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**UNITED STATES**  
**SECURITIES AND EXCHANGE COMMISSION**  
Washington, D.C. 20549  
**FORM 10-K**

(Mark One)

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2021

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from      to

Commission file number 1-13627

**GOLDEN MINERALS COMPANY**

(Exact Name of Registrant as Specified in its Charter)

**DELAWARE**  
(State of Incorporation or Organization)

**26-4413382**  
(I.R.S. Employer Identification No.)

**350 Indiana Street, Suite 650**  
**Golden, Colorado**  
(Address of principal executive offices)

**80401**  
(Zip Code)

**(303) 839-5060**  
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, \$0.01 par value	AUMN	NYSE American

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes  No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes  No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes  No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes  No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer  Accelerated filer  Non accelerated filer  Smaller reporting company  Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by checkmark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes  No

The aggregate market value of the voting and non-voting common equity held by non-affiliates as of June 30, 2021 was approximately \$75.42 million, based on the closing price of the registrant's common stock of \$0.61 per share on the NYSE American on June 30, 2021. For the purpose of this calculation, the registrant has assumed that its affiliates as of June 30, 2021 included all directors and officers and one shareholder that held approximately 23.1% of its outstanding common stock. The number of shares of common stock outstanding on March 22, 2022, was 162,804,612.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's Definitive Proxy Statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A in connection with the 2022 Annual Meeting of Stockholders are incorporated by reference in Part III of this annual report on Form 10-K.

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GOLDEN MINERALS COMPANY  
FORM 10-K  
YEAR ENDED DECEMBER 31, 2021

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References to “Golden Minerals, the “Company,” “our,” “we,” or “us” mean Golden Minerals Company, its predecessors and consolidated subsidiaries, or any one or more of them, as the context requires. Many of the terms used in our industry are technical in nature. We have included a glossary of some of these terms below.

#### FORWARD-LOOKING STATEMENTS

Some information contained in or incorporated by reference into this annual report on Form 10-K may contain forward-looking statements and forward-looking information (collectively, “forward-looking statements”) within the meaning of the United States Private Securities Litigation Reform Act of 1995 and other applicable securities laws. We use the words “anticipate,” “continue,” “likely,” “estimate,” “expect,” “may,” “could,” “will,” “project,” “should,” “believe” and similar expressions (including negative and grammatical variations) to identify forward-looking statements. These statements include comments relating to (i) the assumptions and projections contained in the Rodeo Technical Report Summary, including estimated mineral resources; (ii) projections regarding the Rodeo mine for 2022, including production, payable extraction, anticipated grades, estimated unit costs and net operating margin; (iii) the anticipated life of the Rodeo mine; (iv) the assumptions and projections contained in the Velardeña Technical Report Summary, including estimated mineral resources; (v) the potential restart of mining activities at Velardeña; (vi) future evaluation and drilling plans and exploration activities at our exploration properties, including Yoquivo and Sarita Este; (vii) our financial outlook for 2022, including anticipated expenditures and cash inflows during the year; (viii) our ability to recover VAT receivable in Mexico and the timing of such recovery; and (ix) the potential need for external financing and statements concerning our financial condition, business strategies and business and legal risks. Although we believe the expectations and assumptions reflected in those forward-looking statements are reasonable, we cannot assure you that these expectations and assumptions will prove to be correct. Our actual results could differ materially from those expressed or implied in these forward-looking statements as a result of various factors described in this annual report on Form 10-K, including:

- Timing, duration and overall impact of the COVID-19 pandemic, including potential future suspension of mining activities at the Rodeo Property or processing activities at our Velardeña mill as a result of future orders of the Mexican Federal Government;
- Deviations from the projected timing and amount of estimated production at Rodeo due to unanticipated variations in grade, unexpected challenges associated with our proposed mining plan, volatility in commodity prices, variations in expected recoveries, increases in projected operating or capital costs or interruptions in mineral extraction;
- Higher than anticipated care and maintenance costs at the Velardeña properties in Mexico or at El Quevar in Argentina;
- Risks related to the El Quevar project in Argentina, including unfavorable results from our evaluation activities and whether the option with respect to the El Quevar project is exercised pursuant to the terms of the Earn-In Agreement;
- Decreases in silver and gold prices;
- Whether we are able to raise the necessary capital required to continue our business on terms acceptable to us or at all, and the likely negative effect of volatility in silver and gold prices or unfavorable exploration results;
- Unfavorable results from exploration at the Yoquivo, Sarita Este, Sand Canyon or other exploration properties and whether we will be able to advance these or other exploration properties;

- Risks related to the El Quevar project in Argentina, including unfavorable results from our evaluation activities, the feasibility and economic viability and unexpected costs of maintaining the project, and whether we will be able to find a joint venture partner or secure adequate financing to further advance the project;
- The Rodeo project, including assumptions and projections contained in the Rodeo PEA (including life of mine and mineral extraction expectations), and our plans regarding further advancement of the project;
- Variations in the nature, quality and quantity of any mineral deposits that are or may be located at the Rodeo and Velardeña properties or our exploration properties, changes in interpretations of geological information, and unfavorable results of metallurgical and other tests;
- Whether we will be able to continue or begin to mine and sell minerals successfully or profitably at any of our current properties at current or future silver and gold prices and achieve our objective of becoming a mid-tier mining company;
- Potential delays in our exploration activities or other activities to advance properties towards mining resulting from environmental consents or permitting delays or problems, accidents, problems with contractors, disputes under agreements related to exploration properties, unanticipated costs and other unexpected events;
- Our ability to retain key management and mining personnel necessary to successfully operate and grow our business;
- Economic and political events affecting the market prices for gold, silver, zinc, lead and other minerals that may be found on our exploration properties;
- Political and economic instability in Argentina, Mexico and other countries in which we conduct our business and future actions of any of these governments with respect to nationalization of natural resources or other changes in mining or taxation policies;
- Our ability to acquire additional concessions in Mexico based on the economic and environmental policies of Mexico's current or future governmental authorities;
- Volatility in the market price of our common stock; and
- The factors set forth under "*Risk Factors*" in Item 1A of this annual report on Form 10-K.

Many of these factors are beyond our ability to control or predict. Although we believe that the expectations reflected in our forward-looking statements are based on reasonable assumptions, such expectations may prove to be materially incorrect due to known and unknown risks and uncertainties. You should not unduly rely on any of our forward-looking statements. These statements speak only as of the date of this annual report on Form 10-K. Except as required by law, we are not obligated to publicly release any revisions to these forward-looking statements to reflect future events or developments. All subsequent written and oral forward-looking statements attributable to us and persons acting on our behalf are qualified in their entirety by the cautionary statements contained in this section and elsewhere in this annual report on Form 10-K.

## CONVERSION TABLE

In this annual report on Form 10-K, figures are presented in both United States standard and metric measurements. Conversion rates from United States standard measurement systems to metric and metric to United States standard measurement systems are provided in the table below. All currency references in this annual report on Form 10-K are to United States dollars, unless otherwise indicated.

U.S. Unit	Metric Measure	Metric Unit	U.S. Measure
1 acre	0.4047 hectares	1 hectare	2.47 acres
1 foot	0.3048 meters	1 meter	3.28 feet
1 mile	1.609 kilometers	1 kilometer	0.62 miles
1 ounce (troy)	31.103 grams	1 gram	0.032 ounces (troy)
1 ton	0.907 tonnes	1 tonne	1.102 tons

## GLOSSARY OF SELECTED MINING TERMS

“**Base Metal**” means a classification of non-ferrous metals usually considered to be of low value and higher chemical activity when compared with the precious metals (gold, silver, platinum, etc.). This nonspecific term generally refers to the high-volume, low-value metals copper, lead, tin, and zinc.

“**Breccia**” means rock consisting of fragments, more or less angular, in a matrix of finer-grained material or of cementing material.

“**Calcareous Clastic**” means sedimentary rock composed of siliciclastic particles usually of conglomerate, sand, or silt-size and cemented by calcium carbonate in the form of calcite.

“**Claim**” means a mining interest giving its holder the right to prospect, explore for and exploit minerals within a defined area.

“**Concentrates**” means the partially cleaned product of potentially economically interesting metal-bearing minerals separated from its containing rock or earth by froth flotation or other methods of mineral separation.

“**Concession**” means a grant or lease of a tract of land made by a government or other controlling authority in return for stipulated services or a promise that the land will be used for a specific purpose.

“**Core Drill**” means a rotary type of rock drill that cuts a core of rock and is recovered in long cylindrical sections, usually two centimeters or more in diameter.

“**Deposit**” means an informal term for an accumulation of minerals.

“**Development Stage**” means a project with an established resource, not in production, engaged in the process of additional studies preparing for completion of a feasibility study or for commercial extraction.

“**Diorite**” means a grey to dark grey intermediate intrusive igneous rock composed principally of plagioclase feldspar, biotite, hornblende, and/or pyroxene.

“**Euhedral**” means a well-developed degree of which mineral grains show external crystal faces.

**“Exploration Stage”** means a property that has no mineral reserves disclosed.

**“Exploration Target”** means a statement or estimate of the exploration potential of a mineral deposit in a defined geological setting where the statement or estimate, quoted as a range of tonnage and a range of grade (or quality), relates to mineralization for which there has been insufficient exploration to estimate a mineral resource.

**“Feasibility Study”** means a comprehensive technical and economic study of the selected development option for a mineral project, which includes detailed assessments of all applicable modifying factors, as defined by this section, together with any other relevant operational factors, and detailed financial analysis that are necessary to demonstrate, at the time of reporting, that extraction is economically viable. The results of the study may serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project.

**“Flotation”** means the separating of finely crushed minerals from one another by causing some to float in a froth and others to remain in suspension in the pulp. Oils and various chemicals are used to activate, make floatable, or depress the minerals.

**“Formation”** means a distinct layer of sedimentary or volcanic rock of similar composition.

**“Fracture System”** means a set or group of contemporaneous fractures formed by a stress system.

**“Grade”** means the metal content of mineralized material which for precious metals is usually expressed in troy ounces per ton (2,000 pounds) or in grams per metric tonnes, which contain 2,204.6 pounds or 1,000 kilograms.

**“Indicated mineral resource”** means that part of a mineral resource for which quantity and grade or quality are estimated on the basis of adequate geological evidence and sampling. The level of geological certainty associated with an indicated mineral resource is sufficient to allow a qualified person to apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Because an indicated mineral resource has a lower level of confidence than the level of confidence of a measured mineral resource, an indicated mineral resource may only be converted to a probable mineral reserve.

**“Inferred mineral resource”** means that part of a mineral resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. The level of geological uncertainty associated with an inferred mineral resource is too high to apply relevant technical and economic factors likely to influence the prospects of economic extraction in a manner useful for evaluation of economic viability. Because an inferred mineral resource has the lowest level of geological confidence of all mineral resources, which prevents the application of the modifying factors in a manner useful for evaluation of economic viability, an inferred mineral resource may not be considered when assessing the economic viability of a mining project, and may not be converted to a mineral reserve.

**“Laramide Orogeny”** means a period of mountain building in western North America, which started in the Late Cretaceous age, 70 to 80 million years ago, and ended 35 to 55 million years ago.

**“Measured mineral resource”** means that part of a mineral resource for which quantity and grade or quality are estimated on the basis of conclusive geological evidence and sampling. The level of geological certainty associated with a measured mineral resource is sufficient to allow a qualified person to apply modifying factors in sufficient detail to support detailed mine planning and final evaluation of the economic viability of the deposit. Because a measured mineral resource has a higher level of confidence than the level of confidence of either an indicated mineral resource or an inferred mineral resource, a measured mineral resource may be converted to a proven mineral reserve or to a probable mineral reserve.

**“Mineralization”** means the concentration of metals within a body of rock.

**Mineral reserve**” means an estimate of tonnage and grade or quality of indicated and measured mineral resources that, in the opinion of the qualified person, can be the basis of an economically viable project. More specifically, it is the economically mineable part of a measured or indicated mineral resource, which includes diluting materials and allowances for losses that may occur when the material is mined or extracted.

**“Mining”** means the process of extraction and beneficiation of mineral reserves or mineral deposits to produce a marketable metal or mineral product. Exploration continues during the mining process and, in many cases, mineral reserves or mineral deposits are expanded during the life of the mine activities as the exploration potential of the deposit is realized.

**“Monzodiorite”** means coarse-grained igneous rock consisting of essential plagioclase feldspar, orthoclase feldspar, hornblende and biotite, with or without pyroxene, with plagioclase being the dominant feldspar making up 6% to 90% of the total feldspar and varying from oligoclase to andesine in composition. The presence of the orthoclase feldspar distinguishes this rock from a diorite.

**“National Instrument 43-101”** or **“NI 43-101”** means the standards of disclosure for mineral projects prescribed by the Canadian Securities Administrators.

**“Net Smelter Return Royalty”** or **“NSR Royalty”** means a defined percentage of the gross revenue from a resource extraction operation, less a proportionate share of transportation, insurance, and processing costs.

**“Open Pit”** means a mine working or excavation open to the surface.

**“Ore”** means material containing minerals that can be economically extracted.

**“Outcrop”** means that part of a geologic formation or structure that appears at the surface of the earth.

**“Oxide”** means mineralized rock in which some of the original minerals have been oxidized (i.e., combined with oxygen).

**“Precious Metal”** means any of several relatively scarce and valuable metals, such as gold and silver.

**“Preliminary Economic Assessment”** or **“PEA”** means a study, other than a pre-Feasibility or Feasibility Study, that includes an economic analysis of the potential viability of mineral resources.

**“Probable Mineral Reserves”** means the economically mineable part of an indicated and, in some cases, a measured mineral resource.

**“Production Stage”** means a project that is actively engaged in the process of extraction and beneficiation of mineral reserves or mineral deposits to produce a marketable metal or mineral product.

**“Proven Mineral Reserves”** means the economically mineable part of a measured mineral resource and can only result from conversion of a measured mineral resource.

**“Reclamation”** means the process of returning land to another use after mining is completed.

**“Recovery”** means that portion of the metal contained in the ore that is successfully extracted by processing, expressed as a percentage.

**“Sampling”** means selecting a fractional part of a mineral deposit for analysis.

“**Sediment**” means solid fragmental material that originates from weathering of rocks and is transported or deposited by air, water, or ice, or that accumulates by other natural agents, such as chemical precipitation from solution or secretion by organisms, and that forms in layers on the earth’s surface at ordinary temperatures in a loose, unconsolidated form.

“**Sedimentary**” means formed by the deposition of Sediment.

“**S-K 1300**” means subpart 1300 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission, which sets forth the rules and regulations for disclosure by registrants engaged in the mining industry.

“**Skarn**” means a coarse-grained metamorphic rock formed by the metamorphism of carbonate rock often containing garnet, pyroxene, epidote and wollastonite.

“**Stock**” means discordant igneous intrusion having a surface exposure of less than 40 square miles.

“**Sulfide**” means a compound of sulfur and some other metallic element or elements where sulfur is in the unoxidized form.

“**Tailings Pond**” means a low-lying depression used to confine tailings, the prime function of which is to allow enough time for processed minerals to settle out or for cyanide to be destroyed before water is reused, evaporates, or is discharged into the local watershed.

“**Tertiary**” means the first period of the Cenozoic Era (after the Cretaceous of the Mesozoic Era and before the Quaternary) thought to have covered the span of time between 2 to 3 million years ago and 65 million years ago.

“**Vein**” means a fissure, fault or crack in a rock filled by minerals that have traveled upwards from some deep source.

“**Waste**” means rock lacking sufficient grade and/or other characteristics of ore.

## **ITEMS 1 AND 2: BUSINESS AND PROPERTIES**

### **Overview**

We are a mining company holding a 100% interest in the Rodeo gold mine (the “Rodeo Property”) in Durango State, Mexico, a 100% interest in the Velardeña and Chicago gold-silver mining properties and associated oxide and sulfide processing plants in the state of Durango, Mexico (the “Velardeña Properties”), a 100% interest in the El Quevar advanced exploration silver property (the “El Quevar Property”) in the province of Salta, Argentina (subject to the terms of the April 9, 2020, earn-in agreement (the “Earn-in Agreement”) pursuant to which Barrick Gold Corporation (“Barrick”) has the option to earn a 70% interest in the El Quevar Property), and a diversified portfolio of precious metals and other mineral exploration properties located primarily in or near historical precious metals producing regions of Argentina, Nevada and Mexico. The Rodeo Property, the Velardeña Properties and the El Quevar Property are the only properties that the Company considers material at this time.

We are primarily focused on mining operations at the Rodeo Property (see “*Material Mining Properties – Rodeo Property*” for additional details) as well as further studies of a restart plan for our Velardeña Properties, including use of bio-oxidation to improve the payable gold recovery as further described below under “*Material Mining Properties – Velardeña Properties*”. We began mining activities at the Rodeo Property during December 2020 and began processing mined material from Rodeo at the Velardeña plant in January 2021. The employees at the Rodeo and Velardeña Properties, in addition to those who operate the plant that processes the Rodeo mined material, include an operations group, an administrative group and an exploration group to continue to advance our plans in Mexico and to provide oversight for corporate compliance activities as well as maintaining and safeguarding the longer-term value of the Velardeña Properties assets.

We are also focused on advancing our El Quevar exploration property in Argentina through the Earn-in Agreement with Barrick as described below under “*Exploration Properties—El Quevar*” and continuing to evaluate and search for mining opportunities in North America (including Mexico) with near term prospects of mining, and particularly for properties within reasonable haulage distances of our processing plants at the Velardeña Properties. We are also reviewing strategic opportunities, focusing primarily on development or operating properties in North America, including Mexico.

Our management team is comprised of experienced mining professionals with extensive expertise in mineral exploration, mine construction and development, and mine operations. Our principal office is located in Golden, Colorado at 350 Indiana Street, Suite 650, Golden, CO 80401, and our registered office is the Corporation Trust Company, 1209 Orange Street, Wilmington, DE 19801. We also maintain an office at the Velardeña Properties in Mexico and exploration offices in Argentina and Mexico.

### **Company History**

We were incorporated in Delaware under the Delaware General Corporation Law in March 2009. From March 2009 through September 2011, we focused on the advancement of our El Quevar silver project in Argentina. In September 2011, we completed a business combination transaction with ECU Silver Mining Inc. (“ECU”), resulting in our ownership of the Velardeña and Chicago silver, gold and base metals mines located in the Velardeña mining district in the State of Durango, Mexico as further described below under “—*Velardeña Properties*”.

### **Corporate Structure**

Golden Minerals Company, headquartered in Golden, Colorado, is the operating entity through which we conduct our business. We have a number of wholly-owned subsidiaries organized throughout the world, including in Mexico, South America, the Caribbean and Europe. We generally hold our exploration rights and properties through subsidiaries organized in the countries in which our rights and properties are located.

### **Summary of Mining Properties**

Although we have commenced extraction of minerals at the Rodeo Property, we do not have defined mineral reserves as defined under S-K 1300 and therefore all of our mining properties are considered to be in the exploration stage. We have approximately 12 mining properties, which are listed in the *Summary of Principal Mining Properties* below. In total, Golden Minerals’ mining properties, including our options, cover about 78,600 hectares. The Rodeo Property, the Velardeña Properties and the El Quevar are the only properties that we consider to be material at this time.

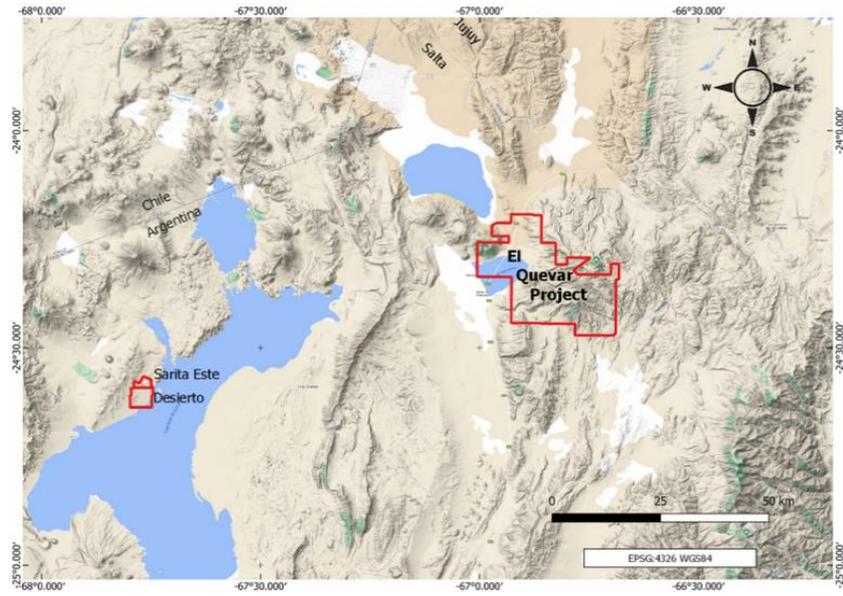
*Property locations*

*Mexico properties*

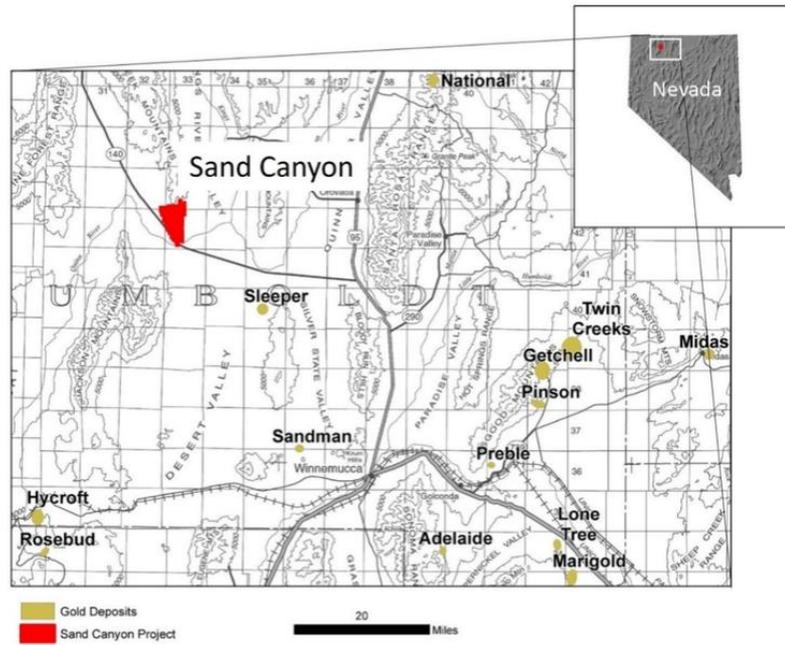
*Mexico Properties, Showing States of Chihuahua and Durango, Mexico*



Argentina properties



United States property



### Summary of Principal Mining Properties

Property	Mine and mineral types	Ownership, Operator, and Permitting	Facilities and processing plants	Recent Activities
<b>Mexico</b>				
Rodeo <sup>(1)</sup>	Gold and silver  Open pit mine(surface)	100% owned or controlled, subject to royalty interest 2 concessions covering 1866 hectares  Permitting complete and currently extracting minerals	Fuel storage, maintenance area, portable warehouses, mobile offices  Mined material is transported to our Velardeña oxide mill for processing	Began mineral extraction in 2021, with payable extraction of 14,398 oz gold and 50,928 oz silver during the year
Velardeña <sup>(2)</sup>	Silver and gold with lead and zinc byproducts.  Potential underground mines	100% ownership of 29 mineral concessions covering 316 hectares and surface ownership of 144 hectares that contain the oxide plant and tailings area. 31 hectares surface ownership containing the sulfide plant and tailings. 35 hectares surface ownership containing mine portal, offices, and maintenance shops.  Permitting complete	Underground workings related to prior mining (suspended in 2015).  300 tonne per day flotation mill for sulfide material  550 tonne per day cyanide leach mill for oxide material	Oxide mill is used to process material from our Rodeo mine.  Currently evaluating mining methods and processing alternatives to enable potential restart of mineral extraction at Velardeña
Santa Maria <sup>(3)</sup>	Gold and silver  Potential underground mine	We hold options to purchase 100% of the 5 concessions that comprise the 101-hectare property with payments now complete	No significant facilities.	In 2020, we entered into an option agreement with Fabled Silver Gold Corp. under which Fabled will have the right to acquire a 100% interest in the property upon final payment of \$2.0 million in cash on or before December 2022.

Yoquivo <sup>(4)</sup>	Gold and silver exploration	We have an option to purchase 6 concessions (1907 hectares)	No significant facilities.	Completed a second phase, 3,949 meter, 21-hole drilling program in 2021 and reported results in the first quarter of 2022
Flechas	Gold and silver exploration	100% ownership of 4 concessions (951 hectares)	No significant facilities	Prior historic production
Miscellaneous	Preliminary mineral exploration	Ownership interest or right to acquire an ownership in seven individual concessions located in Durango, Zacatecas and Chihuahua	No significant facilities	No material exploration work has been conducted to date
<b>Argentina</b>				
El Quevar <sup>(5)</sup>	Silver exploration  Potential surface and/or underground development	100% ownership of 31 mining concessions (56,719 hectares)  Permitting in place for exploration activities	Camp that accommodates 100 workers	Signed earn-in agreement with Barrick Gold, April 2020.  Significant prior drilling
Desierto <sup>(6)</sup>	Gold and silver exploration	33% ownership and an option to increase to 67% ownership of 2 mining concessions (2505 hectares)  Drill permit pending.	No significant facilities.	Pending JV agreement with Cascadero Copper for 51% ownership once option payments are complete

Sarita Este <sup>(6)</sup>	Gold, silver and copper exploration	Company has option to acquire 51% from Cascadero Minerals Corp. One concession totaling 830 hectares.  Drill permit received	No significant facilities.	In January 2022, announced results from initial ~2,500m drill program and plans for trenching and drilling in 2022 field campaign
Carolina and Tocata	Preliminary mineral exploration	Company has ownership interest in 14 concessions in the San Juan and Santa Cruz provinces	No significant facilities	No material exploration work has been conducted to date
<b>Nevada, United States</b>				
Sand Canyon <sup>(7)</sup>	Gold and silver exploration	We have the option to earn a 60% interest from Golden Gryphon Enterprises: US\$2.5M over 5 yrs plus \$0.14M cash payments (now complete) Contains 586 claims totaling 4838 hectares Drill permit received	No significant facilities.	Announced results from initial drill program completed Q1 2020  Currently evaluating results and considering future activities

(1) See “Material Mining Properties— Rodeo Property” for additional details, including a summary of mineral extraction.

(2) See “Material Mining Properties —Velardeña Properties” for additional details.

(3) See “Exploration Properties —Santa Maria” for additional details.

(4) See “Exploration Properties —Yoquivo” for additional details.

(5) See “Material Mining Properties —El Quevar” for additional details.

(6) See “Exploration Properties —Desierto / Sarita Este” for additional details.

(7) See “Exploration Properties —Sand Canyon” for additional details.

#### **Quality Assurance and Quality Control**

Our internal controls relating to Quality Assurance and Quality Control (QA/QC) consist of monitoring the chain of custody of samples and including blanks, duplicates, and reference material standards in each batch of samples for lab analysis, consistent with industry standards. Additionally, umpire check assays are regularly submitted and analyzed to

ensure lab performance, as well as continuous oversight and review by senior staff to ensure all QA/QC procedures and protocols are followed under company standards and guidelines.

QA/QC data is rigorously reviewed and analyzed to ensure its quality for use in exploration and mineral resource and estimation efforts. All mineral resource and estimation efforts are reviewed internally along with undergoing an external detailed peer review and edit process. Although there is inherent risk to any mineral resource estimation, we attempt to minimize risk by following strict QA/QC company procedures and protocols as well as continued and rigorous internal and external review.

**No Proven or Probable Mineral Reserves/Exploration Stage Company**

We are considered an exploration stage company under the SEC criteria because we have not demonstrated the existence of mineral reserves at any of our properties. Under S-K 1300, the SEC defines a “mineral reserve” as “an estimate of tonnage and grade or quality of indicated and measured mineral resources that, in the opinion of the qualified person, can be the basis of an economically viable project.” To have mineral resources, there must be reasonable prospects for economic extraction. Per the SEC, “probable mineral reserves” are the economically mineable part of an indicated and, in some cases, a measured mineral resource and “proven mineral reserves” can only result from measured mineral resources. Mineral reserves cannot be considered proven or probable unless and until they are supported by a preliminary feasibility study or feasibility study, indicating that the mineral reserves have had the requisite geologic, technical and economic work performed and are economically and legally extractable.

Although we are currently extracting minerals from the Rodeo mine, due to the size of the Rodeo deposit and the relatively short anticipated mine life, we did not believe it necessary to incur the expense and delay involved in preparing a preliminary feasibility study or full feasibility study in order to commence extracting minerals at the Rodeo project. We have not completed a preliminary feasibility study or feasibility study with regard to any of our properties to date. We expect to remain an exploration stage company for the foreseeable future. We will not exit the exploration stage until such time, if ever, that we demonstrate the existence of proven or probable mineral reserves that meet the guidelines under S-K 1300, even if we successfully extract material from our properties, as we did in 2021 and expect to do in 2022.

**Summary of Mineral Resources as of December 31, 2021**

	Measured Mineral Resources			Indicated Mineral Resources			Measured + Indicated Mineral Resources			Inferred Mineral Resources		
	Amount tonnes	Grade g/t	Quantity oz	Amount tonnes	Grade g/t	Quantity oz	Amount tonnes	Grade g/t	Quantity oz	Amount tonnes	Grade g/t	Quantity oz
<b>Gold</b>												
Mexico												
<b>Rodeo mine<sup>1</sup></b>												
High-grade	286,100	3.00	27,600	43,500	3.17	4,400	329,600	3.02	32,000			
Low-grade (stockpile)	201,100	1.24	8,000	55,500	1.18	2,100	256,500	1.23	10,100	1,500	1.21	100
<b>Velardeña properties<sup>2</sup></b>	385,000	5.58	69,000	883,800	4.88	138,500	1,268,800	5.09	207,500	1,709,200	4.80	263,800
<b>Total oz</b>			<b>104,600</b>			<b>145,000</b>			<b>249,600</b>			<b>263,900</b>
<b>Silver</b>												
Mexico												
<b>Rodeo mine<sup>1</sup></b>												
High-grade	286,100	13.4	123,000	43,500	10.7	14,900	329,600	13.0	138,000			
Low-grade (stockpile)	201,100	10.2	65,800	55,500	5.2	9,300	256,500	9.1	75,100	1,500	4.10	200
<b>Velardeña properties<sup>2</sup></b>	385,000	327	4,050,800	883,800	316	8,980,600	1,268,800	319	13,031,400	1,709,200	362	19,893,600
<b>Total oz</b>			<b>4,239,600</b>			<b>9,004,800</b>			<b>13,244,500</b>			<b>19,893,800</b>

\* Rounded to nearest 100, columns might not total due to rounding

1. based on \$1,800 oz/Au and \$25 oz/Ag at 1.6 g/t Au cutoff for high-grade, 1.0 g/t Au cutoff for low-grade
2. based on \$1,744 oz/Au and \$23.70 oz/Ag, \$0.97/lb Pb, \$1.15/lb Zn at \$175/t NSR cutoff

**Description of Material Mining Properties**

**Rodeo Property**

*Location, Access and Facilities*

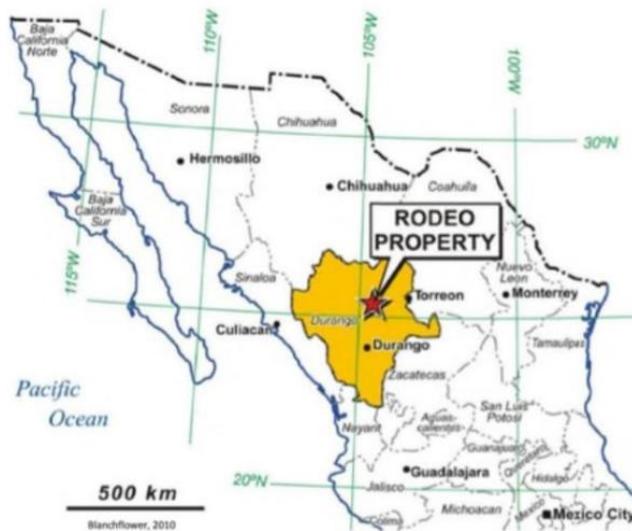
The Rodeo project is located 2 km east of the town of Rodeo in Durango State, Mexico, at latitude 25°9'2.7"N, longitude 105°31'4.2"W. The city of Torreón is located 189 kilometers by road to the east of the project and the city of Durango is located 157 kilometers by road to the south. The property can be reached via gravel roads from the town of Rodeo. Basic amenities are available in the town of Rodeo. Facilities onsite at the Rodeo project include fuel storage, a maintenance area, portable warehouses, mobile offices and other essential services and support units. No processing facilities are located on site. We have obtained rights to extract water from the Nazas River which is within a few kilometers of the project. There is a power line that crosses the property and services the nearby villages, however, we rely on generators to provide power for the minimal infrastructure required at the mine site.

Although we do not have defined mineral reserves and pursuant to S-K 1300 the Rodeo project is in the exploration stage, we began mining at the Rodeo project in late December 2020. The Rodeo mine is a surface mine. We process mined material at our Velardeña oxide mill, which is located approximately 115 kilometers via road from the Rodeo project. The plant was initially constructed in 1996 and improved in 2005 and again in 2012. It is in good working condition and the current book value of the plant is \$1.7 million.

We began processing mined material from the Rodeo project in January 2021 and reached a steady state of throughput in April 2021. Pursuant to the mine plan, we truck mined material to the plant using a commercial trucking contractor. Our Velardeña oxide plant is a typical agitated leach plant that is rated to handle up to 550 tonnes per day of throughput. The plant is equipped with a modern doré refinery, and the attached tailings facility recently underwent an expansion which is expected to be sufficient for the tailings from operations at Rodeo. We installed a new regrind mill circuit at the plant specifically designed to process the harder mined material coming from the Rodeo Property, which was completed in April 2021. The new circuit allowed us to increase daily throughput of Rodeo material in the oxide plant to at least 500 tonnes per day. Mill throughput averaged 532 tonnes per day in third quarter 2021 and 466 tonnes per day in fourth quarter 2021. At that higher throughput level, the current life of the Rodeo mine is estimated to run through the second quarter of 2023, unless additional resources are discovered.

Assays from processing at the Velardeña oxide plant indicate the doré bars smelted to date are comprised of approximately 20 to 30 percent gold and 65 to 80 percent silver and are of a quality that is readily marketable and saleable to refineries located either in Mexico or internationally, consistent with standard commercial terms. We entered into a refining agreement with a third party in February 2021 and have completed 37 shipments of doré as of March 18, 2022.

The following map shows the location of the Rodeo project.



#### *Property History*

Exploration and informal mining of the Rodeo Property dates back over 25 years. Prior to 1994, two prospects, called the “Los Murcielagos” gold-silver-lead-copper and “Francisco Marquez” gold-copper prospects, were documented in the vicinity of the Los Murcielagos arroyo on the Rodeo Property. Little information is available on these historic prospects other than gold- and silver-bearing mineralization was apparently extracted from short adits that are visible from surface. In the early 1990’s, exploration work, including geological mapping and drilling, on the property was carried out by La Cuesta International Inc. and Monarch Resources de Mexico, S.A. de C.V. The property was acquired by Canplats Resource Corporation in 2003, and it conducted a geochemical sampling program and multiple drilling programs during the mid-2000s. Canplats was acquired by Goldcorp Inc. in 2010 and the rights to the Rodeo concessions came to be held in Camino Minerals Corporation (“Camino”), a wholly-owned subsidiary of Goldcorp. In 2010, Camino issued a technical report on the property. In 2011, Camino conducted a 6,238-meter drilling program to investigate the extension of the known mineralization to the north and south of the main mineralized zone of the property, as well as its depth. In 2014, Camino relinquished its right to acquire the Rodeo concessions and the property reverted to La Cuesta. We acquired the Rodeo concessions from La Cuesta International Inc. in 2015.

#### *Title and Ownership Rights*

The Rodeo project consists of two mineral concessions totaling approximately 1,866 hectares. The “Rodeo” concession, totaling 521 hectares, is held under a lease agreement dated May 18, 2015 pursuant to which we are required to make advanced royalty payments of \$40,000 per year to La Cuesta International, S.A. de C.V., a wholly-owned subsidiary of La Cuesta International Inc (“La Cuesta”). We are required to pay La Cuesta a 2% net smelter return royalty.

After \$5 million has been paid to La Cuesta under the royalty agreement, the royalty payment will reduce to a 1% net smelter return. The mineral resources that have been identified to date are located on the Rodeo concession.

The “Rodeo 2” concession, totaling approximately 1,345 hectares, was purchased from Rojo Resources, S.A. de C.V. under a purchase agreement dated July 22, 2015. Royalty payments of 2% of net smelter returns on material produced from Rodeo 2 are also due to La Cuesta.

We are also required to pay a 0.5% net smelter return royalty to the Mexican federal government from all gold and silver extraction at the Rodeo Property.

The following Rodeo Property mine concessions are identified below by name and file number in the Federal government Public Registry of Mining.

<b>Name of Mine Concession</b>	<b>Concession File Number</b>
Rodeo	30748
Rodeo 2	31305

We are required to pay annual concession holding fees to the Mexican government to maintain our rights to the Rodeo mining concessions. In 2021, we made such payments totaling approximately \$33,000 and expect to pay approximately \$35,000 in 2022. Similar to our Velardeña Properties, the Rodeo Property is subject to the Mexican ejido system requiring us to contract with the local communities, or ejidos, surrounding the property to access mineral claims needed in connection with our mining and exploration activities. The Rodeo deposit is located on a private ranch and is not a part of the ejido system. We have a surface use agreement with the private ranch owner that allows us to operate on the property and does not expire until March 12, 2030. The surface use agreement requires us to make annual payments of approximately \$240,000 to the private ranch owner. We also have an agreement with the local ejidos to allow access to the property that we believe will be sufficient to conduct our proposed mining activities for the life of the mine. The local ejidos do not have a direct interest in the mineral claims and payments under the agreement are expected to be less than \$25,000 per year.

#### *Geology and Mineralization*

The Rodeo concession lies on the eastern boundary of the Sierra Madre Occidental. The Rodeo fault system consists of three major parallel structures and wall-rock fracture systems that are the principal feeder conduits for a high-level, gold-silver epithermal mineral system. These major vein and breccia-filled structures appear to be feeder conduits responsible for the 1 kilometer by 4 kilometer area of silicified, clay-altered and gold-anomalous rocks that form a resistant north northwest-trending ridge. All three of the structures are wide, laterally and longitudinally persistent, well-developed feeder vein swarms with high-level, locally banded chalcidonic quartz veins, stockworks and silicified breccias. In the area of principal interest, the structures are strongly veined, silicified, brecciated, and mineralized for over 4 kilometers, and the shear fault zones and hydrothermal system can be traced for 8 kilometers along strike on the property. Individual feeder vein and breccia systems are up to 60 meters thick. Flexures in the vein swarms and/or structural intersections provide brecciation and open conduits for intense, episodic fluid flow and silica deposition with the potential for ore-grade concentrations of precious metals, especially gold.

The immediate Rodeo deposit area is approximately 300 meters along strike and 200 meters wide and extends to a depth of 200 meters below surface. The deposit strikes at 330° and dips to the northeast with various vein phases dipping from subvertical to 30°. The deposit is entirely hosted within Tertiary Rodeo volcanics that are strongly silicified and brecciated. The deposit is bound to the east by the Rodeo fault. Along strike to the north and south, the mineralization is offset slightly by near vertical faulting; mineralization does not terminate at these faults but the intensity of the trend is either diminished or has yet to be located.

### Mineral Resource Estimate

Mineral resources were calculated by Tetra Tech through the effective date of October 31, 2021 as shown in the Technical Report Summary attached to this annual report on Form 10-K. After adjusting for mineral extraction at Rodeo for November and December 2021, the estimate of mineral resources at the Rodeo Property at December 31, 2021 is shown below. Aaron Amoroso, an employee of the Company and “qualified person” pursuant to S-K 1300, prepared the estimate shown below. The resources are reported at a cutoff of 1 g/t for stockpiling and 1.6 g/t for processing. Numbers reported as mineral resource are constrained to a mine design of 1 g/t.

**Table Error! No text of specified style in document.: Rodeo Property – Summary of Gold and Silver Mineral Resources at December 31, 2021 Based on \$1,800 oz/Au and \$25 oz/Ag**

Classification	Cutoff Au (g/t)	Tonnes	Au (g/t)	Au (oz)	Ag (g/t)	Ag (oz)
<b>Low-Grade (Stockpile)</b>						
Measured	1.0	201,100	1.24	8,000	10.18	65,800
Indicated	1.0	55,500	1.18	2,100	5.21	9,300
Measured + Indicated	1.0	256,500	1.23	10,100	9.11	75,100
Inferred	1.0	1,500	1.21	100	4.10	200
<b>High-Grade</b>						
Measured	1.6	286,100	3.00	27,600	13.37	123,000
Indicated	1.6	43,500	3.17	4,400	10.66	14,900
Measured + Indicated	1.6	329,600	3.02	32,000	13.02	137,900

\*Columns may not total due to rounding

The resource tabulation shown above is based on our internal price forecasts at that time which were accepted as reasonable by TetraTech. In preparing the estimate as of December 31, 2021, Mr. Amoroso determined that those price assumptions remained reasonable at the end of the fiscal year. The reported resource for the Rodeo mine as of December 31, 2021 was calculated by adjusting for material mined and processed between November 1<sup>st</sup> and December 31<sup>st</sup>.

#### Production

For a discussion of mineral extraction at Rodeo during 2021 and plans for 2022, see “*Management’s Discussion and Analysis of Financial Condition and Results of Operations – 2021 Highlights – Rodeo Property.*”

#### Certain Laws Affecting Mining in Mexico

Our current and proposed operations at the Rodeo Project are subject to a variety of laws affecting mining operations in Mexico. For a discussion of these laws, see “*Material Mining and Properties – Velardeña Properties - Certain Laws Affecting Mining in Mexico.*”

#### Taxes

For a discussion of the taxes that apply generally to mining projects in Mexico, see “*Material Mining Properties – Velardeña Properties – Taxes in Mexico.*”

### *Recent Activities and Operating Plans*

For a discussion of recent activities and projected operating parameters, see “*Management’s Discussion and Analysis of Financial Condition and Results of Operations – 2021 Highlights – Rodeo Property*” below.

#### **Velardeña Properties**

##### *Location, Access and Facilities*

The Velardeña Properties are comprised of two underground mines and two processing plants, which are located within the Velardeña mining district in the municipality of Cuencamé, in the northeast quadrant of the State of Durango, Mexico, approximately 65 kilometers southwest of the city of Torreón, Coahuila and approximately 140 kilometers northeast of the city of Durango, which is the capital of the State of Durango. The Velardeña property is centered on UTM grid coordinates 2774300 N and 632200 E (WGS 84 datum, zone 13). This property contains the Santa Juana mine which has been the focus of mining efforts since 1995, as well as the historical Terneras, San Juanes, and San Mateo mines.

The Chicago property is located approximately 2 km south of the Velardeña property and is centered at UTM grid coordinates 2772480 N and 631867 E (WGS 84 datum, zone 13). This property contains the historical Los Muertos-Chicago mine.

The mines are reached by a seven-kilometer gravel road from the village of Velardeña which is reached by highway from Torreón and Durango. The Velardeña mining district is situated in a temperate hot, semi-arid region.

Although we do not have defined mineral reserves pursuant to S-K 1300 and the Velardeña Properties are in the exploration stage, we have extracted minerals from the Velardeña Properties in the past. Of the two underground mines comprising the Velardeña Properties, the Velardeña mine includes five different major vein systems including the Terneras, Roca Negra, San Mateo, Santa Juana and San Juanes systems. During 2015, we mined from the San Mateo, Terneras and Roca Negra vein systems as well as the Santa Juana vein system to augment grades as mining and processing rates ramped up.

We own a 300-tonne per day flotation sulfide mill situated near the town of Velardeña. The mill includes three flotation circuits in which we can process sulfide material to make lead, zinc and pyrite concentrates. We also own a conventional 550-tonne per day cyanide leach oxide mill with a Merrill-Crowe precipitation circuit and flotation circuit located adjacent to our Chicago mine. In July 2015, we leased the oxide plant to Minera Hecla S.A. de C.V. (“Hecla”), a Mexican corporation and wholly-owned subsidiary of Hecla Mining Company, to process its own material through the plant (the “Hecla Lease”). The Hecla Lease was subsequently extended and ultimately terminated in accordance with its terms on November 30, 2020. We continue to evaluate and search for other oxide and sulfide feed sources, focusing on sources within haulage distance of our sulfide and oxide mills at the Velardeña Properties.

We installed a new regrind mill circuit at the Velardeña oxide plant specifically designed to process the harder mined material coming from the Rodeo Property, which was completed in April 2021. The new circuit allowed us to increase daily throughput of Rodeo material in the oxide plant to at least 500 tonnes per day.

The recent rise in precious metals prices, the advancement of alternative processing technologies in the industry, and the results of our testing activities prompted us to pursue the preparation of an updated PEA based partly on projected increased gold recoveries from a proposed bio-oxidation circuit to treat gold-bearing pyrite concentrates. In April 2020, we announced positive results from the updated PEA, which was prepared in accordance with NI 43-101.

In June 2021 we began limited scale mining activities at our Velardeña underground mine to obtain further bulk samples for use in final optimization of the bio-oxidation plant design and for use in additional flotation separation studies

that will indicate how we can best separate the gold-bearing minerals into the pyrite-arsenopyrite concentrate that is proposed for processing in the bio-oxidation circuit.

We are also testing mining methods to ensure that we can effectively control mining dilution to obtain the head grades that we expect based on our PEA study. We expect to have the results of these studies in early 2022. We have not yet made a decision regarding a potential restart of the Velardeña mines.

Power for all of the mines and plants is provided through substations connected to the national grid.

Water is provided for all of the mines by wells located in the valley adjacent to the Velardeña Properties. In Mexico, water concessions are granted by the National Commission of Water (“CNA”). Currently no new water concessions are being granted by the CNA; however, companies can acquire water concessions through purchase or lease from current concession holders. We hold title to three wells located near the sulfide plant and hold certificates of registration to three wells located near the oxide plant. We are licensed to pump water from all six wells up to a permitted amount. We are required to make annual payments to the CNA to maintain our rights to these wells. In 2021 we made such payments totaling approximately \$75,000 and expect to pay approximately \$84,000 in 2022. We are required to pay a nominal additional fee to the CNA each year if we use too much water from a particular well or alternatively if we do not use a minimum amount of water from a particular well.

The following map shows the location of the Velardeña Properties.



### *Property History*

Exploration and mining in the Velardeña district extended back to at least the late 1500s or early 1600s, with large scale mining beginning in 1888 with the Velardeña Mining and Smelter Company. In 1902, the mining properties were acquired by ASARCO, who mined the property until 1926 when the mines were closed. For the next 35 years, the mines were operated from time to time by small companies and local miners. The property was nationalized in 1961, and in 1968 the sulfide processing plant was built by the Mexican government. In 1994, William Resources acquired the concessions comprising the Velardeña Properties. In 1997, ECU Gold (the predecessor to ECU Silver Mining Inc.) purchased from William Resources the subsidiaries that owned the concessions and the sulfide processing plant. The oxide processing plant was acquired in 2004. In 2011, we acquired ECU Silver Mining Inc.

### *Title and Ownership Rights*

We hold the concessions comprising the Velardeña Properties through our wholly-owned Mexican subsidiary Minera William S.A. de C.V. At present, a total of 28 mineral concessions comprise the Velardeña Properties. The Velardeña Properties concessions encompass approximately 316 hectares. The mineral concessions vary in size, and the concessions comprising each mineral property are contiguous within each of the Velardeña and Chicago properties. We are required to pay annual concession holding fees to the Mexican government to maintain our rights to the Velardeña mining concessions. In 2020, we made such payments totaling approximately \$22,000 and expect to pay approximately \$23,000 in 2022. We also own the surface rights to 144 hectares that contains the oxide plant, tailings area and access to the Chicago mine, along with surface lands that may be required for potential plant expansions.

The Velardeña Properties are in part subject to the Mexican ejido system requiring us to contract with the local communities, or ejidos, surrounding our properties to obtain surface access rights needed in connection with our mining and exploration activities. We currently have contracts with two ejidos to secure surface rights for our Velardeña Properties with a total annual cost of approximately \$56,000. We have a ten-year contract with the Velardeña ejido, which provides surface rights to certain roads and other infrastructure at the Velardeña Properties through 2021 which is being renewed under mutual agreement, and a 25-year contract with the Vista Hermosa ejido, which provides exploration access and access rights for roads and utilities for our Velardeña Properties until 2038.

The following Velardeña Properties exploitation concessions are identified below by name and number in the Federal government Public Registry of Mining.

Mine/Area	Name of Exploitation Concession	Concession Number
Velardeña	AMPL. DEL ÁGUILA MEXICANA	85580
	ÁGUILA MEXICANA	168290
	LA CUBANA	168291
	TORNASOL	168292
	SAN MATEO NUEVO	171981
	SAN MATEO	171982
	RECUERDO	171983
	SAN LUIS	171984
	LA NUEVA ESPERANZA	171985
	LA PEQUEÑA	171988
	BUEN RETIRO	172014
	UNIFICACIÓN SAN JUAN EVANGELISTA	172737
	UNIFICACIÓN VIBORILLAS	185900
	BUENAVENTURA No. 3	188507
	EL PÁJARO AZÚL	188508
	BUENAVENTURA 2	191305
	BUENAVENTURA	192126
	LOS DOS AMIGOS	193481
	VIBORILLAS NO. 2	211544
	KELLY	218681
Chicago	SANTA TERESA	171326
	SAN JUAN	171332
	LOS MUERTOS	171986
	EL GAMBUSINO	171987
	AMPLIACIÓN SAN JUAN	183883
	MUÑEQUITA	196313
	SAN AGUSTÍN	210764
LA CRUZ	189474	

#### *Geology and Mineralization*

The Velardeña district is located at the easternmost limit of the Sierra Madre Occidental on the boundary between the Sierra Madre Oriental and the Mesa Central sub-provinces. Both of these terrains are underlain by Paleozoic and probably Precambrian basement rocks.

The regional geology is characterized by a thick sequence of limestone and minor calcareous clastic sediments of Cretaceous age, intruded by Tertiary plutons of acidic to intermediate composition. During the Laramide Orogeny, the sediments were folded into symmetrical anticlines and synclines that were modified into a series of asymmetrical overturned folds by a later stage of compression.

A series of younger Tertiary stocks have intruded the older Cretaceous limestone over a distance of approximately 15 kilometers along a northeast to southwest trend. The various mineral deposits of the Velardeña mining district occur along the northeast southwest axis and are spatially associated with the intrusions and their related alteration.

An important northwest-southeast fracture system is associated with these intrusions and, in many cases, acts as the main focus of mineralization. The Velardeña Properties are underlain by a thick sequence of limestone that corresponds to rocks of the Aurora and Cuesta del Cura formations of Lower Cretaceous age.

Several types of Tertiary intrusive rocks are present in the Velardeña district. The largest of these intrusives outcrops on the western flank of the Sierra San Lorenzo and underlies a portion of the Velardeña Properties. It is referred to as the Terneras pluton and forms a northeast oriented, slightly elongated body, considered to represent a diorite or monzodiorite that outcrops over a distance of about 2.5 kilometers. The adjacent limestone has been altered by contact metamorphism (exoskarn), and locally the intrusive has been metamorphosed (endoskarn).

The following is a description of the individual geological characteristics and mineralization found on each of the properties comprising the Velardeña and Chicago mines.

#### Velardeña Mine

The Santa Juana, Terneras, San Juanes and San Mateo vein deposits on the Velardeña property are hosted by Aurora Formation limestone, the Terneras intrusion and related skarn. The limestone is intruded by a series of multiphase diorite or monzodiorite stocks (Terneras intrusion) and dikes of Tertiary age that outcrop over a strike length of approximately 2.5 kilometers.

Two main vein systems are present on the Velardeña property. The first is a northwest striking system as found in the Santa Juana deposit, while the second is east-west trending and is present in the Terneras, San Juanes and San Mateo deposits.

In the Santa Juana deposit, vein trends are steeply northeast dipping and northwest trending. The Terneras, San Juanes and San Mateo veins all strike east-west and dip steeply north. The most extensive of these is the Terneras vein, which was mined in the past over a strike length of 1,100 meters. All of these veins are observed to have extensive strike lengths and vertical continuity for hundreds of meters. The mineralogy of the east west system is somewhat different in that it contains less arsenic than the northwest Santa Juana veins.

Mineralization in the deposits located at the Velardeña mine occurs primarily in epithermal quartz-calcite veins with associated lead, zinc, silver, and copper minerals including gold hosted mostly in arsenopyrite and pyrite, typical of the polymetallic vein deposits of northern Mexico. The veins are usually thin, normally in the 0.2 meter to 0.5 meter range, but consistent along strike and down dip. Coxcomb and rhythmically banded textures are common.

## Chicago Mine

The geologic setting of the Chicago property is very similar to that at the Velardeña mine. The oldest rocks outcropping at Chicago are folded limestone of the Aurora Formation which were intruded by Tertiary diorite stocks and dikes. Intrusive rocks occupy the western portion of the property with a northeast orientation. The limestone-diorite contact exhibits widespread recrystallization and marble formation overprinted by a distinctive green calc-silicate alteration dominated by grossular garnet and lesser wollastonite.

As at Velardeña, a system of post-mineralization faults striking northwest-southeast cuts and locally displaces mineralized structures. These faults are normally filled with calcite and can have widths up to 10 m near the surface.

In the Chicago mine, rhyolitic volcanic rocks and calcareous conglomerate of the Ahuichila Formation unconformably overlie the mineralized sequence across the eastern half of the area. Mineralization is similar to that encountered at Santa Juana mine in terms of mineralogy, host rocks, geometry of the structures and vein continuity.

Mineralization at the Chicago Mine is similar to the Velardeña Mine in terms of mineralogy, host rocks, geometry of the structures, and continuity. The difference between the two is geometric - northwest striking veins dipping to the northeast at Velardeña instead of northeast striking veins dipping to the southeast at Chicago. The major veins at Chicago are the Chicago vein, the Escondida vein, and the Gambusino vein.

### *Mineral Resource Estimate*

Estimated mineral resources for the Velardeña project are shown in Table 2. The resource is reported by mineral type and resource class for all veins. Resources were calculated as diluted to a minimum of 0.7 meters and are reported at a \$175 NSR cutoff..

**Table 2: Velardeña Project – Summary of Silver and Gold Mineral Resources at December 31, 2021 based on \$23.70/troy ounce Ag, \$1,744/troy ounce Au, \$0.97/lb Pb, and \$1.15/lb Zn <sup>(1)(2)(3)</sup>**

Classification	Mineral Type	NSR Cutoff	Tonnes	Grade Ag g/t	Grade Au g/t	Grade Pb%	Grade Zn%	Ag oz	Au oz	Pb lb	Zn lb
Measured	Oxide	175	128,800	268	5.69	1.74	1.53	1,108,000	23,500	4,936,000	4,333,400
Indicated	Oxide	175	280,300	262	5.06	1.73	1.45	2,361,200	45,600	10,681,500	8,936,600
Measured + Indicated	Oxide	175	409,100	264	5.26	1.73	1.47	3,469,200	69,100	15,617,500	13,270,000
Inferred	Oxide	175	351,400	417	4.95	2.55	1.45	4,714,600	56,000	19,729,500	11,248,200
Measured	Sulfide	175	256,200	357	5.52	1.56	1.91	2,942,800	45,500	8,819,300	10,769,700
Indicated	Sulfide	175	603,500	341	4.79	1.46	1.91	6,619,400	92,900	19,475,600	25,408,900
Measured + Indicated	Sulfide	175	859,700	346	5.01	1.49	1.91	9,562,200	138,400	28,294,900	36,178,600
Inferred	Sulfide	175	1,357,700	348	4.76	1.52	1.97	15,179,000	207,800	45,534,200	58,952,900
Measured	All	175	385,000	327	5.58	1.62	1.78	4,050,800	69,000	13,755,300	15,103,100
Indicated	All	175	883,800	316	4.88	1.55	1.76	8,980,600	138,500	30,157,100	34,345,500
Measured + Indicated	All	175	1,268,800	319	5.09	1.57	1.77	13,031,400	207,500	43,912,400	49,448,600
Inferred	All	175	1,709,200	362	4.80	1.73	1.86	19,893,600	263,800	65,263,700	70,201,100

Notes:

- (1) Tetra Tech was the qualified person for the preparation of the mineral resource estimate for the Velardeña Properties.
- (2) Resources are reported as diluted tonnes and grade to 0.7 m fixed width
- (3) Columns may not total due to rounding

Mineral resources have been tabulated using a US\$175/t NSR cutoff grade based on the price assumptions shown in Table 3. The resource tabulation is presented based on the long-term average consensus prices from 40 banks as of December 31, 2021. The prices used are US\$23.70/troy ounce Ag, US\$1,744/troy ounce Au, US\$0.97/lb Pb, and US\$1.15/lb Zn.

**Table 3: Cutoff price assumptions**

Assumption	Value
<b>Ag Price \$/oz</b>	23.70
<b>Au Price \$/oz</b>	1,744
<b>Pb Price \$/lb</b>	0.97
<b>Zn Price \$/lb</b>	1.15

NSR has been calculated with concentrate characteristics and marketing terms supplied by Golden Minerals. Metal contributions are dependent on the concentrate and mineral type, and the overall recoveries are shown in Table 4.

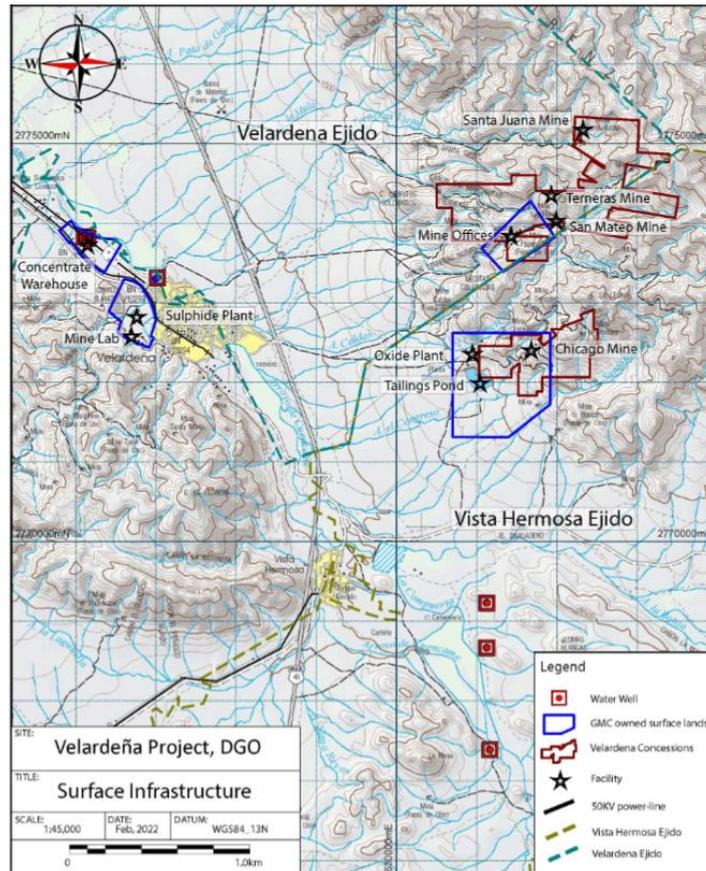
**Table 4: NSR metallurgical recovery assumptions**

Metal	Sulfide Metallurgical Recovery %
<b>Au</b>	67
<b>Ag</b>	90
<b>Pb</b>	72
<b>Zn</b>	77

#### *Velardeña Properties Activities*

Given the current high precious metals prices, the advancement of alternative processing technologies in the industry, and the results of our testing activities prompted us to pursue the preparation of an updated Preliminary Economic Assessment of our Velardeña project. In April 2020 we announced positive results from the updated PEA. The updated PEA was prepared to incorporate new and updated elements of the project database, mine plan and processing plan, most notably the inclusion of bio-oxidation treatment of gold-bearing pyrite concentrates. In late 2019, we obtained successful results from testing Velardeña gold concentrate material using Finnish firm Outotec's "BIOX" process, a sustainable technology that was developed to pre-treat refractory ores and concentrates ahead of conventional cyanide leaching. The gold in these types of mineralized materials, such as those found at Velardeña, is encapsulated in pyrite and arsenopyrite which prevents the gold from being successfully cyanide leached. BIOX utilizes bacteria to oxidize these sulfide minerals, thereby exposing the gold for subsequent cyanide leaching and increasing overall gold recoveries. The 2019 BIOX testing of Velardeña material achieved gold recoveries of 92% from the pyrite-arsenopyrite concentrate, compared to sub-30% gold recoveries realized when the Velardeña Properties last operated in 2015. Tests completed in 2021 and 2022 confirm these results. During 2022, we plan to continue to optimize the mine plan and processing details in preparation for future test-mining and processing in advance of establishing a definite schedule for restarting commercial mineral extraction at the Velardeña mines and the installation of the bio-oxidation circuit. No decision has been made regarding a potential restart of the Velardeña mines, however, discussions are in progress regarding the potential to restart mining and flotation processing once the construction of the bio-oxidation facility has been approved.

Infrastructure



The Velardeña and Chicago Mines are fully developed underground with 10,122 meters of drift and ramp development and 2,278 meters of raise development. Surface installations include maintenance shops, offices, and systems for water, electricity, and compressed air as required for underground mining.

We own the equipment required for mining. The key pieces of equipment include scoop-trams, underground trucks and drilling jumbos. The current equipment fleet is expected to be adequate to achieve the 310 t/d of mill feed for

processing and no additional material equipment is expected to be purchased. We also own the jacklegs required for stoping and underground development (narrow drifts) and ventilation equipment in use underground.

Plant 1 is designed to process sulfide material in a conventional flow sheet of crushing, grinding, and differential flotation to produce three separate concentrates: lead-silver, zinc, and pyrite.

Figure 1 shows the processing flow sheet for Plant 1

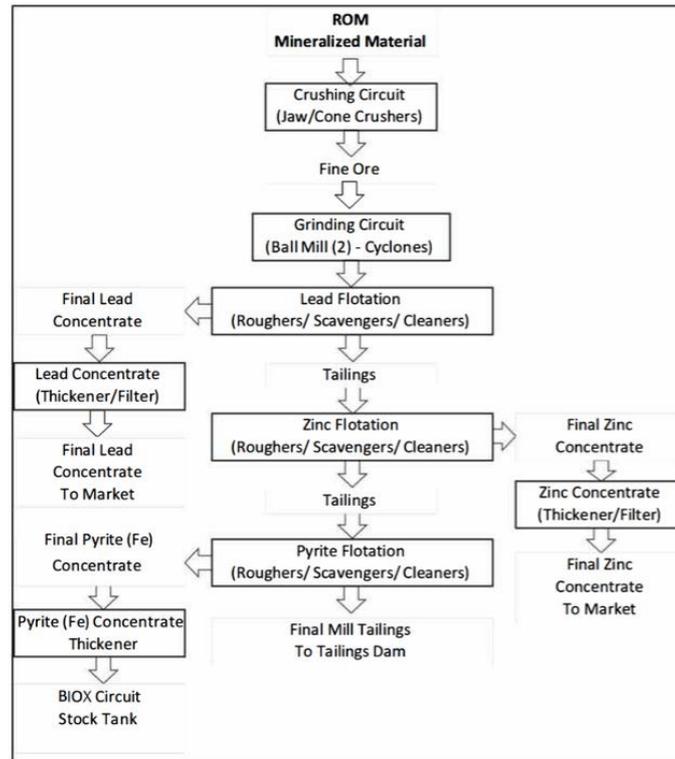


Figure 1: Process plant flow sheet for Plant 1

The sulfide plant was originally constructed in 1966 and has been upgraded and rebuilt several times, most recently in 2014 prior to use in 2015 and in 2017 in preparation for a re-start of the Velardeña and Chicago Mines. The book value of the plant as of December 31, 2021 is \$0.4 million.

The oxide processing plant at Velardeña is a conventional agitated cyanide leach facility and has an operating capacity of up to 550 tpd depending on material hardness and grind size requirements. It is in excellent working condition and is currently in use processing mineralized material from our Rodeo Mine (see Rodeo Mine above for details of the oxide plant). In the future, if we re-start mineral extraction at the Velardeña and Chicago Mines and construct the proposed bio-oxidation facility, we plan to process oxidized concentrates and oxidized mineralized material from the Velardeña

Properties at Plant 2. The plant was initially constructed in 1996 and improved in 2005 and again in 2012 and 2021. The book value of the plant as of December 31, 2021 is \$1.7 million.

#### Environmental Matters and Permitting

We hold environmental licenses and environmental impact assessments that allow us to run our mines, plants and tailing facilities at our Velardeña Properties. We are required to update our environmental licenses and environmental impact assessments for expansion of or modification to any of the existing two processing plants. The construction of new infrastructure beyond the current plant facilities also would require additional permitting, which could include environmental impact assessments and land use permits.

#### *Certain Laws Affecting Mining in Mexico*

Mexico, officially the United Mexican States, is a federal constitutional republic in North America and bordered by the United States of America, Belize and Guatemala. Mexico is a federal democratic republic with 31 states and Mexico City. Each state has its own constitution and its citizens elect a governor, as well as representatives, to their respective state congresses. The President of Mexico is the head of the executive federal government. Executive power is exercised by the President, while legislative power is vested in the two chambers of the Congress of the Union. The three constitutional powers are the Judiciary, the Executive and the Legislature which are independent of each other.

#### Legislation Affecting Mining

The Mining Law, originally published in 1992 and amended in 1996, 2005, 2006 and 2014, is the primary legislation governing mining activities in Mexico. Other significant legislation applicable to mining in Mexico includes the regulations to the Mining Law, the Federal Law of Waters, the Federal Labor Law, the Federal Law of Fire Arms and Explosives, the General Law on Ecological Balance and Environmental Protection and regulations, the Federal Law of Duties and the Federal Law on Metrology and Standards.

#### The Concession System

Under Mexican law, mineral deposits are property of the Mexican republic, and a mining concession, granted by the executive branch of the federal government, is required for the exploration, exploitation and processing of mineral deposits. Mining concessions may only be granted to Mexican individuals domiciled in Mexico or companies incorporated and validly existing under the laws of Mexico. Mexican companies that have foreign shareholders must register with the National Registry of Foreign Investments and renew their registration on an annual basis. Mining concessions grant rights to explore and exploit mineral deposits but do not grant surface rights over the land where the concession is located. Mining concession holders are required to negotiate surface access with the land owner or holder (e.g., agrarian communities) or, should such negotiations prove unsuccessful, file an application with the corresponding administrative authority (Ministry of Economy or Ministry of Agrarian-Territorial-Urban Development) to obtain an easement, temporary occupancy, or expropriation of the land, as the case may be. An application for a concession must be filed with the Mining Agency or Mining Delegation located closest to the area to which the application relates.

Mining concessions have a term of 50 years from the date on which title is recorded in the Public Registry of Mining. Holders of mining concessions are required to comply with various obligations, including the payment of certain mining duties based on the number of hectares of the concession and the number of years the concession has been in effect. Failure to pay the mining duties can lead to cancellation of the relevant concession. Holders of mining concessions are also obliged to carry out and prove assessment works in accordance with the terms and conditions set forth in the Mining Law and its regulations. The regulations to the Mining Law establish minimum amounts that must be spent or invested on mining activities. A report must be filed in May of each year regarding the assessment works carried out during the preceding year. The mining authorities may impose a fine on the mining concession holder if one or more proof of assessment work reports is not timely filed.

Pursuant to amendments to the federal corporate income tax law, effective January 2014, additional duties are imposed on mining concession holders; see “—*Taxes in Mexico*”.

#### Environmental Legislation

Mining projects in Mexico are subject to Mexican federal, state and municipal environmental laws and regulations for the protection of the environment. The principal legislation applicable to mining projects in Mexico is the federal General Law of Ecological Balance and Environmental Protection, which is enforced by the Federal Bureau of Environmental Protection, commonly known as “PROFEPA”. PROFEPA is the federal entity in charge of carrying out environmental inspections and negotiating compliance agreements. Voluntary environmental audits, coordinated through PROFEPA, are encouraged under the federal General Law of Ecological Balance and Environmental Protection. PROFEPA monitors compliance with environmental legislation and enforces Mexican environmental laws, regulations and official standards. If warranted, PROFEPA may initiate administrative proceedings against companies that violate environmental laws, which proceedings may result in the temporary or permanent closure of non-complying facilities, the revocation of operating licenses and/or other sanctions or fines. According to the Federal Criminal Code, PROFEPA must inform the relevant governmental authorities of any environmental crimes that are committed by a mining company in Mexico.

Concession holders under the exploration stage may submit themselves to comply with the Mexican Official Norm: NOM-120-SEMARNAT-1997, which provides, among other things, that mining exploration activities to be carried out within certain areas must be conducted in accordance with the environmental standards set forth in NOM-120-SEMARNAT-1997; otherwise, concession holders are required to file a preventive report or an environmental impact study prior to the commencement of the exploration, exploitation and processing of mineral resources. An environmental impact study is required for exploitation and processing of mineral resources activities.

In 2014 Mexico developed an energy policy applicable to private investment companies whereby new mining concessions are now subject to prior approval from the Ministry of Energy. Current mining concessions forming the Velardeña Properties are not subject to or affected by this approval requirement, but any new mining concessions acquired will be subject to this additional approval.

#### *Taxes in Mexico*

Mexico has a federal corporate income tax rate of 30%, and there are no state taxes on corporate net income. In determining their corporate income tax, entities are allowed to subtract from gross income various deductions permitted by law, and they are allowed a ten-year carry-forward of net operating losses. Pursuant to amendments to the federal tax laws effective January 1, 2014, a 10% withholding tax is charged on dividends distributed to shareholders, regardless of the tax residence of the recipient, out of after tax profits. However, in the case of nonresident shareholders the limitations and tax rates provided in the treaties to avoid double taxation will prevail. A foreign resident company is subject to income tax if it has a permanent establishment in Mexico. In general, a permanent establishment is a place of business where the activities of an enterprise are totally or partially carried out and includes, among others, offices, branches and mining sites.

Under the 2014 amendments to the federal corporate income tax law, titleholders of mining concessions are required to pay an annual special duty of 7.5% of their mining related profits. Titleholders of mining concessions also are required to pay a 0.5% special mining duty, or royalty, on an annual basis, on revenues obtained from the sale of silver, gold and platinum. Both the 7.5% annual special duty and the 0.5% duty are due at the end of March each year. The special duty of 7.5% is generally applicable to earnings before income tax, depreciation, depletion, amortization, and interest. In calculating the special duty of 7.5%, there are no deductions related to depreciable costs from operational fixed assets, but exploration and prospecting depreciable costs are deductible when incurred. Both duties are tax deductible for income tax purposes.

Mexico has several taxes in addition to income tax that are relevant to most business operations, including (i) the Value Added Tax ("VAT"); (ii) import duties; (iii) various payroll taxes; and (iv) statutorily entitled employee profit sharing ("PTU"). In addition, annual mining concession fees are charged by the government.

VAT in Mexico is charged upon alienation of goods, performance of independent services, grant of temporary use or exploitation of goods, or import of goods or services that occur within Mexico's borders, at a rate of 16%. There is no VAT in the case of export of goods or services or for the sale of gold, jewelry, and gold metalwork with a minimum gold content of 80%, excluding retail sale to the general public. The sale of mining concessions is subject to VAT as concessions are not considered to be land. VAT paid by a business enterprise on its purchases and expenses may usually be credited against its liability for VAT collected from customers on its own sales. This creditable VAT may also be directly refunded, but under new regulations beginning in January 2019, the creditable VAT can no longer offset other Mexican federal taxes. At December 31, 2021, the Company recorded a net VAT receivable in Mexico of \$1.3 million, related to the Velardeña Properties and the Rodeo operations. The Company expects that the current amounts will be recovered within a one-year period.

Import duties apply for goods and services entering the country, unless specifically exempted due to a free trade agreement or registered under specific programs like IMMEX. Payroll taxes are payable in most states including Durango and Coahuila, and social security, housing and pension contributions must be made to the federal government when paying salaries.

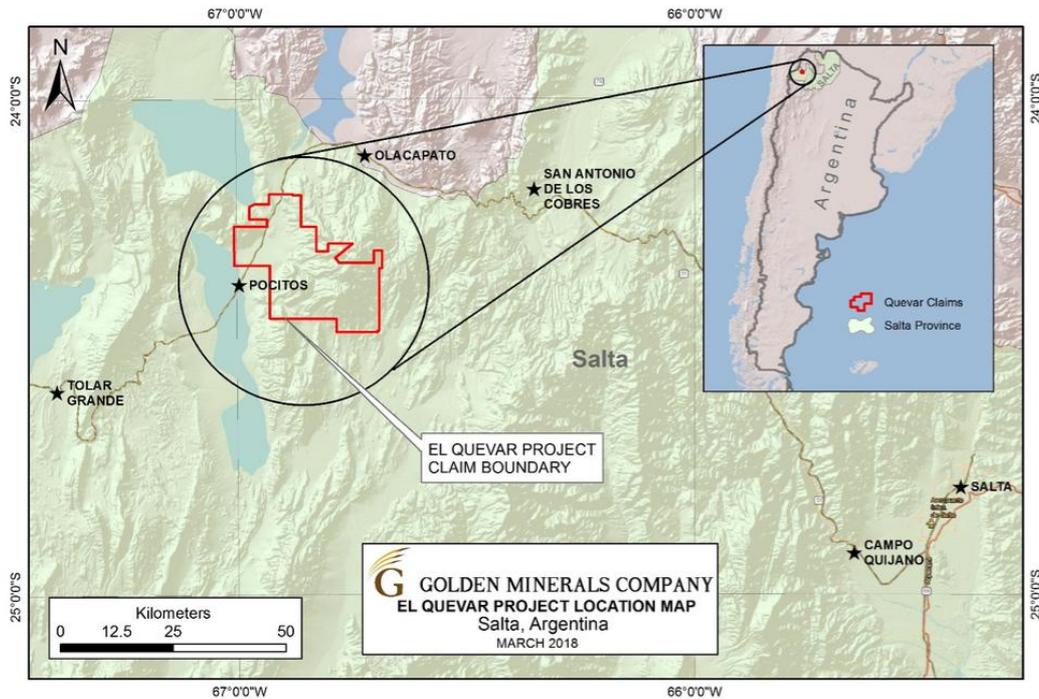
Employees of Mexico entities are statutorily entitled to a portion of the employer's pre-tax profits, called PTU. The rate of profit sharing is currently 10% of the employer's taxable income as defined by the Income Tax law. A taxpayer may reduce its income tax base by an amount equal to the PTU. Certain companies are exempt from paying PTU, which include companies in the extractive industry (principally the mining industry) during the period of exploration.

## **El Quevar**

### *Location and Access*

Our El Quevar silver exploration project is located at 24° 34' 55.2" S latitude and 66° 50' 34.8" W longitude in the San Antonio de los Cobres municipality, Salta Province, in the altiplano region of northwestern Argentina, approximately 300 kilometers by road northwest of the city of Salta, the capital city of the province. The project is also accessible by a 300-kilometer dirt and gravel road from the city of Calama in northern Chile. The small village of Pocitos, located about 20 kilometers to the west of El Quevar, is the nearest settlement. We have established a camp approximately 10 kilometers west of the project to house project workers. A high-tension power line is located approximately 40 kilometers from the site, and a high-pressure gas line devoted to the mining industry and subsidized by the Salta government is located within four kilometers of the El Quevar camp. There is a permitted well for non-potable water on the property with ample volume for exploration purposes and with potential to be increased to accommodate future production needs.

The El Quevar project is located near Nevado Peak with altitudes at the concessions ranging from 3,800 to 6,130 meters above sea level. The climate of the area is high mountain desert, with some precipitation in summer (such as snow) and little snow in winter. The following map shows the location of the El Quevar project.



*Property History*

Mining activity in and around the El Quevar project dates back at least 80 years. Between 1930 and 1950, there was lead and silver extraction from small workings in the area, but we have no mining records from that period. The first organized exploration activities on the property occurred during the 1970s, although no data from that period remains. Over the last 30 years, several companies have carried out exploration activity in the area, including BHP Billiton, Industrias Peñoles, Mansfield Minerals and Hochschild Mining Group, consisting primarily of local sampling with some limited drilling programs.

*Title and Ownership Rights*

According to Argentine law, mineral resources are subject to regulation in the provinces where the resources are located. Each province has the authority to grant mining exploration permits and mining exploitation concession rights to applicants. The Federal Congress has enacted the National Mining Code and other substantive mining legislation, which is applicable throughout Argentina; however, each province has the authority to regulate the procedural aspects of the National Mining Code and to organize the enforcement authority within its own territory.

In the province of Salta, where the El Quevar project is located, all mining concessions are granted by a judge in the Salta Mining Court. The El Quevar project is comprised of exploitation concessions. Exploitation concessions are subject to a canon payment fee (maintenance fee) which is paid in advance twice a year (before June 30th and December 31st of each calendar year). Each time a new mining concession is granted, concession holders are exempt from

the canon payment fee for a period of three years from the concession grant date. However, this exemption does not apply to the grant of vacant exploitation concessions; only to the grant of new mining concessions.

The El Quevar project is currently comprised of 31 mining concessions that we hold directly or indirectly through our wholly-owned subsidiaries. In total, the El Quevar project encompasses approximately 57,000 hectares. The area of most of our exploration activities at El Quevar is within the concessions that are owned by Silex Argentina S.A., our wholly-owned subsidiary.

We are required to pay a 1% net smelter return royalty on the value of all minerals extracted from the El Quevar II concession and a 1% net smelter return royalty on one-half of the minerals extracted from the Castor concession to the third party that owns the royalties on these concessions. We can purchase one half of the royalty for \$1 million in the first two years of mining. The Yaxtché deposit is located primarily on the Castor concession. We may also be required to pay a 3% royalty to the Salta Province based on the net smelter value of minerals extracted from any of our concessions less costs of processing. To maintain all of the El Quevar concessions, we paid canon payment fees to the Argentine government of approximately \$22,000 and \$18,000 in 2020 and 2021, respectively. In 2022 we expect to pay approximately \$14,000.

The following El Quevar mine concessions are identified below by name and file number in the Salta Province Registry of Mines.

<b>Name of Mine Concession</b>	<b>Concession File Number</b>
Quevar II	17114
Quirincolo I	18036
Quirincolo II	18037
Castor	3902
Vince	1578
Armonia	1542
Quespejahuar	12222
Toro I	18332
Quevar Primera	19534
Quevar Novena	20215
Quevar Decimo Tercera	20501
Quevar Tercera	19557
Quevar Vigesimo Tercero	21043
Quevar 10	20219
Quevar Vigesimo Primera	20997
Quevar Vigesimo Septima	22403
Quevar IV	19558
Quevar Vigesimo Cuarto	21044
Quevar 11	20240
Quevar Quinta	19617
Quevar 12	20360
Quevar Decima Quinta	20445
Quevar Sexta	19992
Quevar 19	20706
Quevar Vigesimo Sexta	22087
Quevar Vigesimo Segundo	21042
Quevar Séptima	20319
Quevar Veinteava	20988
Mariana	15190
Arjona II	18080
Quevar Vigesimo Quinto	21054

The surface rights at El Quevar are controlled by the Salta Province. There are no private properties within the concession area. To date, no issues involving surface rights have impacted the project. Although we have unrestricted access to our facilities, we have been granted easements to further protect our access rights.

*Barrick Earn-In Agreement*

In April 2020, we entered into the Earn-In Agreement with Barrick, pursuant to which Barrick has acquired an option (the “Option”) to earn a 70% interest in the Company’s El Quevar. Pursuant to the terms of the Earn-In Agreement,

in order to earn an undivided 70% interest in the El Quevar project, Barrick must: (A) incur a total of \$10 million in work expenditures over a total of eight years (\$0.5 million per year in years one and two, \$1.0 million per year in years three, four and five, and \$2.0 million per year in years six, seven and eight); (B) deliver to the Company a National Instrument 43-101 compliant pre-feasibility study pursuant to the parameters set forth in the Earn-In Agreement; and (C) deliver a written notice to exercise the Option to us within the term of the Earn-In Agreement. Barrick may withdraw from the Earn-In Agreement at any time after spending a minimum of \$1.0 million in work expenditures and upon providing us with 30 days' notice. As of September 30, 2021, Barrick had met the \$1 million in work expenditures that would allow them to withdraw from the Earn-in Agreement.

Upon satisfaction of the earn-in conditions and exercise of the Option, we will form a new entity ("NewCo") that will hold the El Quevar properties. NewCo will be 70% owned by Barrick and 30% owned by us. Funding of NewCo will be based on Barrick's and our respective ownership, and industry standard dilution mechanisms will apply in the case of funding shortfalls by either shareholder.

During the earn-in period, originally scheduled from April 9, 2020 to April 9, 2028, in addition to the exploration spending, Barrick will fund the holding costs of the property, which will qualify as work expenditures. Barrick will reimburse us for expenses related to maintaining the exploration camp which will initially be run by us under a service agreement, which will also qualify as work expenditures. Through December 31, 2021, approximately \$0.9 million of expenses incurred by us were reimbursed under the Earn-In Agreement.

Due to the COVID-19 pandemic and related legal restrictions on mining exploration in Salta, Argentina, Barrick declared a force majeure event under the Earn-In Agreement. As a result of the force majeure event, the earn-in period and other applicable deadlines in the Earn-In Agreement were extended by 119 days. The force majeure event is no longer in effect and Barrick has commenced activities at the site.

#### *Geology and Mineralization*

The geology of the El Quevar project is characterized by silver-rich veins and disseminations in Tertiary volcanic rocks that are part of an eroded stratovolcano. Silver mineralization at El Quevar is hosted within a broad, generally east-west-trending structural zone and occurs as a series of north-dipping parallel sheeted vein zones, breccias and mineralized faults situated within an envelope of pervasively silicified brecciated volcanic rocks. There are at least three sub-parallel structures that extend for an aggregate length of approximately 6.5 kilometers. Several volcanic domes (small intrusive bodies) have been identified and mineralization is also found in breccias associated with these domes, especially where they are intersected by the structures. The silver mineralization at the Yaxtché zone is of epithermal origin. The cross-cutting nature of the mineralization, the assemblage of sulfide and alteration minerals, and the presence of open spaces with euhedral minerals, all point to an origin at shallow to moderate depths (a few hundred meters below surface) from hydrothermal solutions.

#### **Exploration Properties**

In addition to Rodeo, Velardeña and El Quevar, we currently control a portfolio of approximately 12 exploration properties located primarily in certain traditional precious metals producing regions of Mexico, Nevada and Argentina. We do not consider any of our exploration properties to be individually material, including those noted below.

In 2022 we plan to focus our exploration efforts primarily on evaluating and searching for mining opportunities in North America with near term prospects of mining. We are also focused on continuing our exploration efforts on selected properties in our portfolio. During 2022 we expect our expenditures for the exploration program to total approximately \$4.1 million, with approximately \$0.3 million in property holding costs in Mexico, \$0.1 million in holding costs in Nevada and approximately \$1.3 million in other administrative and general reconnaissance costs in Mexico, Argentina and the US.

A brief discussion of certain of our exploration properties is below. We do not believe any of the below are individually material to us at this time.

#### *Yoquivo*

The Yoquivo property was acquired in 2017 and with the 2019 additional acquisition of a claim internal to the exterior boundary the project consists of 1,975 hectares in 7 claims that cover an epithermal vein district hosted in Tertiary andesitic volcanic rocks that is exposed in an erosional window through Oligocene rhyolite on the eastern margin of the Sierra Madre Occidental of northern Mexico. The property is 200 km SW of Chihuahua city in the state of Chihuahua, Mexico. Surface rock sampling done in 2018 demonstrated gold and silver values of potential economic interest in several of the veins in the district. We have an option to purchase the six concessions that comprise the Yoquivo property for payments totaling \$0.75 million over four years subject to a 2% to 3% NSR royalty on production, capped at \$2.8 million.

In October 2018 we announced high-grade silver-gold assays from the Yoquivo project. Multiple silver-gold bearing epithermal veins were mapped and sampled, with the two most important veins being the San Francisco and Pertenencia veins. A new vein, the La Nina vein, was discovered in the northwest of the property where it splits off from the main San Francisco vein. Two other veins, the Esperanza and El Dolar veins have been identified and sampled. Based on sampling and mapping we have identified the most attractive targets on the property and have permits in hand to initiate the drill program. In September 2020 we began a 3,400-meter, 15-hole drill program to test the most promising portions of the veins. We completed the drill program in December 2020 and identified four separate vein systems in which surface sampling has returned attractive grades. We announced the drill results in January 2021, which identified four veins with potentially economic gold-silver grades, including a newly discovered vein without previous historic mining within the district scale property holdings. We began a second phase drill program in October 2021. The drill program included 3,949 meters comprised of 21 holes exploring the Pertenencia, Esperanza and Dolar vein systems. We believe the drill program demonstrated the potential for the Pertenencia vein to host significant high-grade mineralization and hit multiple high-grade veins, suggesting there may be additional blind veins to be found on the property. We recently submitted an application with SEMARNAT for a 50-hole, 10,000 meter drill program, which we plan to commence in 2022 upon receipt of necessary permits.

#### *Sarita Este*

In December 2019 we paid \$150,000 to enter into an option agreement with Cascadero Minerals Corporation (“Cascadero”) to acquire a 51% interest in the gold/copper Sarita Este concession, located in the northwest portion of the Province of Salta, Argentina, located near the Taca Taca project owned by First Quantum Minerals. The option agreement called for us to spend at least \$0.3 million in exploration expenditures and complete a 2,000-meter drill program by the end of 2021, another \$0.5 million by the end of 2022, and another approximately \$1.6 million by 2023 for a total \$2.5 million. We have spent approximately \$1.4 million since entering into the agreement in December 2019. In the fourth quarter of 2021 we completed the first drill program ever conducted at Sarita Este, which involved drilling 10 diamond drill holes totaling 2,518 meters to explore untested epithermal gold-silver and copper porphyry targets. In January 2022 we announced assay results from the drill program, which we believe indicate the potential for a significant gold system. We have submitted new permits for trenching and additional drilling that we plan to complete during a 2022 field campaign.

#### *Santa Maria*

On July 14, 2020, we entered into a binding letter of intent with Fabled Silver Gold Corp., formerly known as Fabled Copper Corp. (“Fabled”), for a potential transaction pursuant to which Fabled would acquire our option to earn a 100% interest in the Santa Maria mining claims located in Chihuahua, Mexico (the “Option”). On December 4, 2020, we entered into a definitive option agreement (the “Option Agreement”) to sell our Option to Fabled. The period to exercise the Option (the “Exercise Period”) expires on December 4, 2022, unless extended by the parties under the terms of the Option Agreement. As consideration for the Option, Fabled (i) paid \$0.5 million in cash to us and issued to us one million

shares of Fabled's common stock; (ii) paid \$1.5 million in cash to the Company on the one year anniversary date following the closing of the Option Agreement; (iii) will pay \$2.0 million in cash to the Company on the two year anniversary date following the closing of the Option Agreement; and (iv) upon exercise of the Option, will grant the Company a 1% net smelter return royalty on the Maria, Martia III, Maria II Frac. I, Santa Maria and Punto Com concessions (the "Concessions"). Pursuant to the Option Agreement, during the Exercise Period, Fabled is obligated to pay to each of the owners of the Concessions (the "Owners") any remaining required payments due to the Owners pursuant to the various underlying option agreements between the Owners and the Company, and to make all payments and perform all other requirements needed to maintain the Concessions in good standing. Fabled has made the remaining payment due on the Marias option, which was the only remaining payment due. Should Fabled not complete its obligations described herein, the Santa Maria mining claims will revert to us and we will be entitled to keep any payments made by Fabled under the terms of the Option Agreement.

#### *Sand Canyon*

During the second quarter 2019 we entered into an earn-in agreement with Golden Gryphon Explorations for the Sand Canyon project located in northwestern Nevada, where surface work has identified a large system of epithermal veins with potential for gold and silver deposits. We hold an option to earn a 60% interest in the Sand Canyon project by spending \$2.5 million in exploration expenses over five years, with guaranteed minimum expenditures of \$0.5 million in year one. To continue to earn an interest in the project, we must spend at least \$0.75 million in each of years two and four and \$0.5 million in year five, and drill at least 5,000 feet of core or 10,000 feet of reverse circulation or a combination of the two, by the end of the second year. We paid \$25,000 cash and \$50,000 in reimbursed exploration expenditures to acquire the option and \$35,000 cash in 2020 on the first anniversary of the agreement, and have made payments of a total additional \$100,000 (\$50,000 in 2021 and \$50,000 in 2022). The drilling commitment was met in 2020.

We completed surface exploration activities on the project in late 2019, including mapping and geochemical sampling to identify drill targets. Based on this work and after securing drill permits, we initiated a drill program in the first quarter 2020. In March 2020 we completed the initial drill program of approximately 1,800 meters in 4 diamond drill holes. The drill holes were placed to target surface geochemical and geophysical anomalies associated with epithermal veining observed in outcrops. Drill holes tested the two principal epithermal vein target areas on the property, the DeLong Canyon target and the Sand Canyon target. The drill hole collared to test the DeLong Canyon target did not encounter any veins or significant anomalous geochemical values. Interpretation shows that a fault offset likely caused the drill hole to miss the vein system as projected from surface. The three drill holes collared to test the veins and anomalies in the Sand Canyon target area all intersected narrow vein and breccia structures with low anomalous values of Ag, As, Sb, and Mo. No potentially economic concentrations of precious metals were encountered in any of the four drill holes. Plans for further testing of the mineralized system are being considered. In the first year of exploration at Sand Canyon and through December 31, 2021, we spent \$1.8 million toward the \$2.5 million earn-in requirement, fulfilling the first- and second-year minimum expenditures and the minimum drill commitment.

#### **Our Competitive Strengths and Business Strategy**

Our business strategy is to establish Golden Minerals as a mid-tier precious metals mining company focused in North America and Argentina. We also review strategic opportunities from time to time.

*Rodeo Property.* As a result of our decision to commence mining operations at our Rodeo project, we now consider the Rodeo Property to be one of our material properties, along with the Velardeña Properties. We began mining at the Rodeo project in late December 2020 and began processing mined material from the Rodeo project in January 2021. We reached a steady state of throughput in April 2021 and exceeded our extraction guidance for Rodeo in 2021. Although short-lived, the Rodeo project is expected to provide free cash flow through the third quarter of 2023 that will enable us to continue to evaluate a potential restart of mining at the Velardeña Properties as well as to evaluate our other exploration properties.

*Velardeña Properties.* Due to continuing net operating losses, we suspended mining and sulfide processing activities at the Velardeña Properties during the first half of November 2015. In June 2021 we began limited scale mining activities at our Velardeña underground mine to obtain further bulk samples for use in final optimization of the bio-oxidation plant design and for use in additional flotation separation studies that will indicate how we can best separate the gold-bearing minerals into the pyrite-arsenopyrite concentrate that is proposed for processing in the bio-oxidation circuit. We are also testing mining methods to ensure that we can effectively control mining dilution to obtain the head grades that we expect based on our PEA study. We expect to have the results of these studies in early 2022. No decision has yet been made regarding a potential restart of the Velardeña mines.

*Exploration Focus.* We are focused on evaluating and searching for mining opportunities in North America with high precious metal grades and low development costs with near term prospects of mining, and particularly properties within reasonable haulage distances of our Velardeña processing plants. We also continue to advance our El Quevar silver project in Salta Province, Argentina through an earn-in agreement with Barrick. And we are continuing our exploration efforts on selected properties in our portfolio of exploration properties located in Mexico, Nevada and Argentina.

*Experienced Management Team.* We are led by a team of mining professionals with approximately 60 years of combined experience in exploration, project development, and operations management, primarily in the Americas. Our executive officers have held senior positions at various large mining companies including, among others, Cyprus Amax Minerals Company, INCO Limited, Meridian Gold Company, Barrick Gold Exploration and Noranda Exploration.

#### **Executive Officers of Golden Minerals**

<b>Name</b>	<b>Age</b>	<b>Position</b>
Warren M. Rehn	67	President and Chief Executive Officer
Robert P. Vogels	64	Senior Vice President and Chief Financial Officer

*Warren M. Rehn.* Mr. Rehn was appointed President of our company in May 2015 and appointed Chief Executive Officer and director in September 2015. Mr. Rehn previously served as Senior Vice President, Exploration and Chief Geologist since December 2012 and served as Vice President, Exploration and Chief Geologist since February 2012. From 2007 until February 2012, Mr. Rehn held various positions at Barrick Gold Exploration, Inc., serving most recently as Chief Exploration Geologist for the Bald Mountain and Ruby Hill mining units. From 2005 until 2007, Mr. Rehn was a consulting geologist for Gerson Lehman Group, which provides consulting services to various industries, including geology and mining. Mr. Rehn served as a Consulting Senior Geologist at Placer Dome Exploration, Inc. in 2004 and as an independent consulting geologist throughout the Americas from 1994 until 2003. He served as a Senior Geologist at Noranda Exploration, Inc. from 1988 until 1994. Mr. Rehn holds an M.S. in Geology from the Colorado School of Mines and a B.S. in Geological Engineering from the University of Idaho.

*Robert P. Vogels.* Mr. Vogels was named Senior Vice President and Chief Financial Officer in March 2009. Mr. Vogels served as Controller of Apex Silver from January 2005 to March 2009 and was named Vice President in January 2006. Prior to joining Apex Silver, Mr. Vogels served as corporate controller for Meridian Gold Company from January 2004 until December 2004. He served as the controller of INCO Limited's Goro project in New Caledonia from October 2002 to January 2004. Prior to joining INCO, Mr. Vogels worked from 1985 through October 2002 for Cyprus Amax Minerals Company, which was acquired in 1999 by Phelps Dodge Corp. During that time, he served in several capacities, including as the controller for its El Abra copper mine in Chile from 1997 until March 2002. Mr. Vogels began his career in public accounting as a CPA. He holds a B.Sc. in accounting and an MBA degree from Colorado State University.

As previously announced, Mr. Vogels plans to retire in 2022. Ms. Julie Weedman is expected to assume the Senior Vice President and Chief Financial Officer role following Mr. Vogels' departure. Ms. Weedman currently serves as the Company's Vice President Finance. She previously served as Vice President Finance of Aerospace Contacts LLC

from March 2020 to January 2022. Ms. Weedman also served as controller for Cupric Canyon Capital LLC from March 2015 until December 2019 and as the corporate controller of Mercator Minerals Ltd. from June 2012 to January 2015. Prior to joining Mercator, Ms. Weedman worked from 2006 to 2012 for Ducommun Corporation, serving in several capacities, including site controller and group controller for its Ducommun Technologies division. Prior to joining Ducommun, Ms. Weedman worked as the site controller for ST Microelectronics in Phoenix. She also spent 10 years at Phelps Dodge Corporation in various financial roles including assistant controller of Chino Mines Co. in Silver City, New Mexico. Ms. Weedman began her career in public accounting with Deloitte & Touche. She holds a B.S. in accountancy from Northern Arizona University.

### **Metals Market Overview**

We are an emerging precious metals exploration company with silver and gold mining properties in Mexico and a large advanced exploration silver project in Argentina. Descriptions of the markets for these metals are provided below.

#### *Silver Market*

Silver has traditionally served as a medium of exchange, much like gold. Silver's strength, malleability, ductility, thermal and electrical conductivity, sensitivity to light and ability to endure extreme changes in temperature combine to make it a widely used industrial metal. While silver continues to be used as a form of investment and a financial asset, the principal uses of silver are industrial, primarily in electrical and electronic components, photography, jewelry, silverware, batteries, computer chips, electrical contacts, and high technology printing. Silver's anti-bacterial properties also make it valuable for use in medicine and in water purification. Additionally, the use of silver in the photovoltaic and solar panel industries is growing rapidly, and new uses of silver are being developed in connection with the use of superconductive wire and radio frequency identification devices.

Most silver product is obtained from mining in which silver is not the principal or primary product. The Silver Institute, an international silver industry association, noted that for 2018 only around 26% of output came from so-called primary silver mines, where silver is the main source of revenue.

The following table sets forth for the periods indicated on the London Fix high and low silver fixes in U.S. dollars per troy ounce. On March 21, 2021, the closing price of silver was \$25.04 per troy ounce.

Year	Silver	
	High	Low
2012	\$ 37.23	\$ 26.67
2013	\$ 32.23	\$ 18.61
2014	\$ 22.05	\$ 15.28
2015	\$ 18.23	\$ 13.71
2016	\$ 20.71	\$ 13.58
2017	\$ 18.56	\$ 15.22
2018	\$ 17.52	\$ 14.13
2019	\$ 19.31	\$ 14.38
2020	\$ 28.89	\$ 12.01
2021	\$ 29.59	\$ 21.53
2022*	\$ 26.18	\$ 22.24

\* Through March 21, 2022.

#### *Gold Market*

Gold has two main categories of use: fabrication and investment. Fabricated gold has a variety of end uses, including jewelry, electronics, dentistry, industrial and decorative uses, medals, medallions and official coins. Gold investors buy gold bullion, official coins and jewelry. The supply of gold consists of a combination of production from mining and the draw-down of existing stocks of gold held by governments, financial institutions, industrial organizations and private individuals.

The following table sets forth for the periods indicated on the London Fix PM high and low gold fixes in U.S. dollars per troy ounce. On March 21, 2021, the closing price of gold was \$1,935 per troy ounce.

Year	Gold	
	High	Low
2012	\$ 1,792	\$ 1,540
2013	\$ 1,694	\$ 1,192
2014	\$ 1,385	\$ 1,142
2015	\$ 1,296	\$ 1,049
2016	\$ 1,366	\$ 1,077
2017	\$ 1,346	\$ 1,151
2018	\$ 1,355	\$ 1,178
2019	\$ 1,546	\$ 1,270
2020	\$ 1,672	\$ 1,527
2021	\$ 1,957	\$ 1,685
2022*	\$ 2,039	\$ 1,788

\* Through March 21, 2022.

## Employees

We currently have 248 employees, including 9 in the United States, approximately 225 in Mexico, primarily involved with the Rodeo operation, and 14 in Argentina, primarily in connection with the El Quevar project.

## Competition

There is aggressive competition within the mining industry for the acquisition of a limited number of mineral resource opportunities, and many of the mining companies with which we compete have greater financial and technical resources than we do. Accordingly, these competitors may be able to spend greater amounts on acquisitions of mineral properties of merit, as well as on exploration and advancement of their mineral properties. We also compete with other mining companies for the acquisition and retention of skilled mining engineers, mine and processing plant operators and mechanics, geologists, geophysicists and other experienced technical personnel. Our competitive position depends upon our ability to successfully and economically advance new and existing silver and gold properties. Failure to achieve and maintain a competitive position could adversely impact our ability to obtain the financing necessary for us to advance our mineral properties.

## Available Information

We make available, free of charge through our website at [www.goldenminerals.com](http://www.goldenminerals.com), our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as soon as reasonably practicable after such material is electronically filed with or furnished to the SEC. Information on our website is not incorporated into this annual report on Form 10-K and is not a part of this report. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at <http://www.sec.gov>.

## ITEM 1A: RISK FACTORS

Investors in Golden Minerals should consider carefully, in addition to the other information contained in, or incorporated by reference into, this annual report on Form 10-K, the following risk factors:

### Risk Factors related to our Financial Circumstances

#### ***We are an exploration stage company and do not have a long-term source of revenue.***

We have a history of operating losses. Although our Rodeo project generated revenue and free cash flow commencing in 2021, that project is short-lived and is not expected to generate significant cash flow beyond 2023. We are evaluating other potential mining activities, including a potential restart of mineral extraction at the Velardeña Properties. However, we do not currently have any mining activities scheduled to commence after the termination of mining at the Rodeo Property. If we are unable to generate revenue from another mining property, we will be dependent on future external financing to fund our corporate expenses and exploration activities. There is no assurance that such financing will be available on acceptable terms or at all. See "*Risk Factors – We may not have access to sufficient future capital.*"

#### ***Our results of operations, cash flows and the value of our properties are highly dependent on the market prices of gold and silver and certain base metals, and these prices can be volatile.***

The profitability of our mining operations and the value of our mining properties are directly related to the market price of gold, silver, and certain base metals. The price of gold and silver may also have a significant influence on the market price of our common stock. The market prices of these metals historically have fluctuated significantly and are

affected by numerous factors beyond our control, including (i) global or regional consumption patterns; (ii) supply of and demand for silver and gold on a worldwide basis; (iii) speculative and hedging activities; (iv) expectations for inflation; (v) political and economic conditions; (vi) supply of, and demand for, consumables required for extraction and processing of metals, and (vii) general economic conditions worldwide.

In the event metal prices decline or remain low for prolonged periods of time, we might be unable to develop our exploration properties, which may adversely affect our results of operations, financial performance, and cash flows. An asset impairment charge may result from the occurrence of unexpected adverse events that impact our estimates of expected cash flows generated from our Rodeo mine or the market value of our non-producing properties, including a material diminution in the price of metals.

***We may not continue to be profitable.***

Profitability at our Rodeo mine is subject to uncertainty. See “*Risk Factors – The assumptions behind our estimates of cash flow and profitability at the Rodeo mine are inherently subject to uncertainty.*” Unexpected interruptions in our mining business may cause us to incur losses, or the revenue that we generate from extraction may not be sufficient to fund continuing operations including exploration and development costs. Our failure to generate future profits may adversely affect the price of our common stock and stockholders may lose all or part of their investment. Metal prices have a significant impact on our profit margin and there is no assurance that we will be profitable in the future. See “*Risk Factors – Our results of operations, cash flows and the value of our properties are highly dependent on the market prices of gold and silver and certain base metals, and these prices can be volatile.*”

***We may not have access to sufficient future capital.***

Although the Rodeo Property is expected to generate revenue and free cash flow through much of 2023, we expect to require additional external financing to fund our continuing business activities. We may be required to expend significant funds to determine if mineral reserves exist at any of our other properties, continue exploration, and if warranted, develop our existing properties and identify and acquire additional properties to diversify our property portfolio.

We do not have a credit, off-take or other commercial financing arrangement in place that would finance our general and administrative costs and other working capital needs to fund our continuing business activities in the future, and we believe that securing credit for these purposes would be challenging. In addition, commercial financing arrangements may not be available on favorable terms or on terms that would not further restrict our flexibility and ongoing ability to meet our cash requirements over a reasonable period of time.

We also may not be able to obtain funding by monetizing additional non-core exploration or other assets at an acceptable price. Although we may be able to access public equity markets, including through issuances under our At the Market Offering Program with H.C. Wainwright & Co. (“ATM Program”), significant equity issuances may be dilutive to our existing stockholders.

We cannot assure you that we will be able to obtain financing to fund our general and administrative costs and other working capital needs to fund our continuing business activities in the future on favorable terms or at all. Failure to obtain financing could result in delay or indefinite postponement of further mining operations or exploration and construction and the possible partial or total loss of our interest in our properties.

**Risks Related to our Operations**

***Increased operating and capital costs could adversely affect our results of operations.***

Operating costs at our Rodeo mine are subject to fluctuation due to a number of factors, such as variable ore grade, changing metallurgy and revisions to mine plans in response to the physical shape and location of the ore body, as well as the age and utilization rates for the mining and processing-related facilities and equipment. In addition, costs are affected by the price and availability of input commodities, such as fuel, electricity, labor, chemical reagents, explosives, steel, concrete and mining and processing related equipment and facilities. Commodity costs are, at times, subject to volatile price movements, including increases that could make mineral extraction less profitable. Further, changes in laws and regulations can affect commodity prices, uses and transport. Reported costs may also be affected by changes in accounting standards. A material increase in costs could have a significant effect on our results of operations and operating cash flow.

We could have significant increases in capital and operating costs over the next several years in connection with the development of new projects in challenging jurisdictions and in the sustaining and/or expansion of existing mining and processing operations. Costs associated with capital expenditures may increase in the future as a result of factors beyond our control, such as inflation or due to supply chain constraints or delays. Increased capital expenditures may have an adverse effect on the results of operations and cash flow generated from existing operations, as well as the economic returns anticipated from new projects, or may make the development of future projects uneconomic.

***The assumptions behind our estimates of cash flow and profitability at the Rodeo mine are inherently subject to uncertainty.***

We have not established mineral reserves as defined under S-K 1300 at the Rodeo mine. As a result, despite the fact that we have undertaken confirmatory drilling to provide additional certainty regarding the Rodeo deposit, there is increased uncertainty and risk that may result in economic or technical failure which may adversely impact our future profitability. In making the decision to commence mining, we made certain assumptions regarding operating and capital costs and project economic returns. These estimates of average cash operating costs are based upon, among other things, (i) anticipated tonnage, grades and metallurgical characteristics of the ore to be mined and processed; (ii) anticipated recovery rates of silver and other metals from the ore; (iii) cash operating costs of comparable facilities and equipment; and (iv) anticipated climatic conditions. Actual cash operating costs, production and economic returns may differ significantly from those anticipated by our studies and estimates.

***We are party to a collective bargaining agreement with a union in Mexico that, together with labor and employment regulations, could adversely affect our mining activities and financial condition.***

Mine employees in Mexico are typically represented by a union, and our relationship with our employees is, and we expect in the future will be, governed in part by collective bargaining agreements. Any collective bargaining agreement that we enter into with a union is likely to restrict our mining flexibility in and impose additional costs on our mining activities. In addition, relations between us and our employees in Mexico may be affected by changes in regulations or labor union requirements regarding labor relations that may be introduced by the Mexican authorities or by labor unions. Changes in legislation or in the relationship between us and our employees may have a material adverse effect on our mining activities and financial condition.

***Competition in the mining industry is intense, and we have limited financial and personnel resources with which to compete.***

Competition in the mining industry for desirable properties, investment capital and human capital is intense. Numerous companies headquartered in the United States, Canada, and elsewhere throughout the world compete for properties and human capital on a global basis. We are a small participant in the mining industry due to our limited financial and human capital resources. We presently operate with a limited number of people and we anticipate operating in the same manner going forward. We compete with other companies in our industry to hire qualified employees and consultants when needed to successfully operate the Rodeo mine, the Velardeña processing facility, and to advance our exploration

properties. We may be unable to attract the necessary human capital to fully explore, and if warranted, develop our properties and be unable to acquire other desirable properties. We believe that competition for acquiring mineral properties, as well as the competition to attract and retain qualified human capital, will continue to be intense in the future.

***Products processed from our Rodeo project or other mines in the future could contain higher than expected contaminants, thereby negatively impacting our financial condition.***

Treatment charges paid to smelters and refineries include penalties for certain elements, including arsenic and antimony that exceed contract limits. If the material mined from our Rodeo project includes higher than expected contaminants, this would result in higher treatment expenses and penalty charges that could increase our costs and negatively impact our business, financial condition and results of operations. This could occur due to unexpected variations in the occurrence of these elements in the material mined, problems that occur during blending of material from various locations in the mine prior to processing and other unanticipated events.

***Conditions of our mining and processing activities are dependent on the availability of sufficient water supplies to support our mining activities.***

Water is critical to our business, and the increasing pressure on water resources requires us to consider both current and future conditions in our management approach. Across the globe, water is a shared and regulated resource. Mining operations require significant quantities of water for mining, ore processing and related support facilities. Our properties in Mexico and Argentina are in areas where water is scarce and competition among users for continuing access to water is significant. Continuous production and mine development are dependent on our ability to acquire and maintain water rights and claims and to defeat claims adverse to current water uses in legal proceedings. Although we believe that our operations currently have sufficient water rights and claims to cover operating demands, we cannot predict the potential outcome of future legal proceedings relating to water rights, claims and uses. Water shortages may also result from weather or environmental and climate impacts out of our control. Shortages in water supply could result in production and processing interruptions. In addition, the scarcity of water in certain regions could result in increased costs to obtain sufficient quantities of water to conduct our operations. The loss of some or all water rights, in whole or in part, or ongoing shortages of water to which we have rights or significantly higher costs to obtain sufficient quantities of water (or the failure to procure sufficient quantities of water) could result in our inability to maintain mineral extraction at current or expected levels, require us to curtail or shut down mining operations and prevent us from pursuing expansion or any development opportunities. Laws and regulations may be introduced in some jurisdictions in which we operate which could also limit access to sufficient water resources, thus adversely affecting our operations.

Processing activities at the Velardeña Properties require significant amounts of water. At the Velardeña Properties, our ability to have sufficient water is dependent on our ability to maintain our water rights and claims. Water is provided for all of the mines comprising our Velardeña Properties by wells located in the valley adjacent to the Velardeña Properties. We hold title to three wells located near the sulfide plant and hold certificates of registration to three wells located near the oxide plant. We are licensed to pump water from all six wells up to a permitted amount. We are currently using water from the three wells associated with the oxide plant and from two of the three wells associated with the sulfide plant. We are required to make annual payments to the Mexican government to maintain our rights to these wells. We are required to pay a fine to the Mexican Government each year if we use too much water from a particular well or alternatively if we do not use a minimum amount of water from a particular well. In addition to these fines, the Mexican Government reserves the right to cancel our title to the wells for abuse of these rules.

We believe we currently have a sufficient amount of water for our expected processing activities at the plant. However, if we began processing material through both the sulfide and oxide plants in the future, we may face shortages in our water supply, and therefore will need to obtain water from outside sources at higher costs. The loss of some or all water rights for any of our wells, in whole or in part, or shortages of water to which we have rights would require us to seek water from outside sources at higher costs and could require us to curtail or shut down mining and processing in the

future. Laws and regulations may be introduced in the future which could limit our access to sufficient water resources in mining activities, thus adversely affecting our business.

***The nature of mineral exploration, mining, and processing activities involves significant hazards, a high degree of risk, and the possibility of uninsured losses.***

Exploration for and the production of minerals is highly speculative and involves greater risk than many other businesses. Many exploration programs do not result in the discovery of mineralization, and any mineralization discovered may not be of sufficient quantity or quality to be profitably mined. While we are not currently conducting mining operations at the Velardeña Properties, we are evaluating a potential restart of mineral extraction. Because the Velardeña mines are underground, potential mining activities, as well as the conduct of our exploration programs that frequently require rehabilitation of and drilling in underground mine workings, are subject to numerous risks and hazards inherent in underground mines. Our operations are, and any future mining operations or construction we may conduct will be, subject to all of the operating hazards and risks normally incident to exploring for and mining of mineral properties, such as, but not limited to:

- Fluctuation in production costs that make mining uneconomic;
- Labor disputes;
- Unanticipated variations in grade and other geologic problems;
- Environmental hazards, noxious fumes and gases;
- Water conditions;
- Difficult surface or underground conditions;
- Industrial accidents;
- Metallurgical and other processing problems;
- Mechanical and equipment performance problems;
- Failure of pit walls, dams, declines, drifts and shafts;
- Unusual or unexpected rock formations;
- Personal injury, fire, flooding, cave-ins, seismic activity and landslides; and
- Decrease in the value of mineralized material due to lower gold, silver and metal prices.

These occurrences could result in damage to, or destruction of, mineral properties or processing facilities, equipment, personal injury or death, environmental damage, reduced extraction and processing and delays in mining, asset write-downs, monetary losses and possible legal liability. Although we maintain insurance against risks inherent in the conducting of our business in amounts that we consider reasonable, this insurance contains exclusions and limitations on coverage, and will not cover all potential risks associated with mining and exploration activities, and related liabilities might exceed policy limits. As a result of any or all of the forgoing, we could incur significant liabilities and costs that may exceed the limits of our insurance coverage or that we may elect not to insure against because of premium costs or other reasons, which could adversely affect our results of operations and financial condition. We may also not be insured against all interruptions to our operations. Losses from these or other events may cause us to incur significant costs which could materially adversely affect our financial condition and our ability to fund activities on our properties. A significant loss could force us to reduce or suspend our operations and development.

**Risks related to our Exploration Activities**

**Our properties are in the exploration stage.**

***Our exploration properties may not contain mineral reserves.***

We have not established that our properties contain any mineral reserve, nor can there be any assurance that we will be able to do so. A mineral reserve is defined by the SEC in Regulation S-K 1300 as that part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination. The probability of an individual prospect ever having a “reserve” that meets the requirements of Regulation S-K 1300 is extremely remote; in all probability our mineral properties do not contain any “reserves” and any funds that we spend on exploration could be lost. Even if we do eventually discover mineral reserves on our properties, there can be no assurance that they can be developed into producing mines and we can extract those minerals. Both mineral exploration and development involve a high degree of risk and few mineral properties which are explored are ultimately developed into producing mines.

**Our mineral resource estimates are inherently imprecise.**

We have released estimates of mineral resources at the Rodeo project and the Velardeña Properties. Mineral resource figures based on estimates made by geologists are inherently imprecise and depend on geological interpretation and statistical inferences drawn from drilling and sampling that may prove to be unreliable or inaccurate. We cannot assure you that these estimates are accurate, and even if the estimates are accurate, the economic viability of the Velardeña project may not justify exploitation, or in the case of Rodeo mine, the estimates may not accurately reflect the future revenue we receive from mineral extraction.

***The exploration of our mineral properties is highly speculative in nature, involves substantial expenditures and is frequently non-productive.***

Mineral exploration is highly speculative in nature and frequently results in no or very little return on amounts invested to evaluate a particular property. Substantial expenditures are required to (i) establish the existence of a potential ore body through drilling and metallurgical and other testing techniques; (ii) determine metal content and metallurgical recovery processes to process metal from the ore; (iii) determine the feasibility of mine development and mineral extraction; and (iv) construct, renovate or expand mining and processing facilities. If we discover a deposit or ore at a property, it usually takes several years from the initial phases of exploration until mineral extraction is possible, if at all. During this time, the economic feasibility of a project may change because of increased costs, lower metal prices or other factors. As a result of these uncertainties, our exploration programs may not result in the identification of proven and probable mineral reserves in sufficient quantities to justify developing a particular property.

***We may acquire additional mining properties and our business may be negatively impacted if reserves are not located on acquired properties or if we are unable to successfully execute and/or integrate the acquisitions.***

We have in the past, and may in the future, acquire additional mining properties. There can be no assurance that reserves will be identified on any properties that we acquire. We may experience negative reactions from the financial markets if we complete acquisitions of additional properties and reserves are not located on acquired properties. There can be no assurance that we will be able to complete any acquisitions successfully, or that any acquisition will achieve anticipated synergies or other positive results. Any material problems that we encounter in connection with such an acquisition could have a material adverse effect on our business, results of operations and financial position. These factors may adversely affect the trading price of our common stock

***We may not mine the Velardeña Properties again.***

In mid-November 2015, we shut down the mines and sulfide processing plant at our Velardeña Properties and placed them on care and maintenance. Commencing mining again is subject to numerous risks and uncertainties, including: whether we are able to create a mine plan or gold recovery improvements that can achieve sustainable cash positive results

at current and future metals prices; unexpected events, including difficulties in maintaining the properties on a care and maintenance basis, potential sabotage or damage to the assets related to the suspension of mining, and variations in ore grade and relative amounts, grades and metallurgical characteristics of oxide and sulfide ores; whether gold and silver prices will achieve or remain at sufficiently high levels to permit us to achieve sustainable cash positive results; whether actual holding and care and maintenance costs exceed current estimates or whether unanticipated costs arise; whether we are able to retain sufficient numbers of skilled mining and management personnel and otherwise maintain satisfactory relations with the unionized workforce on site; and our ability to obtain additional funding for general and administrative costs and other working capital needs to fund our continuing business activities as currently conducted and possibly for a potential restart of our Velardeña Properties. Based on these risks and uncertainties, there can be no assurance that we will restart mining activities at the Velardeña Properties.

### **Regulatory Risks**

***Our operations are subject to ongoing permitting requirements which could result in the delay, suspension or termination of our operations.***

Our operations, including our ongoing exploration drilling programs and mining, require ongoing permits from governmental and local authorities. Future mining and current processing at our Rodeo and Velardeña properties and the continued evaluation of the El Quevar project and other exploration activities will require additional permits from various governmental authorities. We may also be required to obtain certain property rights to access or use our properties. Obtaining or renewing licenses and permits, and acquiring property rights, can be complex and time-consuming processes. There can be no assurance that we will be able to acquire all required licenses, permits or property rights on reasonable terms or in a timely manner, or at all, and that such terms will not be adversely changed, that required extensions will be granted, or that the issuance of such licenses, permits or property rights will not be challenged by third parties. If we cannot obtain or maintain the necessary permits or if there is a delay in receiving future permits, our timetable and business plan will be adversely affected and may prevent or make future mining and processing at our Rodeo or Velardeña properties and other continued processing activities economically unfeasible.

***Our exploration activities are in countries with developing economies and are subject to the risks of political and economic instability associated with these countries.***

We currently conduct exploration activities almost exclusively in countries with developing economies, including Argentina and Mexico. These countries and other emerging markets in which we may conduct business have from time to time experienced economic or political instability. We may be materially adversely affected by risks associated with conducting exploration activities in countries with developing economies, including:

- political instability and violence;
- war and civil disturbance;
- expropriation or nationalization;
- changing fiscal, royalty and tax regimes;
- fluctuations in currency exchange rates;
- high rates of inflation;
- uncertain or changing legal requirements respecting the ownership and maintenance of mineral properties, mines and mining activities, and inconsistent or arbitrary application of such legal requirements;
- uncertain or changing economic and environmental policies of governmental authorities in Mexico or Argentina;
- underdeveloped industrial and economic infrastructure;

- corruption; and
- unenforceability of contractual rights.

Changes in mining or investment policies or shifts in the prevailing political climate in any of the countries in which we conduct exploration activities could adversely affect our business.

***Our El Quevar exploration property is located in Argentina and is subject to various levels of political, economic, legal, social and other risks.***

Our El Quevar exploration property is located in Argentina and, as such, is exposed to various levels of political, economic, legal, social and other risks and uncertainties, including high interest rates; abrupt changes in currency values; high levels of inflation; stability and competitiveness of the Argentine peso against foreign currencies; wage and price controls; regulations to import equipment and other necessities relevant for operations; changes in governmental economic (including export duties and import regulations) or tax policies; and political and social tensions.

The Argentine economy has experienced significant volatility in recent decades, characterized by periods of low or negative gross domestic product growth, high and variable levels of inflation and currency depreciation and devaluation. Financial and securities markets in Argentina, and the Argentine economy, are influenced by economic and market conditions in other markets worldwide. The Argentine government has often changed monetary, taxation, credit, tariff and other policies to influence the course of Argentina's economy, and taken other actions which do, or may be perceived to weaken the nation's economy especially as it relates to foreign investors and the overall investment climate.

The Argentine government has not only historically exercised significant influence over the country's economy, but the country's legal and regulatory frameworks have at times suffered radical changes due to political influence and significant political uncertainties as well. For example, in April 2014, there were nationwide strikes that paralyzed the Argentine economy, shutting down air, train and bus traffic, closing businesses and ports, emptying classrooms, shutting down non-emergency hospital attention and leaving trash uncollected. This is consistent with past periods of significant economic unrest and social and political turmoil. Future government policies to preempt, or in response to, social unrest may include expropriation, nationalization, forced renegotiation or modification of existing contracts, suspension of the enforcement of creditors' rights, new taxation policies, including royalty and tax increases and retroactive tax claims, and changes in laws and policies affecting foreign trade and investment. Such policies could destabilize the country and adversely and materially affect the economy, and thereby our business.

***Most of our properties are subject to extensive environmental laws and regulations which could materially adversely affect our business.***

Our exploration, mining, and processing operations are subject to extensive laws and regulations governing land use and the protection of the environment which control the exploration and mining of mineral properties and their effects on the environment, including air and water quality, mine reclamation, waste generation, handling and disposal, the protection of different species of flora and fauna and the preservation of lands. These laws and regulations require us to acquire permits and other authorizations for conducting certain activities. In many countries, there is relatively new comprehensive environmental legislation, and the permitting and the authorization processes may not be established or predictable. We may not be able to acquire necessary permits or authorizations on a timely basis, if at all. Delays in acquiring any permit or authorization could increase the cost of our projects and could suspend or delay the commencement of extraction and processing of mineralized material.

Our Rodeo and Velardeña properties are subject to regulation by SEMARNAT, the environmental protection agency of Mexico. In order to permit new facilities at or expand existing facilities, regulations require that an environmental impact statement, known in Mexico as a Manifestación de Impacto Ambiental (the "Manifestación"), be prepared by a third-party contractor for submission to SEMARNAT. Studies required to support the Manifestación include a detailed analysis of soil, water, vegetation, wildlife, cultural resources and socio-economic impacts. The Manifestación is then

published on SEMARNAT's web page and in its official gazette in a national and local newspaper. The Manifestación is discussed at various open hearings, including hearings in the local communities, at which third parties may voice their views. We would be required to provide proof of local community support of the Manifestación as a condition to final approval. We may not be able to obtain community support of future projects.

Environmental legislation in Mexico and in many other countries is evolving in a manner which will likely require stricter standards and enforcement, increased fines and penalties for non-compliance, more stringent environmental assessments of proposed projects, and a heightened degree of responsibility for companies and their officers, directors and employees. Future changes in environmental regulation in the jurisdictions where our Rodeo and Velardeña properties are located may adversely affect our business, make our business prohibitively expensive, or prohibit it altogether. We cannot predict what environmental legislation or regulations will be enacted or adopted in the future or how future laws and regulations will be administered or interpreted. Compliance with more stringent laws and regulations, as well as potentially more vigorous enforcement policies or regulatory agencies or stricter interpretation of existing laws, may (i) necessitate significant capital outlays, (ii) cause us to delay, terminate or otherwise change our intended activities with respect to one or more projects, or (iii) materially adversely affect our future exploration activities.

***Many of our properties are located in areas of prior mining activity and we may encounter legacy environmental damage.***

The Velardeña Properties and many of our exploration properties are located in historic mining districts where prior owners, including ECU in the case of the Velardeña Properties, may have caused environmental damage that may not be known to us or to applicable regulators. At the Velardeña Properties and in most other cases, we have not conducted comprehensive environmental analyses of our mineral properties. Insurance fully covering many environmental risks (including potential liability for pollution or other hazards as a result of disposal of waste products occurring from exploration and mining) is not generally available. To the extent environmental hazards may exist on the properties in which we currently hold interests, or may hold interests in the future, that are unknown to us at present and that have been caused by us, or previous owners or operators, or that may have occurred naturally, and to the extent we are subject to environmental requirements or liabilities, the cost of compliance with these requirements and satisfaction of these liabilities could have a material adverse effect on our financial condition and results of operations. If we are unable to fully fund the cost of remediation of any environmental condition, we may be required to suspend activities or enter into interim compliance measures pending completion of the required remediation.

***Climate change and climate change legislation or regulations could impact our business.***

We are subject to physical risks associated with climate change which could seriously harm our results of operations and increase our costs and expenses. The occurrence of severe adverse weather conditions, including increased temperatures and droughts, fires, longer wet or dry seasons, increased precipitation, floods, hail, snow, or more severe storms, may have a potentially devastating impact on our operations. Adverse weather may result in physical damage to our operations, instability of our infrastructure and equipment, washed-out roads to our projects, and alter the supply of water and electricity to our properties, mining sites, and oxide plant. Increased temperatures may also decrease worker productivity at our projects and raise cooling costs. Should the impacts of climate change be material in nature or occur for lengthy periods of time in the areas in which we operate, our financial condition or results of operations would be adversely affected.

Changes in the quantity of water, whether in excess or deficient amounts, may impact exploration and development activities, mining and processing operations, water storage and treatment facilities, tailings storage facilities, closure and reclamation efforts, and may increase levels of dust in dry conditions and land erosion and slope stability in case of prolonged wet conditions. Increased precipitation, extreme rainfall events or increased snowfall may potentially impact tailings storage facilities through flooding of the water management infrastructure, exceeding surface water runoff network capacity, overtopping the facility, or undermining the slope stability of the structure. Increased amounts of water may also result in extended periods of mine pit flooding, maintenance and storage facilities; or may exceed current water

treatment facility capacity to store and treat water physical conditions resulting in an unintended overflow either on or off of the mine site property.

U.S. and international legislative and regulatory action intended to ensure the protection of the environment are constantly changing and evolving in a manner expected to result in stricter standards and enforcement, larger fines and liability, and potentially increased capital expenditures and operating costs. Transitioning our business to meet regulatory, societal and investor expectations may cause us to incur lower economic returns than originally estimated for new exploration projects and development plans of existing operations.

***Title to the Rodeo project, Velardeña Properties and our other properties and rights may be defective or may be challenged.***

Our policy is to seek to confirm the validity of our rights to, title to, or contract rights with respect to, each mineral property in which we have a material interest. However, we cannot guarantee that title to our properties will not be challenged. Title insurance is not available for our mineral properties, and our ability to ensure that we have obtained secure rights to individual mineral properties or mining concessions may be severely constrained. Accordingly, the Rodeo project, Velardeña Properties and our other mineral properties may be subject to prior unregistered agreements, transfers or claims, and title may be affected by, among other things, undetected defects. In addition, we may be unable to conduct activities on our properties as permitted or to enforce our rights with respect to our properties, and the title to our mineral properties may also be impacted by state action. We have not conducted surveys of all of the exploration properties in which we hold direct or indirect interests and, therefore, the precise area and location of these exploration properties may be in doubt.

In most of the countries in which we operate, failure to comply with applicable laws and regulations relating to mineral right applications and tenure could result in loss, reduction or expropriation of entitlements, or the imposition of additional local or foreign parties as joint venture partners. Any such loss, reduction or imposition of partners could have a material adverse effect on our financial condition, results of operations and prospects.

Under the laws of Mexico, mineral resources belong to the state, and government concessions are required to explore for or exploit mineral reserves. Mineral rights derive from concessions granted, on a discretionary basis, by the Ministry of Economy, pursuant to the Mexican mining law and regulations thereunder. We hold title to the Rodeo project, Velardeña Properties and our other properties in Mexico through these government concessions, but there is no assurance that title to the concessions comprising the Rodeo project, Velardeña Properties and other properties will not be challenged or impaired. The Rodeo project, Velardeña Properties and other properties may be subject to prior unregistered agreements, interests or native land claims, and title may be affected by undetected defects. There could be valid challenges to the title of any of the claims comprising the Rodeo project, Velardeña Properties that, if successful, could impair mining with respect to such properties in the future. A defect could result in our losing all or a portion of our right, title, and interest in and to the properties to which the title defect relates.

Our Rodeo project mining concessions, Velardeña Properties mining concessions and our other mining concessions in Mexico may be terminated if our obligations to maintain the concessions in good standing are not satisfied, including obligations to explore or exploit the relevant concession, to pay any relevant fees, to comply with all environmental and safety standards, to provide information to the Ministry of Economy and to allow inspections by the Ministry of Economy. In addition to termination, failure to make timely concession maintenance payments and otherwise comply strictly with applicable laws, regulations and local practices relating to mineral right applications and tenure could result in reduction or expropriation of entitlements. Additionally, in 2014, new mining concessions became subject to additional review and approval by the Mexico Ministry of Energy, and in recent years the federal government has been reluctant to issue new mining concessions at all.

Mining concessions in Mexico give exclusive exploration and exploitation rights to the minerals located in the concessions but do not include surface rights to the real property, which requires that we negotiate the necessary

agreements with surface landowners. Many of our mining properties are subject to the Mexican ejido system requiring us to contract with the local communities surrounding the properties in order to obtain surface rights to land needed in connection with our mining exploration activities. In connection with our Velardeña Properties, we have contracts with two ejidos to secure surface rights with a total annual cost of approximately \$25,000. The first contract is a ten-year contract with the Velardeña ejido, which provides surface rights to certain roads and other infrastructure at the Velardeña Properties through 2021. The second contract is a 25-year contract with the Vista Hermosa ejido signed in March 2013, which provides exploration access and access rights for roads and utilities for our Velardeña Properties. Similar to our Velardeña Properties, the Rodeo project is subject to the Mexican ejido system. We believe, although we cannot be certain, that our agreement with the local ejidos to allow access to the property will be sufficient to conduct our proposed mining activities. We also have a separate surface rights agreement in place with a local private landowner that allows us to conduct mining operations on the two concessions that make up the Rodeo Property. Our inability to maintain and periodically renew or expand these surface rights on favorable terms or otherwise could have a material adverse effect on our business and financial condition.

***Most of our mining properties, including our Rodeo and Velardeña properties, are located in Mexico and are subject to various levels of political, economic, legal, social and other risks.***

Our Rodeo and Velardeña properties are located in Mexico, and, as such, are exposed to various levels of political, economic, legal and other risks and uncertainties, including local acts of violence, such as violence from drug cartels; military repression; extreme fluctuations in currency exchange rates; high rates of inflation; labor unrest; the risks of war or civil unrest; expropriation and nationalization; renegotiation or nullification of existing concessions, licenses, permits and contracts; illegal mining; acts of political corruption; changes in taxation policies; restrictions on foreign exchange and repatriation; and changing political conditions, currency controls and governmental regulations that favor or require the awarding of contracts to local contractors or require foreign contractors to employ citizens of, or purchase supplies from, a particular jurisdiction.

In the past, Mexico has been subject to political instability, changes and uncertainties, which have resulted in changes to existing governmental regulations affecting mineral exploration and mining activities. Mexico's status as a developing country may make it more difficult for us to obtain any required funding for our Rodeo project, Velardeña Properties or other projects in Mexico in the future.

Our Mexican properties are subject to a variety of governmental regulations governing health and worker safety, employment standards, waste disposal, protection of historic and archaeological sites, mine development, protection of endangered and protected species, purchase, storage and use of explosives and other matters. Specifically, our activities related to the Rodeo and Velardeña properties are subject to regulation by SEMARNAT, the Comisión Nacional del Agua, which regulates water rights, and Mexican mining laws. Mexican regulators have broad authority to shut down and levy fines against facilities that do not comply with regulations or standards.

Our Rodeo and Velardeña properties and mineral exploration activities in Mexico may be adversely affected in varying degrees by changing government regulations relating to the mining industry or shifts in political conditions that increase the costs related to our mining and exploration activities or the maintenance of our properties.

Changes, if any, in mining or investment policies, changes or increases in the legal rights of indigenous populations or in the difficulty or expense of obtaining rights from them that are necessary for our Rodeo or Velardeña properties or shifts in political attitude may adversely affect our business and financial condition. Our mining and exploration activities may be affected in varying degrees by government regulations with respect to restrictions on extraction, price controls, export controls, currency remittance, income and other taxes, expropriation of property, foreign investment, maintenance of claims, environmental legislation, land use, land claims of local people, water use and mine safety. Restart of mining or use of both the oxide and sulfide plant may also require us to assure the availability of adequate supplies of water and power, which could be affected by government policy and competing businesses in the area. The

occurrence of these various factors and uncertainties cannot be accurately predicted and could have an adverse effect on our mining and exploration activities and financial condition.

Future changes in applicable laws and regulations or changes in their enforcement or regulatory interpretation could negatively impact current or planned exploration or mining activities at our Rodeo or Velardeña properties or in respect of any of our other projects in Mexico or projects with which we become involved in Mexico. Any failure to comply with applicable laws and regulations, even if inadvertent, could result in the interruption of mining and exploration or material fines, penalties or other liabilities.

***Our ability to develop our Mexican properties is subject to the rights of the Ejido (agrarian cooperatives) who use or own the surface for agricultural purposes.***

Our ability to mine minerals is subject to maintaining satisfactory arrangements and relationships with the Ejido for access and surface disturbances. Ejidos are groups of local inhabitants who were granted rights to conduct agricultural activities on the property. We must negotiate and maintain a satisfactory arrangement with these residents in order to disturb or discontinue their rights to farm.

In connection with our Velardeña Properties, we have contracts with two ejidos to secure surface rights with a total annual cost of approximately \$25,000. The first contract is a ten-year contract with the Velardeña ejido, which provides surface rights to certain roads and other infrastructure at the Velardeña Properties through 2021 and is currently being renewed for an additional 10-year period. The second contract is a 25-year contract with the Vista Hermosa ejido signed in March 2013, which provides exploration access and access rights for roads and utilities for our Velardeña Properties. Similar to our Velardeña Properties, the Rodeo project is subject to the Mexican ejido system. We also have a separate surface rights agreement in place with a local private landowner that allows us to conduct mining operations on the two concessions that make up the Rodeo Property. Our inability to maintain and periodically renew or expand these surface rights on favorable terms or otherwise could have a material adverse effect on our business and financial condition.

***Most of our costs are subject to exchange control policies, the effects of inflation, and currency fluctuations between the U.S. dollar and the Mexican peso.***

Our revenue and external funding are primarily denominated in U.S. dollars. However, certain mining, processing, maintenance and exploration costs at the Rodeo and Velardeña properties and most of our exploration properties are denominated in Mexican pesos. These costs principally include electricity, labor, water, maintenance, local contractors and fuel. The appreciation of the peso against the U.S. dollar increases expenses and the cost of purchasing capital assets in U.S. dollar terms in Mexico, which can adversely impact our operating results and cash flows. Conversely, depreciation of the Mexican peso decreases operating costs and capital asset purchases in U.S. dollar terms. When inflation in Mexico increases without a corresponding devaluation of the Mexican peso, our financial position, results of operations and cash flows could be adversely affected. The annual average inflation rate in Mexico was approximately 7.3% in 2021, 3.2% in 2020, and 3.6% in 2019. At the same time, the peso has been subject to fluctuation, which may not have been proportionate to the inflation rate and may not be proportionate to the inflation rate in the future. The value of the peso decreased by 2.6% in 2021, decreased by 4.7% in 2020, and increased by 3.6% in 2019. In addition, fluctuations in currency exchange rates may have a significant impact on our financial results. There can be no assurance that the Mexican government will maintain its current policies with regard to the peso or that the peso's value will not fluctuate significantly in the future. We cannot assure you that currency fluctuations, inflation and exchange control policies will not have an adverse impact on our financial condition, results of operations, earnings and cash flows.

***Lack of infrastructure could forestall or prevent further exploration and advancement.***

Exploration activities, as well as any advancement activities, depend on adequate infrastructure. Reliable roads, bridges, power sources and water supply are important factors that affect capital and operating costs and the feasibility and economic viability of a project. Unanticipated or higher than expected costs and unusual or infrequent weather phenomena,

or government or other interference in the maintenance or provision of such infrastructure, could adversely affect our business, financial condition and results of operations.

#### **Risks related to our Common Stock**

***One of our stockholders owns a significant percentage of our common stock and could block decisions or transactions that could be beneficial to other stockholders.***

One of our stockholders, The Sentient Group, through the Sentient executive funds (“Sentient”), owns approximately 23% of our outstanding common stock. With this level of ownership, Sentient could exert significant control over us, including over the election of directors, changes in the size or the composition of the board of directors, and mergers and other business combinations involving us. Through greater control of the board of directors and increased voting power, including the potential to prevent a quorum at stockholders meetings, Sentient could control certain decisions, including decisions regarding qualification and appointment of officers, operations of the business including acquisition or disposition of our assets or purchases and sales of mining or exploration properties, dividend policy, and access to capital (including borrowing from third-party lenders and the issuance of equity or debt securities). Sentient’s large share ownership will also make it difficult, if not impossible, for us to enter into a change of control transaction that may otherwise be beneficial for our other shareholders.

***The existence of a significant number of warrants may have a negative effect on the market price of our common stock.***

As of December 31, 2021, we had 10.8 million warrants outstanding with a weighted average exercise price per share of \$0.35. The existence of securities available for exercise and resale is referred to as an “overhang,” and, particularly if the warrants are “in the money,” the anticipation of potential sales could exert downward pressure on the market price of our common stock.

***Failure to meet the maintenance criteria of the NYSE American may result in the delisting of our common stock, which could result in lower trading volumes and liquidity, lower prices of our common shares and make it more difficult for us to raise capital.***

Our common stock is currently listed on the NYSE American. In order to maintain that listing, we must meet certain requirements, including maintaining a minimum amount of shareholders’ equity and a minimum number of public shareholders. In addition to objective standards, the NYSE American may delist the securities of any issuer if, in its opinion, the issuer’s financial condition and/or operating results appear unsatisfactory; if it appears that the extent of public distribution or the aggregate market value of the security has become so reduced as to make continued listing on the NYSE American inadvisable; if the issuer sells or disposes of principal operating assets or ceases to be an operating company; if an issuer fails to comply with the NYSE American’s listing requirements; if an issuer’s common stock sells at what the NYSE American considers a “low selling price” and the issuer fails to correct this via a reverse split of shares after notification by the NYSE American; or if any other event occurs or any condition exists which makes continued listing on the NYSE American, in its opinion, inadvisable.

On August 19, 2019, we received written notification (the “Notice”) from the NYSE American that we were not in compliance with Section 1003(a)(iii) of the NYSE American Company Guide (the “Company Guide”). We are required to report a stockholders’ equity of \$6.0 million or more if we have reported losses from continuing operations and/or net losses in its five most recent fiscal years. The Notice noted that we reported a stockholders’ equity of \$4,380,000 as of June 30, 2019 and losses from continuing operations and/or net losses in each of its five most recent fiscal years ended December 31, 2018. As a result, we became subject to the procedures and requirements of Section 1009 of the Company Guide and were required to submit a plan of compliance by September 18, 2019 to the NYSE American addressing how we intended to regain compliance with Section 1003(a)(iii) of the Company Guide by February 19, 2021. On January 14,

2021, we received notice from the NYSE American that we had resolved the continued listing deficiency with respect to Section 1003(a) (iii) of the Company Guide and had regained compliance with all of the NYSE American continued listing requirements.

If we are unable to remain in compliance with the NYSE American continued listing requirements, our common stock may be suspended from trading on and/or delisted from the NYSE American. Although we have not been notified of any delisting proceedings, there is no assurance that we will not receive such notice in the future or that we will be able to then comply with NYSE American listing standards. If the NYSE American delists our common stock, investors may face material adverse consequences, including, but not limited to, a lack of trading market for our securities, reduced liquidity, decreased analyst coverage of our securities, and an inability for us to obtain additional financing to fund our operations. In particular, if we are delisted from the NYSE American, we will be unable to sell our common stock pursuant to the ATM Program.

***If our common stock were delisted and determined to be a “penny stock,” a broker-dealer could find it more difficult to trade our common stock and an investor may find it more difficult to acquire or dispose of our common stock in the secondary market.***

If our common stock were removed from listing on the NYSE American, it may be subject to the so-called “penny stock” rules. The SEC has adopted regulations that define a “penny stock” to be any equity security that has a market price per share of less than \$5.00, subject to certain exceptions, such as any securities listed on a national securities exchange. For any transaction involving a “penny stock,” unless exempt, the rules impose additional sales practice requirements on broker-dealers, subject to certain exceptions. If our common stock were delisted and determined to be a “penny stock,” a broker-dealer may find it more difficult to trade our common stock and an investor may find it more difficult to acquire or dispose of our common stock on the secondary market. These factors could significantly negatively affect the market price of our common stock and our ability to raise capital.

## **General Risks**

***Our operations may be further disrupted, and our financial results may be adversely affected by the novel coronavirus (COVID-19) pandemic.***

The novel strain of coronavirus known as COVID-19, which was declared a pandemic by the World Health Organization in March 2020, poses a risk to our business and operations. If a significant portion of our workforce becomes unable to work or travel to our operations due to illness or state or federal government restrictions (including travel restrictions and “shelter-in-place” and similar orders restricting certain activities that may be issued or extended by authorities), we may be forced to reduce or suspend exploration activities and/or development projects which may impact liquidity and financial results. These restrictions have significantly disrupted economic activity in the world, national and local economies and have caused volatility in capital markets. For example, in compliance with a directive of the Mexican Federal Government to suspend all non-essential activities, including mining, in response to the COVID-19 pandemic, we suspended processing activities at the Velardeña Properties in the State of Durango, Mexico, during portions of April and May 2020. If the Mexican Federal Government were to resuspend non-essential activities, including mining, this may significantly lower the revenue we expect to receive from production at our Rodeo Property. The various government restrictions arising due to the virus have curtailed the travel of our executives, which might adversely affect our operations on a long-term basis. The effects of the continued outbreak of COVID-19 and related government responses have caused and could continue to cause disruptions to supply chains and capital markets, reduced labor availability and productivity and a prolonged reduction in economic activity. These effects could have a variety of adverse impacts on us, including reduced demand for our products, impairment of goodwill or long-lived assets and impairment of our ability to develop and construct new mines and operate existing projects and to access funds from financial institutions and capital markets. In particular, these effects could disrupt or delay mining at our operating projects, which in turn could have a material adverse effect on our operations, cash flow and financial condition. Due to circumstances beyond our control, including

the availability and distribution of the COVID-19 vaccine, we are unable to determine the long-term impact that the COVID-19 outbreak will have on operations.

To the extent the COVID-19 pandemic adversely affects our business and financial results as discussed above, it may also have the effect of heightening many of the other risks described in this “Risk Factors” section, such as those relating to our operations, indebtedness and financing. Because of the highly uncertain and dynamic nature of events relating to the COVID-19 pandemic, it is not currently possible to estimate the impact of the pandemic on our business. However, these effects could have a material impact on our operations, and we will continue to monitor the COVID-19 situation closely.

***We may not be able to operate successfully if we are unable to recruit, hire, retain and develop key personnel and a qualified and diverse workforce. In addition, we are dependent upon our employees being able to safely perform their jobs, including the potential for physical injuries or illness.***

We depend upon the services of a number of key executives and management personnel. These individuals include our executive officers and other key employees. If any of these individuals were to die, become disabled or leave our company, we would be forced to identify and retain individuals to replace them. We may be unable to hire a suitable replacement on favorable terms should that become necessary.

Our success is also dependent on the contributions of our highly skilled and experienced workforce. Our ability to achieve our operating goals depends upon our ability to recruit, hire, retain and develop qualified and diverse personnel to execute on our strategy. There continues to be competition over highly skilled personnel in our industry. If we lose key personnel or one or more members of our senior management team, and we fail to develop adequate succession plans, or if we fail to hire, retain and develop qualified and diverse employees, our business, financial condition, results of operations and cash flows could be harmed. COVID-19 vaccine mandates and other COVID-19 related laws and policies could make hiring and retaining highly skilled key employees more difficult in the future.

Our business is dependent upon our workforce being able to safely perform their jobs, including the potential for physical injuries or illness. If we experience periods where our employees are unable to perform their jobs for any reason, including as a result of illness (such as COVID-19), our business, financial condition, results of operations and cash flows could be adversely affected. As a result of the COVID-19 pandemic, we have experienced temporary workforce disruptions and periods where we temporarily placed certain sites in care and maintenance. These events, or if similar events occur in the future, could have a material adverse impact on the business in the future.

***We are dependent on information technology systems, which are subject to certain risks, including cybersecurity risks and data leakage risks.***

We are dependent upon information technology systems in the conduct of our business. Any significant breakdown, invasion, virus, cyber attack, security breach, destruction or interruption of these systems by employees, others with authorized access to our systems, or unauthorized persons could negatively impact our business. To the extent any invasion, cyber attack or security breach results in disruption to our business, loss or disclosure of, or damage to, our data or confidential information, our reputation, business, results of operations and financial condition could be materially adversely affected. Our systems and insurance coverage for protecting against cyber security risks may not be sufficient. Although to date we have not experienced any material losses relating to cyber attacks, we may suffer such losses in the future. We may be required to expend significant additional resources to continue to modify or enhance our protective measures. We also may be subject to significant litigation, regulatory investigation and remediation costs associated with any information security vulnerabilities, cyber attacks or security breaches.

**ITEM 1B: UNRESOLVED STAFF COMMENTS**

None.

**ITEM 3: LEGAL PROCEEDINGS**

During April 2021, the Company became aware of a lawsuit in Mexico against one of the Company's Mexican subsidiaries, Minera William, S.A. de C.V. ("Minera William"). The plaintiff in the matter is Unifin Financiera, S.A.B de C.V. ("Unifin"). The lawsuit was assigned to the Fifth Specialized Commercial District Court. Although the Company has knowledge of the existence and content of the lawsuit filed by Unifin, the Court has not officially served Minera William with the complaint as of the date of this report. Unifin is alleging that a representative of Minera William signed certain documents in July 2011 purporting to bind Minera William as a guarantor of payment obligations owed by a third party to Unifin in connection with that third party's acquisition of certain drilling equipment. At the time the documentation was allegedly signed, Minera Williams was a subsidiary of ECU Silver Mining prior to the Company's acquisition of ECU in September 2011. As a preemptive measure, Unifin has obtained a preliminary court order freezing Minera William's bank accounts in Mexico, which has limited the Company's and Minera William's ability to access approximately US\$153,000 according to current currency exchange rates. Notwithstanding this action, the restrictions imposed on Minera Williams' bank accounts do not impact the Company's ability to operate the Rodeo mine, which is held through a different Mexico subsidiary, or continue with the Company's evaluation plans for a potential Velardeña mine restart or move forward with any of the Company's other exploration programs in Mexico. Unifin is seeking recovery for as much as US\$12.5 million. The Company believes there is no basis for this claim and will defend itself if and when the Company is formally served with notice of the lawsuit. As such, the Company has not accrued an amount for this matter in its Condensed Consolidated Balance Sheets or Statements of Operations as of December 31, 2021.

**ITEM 4: MINE SAFETY DISCLOSURES**

Not applicable.

**ITEM 5: MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES**

Our common stock began trading on the NYSE American under the symbol "AUMN" on March 19, 2010. Our common stock is also listed on the Toronto Stock Exchange, also referred to as the "TSX", and trades under the symbol "AUMN".

As of March 21, 2022, we had 156 record holders of our common stock of record based upon the stockholders list provided by our transfer agent, Computershare Trust Company, N.A.

**Dividends**

We have not declared or paid any cash dividends on our common stock and do not anticipate paying any cash dividends on our common stock in the foreseeable future. We currently intend to retain all future earnings, if any, to fund the growth of our business.

**ITEM 6: RESERVED****ITEM 7: MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

*You should read the following discussion and analysis of our financial condition and results of operations together with our financial statements and related notes beginning on page F-1 in this annual report on Form 10-K. This discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual*

results may differ materially from those anticipated in these forward-looking statements as a result of many factors, including those set forth under “Risk Factors” in this annual report on Form 10-K.

## **Our Company**

We were incorporated in Delaware under the Delaware General Corporation Law in March 2009 and are the successor to Apex Silver Mines Limited for purposes of reporting under the Exchange Act. During the year ended December 31, 2021, our principal source of revenue was from the sale of gold and silver from our Rodeo Property in Durango, Mexico. We incurred net operating losses for the years ended December 31, 2021, and 2020.

We remain focused on mining operations at the Rodeo Property as well as the completion of further studies of a restart plan for Velardeña including the use of bio-oxidation to improve the payable gold recovery. We also continue to evaluate and search for mining opportunities in North America (including Mexico) with near-term prospects of mining, and particularly for properties within reasonable haulage distances of our Velardeña Properties. We are also focused on advancing our El Quevar exploration property in Argentina through the Earn-In Agreement with Barrick and on advancing selected properties in our portfolio of exploration properties, located in Mexico, Nevada and Argentina. We are reviewing strategic opportunities, focusing primarily on development or operating properties in North America, including Mexico.

## **2021 Highlights**

### *Rodeo Property*

We began mining activities at the Rodeo Property, using a contract miner, in December 2020. We began hauling the mined material, also using a contractor, for processing at our Velardeña oxide plant beginning in January 2021. We provide the overall mine management and engineering, which includes in-pit technicians who determine whether material is suitable for process or placement on the waste dump. We also employ and supervise the workforce responsible for processing activities at our oxide plant. Our assay lab, located in Velardeña, Durango, Mexico is used for the project’s assaying requirements. We poured our first doré bar at the end of January 2021 and completed our first shipment of doré to a refinery located in the United States in March 2021.

We installed a new regrind mill circuit at the plant specifically designed to process the harder mined material coming from the Rodeo Property, which was completed in April at a total cost of approximately \$1.2 million. The new circuit, which was fully operational at the end of April, allowed us to increase daily throughput of Rodeo material in the oxide plant to at least 500 tonnes per day. Mill throughput averaged 532 tonnes per day in third quarter 2021 and 468 tonnes per day in fourth quarter 2021. At approximately 500 tonnes per day, the current life of the Rodeo mine is estimated to run into the third quarter of 2023, based on our current estimate of remaining mineral resources.

Assays from processing at the oxide plant indicate the doré extracted to date are generally comprised of approximately 20 to 30 percent gold and 65 to 80 percent silver and are of a quality that is readily marketable and saleable to refineries located either in the U.S., Mexico or internationally, consistent with standard commercial terms. We entered into a refining agreement with a third party located in the U.S. in February 2021 and have completed 37 shipments of doré as of March 9, 2022.

The table below sets forth the key processing and sales statistics for the Rodeo operation for the year ended December 31, 2021. Payable gold and silver produced in doré include final settlement adjustments for all doré produced through December 31, 2021:

**Rodeo Operations Statistics**  
(in thousands except per unit amounts)

	Year Ended December 31, 2021
Tonnes mined (1)	661,102
Tonnes in stockpiles awaiting processing (2)	14,068
Tonnes in low grade stockpiles (3)	69,567
Tonnes processed	149,411
Average tonnes per day processed	409
Average gold grade processed (grams per tonne)	4.1
Average silver grade processed (grams per tonne)	12.2
Plant recovery - gold (%)	74.9
Plant recovery - silver (%)	89.9
Payable gold produced in doré (ounces)	14,398
Payable silver produced in doré (ounces)	50,928
Payable gold equivalent produced in doré (ounces) (4)	15,104
Gold sold in doré (ounces)	13,772
Silver sold in doré (ounces)	48,970
Gold equivalent sold in doré (ounces) (4)	14,454
Average realized price, before refining and selling costs	
Gold (dollar per ounce)	\$1,793
Silver (dollar per ounce)	\$24.83

(1) Includes all mined material transported to the plant, stockpiled or designated as waste

(2) Includes mined material stockpiled at the mine or transported to the plant awaiting processing in the plant

(3) Material grading between 2 g/t (current cutoff grade) and 1 g/t Au held for possible future processing

(4) Gold equivalents based on realized \$ Au and \$ Ag price

The following table highlights additional non-GAAP cost and revenue statistics related to the Rodeo operations:

	<b>Year Ended</b>	
	<b>December 31, 2021</b>	
	<b>(in thousands except per unit amounts)</b>	
Total cash operating costs	\$	14,390
Treatment and refining costs		324
Silver by-product credits		(1,216)
<b>Total cash costs, net of by-product credits</b>	<b>\$</b>	<b>13,498</b>
<b>Total cash cost per unit</b>		
Payable gold ounces produced in doré		14,398
Total cash operating costs	\$	999
Treatment and refining charges		23
Silver by-product credits		(84)
<b>Total cash costs, net of by-product credits, per payable gold ounce (1)</b>	<b>\$</b>	<b>937</b>
<b>Tonnes Processed in plant</b>		<b>149,411</b>
Total cash operating costs per tonne processed	\$	96

(1) Cash costs, net of by-product credits, per payable ounce of gold is a non-GAAP financial measure. See “Non-GAAP Financial Measures” below.

Tonnes processed in the oxide plant for the full year 2021 were approximately 149,000, with grades for gold and silver averaging 4.2 and 12.1 grams per tonne, respectively, which is above the remaining life of mine average resource grades of approximately 2.9 and 11.7 grams per tonne for gold and silver, respectively, as depicted in the 2022 PEA. Payable extraction for the full year was approximately 14,400 ounces of gold and 59,900 ounces of silver, which exceeded initial guidance for the full year 2021 of 12,000 to 14,000 ounces of gold and 25,000 to 30,000 ounces of silver. Plant recovery for gold was approximately 74.9% for the full year 2021, as compared to projections based on 2022 PEA results of approximately 80%. Gold recoveries were lower than the PEA for the full year 2021 as we continued to balance the operating performance of the plant between higher throughput and recovery. We continue to optimize the mill circuit for increased recovery with a focus on a finer grind and additional aeration in the leach tank train.

Cash costs, net of silver by-product credits, were approximately \$937 per payable gold ounce for the full year 2021. Our average realized prices for 2021 were \$1,793 and \$24.83 for gold and silver, respectively. Net operating margin for the full year 2021 from the Rodeo Property (defined as revenue from the sale of metals less the cost of metals sold) was approximately \$12.3 million.

For the full year 2022, we are estimating that we will process 175,000 to 185,000 tonnes in the oxide plant, or approximately 500 tonnes per day, with payable extraction for 2022 of approximately 12,000 to 14,000 ounces of gold and 42,000 to 47,000 ounces of silver. Grades for 2022 are estimated to be approximately 2.9 grams per tonne for gold and 9.4 grams per tonne for silver, lower than grades achieved in 2021, but as anticipated in the PEA mine plan for 2022. Mill recoveries are expected to continue during 2022 near current rates of approximately 80 percent for both gold and silver. Higher expected total throughput in the oxide plant for the year 2022, as compared to 2021, will help offset the lower gold grades anticipated for 2022 resulting in similar payable gold extraction in 2022 as compared to 2021, but unit costs will be higher in 2022 as a result of higher plant throughput. Cash costs per payable gold ounce, net of silver by-product credits are expected to be approximately \$1,100 to \$1,200 for the full year 2022. Using an assumed gold price of \$1,800/oz and

an assumed silver price of \$25.00/oz, net operating margin for the full year 2022 from the Rodeo Property (defined as revenue from the sale of metals less the cost of metals sold) is estimated at approximately \$7.0 million to \$9.0 million.

The estimates detailed above for 2022 were derived using the actual results of operations achieved during 2021 and a projection of the mine plan, grades, plant throughput, and recoveries for 2022. Actual future results from mining at Rodeo may vary significantly based upon, among other things, unanticipated variations in grade, unexpected challenges associated with our proposed mining plan, volatility in commodity prices, variations in expected recoveries, increases in projected operating costs, working capital or capital costs or interruptions in mining. See “*Risk Factors – Risk Factors related to our Mining and Processing Activities*”.

#### **Non-GAAP Financial Measures**

Throughout this report, we have provided information prepared or calculated according to U.S. GAAP and have referenced some non-GAAP performance measures which we believe will assist with understanding the performance of our business. Non-GAAP financial measures are intended to provide additional information only and do not have any standard meaning prescribed by generally accepted accounting principles. These measures should not be considered in isolation or as a substitute for performance measures prepared in accordance with GAAP. These non-GAAP measures are not necessarily indicative of operating profit or cash flow from operations as determined under GAAP.

“Total cash costs, net of by-product credits, per payable gold ounce,” includes all direct and indirect operating cash costs associated with the physical activities that would generate doré products for sale to customers, including mining to gain access to mineral resources, mining of mineral resources and waste, milling, third-party related treatment, refining and transportation costs, on-site administrative costs and royalties. Total cash costs do not include depreciation, depletion, amortization, exploration expenditures, reclamation and remediation costs, sustaining capital, financing costs, income taxes, or corporate general and administrative costs not directly or indirectly related to the Rodeo project. By-product credits include revenues from silver contained in the products sold to customers during the period. “Total cash costs, net of by-product credits”, are divided by the number of payable gold ounces produced by the plant for the period to arrive at “Total cash costs, net of by-product credits, per payable gold ounce.”

“*Cost of metals sold*”, reported as a separate line item in our Condensed Consolidated Statements of Operations for the year ended December 31, 2021, is the most comparable financial measure, calculated in accordance with GAAP, to “Total cash costs, net of by-product credits”. “*Cost of metals sold*” includes adjustments for changes in inventory and excludes third-party related treatment and refining costs, which are reported as part of revenue in accordance with GAAP. The following table presents a reconciliation for the year ended December 31, 2021 between the non-GAAP measure of “Total cash cost, net of by-product credits” to the most directly comparable GAAP measure, “*Cost of metals sold*”.

<b>Year Ended December 31, 2021</b>	<b>Reconciliation of Costs of Metals Sold (GAAP) to Total Cash Costs, net of By-product Credits (Non- GAAP)</b>	
Total cash costs, net of by-product credits	\$	13,498
<b>Reconciliation to GAAP measure:</b>		
Treatment and refining costs	\$	(324)
Silver by-product credits		1,216
Write down of inventories to net realizable value		17
Change in inventory (excluding depreciation, depletion and amortization)		(1,096)
Cost of metals sold	\$	<u>13,311</u>

#### *Rodeo Exploration*

In October 2021, we completed an exploration drilling program at Rodeo aimed at expanding the resource. The program included about 5,648 meters in 82 shallow holes at selected near-surface targets located immediately adjacent to the current pit. In November 2021, we announced the final assay results from the drilling program, which included potentially resource-grade intercepts on the north, south and west sides of the currently planned open pit. The drill program included 47 reverse circulation (RC) holes totaling 3,187 meters and 35 core holes totaling 2,461 meters. The drill program has modestly extended the life of mine plan for Rodeo through the third quarter of 2023 based on processing material at a cut-off grade of 1.6 g/t Au. In January 2022 we began a small additional RC drill program (approximately 2,500 m) to finish delineating the mineralized area on the south side of the current pit.

#### *Velardeña*

The Velardeña Properties contain two underground mines that were last operated in late 2015, at which point mining activities were suspended when a combination of low metals prices, mining dilution and metallurgical challenges rendered operations unprofitable. We elected to preserve the asset for future use, and since that time we have evaluated and tested various mining methods and processing alternatives that could enable sustainable profitable operations.

The recent rise in precious metals prices, the advancement of alternative processing technologies in the industry, and the results of our testing activities prompted us to pursue the preparation of an updated NI 43-101 preliminary economic assessment (PEA) based partly on projected increased gold recoveries from a proposed bio-oxidation circuit to treat gold-bearing pyrite concentrates. In April 2020, we announced positive results from the updated PEA.

In June 2021 we began limited scale mining activities at our Velardeña underground mine to obtain further bulk samples for use in final optimization of the bio-oxidation plant design and for use in additional flotation separation studies that will indicate how we can best separate the gold-bearing minerals into the pyrite-arsenopyrite concentrate that is proposed for processing in the bio-oxidation circuit.

We are also testing mining methods to ensure that we can effectively control mining dilution to obtain the head grades that we expect based on our PEA study. We expect to have the results of these studies in early 2022.

#### *Yoquivo*

In September 2020, we began a 3,400-meter, 15-hole drill program to test the most promising portions of certain veins in the Yoquivo property in Chihuahua, Mexico. We completed the drill program in December 2020 and identified

four separate vein systems in which surface sampling has returned grades up to 4,050 g/t silver and 27.7 g/t gold from surface. Of substantial interest was the discovery of a new vein parallel to and east of the Pertenencia vein. While the other principal veins have been partially mined from surface to the water table (up to 130 meters) in the case of San Francisco and Pertenencia, and over a much less extensive vertical interval in the case of El Dolar and Esperanza, the new vein is unmined from surface. We began a second phase drill program in October 2021. The drill program included 3,949 meters comprised of 21 holes exploring the Pertenencia, Esperanza and Dolar vein systems. In January 2022 we announced assay results from the first five holes of the 21-hole, second phase drill program. The drill program demonstrated the potential for the Pertenencia vein to host significant high-grade mineralization and hit multiple high-grade veins, suggesting there may be additional blind veins to be found on the property. We recently submitted an application with SEMARNAT for a 50-hole, 10,000 meter drill program, which we plan to commence in 2022 upon receipt of necessary permits.

#### *El Quevar*

In April 2020, we entered into the Earn-in Agreement with Barrick, pursuant to which Barrick has acquired an option to earn a 70% interest in the Company's El Quevar project located in the Salta Province of Argentina (the "Option"). For a description of the Earn-In Agreement, see "Our Material Mining Properties – El Quevar" in our Annual Report Form 10-K for the year ended December 31, 2021. During the earn-in period, in addition to the exploration spending, Barrick will fund the holding costs of the property, which will qualify as work expenditures. Barrick will reimburse us for expenses related to maintaining the exploration camp, which will initially be run by us under a service agreement, and which will also qualify as work expenditures. Through December 31, 2021, approximately \$0.9 million of expenses incurred by us have been or are expected to be reimbursable under the Earn-in Agreement. As of December 31, 2021, Barrick had met the minimum \$1 million in work expenditures required by the Earn-in Agreement.

#### *Sarita Este / Desierto*

In December 2019 we paid \$150,000 to enter into an option agreement with Cascadero Minerals Corporation ("Cascadero") to acquire a 51% interest in the gold/copper Sarita Este concession, located in the northwest portion of the Province of Salta, Argentina, located near the Taca Taca project owned by First Quantum Minerals. The option agreement called for us to spend at least \$0.3 million in exploration expenditures and complete a 2,000-meter drill program by the end of 2021, another \$0.5 million by the end of 2022, and another approximately \$1.6 million by 2023 for a total \$2.5 million. We have spent approximately \$1.4 million since entering into the agreement in December 2019.

In the fourth quarter of 2021 we completed the first drill program ever conducted at Sarita Este, which involved drilling 10 diamond drill holes totaling 2,518 meters to explore untested epithermal gold-silver and copper porphyry targets. In January 2022 we announced assay results from the drill program, including the potential of an oxidized gold system and a copper porphyry system. We have submitted new permits for trenching and additional drilling that we plan to complete during a 2022 field campaign.

### **Results of Operations**

For the results of operations discussed below, we compare the results of operations for the year ended December 31, 2021, to the results of operations for the year ended December 31, 2020.

*Revenue from the sale of metals.* We recorded \$25.6 million in revenue for the year ended December 31, 2021, all from the sale of gold and silver bearing doré from the Rodeo Operation in Mexico. We did not record any revenue from doré sales for the year ended December 31, 2020.

*Costs of metals sold.* For the year ended December 31, 2021, we recorded \$13.2 million of costs of metals sold. Because we did not record any revenue from doré sales during the year, we did not record any cost of metals sold during the year ended December 31, 2020.

*Revenue from oxide plant lease.* We recorded revenue of \$5.6 million for the year ended December 31, 2020, from the lease of our Velardeña oxide plant to Hecla in the accompanying financial statements. Hecla terminated the Lease Agreement in accordance with the terms of the Third Amendment one month early, effective November 30, 2020. We did not record any plant lease related income for the year ended December 31, 2021.

*Oxide plant lease costs.* During the years ended December 31, 2020, we recorded \$2.0 million of costs related to the oxide plant lease consisting primarily of reimbursable labor and utility costs which for accounting purposes were also included in revenue from the oxide plant lease. Hecla terminated the Lease Agreement in accordance with the terms of the Third Amendment one month early, effective November 30, 2020.

*Exploration Expense.* Our exploration expense, including work at Rodeo, Velardeña and other properties, totaled \$5.3 million for the year ended December 31, 2021. Our exploration expense, including work at the Rodeo, Sand Canyon, Yoquivo and other properties, totaled \$5.0 million for the year ended December 31, 2020. Exploration expense for both years was incurred primarily in Mexico and includes property holding costs, costs incurred by our local exploration offices, and allocated corporate administrative expenses. The higher exploration expense for 2021 is primarily related to increased exploration at our Velardeña Properties and Rodeo operation in Mexico and Sarita Este property in Argentina during the period.

*Velardeña shutdown and care and maintenance costs.* We recorded \$1.4 million and \$1.2 million for the years ended December 31, 2021, and 2020, respectively, for expenses related to care and maintenance at our Velardeña Properties as the result of the suspension of mining and processing activities in November 2015. The increased costs for 2021 are primarily related to certain increases in employee related benefits.

*El Quevar Project Expense.* As discussed above, during April 2020, we entered into the Earn-In Agreement with Barrick, pursuant to which Barrick has acquired an option to earn a 70% interest in the El Quevar project. During the earn in period Barrick has and will continue to reimburse us for certain holding and maintenance costs related to the project. During the year ended December 31, 2021, we recorded an expense of approximately \$0.3 million primarily related to holding and evaluation costs for the Yaxtché deposit at the El Quevar project, net of costs reimbursed. During the year ended December 31, 2020, we recorded an expense of approximately \$0.6 million primarily related to exploration, holding and evaluation costs for the Yaxtché deposit at the El Quevar project, net of costs reimbursed. For both years, additional nominal costs incurred in Argentina and not related to the El Quevar project are included in “Exploration Expense”, discussed above.

*Administrative Expense.* Administrative expenses totaled \$4.8 million for the year ended December 31, 2021, compared to \$3.7 million for the year ended December 31, 2020. Administrative expenses, including costs associated with being a public company, are incurred primarily by our corporate activities in support of the Rodeo project, Velardeña Properties, El Quevar project and our exploration portfolio. The \$4.8 million of administrative expenses we incurred during 2021 is comprised of \$2.5 million of employee compensation and directors’ fees, \$1.2 million of professional fees, and \$1.1 million of insurance, rents, travel expenses, utilities and other office costs. The \$3.7 million of administrative expenses we incurred during 2020 is comprised of \$1.4 million of employee compensation and directors’ fees, \$1.3 million of professional fees, and \$1.0 million of insurance, rents, travel expenses, utilities and other office costs.

*Stock based compensation.* During the year ended December 31, 2021, we incurred expense related to stock-based compensation in the amount of \$1.6 million compared to \$0.9 million for the year ended December 31, 2020. Stock based compensation varies from period to period depending on the number and timing of shares granted, the type of grant, the market value of the shares on the date of grant and other variables.

*Reclamation and accretion expense.* During each of the years ended December 31, 2021, and 2020, we incurred \$0.3 million and \$0.2 million of reclamation expense, respectively, related to the accretion of an asset retirement obligation at the Velardeña Properties.

*Other Operating Income, Net.* We recorded \$0.5 million of other operating income for the year ended December 31, 2021, primarily related to the amortization of deferred income related to the option agreement for the sale of the Santa Maria property, as discussed above. We recorded only a nominal amount of other operating income for the year ended December 31, 2020, consisting primarily of the sale of surplus equipment.

*Depreciation, depletion and amortization.* During the year ended December 31, 2021, we incurred depreciation, depletion and amortization expense of \$0.6 million compared to \$1.0 million for the year ended December 31, 2020. The lower depreciation recorded during 2021 was the result of various assets becoming fully depreciated during 2021.

*Interest and Other expense, net.* We recorded approximately \$0.4 million of interest and other expense, net for the year ended December 31, 2021, primarily related to write-off of deferred costs related to the Lincoln Park Capital program. We recorded \$0.1 million of interest and other expense, net for the year ended December 31, 2020, primarily related to interest incurred on the repayment of the Autlán advanced payment and the financing of certain insurance premiums.

*Gain (Loss) on Foreign Currency.* We recorded a \$0.2 million foreign currency gain and a \$0.1 million foreign currency loss for the years ended December 31, 2021, and December 31, 2020, respectively. Foreign currency gains and losses are primarily related to the effect of currency fluctuations on monetary assets net of liabilities held by our foreign subsidiaries that are denominated in currencies other than U.S. dollars.

*Income Taxes.* We recorded a \$462,000 income tax expense for the year ended December 31, 2021 and \$48,000 income tax expense for the year ended December 31, 2020. The increase in income taxes in 2021 is related to the start up of profitable operations at the Rodeo Property during 2021.

### **Liquidity and Capital Resources**

At December 31, 2021, our aggregate cash and cash equivalents totaled \$12.2 million, compared to the \$9.7 million in similar assets held at December 31, 2020. The December 31, 2021 balance is due in part from the following expenditures and cash inflows for the year ended December 31, 2021. Expenditures totaled \$14.1 million from the following:

- \$5.3 million in exploration expenditures, including \$1.4 million of exploration and mining activities at our Rodeo project along with other work at the Yoquivo, Sarita Este and other properties;
- \$1.6 million in capital expenditures, including \$1.4 million related to construction of the new regrind mill circuit and other projects related to the Rodeo project;
- \$1.4 million in care and maintenance costs at the Velardeña Properties;
- \$0.3 million in exploration and evaluation activities, care and maintenance and property holding costs at the El Quevar project, net of reimbursements from Barrick;
- \$4.8 million in general and administrative expenses; and
- \$0.7 million related to a net working capital increase due primarily to an increase in inventories and value added tax receivables associated with the Rodeo operation, partially offset by an increase in accounts payable and other accrued liabilities, also related to the Rodeo operation.

The foregoing expenditures were offset by cash inflows of \$16.6 million from the following:

- \$12.3 million of net operating margin from the Rodeo operation (defined as revenue from the sale of metals less the cost of metals sold);
- \$1.8 million, net of fees from the ATM Program (as further described in Note 15);
- \$1.5 million from the second installment related to the sale of the Santa Maria property to Fabled (as further described in Note 8); and
- \$1.0 million from the exercise of warrants issued in prior offerings (as further described in Note 15).

In addition to the \$12.2 million cash balance at December 31, 2021, we expect to receive approximately \$7.0 million to \$9.0 million in net operating margin from the Rodeo Property (defined as revenue from the sale of metals less the cost of metals sold) during the twelve months ending December 31, 2022, assuming an average gold and silver price during that period of \$1,800 and \$25.00 oz respectively (our realized prices for the twelve months ended December 31, 2021, as shown above, were \$1,793 and \$24.83 for gold and silver, respectively). Our forecasted cash inflows during the twelve months ending December 31, 2022 also include the anticipated third and final installment of \$2.0 million from the sale of the Santa Maria property to Fabled, scheduled to be paid in December 2022, as discussed above, as we believe it is probable this installment will be received based on Fable's performance to date.

Our forecasted expenditures during the twelve months ending December 31, 2022, apart from Rodeo cost of metals sold, which is already included in our forecast of net operating margin, and also apart from a positive decision to move forward with the start-up of the Velardeña operation, as discussed above, total approximately \$10.2 million as follows:

- Approximately \$4.1 million on exploration activities and property holding costs related to our portfolio of exploration properties located in Mexico, Argentina and Nevada, including project assessment and evaluation costs relating to additional exploration at Rodeo, Yoquivo, and other properties;
- Approximately \$1.2 million at the Velardeña Properties for care and maintenance;
- Approximately \$0.4 million at the El Quevar project to fund care and maintenance and property holding costs, net of reimbursement from Barrick; and
- Approximately \$3.7 million on general and administrative costs; and
- Approximately \$0.8 million of working capital related primarily to a reduction of accounts payable and other accrued liabilities related to bonuses and other expense items accrued at December 31, 2021.

Our forecasted cash resources of approximately \$21.2 to \$23.2 million, which include cash on hand at December 31, 2021, the forecasted net operating margin from the Rodeo Property, and the anticipated third installment of \$2.0 million from the sale of the Santa Maria property to Fabled, are greater than our forecasted expenditures of approximately \$10.2 million. The actual amount of cash receipts that we receive during the period from the Rodeo operation may vary significantly from the amounts specified above due to, among other things: (i) unanticipated variations in grade, (ii) unexpected challenges associated with our proposed mining plan, (iii) decreases in commodity prices below those used in calculating the estimates shown above, (iv) variations in expected recoveries, (v) increases in operating costs above those used in calculating the estimates shown above, or (vi) interruptions in mining at Rodeo. In addition, the actual amount of cash that we receive from the anticipated third installment of \$2.0 million from the sale of the Santa Maria property to Fabled is dependent on Fabled's decision to pay the amount that is due to us under the terms of the Fabled Option Agreement on a timely basis. The actual amount of cash expenditures that we incur during the twelve-month period ending

December 31, 2022 may vary significantly from the amounts specified above and will depend on a number of factors, including variations in the anticipated care and maintenance costs at the Velardeña Properties or at El Quevar, and costs for continued exploration, project assessment, and advancement of our other exploration properties. Likewise, if cash expenditures are greater than anticipated or if cash receipts are less than anticipated, we may need to take certain actions to maintain sufficient cash balances over the next twelve months, including additional asset dispositions or raising additional equity capital through sales under the ATM Program or otherwise.

The consolidated financial statements have been prepared on a going concern basis under which an entity is considered to be able to realize its assets and satisfy its liabilities in the normal course of business. However, our continuing long-term operations may be dependent upon our ability to continue currently profitable operations and to secure sufficient funding, if needed, to generate future profitable operations. The underlying value and recoverability of the amounts shown as property, plant and equipment in our condensed consolidated financial statements are dependent on our ability to continue to generate positive cash flows from operations and to continue to fund exploration activities that would lead to additional profitable mining and processing activities or to generate proceeds from the disposition of property, plant and equipment. There can be no assurance that we will be successful in continuing to generate profitable mining and processing activities or to securing additional funding, if needed, to generate future profitable operations on terms acceptable to us or at all. We believe the cash on hand, anticipated positive net operating margins from the Rodeo operation, the potential use of the ATM Program, and the potential for additional asset dispositions make it probable that we will have sufficient cash to meet our financial obligations and continue our business strategy beyond one year from the filing of our consolidated financial statements for the period ended December 31, 2021.

### **Critical Accounting Policies and Estimates**

The selection and application of accounting policies is an important process that has developed as our business activities have evolved and as the accounting rules have changed. Accounting rules generally do not involve a selection among alternatives, but involve an implementation and interpretation of existing rules, and the use of judgment, to the specific set of circumstances existing in our business. Discussed below are the accounting policies that we believe are critical to our financial statements due to the degree of uncertainty regarding the estimates or assumptions involved and the magnitude of the asset, liability, revenue or expense being reported.

#### *Income Recognition*

We record income from farm-out agreements with third parties in accordance with Accounting Standards Codification (“ASC”) 610 and ASC 606, which generally provides that income be recognized as the Company performs its obligations according to the contract. In most instances, this will result in income being recognized ratably over a period of time relating to the receipt of periodic payments as the Company satisfies its performance obligation.

#### *Mineral Reserves*

We do not have defined mineral reserves pursuant to Regulation SK subpart 1300 (“S-K 1300”) and all of our mining properties are in the exploration stage. When and if we determine that a mining property has mineral reserves, subsequent development costs will be capitalized to those properties. When we commence extraction at our mining properties, capitalized costs are charged to operations using the units-of-production method. We cannot be certain that any part of the deposits at our properties will ever be confirmed or converted into S-K 1300 compliant reserves.

#### *Asset Retirement Obligations*

We record asset retirement obligations in accordance with ASC 410, “Asset Retirement and Environmental Obligations” (“ASC 410”), which establishes a uniform methodology for accounting for estimated reclamation and abandonment costs. According to ASC 410, the fair value of a liability for an asset retirement obligation (“ARO”) is recognized in the period in which it is incurred if a reasonable estimate of fair value can be made. To the extent that the

ARO is related to fixed plant and equipment, an offsetting asset retirement cost is capitalized as part of the carrying value of the assets with which it is associated and depreciated over the useful life of the asset.

*Long Lived Assets*

Long lived assets are recorded at cost and per the guidance of ASC 360 we assess the recoverability of our long lived assets, including goodwill, whenever events or changes in circumstances indicate that the carrying value of the assets may not be recoverable. If the sum of estimated future net cash flows on an undiscounted basis is less than the carrying amount of the related asset, impairment is considered to exist. The related impairment loss is measured by comparing estimated future net cash flows on a discounted basis or by comparing other market indicators to the carrying amount of the asset.

*Functional Currency*

Our revenue and external funding are primarily denominated in U.S. dollars. Additionally, substantially all of our significant expenditures are made with reference to U.S. dollars. Accordingly, the Company and its subsidiaries use the U.S. dollar as their functional and reporting currency.

## **ITEM 7A: QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

### **Interest Rate Risk**

We invest substantially all of our excess cash with high credit-quality financial institutions or in U.S. government and debt securities rated “investment grade” or better. The rates received on such investments may fluctuate with changes in economic conditions. Based on the average cash, restricted cash, investments and restricted investment balances outstanding during the year ended December 31, 2021, a 1.0% decrease in interest rates would have resulted in a reduction in interest income for the period of less than approximately \$0.1 million.

### **Foreign Currency Exchange Risk**

Although most of our expenditures are in U.S. dollars, certain purchases of labor, supplies and capital assets are denominated in other currencies. As a result, currency exchange fluctuations may impact the costs of our mining and exploration activities. To reduce this risk, we maintain minimum cash balances in foreign currencies and complete most of our purchases in U.S. dollars.

### **Commodity Price Risk**

We are primarily engaged in the exploration and mining of properties containing silver, gold, zinc, lead and other minerals. As a result, decreases in the price of any of these metals have the potential to negatively impact our ability to establish reserves and mine on our properties. For further detail regarding the effect on our expected cash flow from fluctuations in silver and gold prices, see “*Item 7: Management’s Discussion and Analysis—Liquidity and Capital Resources*” above.

## **ITEM 8: FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**

The consolidated financial statements and supplementary information filed as part of this Item 8 are listed under Part IV, Item 15, “Exhibits, Financial Statement Schedules” and contained in this annual report on Form 10-K at page F-1.

## **ITEM 9: CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE**

None.

## **ITEM 9A: CONTROLS AND PROCEDURES**

### **Disclosure Controls and Procedures**

Our management has evaluated, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, the effectiveness of our disclosure controls and procedures as of December 31, 2020.

Based on that evaluation, the Chief Executive Officer and Chief Financial Officer have concluded that, as of December 31, 2021, our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) were effective and designed to provide reasonable assurance that (i) information required to be disclosed in our reports filed under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms, and (ii) information is accumulated and communicated to management, including the Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosures.

The management of Golden Minerals, including the Chief Executive Officer and Chief Financial Officer, does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met.

Further, the design of a control system must reflect the fact that there are resource constraints and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of our controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected.

**Management’s Report on Internal Control over Financial Reporting**

Management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act). Under the supervision and with the participation of management, including our Chief Executive Officer and Chief Financial Officer, we assessed the effectiveness of our internal control over financial reporting as of December 31, 2021. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control—Integrated Framework*. Based on our assessment, management has concluded that, as of December 31, 2021, our internal control over financial reporting is effective based on these criteria.

**Changes in Internal Control over Financial Reporting**

There have been no changes in our internal control over financial reporting that occurred during the period covered by this report that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

**ITEM 9B: OTHER INFORMATION**

None.

**ITEM 9C: DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS**

Not applicable.

### **PART III**

#### **ITEM 10: DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE**

Incorporated by reference from the information in our proxy statement for the 2022 Annual Meeting of Stockholders, which we will file with the Securities and Exchange Commission within 120 days of the end of the fiscal year to which this report relates.

We have adopted a code of ethics that applies to all of our employees, including the principal executive officer, principal financial officer, principal accounting officer, and those of our officers performing similar functions. The full text of our code of ethics can be found on the Corporate Governance page on our website. In the event our Board of Directors approves an amendment to or waiver from any provision of our code of ethics, we will disclose the required information pertaining to such amendment or waiver on our website.

#### **ITEM 11: EXECUTIVE COMPENSATION**

Incorporated by reference from the information in our proxy statement for the 2022 Annual Meeting of Stockholders, which we will file with the Securities and Exchange Commission within 120 days of the end of the fiscal year to which this report relates.

#### **ITEM 12: SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS**

Incorporated by reference from the information in our proxy statement for the 2022 Annual Meeting of Stockholders, which we will file with the Securities and Exchange Commission within 120 days of the end of the fiscal year to which this report relates.

#### **ITEM 13: CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE**

Incorporated by reference from the information in our proxy statement for the 2022 Annual Meeting of Stockholders, which we will file with the Securities and Exchange Commission within 120 days of the end of the fiscal year to which this report relates.

#### **ITEM 14: PRINCIPAL ACCOUNTING FEES AND SERVICES**

Incorporated by reference from the information in our proxy statement for the 2022 Annual Meeting of Stockholders, which we will file with the Securities and Exchange Commission within 120 days of the end of the fiscal year to which this report relates.

**PART IV**

**ITEM 15: EXHIBITS, FINANCIAL STATEMENT SCHEDULES**

- a. Documents filed as part of this annual report on Form 10-K or incorporated by reference:
- (1) Our consolidated financial statements are listed on the “Index to Financial Statements” on Page F-1 to this report.
  - (2) Financial Statement Schedules (omitted because they are either not required, are not applicable, or the required information is disclosed in the notes to the financial statements or related notes).
  - (3) The following exhibits are filed with this annual report on Form 10-K or incorporated by reference.

**ITEM 16: FORM 10-K SUMMARY**

Not applicable

**EXHIBITS**

Exhibit Number	Description
3.1	<a href="#">Amended and Restated Certificate of Incorporation of Golden Minerals Company.</a> (2)
3.2	<a href="#">First Amendment to the Amended and Restated Certificate of Incorporation of Golden Minerals Company.</a> (3)
3.3	<a href="#">Second Amendment to the Amended and Restated Certificate of Incorporation of Golden Minerals Company.</a> (15)
3.4	<a href="#">Third Amendment to the Amended and Restated Certificate of Incorporation of Golden Minerals Company.</a> (16)
3.5	<a href="#">Bylaws of Golden Minerals Company.</a> (2)
4.1	<a href="#">Specimen of Common Stock Certificate.</a> (4)
4.2	<a href="#">Form of Series A Warrant.</a> (25)
4.3	<a href="#">Form of Series B Warrant.</a> (25)
4.4	<a href="#">Form of Series A Warrant.</a> (29)
4.5	<a href="#">Form of Series B Warrant.</a> (29)
4.6	<a href="#">Description of Registrant's Securities *</a>
10.1	<a href="#">Form of Indemnification Agreement.</a> (2)
10.2	<a href="#">Form of Change of Control Agreement.</a> (2)
10.3	<a href="#">Amendment No. 1 to Change of Control Agreement.</a> (5)
10.4	<a href="#">Golden Minerals Company Amended and Restated 2009 Equity Incentive Plan.</a> (6)
10.5	<a href="#">Form of Restricted Stock Award Agreement Pursuant to the 2009 Equity Incentive Plan.</a> (7)
10.6	<a href="#">Non-Employee Directors Deferred Compensation and Equity Award Plan.</a> (7)

10.7	<a href="#">Form of Non-Qualified Stock Option Award Agreement Pursuant to the Amended and Restated 2009 Equity Incentive Plan.</a> (8)
10.8	<a href="#">Registration Rights Agreement by and among Golden Minerals Company, Sentient Global Resources Fund III, L.P., SGRF III Parallel I, L.P. and Sentient Global Resources Fund IV, L.P. dated as of October 7, 2011.</a> (9)
10.9	<a href="#">Registration Rights Agreement between Golden Minerals Company and Sentient Global Resources Fund IV, L.P. dated as of September 19, 2012.</a> (1)
10.10	<a href="#">Registration Rights Agreement between Golden Minerals Company and Sentient Global Resources Fund IV, L.P. dated as of September 10, 2014.</a> (11)
10.11	<a href="#">Golden Minerals Company 2013 Key Employee Long-Term Incentive Plan.</a> (10)
10.12	<a href="#">Registration Rights Agreement between Golden Minerals Company and Sentient Global Resources Fund IV, L.P. dated as of February 11, 2016.</a> (13)
10.13	<a href="#">Registration Rights Agreement between Golden Minerals Company and Sentient Global Resources Fund IV, L.P. dated as of June 10, 2016.</a> (17)
10.14	<a href="#">Form of Unit Agreement Pursuant to the 2013 Key Employee Long-Term Incentive Plan.</a> (18)
10.15	<a href="#">At the Market Offering Agreement, dated as of December 20, 2016, between Golden Minerals Company and H.C. Wainwright &amp; Co., LLC, as amended by the Amendment dated November 23, 2018 and the Amendment dated December 11, 2020.</a> (20)(22) (34)
10.16	<a href="#">Registration Rights Agreement, dated as of May 9, 2018 between Golden Minerals Company and Lincoln Park Capital Fund, LLC.</a> (23)
10.17	<a href="#">Earn-In Agreement among Golden Minerals Company, ASM Services S.A.R.L., Sillex Spain, S.L., Sillex Argentina, S.A. and Barrick Gold Corporation, dated April 9, 2020.</a> (30)
10.18	<a href="#">Subscription Agreement by and between Golden Minerals Company and Barrick Gold Corporation, dated April 9, 2020.</a> (30)
10.19	<a href="#">Option Agreement by and among Golden Minerals Company, Minera de Cordilleras, S. de R.L. de C.V., Fabled Silver Gold Corp., and Fabled Silver Gold Mexico Corp., S.A. de C.V., dated December 4, 2020.</a> (32)
21.1	<a href="#">Subsidiaries of the Company.*</a>
23.1	<a href="#">Consent of Plante &amp; Moran, PLLC.*</a>

<b>23.2</b>	<a href="#">Consent of Tetra Tech.*</a>
<b>23.3</b>	<a href="#">Consent of Aaron Amoroso *</a>
<b>31.1</b>	<a href="#">Certification of Chief Executive Officer of Periodic Report Pursuant to Rule 13a-14(a) and Rule 15d-14(a),(Section 302 of the Sarbanes-Oxley Act of 2002).*</a>
<b>31.2</b>	<a href="#">Certification of Chief Financial Officer of Periodic Report Pursuant to Rule 13a-14(a) and Rule 15d-14(a),(Section 302 of the Sarbanes-Oxley Act of 2002).*</a>
<b>32.1</b>	<a href="#">Certificate of Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. 1350 (Section 906 of the Sarbanes-Oxley Act of 2002).**</a>
<b>96.1</b>	<a href="#">Rodeo Project – Technical Report Summary*</a>
<b>96.2</b>	<a href="#">Velardeña Project – Technical Report Summary*</a>
<b>101.INS</b>	Inline XBRL Instance Document*
<b>101.SCH</b>	Inline XBRL Taxonomy Extension Schema Document*
<b>101.CAL</b>	Inline XBRL Taxonomy Calculation Linkbase Document*
<b>101.DEF</b>	Inline XBRL Taxonomy Definition Document*
<b>101.LAB</b>	Inline XBRL Taxonomy Label Linkbase Document*
<b>101.PRE</b>	Inline XBRL Taxonomy Presentation Linkbase Document*
<b>104</b>	Cover Page Interactive Data File (the cover page XBRL tags are embedded in the Inline XBRL document)

- (1) Incorporated by reference to our Current Report on Form 8-K filed September 19, 2012.
- (2) Incorporated by reference to our Current Report on Form 8-K filed March 30, 2009.
- (3) Incorporated by reference to our Current Report on Form 8-K filed September 9, 2011.
- (4) Incorporated by reference to our Form S-1/A Registration Statement filed November 16, 2009.
- (5) Incorporated by reference to our Current Report on Form 8-K filed May 28, 2013.
- (6) Incorporated by reference to our Quarterly Report on Form 10-Q filed August 6, 2014.
- (7) Incorporated by reference to our Quarterly Report on Form 10-Q filed August 10, 2009.

- (8) Incorporated by reference to our Quarterly Report on Form 10-Q filed May 4, 2010.
- (9) Incorporated by reference to our Current Report on Form 8-K filed October 11, 2011.
- (10) Incorporated by reference to our Current Report on Form 8-K filed December 18, 2013.
- (11) Incorporated by reference to our Current Report on Form 8-K filed September 10, 2014.
- (12) Incorporated by reference to our Current Report on Form 8-K filed July 20, 2015.
- (13) Incorporated by reference to our Current Report on Form 8-K filed on February 18, 2016.
- (14) Incorporated by reference to our Current Report on Form 8-K filed on May 6, 2016.
- (15) Incorporated by reference to our Current Report on Form 8-K filed on May 20, 2016.
- (16) Incorporated by reference to our Current Report on Form 8-K filed on June 12, 2020.
- (17) Incorporated by reference to our Current Report on Form 8-K filed on June 14, 2016.
- (18) Incorporated by reference to our Quarterly Report on Form 10-Q filed August 11, 2016.
- (19) Incorporated by reference to our Quarterly Report on Form 10-Q filed on November 3, 2016.
- (20) Incorporated by reference to our Current Report on Form 8-K filed on December 20, 2016.
- (21) Incorporated by reference to our Current Report on Form 8-K filed on August 3, 2017.
- (22) Incorporated by reference to our Current Report on Form 8-K filed on November 23, 2018.
- (23) Incorporated by reference to our Current Report on Form 8-K filed on May 9, 2018.
- (24) Incorporated by reference to our Current Report on Form 8-K filed on December 6, 2019.
- (25) Incorporated by reference to our Annual Report on Form 10-K filed on February 27, 2020.
- (26) Incorporated by reference to our Quarterly Report on Form 10-Q filed on August 7, 2019.
- (27) Incorporated by reference to our Current Report on Form 8-K filed on July 19, 2019.
- (28) Incorporated by reference to our Current report on Form 8-K filed on April 2, 2020.
- (29) Incorporated by reference to our Current Report on Form 8-K filed on April 23, 2020.
- (30) Incorporated by reference to our Quarterly Report on Form 10-Q filed on May 6, 2020.
- (31) Incorporated by reference to our Current Report on Form 8-K filed on July 20, 2020.
- (32) Incorporated by reference to our Current Report on Form 8-K filed on December 10, 2020.

(33) Incorporated by reference to our Current Report on Form 8-K filed on July 24, 2020.

(34) Incorporated by reference to our Current Report on Form 8-K filed on December 11, 2020.

\* Filed herewith.

\*\* Furnished herewith.



**GOLDEN MINERALS COMPANY**  
**FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA INDEX**

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## 1 Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors of Golden Minerals Company

### Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Golden Minerals Company (the “Company”) as of December 31, 2021 and 2020, the related consolidated statements of operations, changes in equity, and cash flows for each of the years in the two-year period ended December 31, 2021 and the related notes (collectively referred to as the “financial statements”). In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the years in the two-year period ended December 31, 2021, in conformity with accounting principles generally accepted in the United States of America.

### Basis for Opinion

The Company’s management is responsible for these financial statements. Our responsibility is to express an opinion on the Company’s financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (“PCAOB”) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

### Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Mineral Resources and Asset Retirement Obligations —Refer to Note 11 to the financial statements

### *Critical Audit Matter Description*

Estimates of mineral resources, combined with future mine plans, are used to determine mine closure dates utilized in recording the fair value of asset retirement obligations. Since the asset retirement liability represents the present value of the expected future cash outlays, a significant change in mineral resources can impact mine lives, plans and extensions which in turn, could have a substantial effect on the recorded liability. The Company performs an in-depth evaluation of its mineral resource estimates by mine on a periodic basis, in addition to routine assessments. The determination of mineral resources requires management, with the support of management's experts, to make significant estimates and assumptions related to key inputs including the plan for the production of mineral resources and ultimate mine closure (collectively "mineral resource inputs"). Changes in any of the judgments or assumptions related to the mineral resource inputs can have a significant impact with respect to the valuation of asset retirement obligations. The Company's asset retirement obligation balance was \$3.6 million as of December 31, 2021.

Given the significant judgments and assumptions made by management to estimate mineral resources and the sensitivity of changes to mineral resource inputs on the Company's recorded asset retirement obligations, performing audit procedures to evaluate the reasonableness of management's judgments and estimates related to the mineral resource inputs required a high degree of auditor judgment and an increased extent of effort.

*How the Critical Audit Matter was Addressed in the Audit*

Our audit procedures related to management's significant judgments and assumptions related to mineral resources and the related mine closure dates included the following, among others:

- We obtained an understanding of management's process to develop their estimate of mineral resources and the related mine closure dates and tested the accuracy of key data used in their estimation process. We also gained an understanding of the design of key controls used by management to develop their estimate.
- We evaluated the experience, qualifications and objectivity of management's experts, including external engineers.
- We involved our valuation specialists to assist in evaluating the appropriateness of the Company's estimate of the credit-adjusted-risk-free rate based on the mineral resource inputs.
- We performed sensitivity analysis around the significant assumptions used in the valuation of the asset retirement obligation.
- We evaluated the Company's calculation of the changes in asset retirement obligations and compared significant assumptions to other sources of audit evidence.
- We also evaluated the adequacy of the Company's disclosures in Note 11 in relation to the Company's asset retirement obligation.

/s/ Plante & Moran, PLLC

We have served as the Company's auditor since 2013.

Denver, Colorado

March 23, 2022

**GOLDEN MINERALS COMPANY**  
**CONSOLIDATED BALANCE SHEETS**  
(Expressed in United States dollars)

	December 31, 2021	December 31, 2020
	(in thousands, except share data)	
<b>Assets</b>		
Current assets		
Cash and cash equivalents (Note 3)	\$ 12,229	\$ 9,704
Short-term investments (Note 3)	67	79
Lease receivables	—	72
Inventories, net (Note 5)	1,573	284
Value added tax receivable, net (Note 6)	1,290	45
Prepaid expenses and other assets (Note 4)	1,145	1,130
Total current assets	16,304	11,314
Property, plant and equipment, net (Note 8)	6,627	5,520
Other long term assets (Note 9)	747	1,472
Total assets	<u>\$ 23,678</u>	<u>\$ 18,306</u>
<b>Liabilities and Equity</b>		
Current liabilities		
Accounts payable and other accrued liabilities (Note 10)	\$ 3,381	\$ 1,318
Deferred revenue (Note 8)	1,469	535
Other current liabilities (Note 12)	721	667
Total current liabilities	5,571	2,520
Asset retirement and reclamation liabilities (Note 11)	3,569	3,166
Other long term liabilities (Note 12)	353	648
Total liabilities	9,493	6,334
Commitments and contingencies (Note 20)		
Equity (Note 15)		
Common stock, \$.01 par value, 350,000,000 shares authorized; 162,804,612 and 157,512,652 shares issued and outstanding respectively	1,628	1,575
Additional paid in capital	540,518	536,263
Accumulated deficit	(527,961)	(525,866)
Shareholders' equity	14,185	11,972
Total liabilities and equity	<u>\$ 23,678</u>	<u>\$ 18,306</u>

The accompanying notes form an integral part of these consolidated financial statements.

**GOLDEN MINERALS COMPANY**  
**CONSOLIDATED STATEMENTS OF OPERATIONS**  
(Expressed in United States dollars)

	Year Ended December 31,	
	2021	2020
	(in thousands, except per share data)	
<b>Revenue:</b>		
Sale of metals (Note 16)	\$ 25,596	\$ —
Oxide plant lease (Notes 7, 17)	—	5,637
Total revenue	25,596	5,637
<b>Costs and expenses:</b>		
Cost of metals sold (exclusive of depreciation shown below) (Note 16)	(13,311)	—
Oxide plant lease costs (Note 17)	—	(1,988)
Exploration expense	(5,260)	(4,954)
El Quevar project expense	(342)	(618)
Velardeña care and maintenance costs	(1,409)	(1,163)
Administrative expense	(4,821)	(3,651)
Stock based compensation	(1,593)	(859)
Reclamation expense	(262)	(249)
Other operating income (expense), net	547	7
Depreciation and amortization	(611)	(962)
Total costs and expenses	(27,062)	(14,437)
Loss from operations	(1,466)	(8,800)
<b>Other income (expense):</b>		
Interest and other expense, net (Note 18)	(373)	(132)
Gain (loss) on foreign currency transactions	206	(106)
Total other income (loss)	(167)	(238)
Loss from operations before income taxes	(1,633)	(9,038)
Income taxes (Note 14)	(462)	(48)
Net Loss	\$ (2,095)	\$ (9,086)
<b>Net income (loss) per common share — basic</b>		
Loss	\$ (0.01)	\$ (0.07)
<b>Weighted average Common Stock outstanding - basic (1)</b>	<b>161,942,970</b>	<b>131,774,120</b>

(1) Potentially dilutive shares have not been included because to do so would be anti-dilutive

The accompanying notes form an integral part of these consolidated financial statements.

**GOLDEN MINERALS COMPANY**  
**CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY**  
(Expressed in United States dollars)

	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Total Equity
	Shares	Amount			
	(in thousands except share data)				
<b>Balance, December 31, 2019</b>	<b>106,734,279</b>	<b>\$ 1,067</b>	<b>\$ 521,314</b>	<b>\$ (516,780)</b>	<b>\$ 5,601</b>
Stock compensation accrued and restricted stock awards granted (Note 15)	300,000	3	856	—	859
Shares issued under the at-the-market offering agreement, net (Note 15)	823,452	9	214	—	223
Shares issued under the Lincoln Park commitment purchase agreement, net (Note 15)	900,000	9	207	—	216
Subscription agreement (Note 15)	4,719,207	47	898	—	945
2020 Offering and private placement transaction (Note 15)	15,000,000	150	2,561	—	2,711
Public offering (Note 15)	20,535,714	205	7,748	—	7,953
Warrants exercised (Note 15)	8,500,000	85	2,465	—	2,550
Net loss	—	—	—	(9,086)	(9,086)
<b>Balance, December 31, 2020</b>	<b>157,512,652</b>	<b>\$ 1,575</b>	<b>\$ 536,263</b>	<b>\$ (525,866)</b>	<b>\$ 11,972</b>
Stock compensation accrued and restricted stock awards granted (Note 15)	335,000	3	1,590	—	1,593
Shares issued under the at-the-market offering agreement, net (Note 15)	1,856,960	19	1,681	—	1,700
Warrants exercised (Note 15)	3,100,000	31	984	—	1,015
Net loss	—	—	—	(2,095)	(2,095)
<b>Balance, December 31, 2021</b>	<b>162,804,612</b>	<b>\$ 1,628</b>	<b>\$ 540,518</b>	<b>\$ (527,961)</b>	<b>\$ 14,185</b>

The accompanying notes form an integral part of these consolidated financial statements.

**GOLDEN MINERALS COMPANY**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**  
(Expressed in United States dollars)

	Year Ended December 31,	
	2021	2020
	(in thousands)	
Cash flows from operating activities:		
Net cash from (used in) operating activities (Note 19)	\$ 1,414	\$ (9,484)
Cash flows from investing activities:		
Proceeds from sale of assets	17	525
Acquisition of short-term investments	—	(59)
Acquisitions of property, plant and equipment	(1,620)	(470)
Net cash used in investing activities	\$ (1,603)	\$ (4)
Cash flows from financing activities:		
Proceeds from issuance of common stock, net of issuance costs	2,714	14,599
Proceeds from related party loan (Note 23)	—	1,000
Payment of related party loan (Note 23)	—	(1,000)
Net cash from financing activities	\$ 2,714	\$ 14,599
Net increase in cash and cash equivalents	2,525	5,111
Cash and cash equivalents, beginning of period	9,704	4,593
Cash and cash equivalents, end of period	\$ 12,229	\$ 9,704

The accompanying notes form an integral part of these consolidated financial statements.

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS**  
**(Expressed in United States dollars)**

**1. Nature of Operations**

The Company is a mining company, holding a 100% interest in the Rodeo property in Durango State, Mexico (the “Rodeo Property”), a 100% interest in the Velardeña and Chicago precious metals mining properties and associated oxide and sulfide processing plants in the state of Durango, Mexico (the “Velardeña Properties”), a 100% interest in the El Quevar advanced exploration silver property in the province of Salta, Argentina, which is subject to the terms of the April 9, 2020 earn-in agreement (the “Earn-in Agreement”) pursuant to which Barrick Gold Corporation (“Barrick”) has the option to earn a 70% interest in the El Quevar project (see Note 8), and a diversified portfolio of precious metals and other mineral exploration properties located primarily in or near historical precious metals producing regions of Mexico, Argentina and Nevada. The Rodeo Property, Velardeña Properties and the El Quevar advanced exploration property are the Company’s only material properties.

The Company is primarily focused on mining operations at the Rodeo Property as well as further studies of a restart plan for the Velardeña mine, including use of bio-oxidation to improve the payable gold recovery. The Company is also focused on (i) advancing the El Quevar exploration property in Argentina through the Earn-in Agreement with Barrick and (ii) continuing to evaluate and search for mining opportunities in North America (including Mexico) with near-term prospects of mining, and particularly for properties within reasonable haulage distances of our processing plants at the Velardeña Properties. The Company is also reviewing strategic opportunities, focusing primarily on development or operating properties in North America, including Mexico.

The Company began mining activities at the Rodeo Property during December 2020 and began processing mined material from Rodeo at the Velardeña plant in January 2021. The employees at the Rodeo and Velardeña Properties, in addition to those that operate the plant that processes the Rodeo mined material, include an operations group, an administrative group and an exploration group to continue to advance the Company’s plans in Mexico and to provide oversight for corporate compliance activities as well as maintaining and safeguarding the longer-term value of the Velardeña Properties assets.

The Company is considered an exploration stage issuer under the criteria set forth by the SEC under Regulation SK subpart 1300 (“S-K 1300”) as the Company has not yet demonstrated the existence of mineral reserves at any of the Company’s properties. As a result, and in accordance with GAAP for exploration stage companies, all expenditures for exploration and evaluation of the Company’s properties are expensed as incurred. As such, the Company’s financial statements may not be comparable to the financial statements of mining companies that do have proven and probable mineral reserves. Such companies would typically capitalize certain development costs including infrastructure development and mining activities to access the ore. The capitalized costs would be amortized on a units-of-production basis as reserves are mined. The amortized costs are typically allocated to inventory and eventually to cost of sales as the inventories are sold. As the Company does not have proven and probable mineral reserves, substantially all expenditures at the Company’s Rodeo property and the Velardeña Properties for mine construction activity, as well as operating costs associated with the mill facilities, and for items that do not have a readily identifiable market value apart from the mineralized material, have been expensed as incurred. Such costs are charged to cost of metals sold or project expense during the period depending on the nature of the costs. Certain of the costs may be reflected in inventories prior to the sale of the product. The Company cannot be certain that any deposits at any of its properties will ever be confirmed or converted into S-K 1300 compliant “reserves”.

**2. Summary of Significant Accounting Policies**

The Company’s consolidated financial statements have been prepared in accordance with U.S. GAAP. The preparation of the Company’s consolidated financial statements requires management to make estimates and assumptions

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
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that affect the reported amounts of assets and liabilities and related disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. The more significant areas requiring the use of management estimates and assumptions relate to mineral resources and related future metals prices that are the basis for future cash flow estimates utilized in impairment calculations; depreciation, depletion and amortization calculations; environmental reclamation and closure obligations; valuation allowances for deferred tax assets and the fair value of financial instruments. The Company based its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances. Actual results may differ significantly from these estimates under different assumptions or conditions.

The policies adopted, considered by management to be significant, are summarized as follows:

*a. Basis of consolidation*

All of the Company's consolidated subsidiaries are 100% owned and as such the Company does not have a noncontrolling interest in any of its subsidiaries. All intercompany transactions and balances have been eliminated at consolidation.

*b. Translation of foreign currencies*

The Company's revenue and external funding are primarily denominated in U.S. dollars. Additionally, substantially all of the Company's significant expenditures are made with reference to U.S. dollars. Accordingly, the Company and its subsidiaries use the U.S. dollar as their functional and reporting currency.

*c. Cash and cash equivalents*

The Company considers all highly liquid investments with a maturity of three months or less when purchased to be cash equivalents.

*d. Inventories*

Materials and supplies inventories are valued at the lower of average cost or net realizable value. Cost includes applicable taxes and freight. The Company routinely counts and evaluates its material and supplies to determine the existence of any obsolete stock that is subject to impairment.

*e. Mining properties, exploration and development costs*

The Company expenses general prospecting costs and the costs of acquiring and exploring unevaluated mining properties. When and if a mining property is determined to have proven and probable mineral reserves, subsequent development costs will be capitalized to mineral properties. For acquired mining properties with proven and probable mineral reserves, the Company will capitalize acquisition costs and subsequent development costs. When and if mining properties are developed and operations commence, capitalized costs will be charged to operations using the units-of-production method over proven and probable reserves. Upon abandonment or sale of a mining property, all capitalized costs relating to the specific property are written off in the period abandoned or sold and a gain or loss is recognized in the accompanying Consolidated Statements of Operations.

As discussed in Note 1, the Company is considered an exploration stage company under the criteria set forth by the SEC since it has not yet demonstrated the existence of mineral reserves at any of the Company's properties. As the

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Company does not have proven and probable mineral reserves, substantially all expenditures at the Company's Rodeo property and the Velardeña Properties for mine construction activity, as well as operating costs associated with the mill facilities, and for items that do not have a readily identifiable market value apart from the mineral resources, have been expensed as incurred. Such costs are charged to cost of metals sold or project expense during the period depending on the nature of the costs. Certain of the costs may be reflected in inventories prior to the sale of the product.

On a quarterly basis the Company evaluates its exploration properties to determine if they meet the Company's minimum requirements for continued evaluation. The rights to the properties that do not meet the minimum requirements are relinquished and the carrying values, if any, are written off and reflected in "Other operating income, net" on the accompanying Consolidated Statements of Operations.

*f. Property, plant and equipment and long lived asset impairment*

Buildings are depreciated using the straight-line method over the estimated useful lives of 30 to 40 years or the life of the mine whichever is shorter. Mining equipment and machinery, excluding the plant, are depreciated using the straight-line method over useful lives of three to eight years or the lease period, whichever is shorter. Mineral properties and the plant are depreciated using units of production based on estimated mineral resources. Other furniture and equipment are depreciated using the straight-line method over estimated useful lives of three to five years.

As discussed above, the Company does not have any properties with proven or probable mineral reserves.

Property, plant and equipment are recorded at cost and per the guidance of ASC 360 the Company assesses the recoverability of its property, plant and equipment, whenever events or changes in circumstances indicate that the carrying value of the assets may not be recoverable. If the sum of estimated future net cash flows on an undiscounted basis is less than the carrying amount of the related asset, impairment is considered to exist. The related impairment loss is measured by comparing estimated future net cash flows on a discounted basis or by comparing other market indicators to the carrying amount of the asset.

The Company evaluated its remaining long lived assets at December 31, 2021 and 2020, and determined that no impairment was incurred.

*g. Asset Retirement Obligations*

The Company records asset retirement obligations ("ARO") in accordance with ASC 410, "Asset Retirement and Environmental Obligations" ("ASC 410"), which establishes a uniform methodology for accounting for estimated reclamation and abandonment costs. According to ASC 410, the fair value of an ARO is recognized in the period in which it is incurred if a reasonable estimate of fair value can be made. An offsetting asset retirement cost ("ARC") is capitalized as part of the carrying value of the assets with which it is associated and depreciated over the useful life of the asset (see Note 11).

The Company prepares estimates of the timing and amount of expected cash flows when an ARO is incurred. The fair value of the ARO is measured by discounting the expected cash flows using a discount rate that reflects the credit adjusted risk-free rate of interest. The Company records the fair value of an ARO when it is incurred and layer adjustments of the ARO are recorded as an adjustment to the corresponding ARC. The ARO is adjusted to reflect the passage of time (accretion cost) calculated by applying the discount rate implicit in the initial fair value measurement to the beginning-of-period carrying amount of the ARO. The Company records accretion costs to expense as incurred.

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*h. Value Added Taxes*

The Company pays value added tax ("VAT") in Mexico as well as other countries, primarily related to the Rodeo operation and exploration projects. For exploration projects, the amounts are generally charged to expense as incurred because of the uncertainty of recoverability. For the Rodeo operation, the Company records VAT paid as a recoverable asset, which appears in "Value added tax receivable, net" on the Consolidated Balance Sheets. Mexico law allows for certain VAT payments to be recovered through ongoing applications for refunds.

*i. Revenue Recognition*

The Company recognizes "Revenue from the Sale of Metals" in the Consolidated Statements of Operations following the guidance of ASC 606. Under the terms of the Company's agreement with its customer, title passes and revenue is recognized by the Company when the contractual performance obligations of the parties are completed, generally at the time a provisional or final payment is made. Refining and transport costs, deducted from the final payments made, are treated as third party costs incurred after the transfer of control on provisional sales, and are therefore netted against revenue on an accrual basis.

The Company recognizes oxide plant lease fees and reimbursements for labor, utility and other costs as "Revenue from Oxide plant lease" in the Consolidated Statements of Operations following the guidance of ASC 842, which supports recording as gross revenue the reimbursement of expenses incurred directly by the Company in performing its obligations under the lease in situations where the entity has control over the specific goods or services transferred to a customer as a principal versus as an agent. The actual costs incurred for reimbursed direct labor and utility costs are reported as "Oxide plant lease costs" in the Consolidated Statements of Operations. The Company recognizes lease fees during the period the fees are earned per the terms of the lease (see Note 17).

*j. Stock compensation*

Stock based compensation costs are recognized per the guidance of ASC 718, "Compensation — Stock Compensation" ("ASC 718"), using a graded vesting attribution method whereby costs are recognized over the requisite service period for each separately vesting portion of the award (see Note 15). Stock grants are valued at their grant date at fair value which in the case of options requires the use of the Black-Scholes option pricing model. Per ASC 718 the grants may be classified as equity grants or liability grants depending on the terms of the grant.

*k. Leases*

Effective January 1, 2019 the Company adopted ASU 2016-02 and ASU No. 2018-11, which requires lessees to recognize a right-of-use asset and a lease liability for all leases with terms greater than twelve months. Leases are classified as either finance or operating, with classification affecting the pattern of expense recognition in the income statement.

*l. Net income (loss) per Share of Common Stock*

Basic income (loss) per share is computed by dividing net income (loss) available to holders of the Company's Common Stock by the weighted average number of shares of Common Stock outstanding for the period. Diluted income (loss) per share reflects the potential dilution that would occur if securities or other contracts to issue Common Stock were exercised or converted into Common Stock.

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At December 31, 2021 and 2020, all potentially dilutive shares relating to warrants and stock compensation awards were excluded from the computation of diluted earnings per share because to include them would have been anti-dilutive.

*m. Comprehensive Income (Loss)*

Comprehensive income (loss) is defined as all changes in equity (deficit), exclusive of transactions with stockholders, such as capital investments. Comprehensive income (loss) includes net income (loss) and changes in certain assets and liabilities that are reported directly in equity.

*n. Income Taxes*

The Company accounts for income taxes in accordance with the provisions of ASC 740, "Income Taxes" ("ASC 740"), on a tax jurisdictional basis. The Company files United States and certain other foreign country income tax returns, and pays taxes reasonably determined to be due. The tax rules and regulations in these countries are highly complex and subject to interpretation. The Company's income tax returns are subject to examination by the relevant taxing authorities and in connection with such examinations, disputes can arise with the taxing authorities over the interpretation or application of certain tax rules within the country involved. In accordance with ASC 740, the Company identifies and evaluates uncertain tax positions, and recognizes the impact of uncertain tax positions for which there is a less than more-likely-than-not probability of the position being upheld when reviewed by the relevant taxing authority. Such positions are deemed to be unrecognized tax benefits and a corresponding liability is established on the balance sheet.

The Company classifies income tax related interest and penalties as income tax expense.

*o. Recently Adopted Standards*

During the first quarter 2020 the Company adopted ASU No. 2016-13, "Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments" ("ASU 2016-13"). ASU 2016-13 modifies the impairment model to utilize an expected loss methodology in place of the currently used incurred loss methodology, which will result in more timely recognition of losses. As the Company's principal credit risk is related to its Lease Receivables the adoption of this update did not result in a material impact on the Company's consolidated financial position or results of operations.

On April 12, 2021, the SEC published a statement relating to accounting and reporting considerations for warrants issued by Special Purpose Acquisition Companies (SPACs). The SEC statement raised accounting and reporting considerations for all reporting entities that restrict the use of the exception under ASC 815-40-25-7 through 8 that allows for equity treatment, under certain conditions, for warrants that allow cash settlement in certain change of control transactions. The restriction put forth by the SEC would prevent equity treatment in cases where cash is received disproportionately between shareholders and warrant holders in such transactions. All of the outstanding warrants granted by the Company are recorded in equity at December 31, 2021 and December 31, 2020 following the guidance established by ASC Topic 815-40. The Company's warrants allow for the potential settlement in cash if certain extraordinary events are effected by the Company, including a 50% or greater change of control in the Company's common stock. Since those events have been deemed to be within the Company's control, the Company continues to apply equity treatment for these warrants.

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**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
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*p. Recently Issued Pronouncements*

There were no new accounting pronouncements issued during 2021 that would affect the Company or have a material impact on its consolidated financial position or results of operations.

**3. Cash and Cash Equivalents and Short-Term Investments**

Of the \$12.2 million reported as “Cash and cash equivalents” on the Condensed Consolidated Balance Sheets at December 31, 2021, the Company had approximately \$153,000 that was unavailable for use due to a court order freezing the bank accounts of one of the Company’s subsidiaries in Mexico related to a lawsuit, as further described in Note 20. The restrictions imposed on the subsidiary’s bank accounts do not impact the Company’s ability to operate the Rodeo mine, which is held through a different Mexico subsidiary, or to continue with the Company’s evaluation plans for a potential Velardeña mine restart or move forward with any of the Company’s other exploration programs in Mexico.

The Company considers all highly liquid investments with a maturity of three months or less when purchased to be cash equivalents. Short-term investments include investments with maturities greater than three months, but not exceeding 12 months, or highly liquid investments with maturities greater than 12 months that the Company intends to liquidate during the next 12 months for working capital needs.

The following tables summarize the Company’s short-term investments at December 31, 2021 and December 31, 2020:

<u>December 31, 2021</u>	<u>Cost</u>	<u>Estimated Fair Value</u>	<u>Carrying Value</u>
(in thousands)			
<b>Investments:</b>			
Short-term:			
Trading securities	\$ 59	\$ 67	\$ 67
Total trading securities	59	67	67
Total short term	<u>\$ 59</u>	<u>\$ 67</u>	<u>\$ 67</u>
<u>December 31, 2020</u>			
<b>Investments:</b>			
Short-term:			
Trading securities	\$ 59	\$ 79	\$ 79
Total trading securities	59	79	79
Total short term	<u>\$ 59</u>	<u>\$ 79</u>	<u>\$ 79</u>

The short-term investments at December 31, 2021, consist of 1,000,000 common shares of Fabled Silver Gold Corp. (“Fabled”), and 200,000 common shares of Fabled Copper Corp. The short-term investments at December 31, 2020, consist of 1,000,000 common shares of Fabled. Fabled is a junior mining company that entered into an option agreement with the Company to acquire the Company’s option to earn a 100% interest in the Santa Maria mining claims located in Chihuahua, Mexico (see Note 8). The common shares were issued to the Company as partial consideration per the terms of the option agreement. The Fabled Copper Corp. shares were received in a spin-off of assets from Fabled that occurred on December 21, 2020, to which all existing shareholders of Fabled were entitled.

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*Credit Risk*

The Company invests substantially all of its excess cash with high credit-quality financial institutions or in U.S. government or debt securities. Credit risk is the risk that a third party might fail to fulfill its performance obligations under the terms of a financial instrument. For cash and equivalents and investments, credit risk represents the carrying amount on the balance sheet. The Company mitigates credit risk for cash and equivalents and investments by placing its funds and investments with high credit-quality financial institutions, limiting the amount of exposure to each of the financial institutions, monitoring the financial condition of the financial institutions and investing only in government and corporate securities rated “investment grade” or better. The Company invests with financial institutions that maintain a net worth of not less than \$1 billion and are members in good standing of the Securities Investor Protection Corporation.

**4. Prepaid Expenses and Other Assets**

Prepaid expenses and other assets consist of the following:

	<b>December 31, 2021</b>	<b>December 31, 2020</b>
	(in thousands)	
Prepaid insurance	\$ 575	\$ 571
Recoupable deposits and other	570	559
	<u>\$ 1,145</u>	<u>\$ 1,130</u>

The December 31, 2021 recoupable deposits and other includes a receivable from Barrick for reimbursement of costs of approximately \$0.3 million related to the Earn-in Agreement (see Note 8).

Recoupable deposits and other at December 31, 2020, includes \$0.2 million related to a recoupable deposit paid to a contractor engaged in mining activities at the Rodeo property (see Note 9). The deposit was credited towards costs charged by the mining contractor evenly over the first four months of 2021.

**5. Inventories**

Inventories at the Velardeña Properties were as follows:

	<b>December 31, 2021</b>	<b>December 31, 2020</b>
	(in thousands)	
Doré inventory	\$ 446	\$ 0
In-process inventory	668	0
Material and supplies	<u>\$ 459</u>	<u>\$ 284</u>
	<u>\$ 1,573</u>	<u>\$ 284</u>

Doré and in-process inventories, recorded at book value, include approximately \$21,000 of capitalized depreciation and amortization. Doré inventory at December 31, 2021 consists of 626 payable ounces of gold and 1,958 payable ounces of silver.

The materials and supplies inventories at December 31, 2021 and December 31, 2020 are primarily related to the Rodeo operation and are reduced by a \$0.3 million and \$0.2 million obsolescence reserve, respectively.

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**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
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**6. Value added tax receivable, net**

At December 31, 2021, the Company recorded a net value added tax (“VAT”) paid in Mexico of \$1.3 million, related to the Velardeña Properties and the Rodeo operation, as a recoverable asset, which appears in “*Value added tax receivable, net*” on the Consolidated Balance Sheets. Mexico law allows for certain VAT payments to be recovered through ongoing applications for refunds. The Company expects that the current amounts will be recovered within a one-year period. At December 31, 2021, the Company recorded approximately \$0.5 million of VAT payable as a reduction to the VAT receivable in Mexico. At December 31, 2020, the Company had recorded approximately \$45,000 of VAT.

The Company has also paid VAT in Mexico as well as other countries, primarily related to exploration projects, which has been charged to expense as incurred because of the uncertainty of recoverability.

**7. Derivative at Fair Value**

On December 3, 2019 the Company entered into an amendment to the Velardeña oxide plant lease agreement (the “Hecla Lease”) with Minera Hecla, S.A. de C.V. (“Hecla”), a Mexican corporation and wholly-owned subsidiary of Hecla Mining Company, reducing the variable per tonne fee contained in the lease agreement from \$22.00 to \$11.00. Under certain silver price and delivered ore head grade limits, the variable per tonne fee could be increased back to the previous \$22.00 per tonne. Pursuant to ASC Topics 815-Derivatives and Hedging (“ASC 815”) and 842-Leases (“ASC 842”), arrangements with variable lease payments must be evaluated to assess whether they contain embedded derivatives. If embedded derivatives are not “clearly and closely related” to the lease contract, they must be bifurcated and accounted for separately from the host contract. The Company determined that the potential for the Company to receive an additional \$11.00 variable per tonne fee if certain conditions relating to the silver price and delivered ore head grades are met does not qualify for the “clearly and closely related” exception, and as a result, the potential additional \$11.00 variable per tonne fee constitutes a derivative that must be valued and accounted for apart from the host lease contract. Per the guidance of ASC 842, the Company determined that the amendment to the Hecla Lease constituted a modification that must be accounted for as a new lease commencing on December 2, 2019, the date the amendment was agreed upon by both parties. The Company treated the fair value of the derivative received at the time of the modification to the lease agreement as an upfront lease payment that was amortized over the remaining life of the lease on a straight line basis and recorded a “*Derivative at fair value*” asset of approximately \$0.2 Million on the Consolidated Balance Sheet related to the amended Hecla Lease. On July 7, 2020, the Company received notification from Hecla terminating the Hecla Lease, effective November 30, 2020, therefore, at December 31, 2020, the Company no longer recorded a derivative value related to the Hecla Lease.

For the year ended December 31, 2020 the Company recognized a reduction of \$254,000 to “*Revenue - plant lease*” on the Company’s Condensed Consolidated Statements of Operations related to the change in the fair value of the derivative between December 31, 2019 and the termination of the Hecla Lease on November 30, 2020 (see Note 17). During the year ended December 31, 2020, the Company also recognized approximately \$180,000 “*Revenue - plant lease*” on the Company’s Consolidated Statements of Operations related to the amortization of deferred revenue.

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**8. Property, Plant and Equipment***Property, plant and equipment, net*

The components of property, plant, and equipment, net were as follows:

	December 31, 2021	December 31, 2020
	(in thousands)	
Mineral properties	\$ 9,353	\$ 9,353
Exploration properties	2,418	2,418
Royalty properties	200	200
Buildings	3,806	3,755
Mining equipment and machinery	17,477	16,135
Other furniture and equipment	1,328	890
Construction in progress	—	259
Asset retirement cost	1,057	948
	<u>35,639</u>	<u>33,958</u>
Less: Accumulated depreciation and amortization	<u>(29,012)</u>	<u>(28,438)</u>
	<u>\$ 6,627</u>	<u>\$ 5,520</u>

*El Quevar Earn-In Agreement*

On April 9, 2020, the Company and several of its directly and indirectly wholly-owned subsidiaries entered into the Earn-in Agreement with Barrick, pursuant to which Barrick has acquired an option (the "Option") to earn a 70% interest in the Company's El Quevar project located in the Salta Province of Argentina. Pursuant to the terms of the Earn-in Agreement, in order to earn an undivided 70% interest in the El Quevar project, Barrick must: (A) incur a total of \$10 million in work expenditures over a total of eight years (\$0.5 million per year in years one and two, \$1 million per year in years three, four and five, and \$2 million per year in years six, seven and eight); (B) deliver to the Company a National Instrument 43-101 compliant pre-feasibility study pursuant to the parameters set forth in the Earn-in Agreement; and (C) deliver a written notice to exercise the Option to the Company within the term of the Earn-in Agreement. Barrick may withdraw from the Earn-in Agreement at any time after spending a minimum of \$1 million in work expenditures and upon providing 30 days' notice to the Company. The Company will form a new entity ("NewCo") that will hold the El Quevar properties. Upon satisfaction of the Earn-in conditions and exercise of the Option, NewCo will be 70% owned by Barrick and 30% owned by the Company. Funding of NewCo will be based on Barrick's and the Company's respective ownership and industry standard dilution mechanisms will apply in the case of funding shortfalls by either shareholder. As of December 31, 2021, Barrick had met the \$1 million in work expenditures that would allow them to withdraw from the Earn-in Agreement. The carrying value of El Quevar as of December 31, 2021 is \$2.3 million.

*Sale of Santa Maria Property*

On July 14, 2020, the Company entered into a binding letter of intent ("Letter of Intent") with Fabled for a potential transaction pursuant to which Fabled would acquire the Company's option to earn a 100% interest in the Santa Maria mining claims located in Chihuahua, Mexico (the "Option"). On December 4, 2020, the Company entered into a definitive option agreement ("Option Agreement") to sell its option to Fabled. The period to exercise the Option (the "Exercise Period") expires on December 4, 2022, unless extended by the parties under the terms of the Option Agreement. As consideration for the Option, Fabled (i) paid \$500,000 in cash to the Company and issued to the Company 1,000,000

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shares of Fabled's common stock (the "Closing Consideration"); (ii) paid \$1,500,000 in cash to the Company on the one year anniversary date following the closing of the Option Agreement; (iii) will pay \$2,000,000 in cash to the Company on the two year anniversary date following the closing of the Option Agreement; and (iv) upon exercise of the Option, will grant the Company a 1% net smelter return royalty on the Maria, Martia III, Maria II Frac. I, Santa Maria and Punto Com concessions (the "Concessions"). Pursuant to the Option Agreement, during the Exercise Period, Fabled is obligated to pay to each of the owners of the Concessions any remaining required payments due to the owners pursuant to the various underlying option agreements between the owners and the Company, and to make all payments and perform all other requirements needed to maintain the Concessions in good standing. As of December 31, 2021, there was approximately \$0.1 million of concession payments remaining to be paid by Fabled over the next approximately one year. Should Fabled not complete its obligations described above, the Santa Maria mining claims will revert to the Company and the Company will be entitled to keep any payments made by Fabled under the terms of the Option Agreement. The carrying value of Santa Maria as of December 31, 2021 is zero.

The Company recorded the \$0.5 million received from Fabled upon execution of the agreement to "Deferred revenue" on the accompanying Condensed Consolidated Balance Sheets and amortized the amount to "Other operating income" over a one year period through December 2021. The Company recorded the \$1.5 million received from Fabled for the second payment received on the first anniversary date, as noted above, to "Deferred revenue" on the accompanying Condensed Consolidated Balance Sheets and is amortizing the amount to income over a one year period through December 2022. Upon receipt of each cash payment, the Option Agreement imposes a performance obligation on the Company to provide Fabled an exclusive right to the Santa Maria Properties to conduct exploration and mining activities during the period from receipt of the payment until the due date of the next required payment. Accordingly, the Company has determined that its performance obligation for each option payment received is satisfied over time. At December 31, 2021, there is a remaining unamortized balance of approximately \$1.5 million.

*Construction in Progress*

Construction in progress at December 31, 2020 is related to upgrades that were made at the Velardeña Properties processing plant that processes the Rodeo mined material.

**9. Other Long-Term Assets**

Other long-term assets at December 31, 2021 and December 31, 2020 consist of the following:

	December 31, 2021	December 31, 2020
	(in thousands)	
Deferred offering costs	\$ 70	\$ 479
Right of use assets	677	993
	<u>\$ 747</u>	<u>\$ 1,472</u>

The right of use assets at December 31, 2021 include approximately \$0.4 million related to certain office leases and \$0.3 million related to a mining equipment lease at our Rodeo Property. The right of use assets at December 31, 2020 include approximately \$0.5 million related to certain office leases and \$0.5 million related to a mining equipment lease at our Rodeo Property.

The deferred offering costs at December 31, 2021 were associated with the ATM Agreement (see Note 15). The deferred offering costs at December 31, 2020 were associated with the ATM Agreement and the Commitment Purchase

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
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Agreement (see Note 15). The Commitment Purchase Agreement expired during May 2021, and as of December 31, 2021 the Company had written off the remaining balance of \$353,000 of deferred LPC Program costs to “*Interest and Other Expense*” on the Condensed Consolidated Statement of Operations.

The Company took possession of new office space and began a new long-term lease for its principal headquarters office with an effective commencement date of June 1, 2019. The new office lease will expire five years and eight full calendar months following the commencement date. There are no options to extend the lease beyond the stated term. The Company recorded a right of use asset of approximately \$465,000 and a lease liability of approximately \$450,000 in the second quarter of 2019 based on the net present value of the future lease payments discounted at 9.5%, which represents the Company’s incremental borrowing rate at the time of the agreement for purposes of applying the guidance of Topic 842. As required, the Company will recognize a single lease cost on a straight-line basis.

The Company also has long-term office leases in Mexico and Argentina that expired in 2019 and recorded a combined right of use asset and liability of approximately \$45,000 relating to both of those leases at January 1, 2019. In November 2019, the Company renewed its Mexican office lease for four years and recorded a right of use asset and lease liability of approximately \$174,000. In December 2021, the Company also renewed its Argentina office lease for three years and recorded a right of use asset and lease liability of approximately \$27,000.

In December 2020, the Company’s wholly-owned subsidiary, Minera de Cordilleras S. de R.L. de C.V., entered into an agreement with Triturados del Guadiana, S.A de C.V. (“Trigusa”), whereby Trigusa will carry out mining activities at the Rodeo property. Per the terms of the mining agreement, Trigusa will provide services for the 27-month period ending March 31, 2023, with the potential for an extension of time upon mutual agreement of both parties. The Company has determined that the mining agreement contains an embedded lease, relating to the mining equipment provided by Trigusa, per the guidance of ASU 2016-02 and Topic 842. The Company did not elect the practical expedient permitting the combination of lease and non lease components of the mining agreement. The Company recorded a right of use asset and a lease liability of approximately \$420,000 based on the net present value of the future lease payments discounted at 7.0%, which represents the Company’s incremental borrowing rate at the time of the agreement.

The lease liabilities noted above have been included in “*Other liabilities*”, short term and long term (Note 12), in the Company’s Consolidated Balance Sheets at December 31, 2021 and December 31, 2020.

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**10. Accounts Payable and Other Accrued Liabilities**

The Company's accounts payable and other accrued liabilities consist of the following:

	<u>December 31,</u> <u>2021</u>	<u>December 31,</u> <u>2020</u>
	(in thousands)	
Accounts payable and accruals	\$ 1,079	\$ 472
Accrued employee compensation and benefits	2,009	846
Income taxes payable	293	—
	<u>\$ 3,381</u>	<u>\$ 1,318</u>

**December 31, 2021**

Accounts payable and accruals at December 31, 2021 are primarily related to amounts due to contractors and suppliers in the amounts of \$0.7 million related to the Company's Velardeña and Rodeo properties and \$0.2 million related to corporate administrative and exploration activities.

Accrued employee compensation and benefits at December 31, 2021 consist of \$0.2 million of accrued vacation payable and \$1.8 million related to withholding taxes and benefits payable. Included in the \$2.0 million of accrued employee compensation and benefits is \$1.3 million related to activities at the Velardeña Properties and Rodeo Property.

On April 23, 2021, a new labor law was made official in Mexico that impacts companies that utilize subcontractor structures, effective beginning August 1, 2021. The Company utilizes subcontractor structures in Mexico, as is common practice among companies in the mining and other industries in Mexico. The law disallows a deduction in computing income taxes for labor outsourcing costs unless the arrangement falls within certain narrowly defined exceptions. The new law does provide for annual caps on the amount of employee profit sharing a company would be required to pay, which is designed to even out the profit-sharing liability over several years. As of December 31, 2021, the Company has reorganized the functions performed by its various Mexican subsidiaries to comply with the new law. The Company's profit-sharing liability in Mexico has increased for the full year 2021 as a result of the new law taking effect and the completion of the Company's reorganization process, and approximately \$0.4 million has been accrued for such amount, included in accrued employee compensation and benefits.

The income taxes payable are related to operations at the Company's Mexican subsidiaries (see Note 14).

**December 31, 2020**

Accounts payable and accruals at December 31, 2020 are primarily related to amounts due to contractors and suppliers in the amounts of \$0.3 million related to the Company's Velardeña and Rodeo properties and \$0.2 million related to exploration and corporate administrative activities.

Accrued employee compensation and benefits at December 31, 2020 consist of \$0.3 million of accrued vacation payable and \$0.5 million related to withholding taxes and benefits payable. Included in the \$0.8 million of accrued employee compensation and benefits is \$0.6 million related to activities at the Velardeña and Rodeo properties.

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**11. Asset Retirement and Reclamation Liabilities**

In 2012, the Company retained the services of a mining engineering firm to prepare a detailed closure plan for reclamation activity the Velardeña Properties. The plan was completed during the second quarter 2012 and indicated that the Company had an ARO and offsetting ARC of approximately \$1.9 million. The original ARC had been fully amortized or written off by the end of December 31, 2015. The ARO has been adjusted since 2012 for changes in assumptions related to inflation factors and the timing of future expenditures used in the determination of future cash flows, which previously contemplated that reclamation activities could begin as early as 2023 following the completion of mining at the Rodeo property.

In the fourth quarter of 2021, due to the current operating success at Rodeo and the potential of a restart of operations at the Velardeña mine based on recent technical studies and an updated PEA that would further delay the start of any reclamation activity, the Company retained the services of an environmental consultant to review the closure plan to determine the appropriateness of the scope and cost estimates used in the calculation of the ARO. The consultant confirmed the adequacy of the scope of the closure plan and provided certain adjustments to cost estimates. In addition, the timing for the incurrence of reclamation activity was extended approximately 7 years to take into account the likelihood of a restart of operations at the Velardeña mine that would further delay the start of any reclamation activity.

The Company will continue to accrue additional estimated ARO amounts based on the closure plan and as activities requiring future reclamation and remediation occur. The following table summarizes activity in the Velardeña Properties ARO for the years ended December 31, 2021 and 2020:

	Year Ended December 31,	
	2021	2020
	(in thousands)	
Beginning balance	\$ 3,156	\$ 2,825
Changes in estimates, and other	143	82
Accretion expense	262	249
Ending balance	<u>\$ 3,561</u>	<u>\$ 3,156</u>

The change in estimate of the ARO recorded during the year ended December 31, 2021 is primarily the result of changes in assumptions related to the amount and timing of future expenditures used in the determination of future cash flows as a result of a review of the closure plan undertaken in the fourth quarter 2021, as noted above (also see Note 13). The change in estimate of the ARO recorded during the year ended December 31, 2020 is primarily the result of changes in assumptions related to inflation factors used in the determination of future cash flows during that period.

Accretion expense in the table noted above for each of the years ended December 31, 2021 and 2020 has been recorded as “*Reclamation expense*” on the Company’s Consolidated Statements of Operations. To the extent that a positive change in estimates, and other for the ARO is related to fixed plant and equipment, an offsetting ARC is capitalized as part of the carrying value of the assets with which it is associated and depreciated over the useful life of the asset, otherwise the increase is recorded as “*Other operating expense, net*” on the Company’s Consolidated Statements of Operations. A negative change in estimates, and other is recorded as a decrease to the ARC previously recorded or, as appropriate, to “*Other operating income, net*” on the Company’s Consolidated Statements of Operations.

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The ARO set forth on the accompanying Consolidated Balance Sheets at December 31, 2021 and December 31, 2020 includes a nominal amount of reclamation liability related to activities at the El Quevar project in Argentina.

## 12. Other Liabilities

### *Other Current Liabilities*

The following table sets forth the Company's other current liabilities at December 31, 2021 and 2020:

	December 31, 2021	December 31, 2020
	(in thousands)	
Premium financing	\$ 394	\$ 390
Office lease liability	120	138
Mining equipment lease liability	207	139
	<u>\$ 721</u>	<u>\$ 667</u>

The premium financing at December 31, 2021 consists of the remaining balance, plus accrued interest, related to premiums payable for the Company's directors and officers insurance. In November 2021 the Company financed approximately \$0.4 million of its premium for directors and officers insurance. The premium is payable in eight equal payments at an interest rate of 4.0% per annum. At December 31, 2021 the remaining balance, plus accrued interest, was approximately \$0.4 million.

The premium financing at December 31, 2020 consists of the remaining balance, plus accrued interest, related to premiums payable for the Company's directors and officers insurance and general liability insurance. In June 2020, the Company financed approximately \$0.1 million of its premium for general liability insurance. The premium was payable in twelve equal payments at an interest rate of 5.7% per annum. At December 31, 2020, the remaining balance, plus accrued interest, was approximately \$23,000. In December 2020 the Company financed approximately \$0.4 million of its premium for directors and officers insurance. The premium was payable in eight equal payments at an interest rate of 5.7% per annum. At December 31, 2020 the remaining balance, plus accrued interest, was approximately \$0.4 million.

The office lease liability is related to lease liabilities for office space at the Company's principal headquarters in Golden, Colorado and in Mexico and Argentina (see Note 9).

The mining equipment lease liability is related to equipment used by the contract miner at our Rodeo property (see Note 9).

### *Other Long-Term Liabilities*

Other long-term liabilities of \$0.4 million for the period ended December 31, 2021, are primarily related to lease liabilities for office space at the Company's principal headquarters in Golden, Colorado and in Mexico and Argentina (see Note 9). Also included in other long-term liabilities is approximately \$19,000 of deferred income taxes payable (see Note 14).

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Other long-term liabilities of \$0.6 million for the period ended December 31, 2020, consist of \$0.3 million related to a mining equipment lease liability at our Rodeo property and \$0.3 million related to lease liabilities for office space at the Company's principal headquarters in Golden Colorado and in Mexico and Argentina (see Note 9).

**13. Fair Value Measurements**

Financial assets and liabilities and nonfinancial assets and liabilities are measured at fair value on a recurring (annual) basis under a framework of a fair value hierarchy which prioritizes the inputs into valuation techniques used to measure fair value into three broad levels. This hierarchy gives the highest priority to quoted prices (unadjusted) in active markets and the lowest priority to unobservable inputs. Further, financial assets and liabilities should be classified by level in their entirety based upon the lowest level of input that was significant to the fair value measurement. The three levels of the fair value hierarchy per ASC 820 are as follows:

**Level 1:** Unadjusted quoted market prices in active markets for identical assets or liabilities that are accessible at the measurement date.

**Level 2:** Quoted prices in inactive markets for identical assets or liabilities, quoted prices for similar assets or liabilities in active markets, or other observable inputs either directly related to the asset or liability or derived principally from corroborated observable market data.

**Level 3:** Unobservable inputs due to the fact that there is little or no market activity. This entails using assumptions in models which estimate what market participants would use in pricing the asset or liability.

***Recurring Fair Value Measurements***

The following table summarizes the Company's financial assets and liabilities measured on a recurring basis at fair value at December 31, 2021 and 2020 by respective level of the fair value hierarchy:

	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Total</u>
	(in thousands)			
<b>At December 31, 2021</b>				
Assets:				
Cash and cash equivalents	\$ 12,229	\$ —	\$ —	\$ 12,229
Short-term investments	67	—	—	67
	<u>\$ 12,296</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 12,296</u>
<b>At December 31, 2020</b>				
Assets:				
Cash and cash equivalents	\$ 9,704	\$ —	\$ —	\$ 9,704
Short-term investments	79	—	—	79
	<u>\$ 9,783</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 9,783</u>

The Company's cash equivalents, comprised principally of U.S. treasury securities, are classified within Level 1 of the fair value hierarchy.

The Company's short-term investments consist of the 1,000,000 shares of common stock of Fabled and 200,000 shares of Fabled Copper Corp. shares and are classified within Level 1 of the fair value hierarchy (see Note 8)

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At December 31, 2021 the Company did not have any financial assets or liabilities classified within Level 2 or Level 3 of the fair value hierarchy. At December 31, 2020 the Company did not have any financial assets or liabilities classified within Level 2 or Level 3 of the fair value hierarchy.

*Non-recurring Fair Value Measurements*

The Company assesses, where appropriate, the fair value of its liabilities and long lived assets if circumstances indicate a change in the fair value has occurred. The valuation policies are approved by the Chief Financial Officer who reviews and approves the inputs used in the fair value calculations and the changes in fair value measurements from period to period for reasonableness. Fair value measurements are discussed with the Company's Chief Executive Officer, as deemed appropriate.

The Company recorded an addition to its ARO as of December 31, 2021, of approximately \$143,000 (see Note 11), reflecting a change in the fair value of the ARO primarily as the result of changes in assumptions related to the amount and timing of future expenditures used in the determination of future cash flows, following the guidance of ARC Topic 410. The fair value analysis was performed internally by the Company with the assistance of third-party experts. A third-party expert was used to assess the environmental closure and reclamation obligations for the Company. A third-party expert was also used to determine an appropriate discount rate for determining the fair value of the ARO at December 31, 2021. The valuation falls within Level 3 of the fair value hierarchy.

No other non-recurring fair value adjustments to liabilities or long lived assets were recorded during the year ended December 31, 2021. There were no non-recurring fair value measurements at December 31, 2020.

#### **14. Income Taxes**

The Company accounts for income taxes in accordance with the provisions of ASC 740 on a tax jurisdictional basis. The provision for income taxes consists of the following:

	<b>For the Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
	<b>(in thousands)</b>	
<b>CURRENT TAXES:</b>		
United States	\$ —	\$ —
Other Countries	443	48
	<u>\$ 443</u>	<u>\$ 48</u>
<b>DEFERRED TAXES:</b>		
United States	\$ —	\$ —
Other Countries	19	—
	<u>\$ 19</u>	<u>\$ —</u>
Total income tax provision	<u>\$ 462</u>	<u>\$ 48</u>

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**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
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Income (loss) from operations before income taxes by country consists of the following:

	<b>For the Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
	<b>(in thousands)</b>	
United States	\$ (3,723)	\$ (9,056)
Other Countries	2,090	18
	<u>\$ (1,633)</u>	<u>\$ (9,038)</u>

The Company recorded \$443,000 of current tax expense and \$19,000 of deferred tax expense for the year ended December 31, 2021, stemming primarily from 7.5% special mining tax and the taxable income of certain subsidiaries in Mexico related to the Rodeo operation. The Company recorded \$48,000 of current tax expense for the year ended December 31, 2020, stemming primarily from the taxable income of subsidiaries in Mexico. There were no deferred taxes recorded for the year ended December 31, 2020.

A reconciliation of the provision for income taxes computed at the statutory rate to the provision for income taxes as shown in the Consolidated Statements of Operations and Comprehensive Loss is summarized below.

	<b>For Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
	<b>(in thousands)</b>	
Tax expense (benefit) at U.S. rate of 21%	\$ (343)	\$ (1,898)
Other adjustments:		
Rate differential of other jurisdictions	505	46
Effects of foreign earnings	687	(1,021)
Change in valuation allowance	(6,948)	7,246
Provision to tax return true-ups	(99)	(478)
Exchange rate changes on deferred tax assets	3,893	(4,050)
Mexican special mining tax	212	—
Expired net operating losses	2,667	753
Other	(112)	(550)
Income tax provision	<u>\$ 462</u>	<u>\$ 48</u>

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The components of the deferred tax assets and deferred tax liabilities are as follows:

	For the year ended December 31,	
	2021	2020
	(in thousands)	
Deferred tax assets:		
Net operating loss carryforwards	\$ 110,451	\$ 119,109
Capital loss carry forwards	1,702	1,702
Stock-based compensation	896	747
Property, plant and equipment	4,624	3,287
Other	1,755	1,662
	119,428	126,507
Less: Valuation allowance	(118,580)	(125,528)
Total deferred tax assets	848	979
Deferred tax liabilities:		
Property, plant and equipment	(703)	(778)
Other	(164)	(201)
Total deferred tax liabilities	(867)	(979)
Net deferred tax asset (liability)	\$ (19)	\$ —

In accordance with ASC 740, the Company presents deferred tax assets net of its deferred tax liabilities on a tax jurisdictional basis on its Consolidated Balance Sheets. The net deferred tax liability as of December 31, 2021 was \$19,000, primarily related to the 7.5% special mining tax in Mexico. The net deferred tax liability as of December 31, 2020 was zero.

At December 31, 2021 the Company had net operating loss carryforwards in the U.S. and in certain non-U.S. jurisdictions totaling \$432.4 million. In the U.S. there are \$83.8 million of net operating loss carryforwards, \$13.2 million of which have no expiration, while the remaining losses will expire in future years through 2037. In the remaining non-U.S. countries, there are \$68.8 million of net operating loss carryforwards related to the Rodeo operation and Velardeña Properties in Mexico, which will expire in future years through 2030, \$91.8 million in Spain, which have no expiration date, and \$188.0 million in other non-U.S. countries (including Luxemburg, Peru, Argentina and Canada), which will expire in future years through 2041.

The valuation allowance offsetting the net deferred tax assets of the Company of \$118.6 million and \$125.5 million at December 31, 2021 and 2020, respectively, relates primarily to the uncertain utilization of certain deferred tax assets, primarily net operating loss carryforwards, in various tax jurisdictions. The Company continually assesses both positive and negative evidence to determine whether it is more likely than not that deferred tax assets can be realized prior to their expiration.

The Company, a Delaware corporation, and its subsidiaries file tax returns in the United States and in various foreign jurisdictions. The tax rules and regulations in these countries are highly complex and subject to interpretation. The Company's tax returns are subject to examination by the relevant taxing authorities and in connection with such examinations, disputes can arise with the taxing authorities over the interpretation or application of certain tax rules within the country involved. In accordance with ASC 740, the Company identifies and evaluates uncertain tax positions, and recognizes the impact of uncertain tax positions for which there is less than a more-likely-than-not probability of the

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position being upheld upon review by the relevant taxing authority. Such positions are deemed to be “unrecognized tax benefits” which require additional disclosure and recognition of a liability within the financial statements. If recognized, none of the unrecognized tax benefits would affect the Company’s effective tax rate.

Below is a reconciliation of the beginning and ending amount of gross unrecognized tax benefits, which excludes any estimated penalties and interest on all identified unrecognized tax benefits. The Company had no unrecognized tax benefits at December 31, 2021. The unrecognized tax benefit as of December 31, 2020 is completely offset by net deferred tax benefits and therefore does not appear on the Consolidated Balance Sheet.

	<u>The Year Ended December 31,</u>	
	<u>2021</u>	<u>2020</u>
	(in thousands)	
Gross unrecognized tax benefits at beginning of period	\$ 249	\$ 269
Increases for tax positions taken during prior years	—	—
Decreases relating to settlements with taxing authorities	—	—
Reductions due to lapse of statute of limitations	(249)	(20)
Gross unrecognized tax benefits at end of period	<u>\$ —</u>	<u>\$ 249</u>

Tax years as early as 2016 remain open and are subject to examination in the Company’s principal tax jurisdictions. The Company does not expect a significant change to its net unrecognized tax benefits over the next 12 months. No interest and penalties were recognized in the Consolidated Statement of Operations and Comprehensive Loss for the year ended December 31, 2021 or 2020, and there were no interest and penalties recognized in the statement of financial position as of December 31, 2021 and 2020. The Company classifies income tax related interest and penalties as income tax expense.

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**15. Equity**

*Public offering*

On July 21, 2020, the Company entered into an Amended and Restated Underwriting Agreement (the “Underwriting Agreement”) with H.C. Wainwright & Co., LLC as representative of the underwriters named in Schedule I thereto (the “Underwriters”), providing for the issuance and sale by the Company in a firm commitment offering (the “Offering”) of 17,857,143 shares of common stock at a price to the public of \$0.42 per share (the “Offering Shares”). In addition, the Company granted the Underwriters an option to purchase, at the public offering price per share of common stock, up to an additional 2,678,571 shares of common stock, exercisable for 30 days from the date of the Underwriting Agreement (the “Option Shares”). The Offering Shares and Option Shares were registered pursuant to the Company’s registration statement on Form S-3 (File No. 333-220461), and a prospectus supplement thereto filed with the Securities and Exchange Commission. On July 24, 2020, the Underwriters acquired the Offering Shares and the full amount of the Option Shares from the Company. After the underwriting discount of 6% and total offering expenses of approximately \$155,000 the Company received net proceeds of approximately \$8.0 million from the sale of the Offering Shares and the Option Shares.

*2020 offering and private placement transaction*

On April 20, 2020, the Company entered into a securities purchase agreement with certain institutional investors providing for the issuance and sale of 15,000,000 shares of the Company’s common stock at a price of \$0.20 per share, and in a concurrent private placement transaction, the issuance of an aggregate of 11,250,000 warrants, ultimately consisting of 7,500,000 series A warrants and 3,750,000 series B warrants (each a “Warrant” and collectively, the “Warrants”), to purchase up to 11,250,000 shares of our common stock at an exercise price of \$0.30 per share, for aggregate gross proceeds of \$3.0 million (the “Offering”). The securities purchase agreement granted the institutional investors the right to collectively participate in up to 50% of any future offerings of securities by the Company on the same terms as other investors, other than certain “exempt issuances” and “permitted sales” as defined in the securities purchase agreement, until April 22, 2021.

Each Warrant is exercisable six months from the date of issuance on April 22, 2020 and has a term expiring five years after such initial exercise date. The Warrants contain so-called full-ratchet anti-dilution provisions which may be triggered upon any future issuance by the Company of shares of its common stock or common stock equivalents at a per share price below the then-exercise price of the Warrant, subject to certain exceptions; provided, however, that with respect to the Series B warrants, the adjusted exercise price will not be less than \$0.26.

The net proceeds of the Offering were recorded in equity and appear as a separate line item in the Consolidated Statements of Changes in Equity. Total costs for the Offering were approximately \$334,000, including listing fees, legal and other costs, and the placement agent fee of six percent of aggregate gross proceeds, however, a reduced fee was accepted with respect to one investor. All such costs were recorded as a reduction to “Additional paid in capital” on the Consolidated Balance Sheets. Using the Black Scholes model, and assuming no triggering events take place to reduce the exercise price of the warrants, the fair value of the combined Series A and Series B warrants issued was approximately \$1.9 million on April 22, 2020, the date of issuance of the warrants. The Black Scholes inputs included the closing stock price on April 22, 2020 (the date of issuance of the warrants) of \$0.24, the exercise price and exercise period of the warrants, the Company’s applicable volatility rate for the period of the Warrants of 95%, and the applicable risk-free rate of 0.41%.

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Subscription agreement

In connection with the Earn-In Agreement, the Company and Barrick entered into the Subscription Agreement dated as of April 9, 2020 pursuant to which Barrick purchased 4,719,207 shares of the Company's common stock at a purchase price of \$0.2119 per share in a private placement transaction. The Shares were offered and sold without registration under the Securities Act of 1933, as amended (the "Act") in reliance on the exemptions provided by Section 4(a)(2) of the Act and/or Regulation D promulgated thereunder. The net proceeds of the Subscription Agreement of approximately \$0.9 million were recorded in equity and appear as a separate line item in the Consolidated Statements of Changes in Equity.

Registered direct purchase agreement and commitment purchase agreement and registration rights agreement

On May 9, 2018 the Company entered into a registered direct purchase agreement (the "Registered Purchase Agreement") with Lincoln Park Capital Fund, LLC ("LPC") pursuant to which LPC purchased 3,153,808 shares of the Company's common stock at a price of \$0.4122 per share, the closing price of the Company's common stock on the NYSE American on May 8, 2018, for an aggregate purchase price of \$1.3 million.

On May 9, 2018, the Company entered into a commitment purchase agreement (the "Commitment Purchase Agreement" and together with the Registered Purchase Agreement, the "LPC Program") and a registration rights agreement (the "Registration Rights Agreement") with LPC, pursuant to which the Company, at its sole discretion, has the right to sell up to an additional \$10.0 million of the Company's common stock to LPC, subject to certain limitations and conditions contained in the Commitment Purchase Agreement. The Company closed on the Commitment Purchase Agreement in July 2018. The Commitment Purchase Agreement expired in May 2021.

During year ended December 31, 2021, the Company did not sell any shares of common stock to LPC under the Commitment Purchase Agreement. With the May 2021 expiration of the agreement, the Company wrote off the remaining balance of \$353,000 of deferred LPC Program costs to "Interest and Other Expense" on the Consolidated Statement of Operations.

During the year ended December 31, 2020 the Company sold 900,000 shares of common stock to LPC under the Commitment Purchase Agreement at an average sales price per share of approximately \$0.27, resulting in net proceeds of approximately \$216,000. In addition, approximately \$24,000 of Commitment Purchase Agreement costs were amortized, resulting in a remaining balance of \$352,000 of deferred LPC Program costs, recorded in "Other long-term assets" on the Consolidated Balance Sheets as of December 31, 2020.

At the Market Offering Agreement

In December 2016, the Company entered into an at-the-market offering agreement (as amended from time to time, the "ATM Agreement") with H. C. Wainwright & Co., LLC ("Wainwright"), under which the Company may, from time to time, issue and sell shares of the Company's common stock through Wainwright as sales manager in an at-the-market offering under a prospectus supplement for aggregate sales proceeds of up to \$5.0 million (the "ATM Program") or a maximum of 10 million shares. On September 29, 2017, the Company entered into an amendment to the ATM Agreement with Wainwright to reflect a new registration statement on Form S-3 (File No. 333-220461) under which shares of the Company's common stock may be sold under the ATM Program. On November 23, 2018 the Company entered into a second amendment of the ATM Agreement extending the agreement until the earlier of December 20, 2020, or the date that the ATM Agreement is terminated in accordance with the terms therein. On December 11, 2020 the Company entered

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into a third amendment of the ATM Agreement further extending the agreement so that it will remain in full force and effect until such time as the ATM Agreement is terminated in accordance with certain other terms therein or upon mutual agreement by the parties, and to reflect a new registration statement on Form S-3 (No. 333-249218).

Offers or sales of common shares under the ATM Program will be made only in the United States and no offers or sales of common shares under the ATM Agreement will be made in Canada. The common stock will be distributed at the market prices prevailing at the time of sale. As a result, prices of the common stock sold under the ATM Program may vary as between purchasers and during the period of distribution. The ATM Agreement provides that Wainwright will be entitled to compensation for its services at a commission rate of 2.0% of the gross sales price per share of common stock sold.

During the year ended December 31, 2021, the Company sold an aggregate of 1,856,960 shares of common stock under the ATM Program at an average price of \$0.97 per share of common stock for net proceeds, after commissions and fees, of approximately \$1.8 million. Also, approximately \$57,000 of deferred ATM Program costs were amortized. The Company has not sold any shares of common stock under the ATM since March 31, 2021. At December 31, 2021 there was a remaining balance of \$70,000 of deferred ATM Program costs, recorded in "*Prepaid expenses and other assets*" on the Consolidated Balance Sheets.

During the year ended December 31, 2020, the Company sold an aggregate of 823,452 shares of common stock under the ATM Agreement at an average price of \$0.28 per share of common stock for net proceeds of approximately \$223,000. In addition, approximately \$8,000 of deferred ATM Program costs were amortized, resulting in a remaining balance of \$127,000 of deferred ATM Program costs, recorded in "*Other long-term assets*" on the Consolidated Balance Sheets as of December 31, 2020.

There is currently approximately \$2.2 million remaining available for issuance under the ATM Program based on a prospectus supplement filed with SEC on December 11, 2020.

*Equity Incentive Plans*

Under the Company's Amended and Restated 2009 Equity Incentive Plan (the "Equity Plan") awards of the Company's common stock may be made to officers, directors, employees, consultants and agents of the Company and its subsidiaries. The Company recognizes stock-based compensation costs using a graded vesting attribution method whereby costs are recognized over the requisite service period for each separately vesting portion of the award.

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The following table summarizes the status of the Company’s restricted stock grants issued under the Equity Plan at December 31, 2021 and 2020 and changes during the years then ended:

	The Year Ended December 31,			
	2021		2020	
Restricted Stock Grants	Number of Shares	Weighted Average Grant Date Fair Value Per Share	Number of Shares	Weighted Average Grant Date Fair Value Per Share
Outstanding at beginning of period	224,002	\$ 0.36	318,003	\$ 0.30
Granted during the period	335,000	0.67	300,000	0.42
Restrictions lifted during the period	(265,668)	0.47	(394,001)	0.36
Forfeited during the period	—	—	—	—
Outstanding at end of period	<u>293,334</u>	<u>\$ 0.61</u>	<u>224,002</u>	<u>\$ 0.36</u>

During the year ended December 31, 2021, the Company recognized approximately \$165,000 of stock compensation expense related to the restricted stock grants. The Company expects to recognize additional stock compensation expense related to these awards of approximately \$0.1 million over the next 18 months. During the year ended December 31, 2021, 335,000 shares were granted to nine employees, with one-third of the grants (111,666 shares) vesting on the grant date and the remaining shares vesting equally on the first and second anniversaries of the grant date. Also, during the period, restrictions were lifted on the normal vesting of 154,002 shares granted to six employees in prior years.

During the year ended December 31, 2020, the Company recognized approximately \$0.1 million of compensation expense related to the restricted stock grants. During the year ended December 31, 2020, 300,000 shares were granted to seven employees, with one-third of the grants (100,000 shares) vesting on the grant date and the remaining shares vesting equally on the first and second anniversaries of the grant date. In addition to the vesting of one-third of the shares granted in 2020, restrictions were lifted on the normal vesting of 214,001 shares granted to seven employees in prior years. Also, during the period, the Company lifted restrictions on 80,000 restricted shares and recognized additional compensation expense of \$23,000 related to the resignation of an employee during the period.

Pursuant to the Equity Plan the Company had granted 30,310 stock options to certain officers and directors in 2010. The options with an average exercise price of \$8.06 expired during 2020. The Company did not incur any expense related to stock options during the years ended December 31, 2021, and December 31, 2020, and no options remained outstanding at those dates.

Also, pursuant to the Equity Plan, the Company’s Board of Directors adopted the Non-Employee Director’s Deferred Compensation and Equity Award Plan (the “Deferred Compensation Plan”). Pursuant to the Deferred Compensation Plan, the non-employee directors receive a portion of their compensation in the form of Restricted Stock Units (“RSUs”) issued under the Equity Plan. The RSUs vest on the first anniversary of the grant and each vested RSU entitles the director to receive one unrestricted share of common stock upon the termination of the director’s board service.

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
**(Expressed in United States dollars)**

The following table summarizes the status of the RSU grants issued under the Deferred Compensation Plan at December 31, 2021 and 2020 and changes during the years then ended:

	The Year Ended December 31,			
	2021		2020	
Restricted Stock Units	Number of Shares	Weighted Average Grant Date Fair Value Per Share	Number of Shares	Weighted Average Grant Date Fair Value Per Share
Outstanding at December 31, 2020	3,610,038	\$ 0.70	2,830,038	\$ 0.78
Granted during the period	400,000	0.60	780,000	0.40
Restrictions lifted during the period	—	—	—	—
Forfeited during the period	—	—	—	—
Outstanding December 31, 2021	<u>4,010,038</u>	<u>\$ 0.69</u>	<u>3,610,038</u>	<u>\$ 0.70</u>

For the year ended December 31, 2021 the Company recognized approximately \$0.2 million of compensation expense related to the RSU grants. During the year ended December 31, 2021, each of the six board members were granted 50,000 RSUs that vest one year from the grant date. During December 2021 a new director was granted 100,000 RSUs with 66,667 vesting on the grant date and the remaining 33,333 vesting one year from the grant date.

During the year ended December 31, 2020, the Company recognized approximately \$0.3 million of compensation expense related to the RSU grants. During the year ended December 31, 2020, 80,000 RSUs were granted to each of the six board members. Included in the RSUs granted during the period were 300,000 RSUs awarded to the directors in lieu of the annual cash retainer. Such RSUs vested upon grant and the Company recorded \$120,000 of stock compensation expense related to the grant.

In addition, during the year ended December 31, 2021, the Company granted a consultant 100,000 RSUs and recognized \$67,000 of stock compensation expense. The RSUs vested on the grant date and each vested RSU entitles the consultant to receive one unrestricted share of common stock upon termination of the consulting agreement with the Company. The consultant RSUs are not included in the Directors table above.

The Company expects to recognize additional compensation expense related to the RSU grants of approximately \$0.1 million over the next six months.

Key Employee Long-Term Incentive Plan

The Company's 2013 Key Employee Long-Term Incentive Plan (the "KELTIP") provides for the grant of units ("KELTIP Units") to certain officers and key employees of the Company, which units will entitle such officers and employees to receive an amount, in cash or in Company common stock (such method of settlement at the sole discretion of the Board of Directors) issued pursuant to the Company's Equity Plan, measured generally by the price of the Company's common stock on the settlement date. KELTIP Units are not an actual equity interest in the Company and are solely unfunded and unsecured obligations of the Company that are not transferable and do not provide the holder with any stockholder rights. Payment of the settlement amount of vested KELTIP Units is deferred generally until the earlier of a change of control of the Company or the date the grantee ceases to serve as an officer or employee of the Company.

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
**(Expressed in United States dollars)**

The Company intends to settle all the KELTIP Units in common stock of the Company, an option that the Board of Directors holds in its sole discretion so long as sufficient shares remain available under the Equity Plan. As a result, all outstanding KELTIP Units are recorded in equity at December 31, 2021 and December 31, 2020.

During the year ended December 31, 2021, the Company granted 1,605,000 KELTIP Units to two officers of the Company and recognized approximately \$1.1 million of stock compensation expense related to the grants. During the year ended December 31, 2020, the Company granted 1,400,000 KELTIP Units to two officers of the Company and recognized approximately \$0.5 million of stock compensation expense related to the grants. There were 5,330,000 and 3,725,000 KELTIP Units outstanding at December 31, 2021 and December 31, 2020, respectively.

Subsequent to December 31, 2021, during January 2022, the Company granted 450,000 KELTIP units to a new officer and will recognize approximately \$0.2 million of stock compensation expense related to the grant in the first quarter 2022.

Common stock warrants

The following table summarizes the status of the Company's common stock warrants at December 31, 2021 and December 31, 2020, and the changes during the years then ended:

<b>Common Stock Warrants</b>	<b>Number of Underlying Shares</b>	<b>Weighted Average Exercise Price Per Share</b>
Outstanding at December 31, 2019	14,653,846	\$ 0.39
Granted during the period:		
April 2020 Series A warrants	7,500,000	0.30
April 2020 Series B warrants	3,750,000	0.30
Exercised during period		
April 2020 Series A warrants	(5,000,000)	0.30
April 2020 Series B warrants	(3,500,000)	0.30
Outstanding at December 31, 2020	17,403,846	0.38
Exercised during period		
July 2019 Series A warrants	(200,000)	0.35
July 2019 Series B warrants	(1,500,000)	0.35
April 2020 Series A warrants	(1,400,000)	0.30
Expired during period		
May 2016 warrants	(1,500,000)	0.75
Outstanding December 31, 2021	<u>12,803,846</u>	\$ 0.34

The warrants relate to prior and current registered offerings and private placements of the Company's stock.

As discussed above under "Equity – Offering and private placement transaction", on April 20, 2020, the Company entered into a securities purchase agreement with certain institutional investors providing for the issuance and sale of 15,000,000 shares of the Company's common stock and in a concurrent private placement transaction, the issuance of an aggregate of 11,250,000 warrants, ultimately consisting of 7,500,000 series A warrants and 3,750,000 series B warrants. During the year ended December 31, 2020, 5,000,000 series A warrants and 3,500,000 series B warrants were exercised,

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
**(Expressed in United States dollars)**

for net proceeds of \$2.6 million, leaving a balance of 2,500,000 and 250,000 series A and series B warrants outstanding, respectively, as of December 31, 2020. During the year ended December 31, 2021, 1,400,000 series A warrants were exercised, for net proceeds of \$0.4 million, leaving a balance of 1,100,000 and 250,000 series A and series B warrants outstanding, respectively, as of December 31, 2021.

On July 17, 2019, the Company issued 8,653,846 registered shares of common stock in a registered direct offering. In connection with the offering, each investor received an unregistered Series A warrant to purchase a share of common stock for each share of common stock purchased. Each Series A warrant is exercisable six months from the date of issuance and has a term expiring in January 2025. During the year ended December 31, 2021, 200,000 series A warrants were exercised, for net proceeds of \$0.1 million, leaving a balance of 8,453,846 series A warrants outstanding.

In May 2016, the Company issued 8.0 million registered shares of common stock at a purchase price of \$0.50 per share in a registered direct offering resulting in gross proceeds of \$4.0 million. In connection with the offering, each investor received an unregistered warrant to purchase three-quarters of a share of common stock for each share of common stock purchased. The resulting 6,000,000 warrant shares had an exercise price of \$0.75 per share, became exercisable on November 7, 2016 and were exercisable until November 6, 2021, five years from the initial exercise date. In connection with the July 2019 registered direct offering noted above, the Company also agreed to exchange, on a one-for-one basis, 4,500,000 of the May 2016 warrants for Series B warrants to purchase 4,500,000 shares of common stock at an exercise price of \$0.35 per share. Each Series B warrant is exercisable six months from the date of issuance and has a term expiring in May 2022. During the year ended December 31, 2021, 1,500,000 of the series B warrants were exercised, for net proceeds of \$0.5 million, leaving a balance of 3,000,000 series B warrants outstanding. The remaining 1,500,000 warrants from the May 2016 offering that were not exchanged in the July 2019 registered direct offering expired on November 6, 2021.

All outstanding warrants are recorded in equity at December 31, 2021 and December 31, 2020 following the guidance established by ASC Topic 815-40. The Company's warrants allow for the potential settlement in cash if certain extraordinary events are affected by the Company, including a 50% or greater change of control in the Company's common stock. Since those events have been deemed to be within the Company's control, the Company continues to apply equity treatment for these warrants.

**16. Sale of Metals and Related Costs**

During the year ended December 31, 2021, the Company sold gold and silver contained in doré bars related to the Rodeo operation and recorded revenue of approximately \$25.6 million, (approximately \$24.7 million related to gold in the doré bars, approximately \$1.2 million related to silver in the doré bars offset by refining and other selling costs of approximately \$0.3 million). The company recorded related costs of approximately \$13.3 million. The gold and silver contained in the doré bars were sold to one customer, a metals refinery located in the United States. Under the terms of the Company's exclusive agreement with its customer, title and control passes and revenue is recognized by the Company when the contractual performance obligations of the parties are completed, generally at the time a provisional or final payment for the gold and silver is agreed to by the parties. A provisional payment for approximately 95% of the contained gold and silver is made generally within 10-12 days after the product is shipped and customary sales documents are completed. A final payment for the gold and the silver is made within approximately 30 days following the date of shipment when final assays and refinery charges are agreed upon by the parties. A separate price for the gold and silver sold is set, based on current market prices, at the time a provisional or final payment is made. There are no minimum or maximum quantities defined under the agreement.

Refining and transport costs, deducted from the final payments made, are treated as third party costs incurred by the Company in performing its obligations under the agreement with its customer after the transfer of control on provisional sales, and are therefore netted against revenue on an accrual basis.

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
**(Expressed in United States dollars)**

Costs related to the sale of metals products include direct and indirect costs incurred to mine, process and market the products.

During the year ended December 31, 2020 the Company did not sell any doré products or incur any related costs.

**17. Oxide Plant Lease Revenue and Related Costs**

For the year ended December 31, 2020 the Company recorded revenue of approximately \$5.6 million and related costs of approximately \$2.0 million associated with the lease of the Velardeña Properties oxide plant to Hecla. The Company recognizes oxide plant lease fees and reimbursements for labor, utility and other costs as “*Revenue: Oxide plant lease*” in the Consolidated Statements of Operations following the guidance of ASC 842. ASC 842 supports recording as gross revenue the reimbursement of expenses incurred directly by the Company in performing its obligations under the lease in situations where the entity has control over the specific goods or services transferred to a customer as a principal versus as an agent. The actual costs incurred for reimbursed direct labor and utility costs are reported as “*Oxide plant lease costs*” in the Consolidated Statements of Operations. The Company recognizes lease fees during the period the fees are earned per the terms of the lease.

On July 7, 2020, the Company received notification from Hecla terminating the Hecla Lease, effective November 30, 2020. Therefore, during the year ended December 31, 2021, the Company did not record any income or costs associated with the lease of the oxide plant to Hecla.

For the year ended December 31, 2020, the Company recognized a reduction of \$254,000 to “*Revenue - plant lease*” on the Company’s Condensed Consolidated Statements of Operations related to the change in the fair value of a derivative related to the Hecla Lease on November 30, 2020 (see Note 7). During the year ended December 31, 2020, the Company also recognized approximately \$180,000 “*Revenue - plant lease*” on the Company’s Condensed Consolidated Statements of Operations related to the amortization of deferred revenue.

**18. Interest and Other Expense, net**

For the year ended December 31, 2021 the Company recognized approximately \$0.4 million other expense primarily related the write off of deferred costs related to the LPC Program (see Note 15).

For the year ended December 31, 2020 the Company recorded approximately \$0.1 million of interest expense, primarily related to interest paid to Autlán and interest incurred related to the financing of certain insurance premiums (see Note 12) as well as to Sentient (see Note 23).

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
**(Expressed in United States dollars)**

**19. Cash flow information**

The following table reconciles net loss for the period to cash used in operations:

	<b>Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
	(in thousands)	
<b>Cash flows from operating activities:</b>		
Net loss	\$ (2,095)	\$ (9,086)
<b>Adjustments to reconcile net loss to net cash used in operating activities:</b>		
Depreciation and amortization	611	962
Accretion of asset retirement obligation	262	249
Decrease in derivative at fair value, net	—	254
Loss (gain) on trading securities	12	(20)
Write off of deferred financing costs	352	—
Asset write off	—	100
Gain on sale of assets	(17)	(525)
Stock compensation	1,593	859
<b>Changes in operating assets and liabilities from continuing operations:</b>		
Decrease in lease receivable	—	376
Decrease (increase) in prepaid expenses and other assets	57	(506)
Increase in inventories	(1,279)	(53)
Increase in value added tax recoverable, net	(1,245)	—
Decrease (increase) in other long-term assets	373	(341)
Increase (decrease) in reclamation liability	33	(4)
Increase (decrease) in accounts payable and accrued liabilities	2,063	(810)
Increase (decrease) in other current liabilities	54	(1,156)
Increase in deferred revenue	948	63
Decrease (increase) in other long-term liabilities	(308)	154
<b>Net cash from (used in) operating activities</b>	<b>\$ 1,414</b>	<b>\$ (9,484)</b>

The following table sets forth supplemental cash flow information and non-cash transactions:

	<b>Year Ended December 31,</b>	
	<b>2021</b>	<b>2020</b>
	(in thousands)	
<b>Supplemental disclosure:</b>		
Interest paid	\$ 8	\$ 96
Income taxes paid	\$ 150	\$ 284
<b>Supplemental disclosure of non-cash transactions:</b>		
Deferred equity offering costs amortized	\$ 57	\$ 32
Deferred equity offering costs written off	\$ 352	\$ 59

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
**(Expressed in United States dollars)**

**20. Commitments and Contingencies**Leases and Purchase Commitments

The Company has non-cancelable operating lease and other commitments as follows:

	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>Thereafter</u>
El Quevar mining concessions (estimated)	\$ 7	\$ 7	\$ 7	\$ 7	\$ 7	\$ —
Velardeña mining concessions (estimated)	\$ 23	\$ 23	\$ 23	\$ 23	\$ 23	\$ —
Velardeña ejido and surface rights (estimated)	\$ 56	\$ 56	\$ 56	\$ 56	\$ 56	\$ —
Rodeo mining concessions (estimated)	\$ 35	\$ 35	\$ 35	\$ 35	\$ 35	\$ —
Rodeo ejido and surface rights (estimated)	\$ 253	\$ 253	\$ 253	\$ 253	\$ 253	\$ —
Office space	\$ 169	\$ 161	\$ 119	\$ 9	\$ —	\$ —

The Company is required to make payments to the Argentine government to maintain its rights to the El Quevar mining concessions. The Company has made such payments totaling approximately \$9,000 and \$22,000 for the years ended December 31, 2021, and 2020, respectively.

The Company is required to pay concession holding fees to the Mexican government to maintain its rights to the Velardeña Properties and Rodeo property mining concessions. During the years ended December 31, 2021 and 2020 the Company made such payments totaling approximately \$55,000 and \$52,000 respectively. Additionally, during the years ended December 31, 2021 and 2020, the Company made annual payments to local ejidos and property owners under its surface rights agreements for the Velardeña Properties and Rodeo property of approximately \$109,000 and \$131,000 respectively.

The Company has office leases for its corporate headquarters in Golden, Colorado, as well as for its Velardeña Properties offices in Mexico, and exploration offices in Mexico and Argentina. The lease for the corporate headquarters expires in January 2025. Payments associated with the corporate headquarters lease were recorded to rent expense by the Company in the amounts of \$175,000 and \$177,000 for the years ended December 31, 2021, and 2020, respectively. The lease for the Mexican offices expires in October 2023. Payments associated with the Mexican office lease were recorded to rent expense by the Company in the amounts of \$54,000 and \$53,000 for the years ended December 31, 2021, and 2020, respectively. The lease for the Argentina office was renegotiated and extended during the fourth quarter 2021 and now expires in November 2024. Payments associated with the Argentina office lease were recorded to rent expense by the Company in the amounts of \$10,000 and \$9,000 for the years ended December 31, 2021, and 2020, respectively.

The table above assumes that no annual maintenance payments will be made more than five years after December 31, 2021. If the Company continues mining and processing at the Rodeo or the Velardeña Properties beyond five years, the Company expects that it would make annual concession and surface rights payments of approximately \$79,000 per year for the life of the Velardeña mine and approximately \$288,000 per year for the life of the Rodeo mine. If the Company continues to evaluate development opportunities at the El Quevar project, the Company expects that it would make annual maintenance payments of approximately \$7,000 per year for the life of the El Quevar mine.

Payments associated with other exploration concessions the Company owns are not included because the Company has not completed exploration work on these concessions. Exploration success is historically low and the Company has the right to terminate the payments and release the concessions at any time.

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
**(Expressed in United States dollars)**

Contingencies

During April 2021, the Company became aware of a lawsuit in Mexico against one of the Company's Mexican subsidiaries, Minera William, S.A. de C.V. ("Minera William"). The plaintiff in the matter is Unifin Financiera, S.A.B de C.V. ("Unifin"). The lawsuit was assigned to the Fifth Specialized Commercial District Court. Although the Company has knowledge of the existence and content of the lawsuit filed by Unifin, the Court has not officially served Minera William with the complaint as of the date of this report. Unifin is alleging that a representative of Minera William signed certain documents in July 2011 purporting to bind Minera William as a guarantor of payment obligations owed by a third party to Unifin in connection with that third party's acquisition of certain drilling equipment. At the time the documentation was allegedly signed, Minera Williams was a subsidiary of ECU Silver Mining prior to the Company's acquisition of ECU in September 2011. As a preemptive measure, Unifin has obtained a preliminary court order freezing Minera William's bank accounts in Mexico, which has limited the Company's and Minera William's ability to access approximately US\$153,000 according to current currency exchange rates. Notwithstanding this action, the restrictions imposed on Minera Williams' bank accounts do not impact the Company's ability to operate the Rodeo mine, which is held through a different Mexico subsidiary, or continue with the Company's evaluation plans for a potential Velardeña mine restart or move forward with any of the Company's other exploration programs in Mexico. Unifin is seeking recovery for as much as US\$12.5 million. The Company believes there is no basis for this claim and will defend itself if and when the Company is formally served with notice of the lawsuit. As such, the Company has not accrued an amount for this matter in its Condensed Consolidated Balance Sheets or Statements of Operations as of December 31, 2021.

At December 31, 2020, the Company had no gain or loss contingencies.

**21. Foreign Currency**

The Company conducts exploration and mining activities primarily in Mexico and Argentina, and gains and losses on foreign currency transactions are related to those activities. The Company's functional currency is the U.S. dollar but certain transactions are conducted in the local currencies resulting in foreign currency transaction gains or losses.

**22. Segment Information**

The Company's sole activity is the mining, construction and exploration of mining properties containing precious metals. The Company's reportable segments are based upon the Company's revenue producing activities and cash consuming activities. The Company reports two segments, one for its revenue producing activities in Mexico, which includes both the Velardeña Properties and the Rodeo Property, and the other comprised of non-revenue producing activities, including exploration, construction and general and administrative activities. Intercompany revenue and expense amounts have been eliminated within each segment in order to report on the basis that management uses internally for evaluating segment performance.

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
**(Expressed in United States dollars)**

The financial information relating to the Company's segments is as follows:

<u>The Year ended December 31, 2021</u>	Revenue	Costs Applicable to Sales	Depreciation, Depletion and Amortization	Exploration, El Quevar, Velardeña and Administrative Expense (in thousands)	Pre-Tax (Income)/Loss	Total Assets	Capital Expenditures
Mexico Operations	\$ 25,596	\$ 13,311	\$ 491	\$ 4,301	\$ (7,317)	\$ 8,205	\$ 1,552
Corporate, Exploration & Other	—	—	120	7,532	8,950	15,473	68
	<u>\$ 25,596</u>	<u>\$ 13,311</u>	<u>\$ 611</u>	<u>\$ 11,833</u>	<u>\$ 1,633</u>	<u>\$ 23,678</u>	<u>\$ 1,620</u>
<u>The Year ended December 31, 2020</u>							
Mexico Operations	\$ 5,637	\$ 1,988	\$ 697	\$ 1,913	\$ (808)	\$ 4,175	\$ 301
Corporate, Exploration & Other	—	—	265	8,473	9,846	14,131	169
	<u>\$ 5,637</u>	<u>\$ 1,988</u>	<u>\$ 962</u>	<u>\$ 10,386</u>	<u>\$ 9,038</u>	<u>\$ 18,306</u>	<u>\$ 470</u>

Revenue for the year ended December 31, 2021, was from the Company's Rodeo Property in Mexico (see Note 16) and was all attributable to the sale of gold and silver doré bars. Revenue for the year ended December 31, 2020 was from the Company's Velardeña Properties in Mexico (see Note 17) and was all attributable to the lease of the oxide plant.

**23. Related Party Transactions**

The following sets forth information regarding transactions between the Company (and its subsidiaries) and its officers, directors and significant stockholders.

*Debt – Related Party*

On March 30, 2020, in response to potential economic and market uncertainties caused by the COVID-19 pandemic, the Company entered into a Short-Term Loan Agreement (the "Loan Agreement") with Sentient Global Resources Fund IV, L.P., a Cayman Islands exempted limited partnership ("Sentient Global"), pursuant to which Sentient granted to the Company an unsecured loan in an amount equal to \$1,000,000 (the "Sentient Loan"). Sentient Global is a private equity fund, and together with certain other Sentient equity funds, is the Company's largest stockholder, holding in the aggregate approximately 38% of the Company's outstanding common stock at the date of the Loan Agreement. The Sentient Loan had an interest rate of 10% per annum and was due in full, together with accrued interest and any other amount outstanding under the Loan Agreement, on December 31, 2020. On August 12, 2020, the Company repaid the Sentient Loan in full in the amount of approximately \$1,037,159 (including all accrued interest), with no prepayment penalty, and terminated the Loan Agreement.

*Administrative Services:*

In August 2016, the Company began providing limited accounting and other administrative services to Minera Indé, an indirect subsidiary of Sentient. At December 31, 2021, Sentient, through the Sentient executive funds, held approximately 23% of the Company's 162.5 million shares of issued and outstanding common stock. The administrative services are provided locally in Mexico by the administrative staff in the Company's Mexico office. The Company charges Minera Indé \$15,000 per month for the services, which provides reimbursement to the Company for its costs incurred plus a small profit margin. The Company also leases, from time to time, certain nonessential mining equipment to Minera Indé.

**GOLDEN MINERALS COMPANY**  
**NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS - (Continued)**  
**(Expressed in United States dollars)**

Amounts received under the arrangement reduce costs incurred for exploration. The Company's Board of Directors and Audit Committee approved the agreement. For the years ended December 31, 2021 and 2020, the Company charged Minera Indé approximately \$263,000 and \$230,000, respectively, for services and the use of equipment, offsetting costs that are recorded in "*Velardeña care and maintenance*" in the Condensed Consolidated Statements of Operations.

**24. Subsequent Events**

Subsequent to December 31, 2021, during January 2022, the Company granted 450,000 KELITIP units to a new officer and will recognize approximately \$0.2 million of stock compensation expense related to the grant in the first quarter 2022.

## SUBSIDIARIES

<u>NAME</u>	<u>JURISDICTION OF FORMATION</u>
ASM Services S.a r.l. ....	Luxembourg
Silex Spain, S.L. ....	Spain
Silex Argentina S.A. ....	Argentina
Golden Minerals Services Corp. ....	United States
Minera de Cordilleras S. de R.L. de C.V. ....	Mexico
ECU Silver Mining Inc. ....	Canada
Minera William, S.A. de C.V. ....	Mexico

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CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Golden Minerals Company's Registration Statements on Form S-3, as amended (File Nos. 333-167026, 333-172363, 333-179993, 333-189693, 333-200555, 333-213268, 333-220457, 333-235376, 333-249210, and 333-249218), on Form S-8 (File Nos. 333-159096, 333-165933, 333-170891, 333-176915, 333-190542, 333-200557, 333-211348, 333-231264, 333-235375, and 333-249213) and on Form S-1 (File No. 333-225483) of our report dated March 23, 2022, relating to the consolidated financial statements, which appears in this Annual Report on Form 10-K.

/s/ Plante & Moran, PLLC  
Plante & Moran, PLLC

March 23, 2022  
Denver, Colorado

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**CONSENT OF QUALIFIED PERSON**

In connection with the Annual Report on Form 10-K for the year ended December 31, 2021 and any amendments or supplements and/or exhibits thereto (collectively, the Form 10-K), the undersigned hereby consents to:

- the filing and use of the Technical Report Summaries for the Velardeña project and the Rodeo property as exhibits to the Form 10-K;
- the use of and references to our name, including our status as an expert or “qualified person” (as defined in Subpart 1300 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission), in connection with the Form 10-K and the Technical Report Summaries; and
- the use of information derived, summarized, quoted, or referenced from the Technical Report Summaries, or portions thereof, that was prepared by us, that we supervised the preparation of and/or that was reviewed and approved by us, that is included or incorporated by reference in the Form 10-K.

We also consent to the incorporation by reference of the above items in the registration statements of Golden Minerals Company on Form S-3, as amended (File Nos. 333-167026, 333-172363, 333-179993, 333-189693, 333-200555, 333-213268, 333-220457, 333-235376, 333-249210, and 333-249218), on Form S-8 (File Nos. 333-159096, 333-165933, 333-170891, 333-176915, 333-190542, 333-200557, 333-211348, 333-231264, 333-235375, and 333-249213) and on Form S-1 (File No. 333-225483).

Dated March 23, 2022

Tetra Tech

/s/ Dante Ramirez Rodriguez, Ph.D.

Name of Qualified Person

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**CONSENT OF QUALIFIED PERSON**

In connection with the Annual Report on Form 10-K for the year ended December 31, 2021 and any amendments or supplements and/or exhibits thereto (collectively, the Form 10-K), the undersigned hereby consents to:

- the use of and references to my name, including my status as an expert or “qualified person” (as defined in Subpart 1300 of Regulation S-K promulgated by the U.S. Securities and Exchange Commission) in connection with the preparation of the mineral resource estimate for the Rodeo property as presented in the Form 10-K; and
- the use of information that was prepared by me, that I supervised the preparation of and/or that was reviewed and approved by me, that is included or incorporated by reference in the Form 10-K.

I also consent to the incorporation by reference of the above items in the registration statements of Golden Minerals Company on Form S-3, as amended (File Nos. 333-167026, 333-172363, 333-179993, 333-189693, 333-200555, 333-213268, 333-220457, 333-235376, 333-249210, and 333-249218), on Form S-8 (File Nos. 333-159096, 333-165933, 333-170891, 333-176915, 333-190542, 333-200557, 333-211348, 333-231264, 333-235375, and 333-249213) and on Form S-1 (File No. 333-225483).

Dated March 23, 2022

/s/ Aaron Amoroso

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Name of Qualified Person

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## CERTIFICATION

I, Warren M. Rehn, certify that:

1. I have reviewed this annual report on Form 10-K of Golden Mineral Company;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b. Designed such internal controls over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors:
  - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 23, 2022

/s/ WARREN M. REHN

Warren M. Rehn

*President and Chief Executive Officer*

*(Principal Executive Officer)*

---

## CERTIFICATION

I, Robert P. Vogels, certify that:

1. I have reviewed this annual report on Form 10-K of Golden Mineral Company;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b. Designed such internal controls over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors:
  - a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 23, 2022

/s/ ROBERT P. VOGELS

Robert P. Vogels  
Senior Vice President and Chief Financial Officer  
(Principal Financial Officer)

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**CERTIFICATION PURSUANT TO  
18 U.S.C. SECTION 1350,  
AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of Golden Minerals Company (the "Company") on Form 10-K for the year ended December 31, 2021, as filed with the SEC on the date hereof (the "Report"), the undersigned hereby certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

*/s/ WARREN M. REHN*

\_\_\_\_\_  
Warren M. Rehn

*President and Chief Executive Officer*

*(Principal Executive Officer)*

March 23, 2022

*/s/ ROBERT P. VOGELS*

\_\_\_\_\_  
Robert P. Vogels

*Senior Vice President and Chief Financial Officer*

*(Principal Financial Officer)*

March 23, 2022

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Rodeo Project

# Technical Report Summary

Rodeo, Durango, Mexico



March 2022

Project No. 117-8133005



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# Rodeo Project Technical Report Summary

117-8133004

March 2022

## PRESENTED TO

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**Golden Minerals Company**  
350 Indiana St., Suite 650  
Golden, CO 80401 USA

## PRESENTED BY

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**Tetra Tech**  
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TETRA TECH

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## ACRONYMS & ABBREVIATIONS

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3D	Three dimensional
Ag	Silver
Ar	Argon
As	Arsenic
ASARCO	American Smelting and Refining Company
Au	Gold
BAT	Batch amenability tests
BIOX	Bio-oxidation
CAPEX	Capital expenditures
CCD	Counter current decantation
cm	Centimeter
Cu	Copper
cu ft	Cubic feet
DMT	Dry metric tonne
Fe	Iron
ft	Feet
g/t	Grams/tonne
HP	Horsepower
IDW	Inverse distanced weighted
IMMSA	Industrial Minera de México S.A
in	Inch
IRR	Internal rate of return
k	Thousand
kg	Kilogram
km	Kilometer
kt	Thousand tonnes
lb	Pound
LOM	Life of mine
m	Meter
M	Million
MI	Measured and Indicated
MII	Measured, Indicated, and Inferred
mm	Millimeters
Mt	Million tonnes
MXN	Mexican Pesos
mya	Million years ago
NPV	Net present value
NSR	Net smelter return
OPEX	Operating expenditure
oz	Troy ounce
Pb	Lead
PEA	Preliminary Economic Assessment

PLS	Pregnant leach solution
QA/QC	Quality assurance/quality control
QP	Qualified Person
ROM	Run of mine
SEMARNAT	Secretaria del Medio Ambiente y Recursos Naturales
t	Tonnes
tpd	Tonnes per day
tpy	Tonnes per year
TRS	Technical Report Summary
TSF	Tailings storage facility
USD	United States dollars
yd	Yard
yr	year
Zn	Zinc

## 1. EXECUTIVE SUMMARY

This Technical Report Summary (TRS) is prepared for Golden Minerals Company (Golden Minerals) to report Mineral Resources for the Rodeo Project (the Project) located in Rodeo, Durango Mexico. The purpose of this report is to summarize the results of an Initial Assessment for the property as defined under the U.S. Securities and Exchange Commission's Regulation S-K 1300. This is the first TRS prepared for the Project.

### 1.1 Property Description and Ownership

The Rodeo Project is located 2 km east of the town of Rodeo in Durango State, Mexico, at latitude 25°9'2.7"N, longitude 105°31'4.2"W (WGS84) as shown in **Figure 1-1**. Full services are available in the large regional cities of Torreón (189 km to the east) and Durango (157 km to the south), with basic amenities available in the town of Rodeo.



**Figure 1-1: Rodeo Project location map**

The Project consists of an open pit mine that is held by Minera de Cordilleras S.A. de R.L. de C.V. (Minera Cordilleras), and an oxide processing plant (Plant 2) that is held by Minera Williams S.A. de R.L. de C.V. (Minera Williams). Both Minera Cordilleras and Minera Williams are wholly owned subsidiaries of Golden Minerals.

The Project contains two mineral concessions totaling 1,865.7 hectares. The Rodeo R1 concession is held under a purchase agreement subject to royalty payments with La Cuesta International S.A. de C.V., a wholly owned subsidiary of La Cuesta International, Inc. (La Cuesta). The Rodeo 2 concession was purchased by Minera

Cordilleras from Rojo Resources and is wholly owned by Golden Minerals. Surface rights to the concessions are held by ejidos (rural agricultural co-operatives) and private landowners. Access to the concession areas is through surface rights agreements with the Francisco Marquez Ejido and the private owner of the Rancho La Pequeña. These agreements were formalized before a notary and are in good standing.

## 1.2 Geology and Mineralization

The Rodeo concessions lie on the eastern boundary of the Sierra Madre Occidental, a dissected volcanic plateau elongated in a NNW direction. It is approximately 1,200 km long with an average altitude of approximately 2,000 m above sea level. The geology of the Sierra Madre Occidental is divided into two principal volcanic groups:

- **Upper Volcanic Supergroup** (27-34 mya): Rhyolitic and rhyodacitic ignimbrites, caldera complex with associated high level intrusives, minor andesites, and mafic lavas
- **Lower Volcanic Complex** (45-100 mya): Andesitic to rhyolitic extrusives, intruded by batholithic complexes

The formation of these volcanic complexes can be related to late Mesozoic and Tertiary subduction processes along the Middle America Trench. The dominant structural event affecting these rocks, particularly the Upper Volcanic Supergroup, is a tensional one, possibly coeval with the spreading episode which was opening the Gulf of California to the Northwest. This event led to the formation of a complex of normal faults within and on the margins of the volcanics. Displacements on these faults is never very great, particularly on the eastern margin of the Sierra Madre Occidental but tilting of structural blocks was extensive. Wedges of coarse clastic rocks now fill the associated half grabens. A number of these faults have been the loci of possible late-stage volcanic alteration/silicification/mineralization events which are the targets for exploration efforts.

The immediate Rodeo deposit area is approximately 300 m along strike and 200 m wide and extends to a depth of 200 m below surface. The deposit strikes at 330° and dips to the ENE with various vein phases dipping from sub-vertical to 30°. The deposit is entirely hosted within Tertiary Rodeo volcanics, which are strongly silicified and brecciated. The deposit is bound to the east by the Rodeo Fault, however drilling to date has not demonstrated that the deposit reaches or is truncated by the fault.

Along strike to the north and south, the mineralization is offset slightly by near vertical faulting; mineralization does not terminate at these faults, but the intensity of the trend is either diminished or has yet to be located.

Mineralization at the deposit is epithermal low-sulfidation (quartz-adularia) type. Although very little mineralization is hosted in or centered on the Rodeo Fault itself, it is likely the fault played a role as a pathway at depth for the Rodeo deposit. Quartz veins 15 m or greater in width have been located throughout the property. The high-grade Au mineralization appears limited to a distinctive veining event. Evidence of ancillary veining events pre- and post-dating the high-grade event carry low-grade to anomalous level of Au mineralization.

## 1.3 Property Status

The Rodeo mine is operating without reported Mineral Reserves. Material from the mine is hauled to Plant 2 in Velardeña, Durango, Mexico for processing in an agitated leach/Merrill-Crowe circuit to produce Au-Ag doré bars. Recent exploration by Golden Minerals includes a 2016 drilling campaign totaling 14 holes and 2,083.7 m. Golden Minerals also performed regional mapping sampling, metallurgical test work on the mineralization, and completed a preliminary assessment report on the deposit.

In 2019, Golden minerals conducted a regional mapping and sampling program that identified additional exploration targets and received permits to conduct a resource definition program at Rodeo totaling 35 holes and 1,414 meters in 2020, as well as a second Resource definition drilling and exploration campaign in 2021 that

totaled 82 holes and 5,648 meters. Mining from the Rodeo open pit began December 2020 and doré production from Plant 2 began in January 2021.

## 1.4 Mineral Resource Estimates

Mineral Resources were calculated with an effective date October 31, 2021. The Resources are reported at a cutoff of 1.0 g/t Au for stockpiling and 1.6 g/t Au for processing. Reported Resources are constrained within an open pit mine design using the 1.0 g/t Au cutoff grade and are shown in **Table 1-1**.

**Table 1-1: Estimated Rodeo Resources for stockpile and processing**

Classification	Cutoff Au (g/t)	Tonnes	Au (g/t)	Au (oz)	Ag (g/t)	Ag (oz)
<b>Low-Grade (Stockpile)</b>						
Measured	1.0	208,500	1.24	8,350	10.03	67,200
Indicated	1.0	56,400	1.18	2,140	5.18	9,400
Measured + Indicated	1.0	264,900	1.23	10,500	9.00	76,600
Inferred	1.0	1,500	1.20	58	4.09	198
<b>High-Grade</b>						
Measured	1.6	310,700	3.11	31,100	13.10	131,000
Indicated	1.6	43,700	3.17	4,500	10.67	15,000
Measured + Indicated	1.6	354,400	3.12	35,600	12.8	146,000

\* Columns may not total due to rounding

## 1.5 Mineral Reserve Estimates

Mineral Reserves have not been estimated for the Rodeo Project.

## 1.6 Capital and Operating Costs

The Rodeo Project is currently in operation without quoted Mineral Reserves. Capital and operating cost estimates have been provided to Tetra Tech by Golden Minerals based on production data from the 10 months of operations between start up and the effective date of this report, and internal forecasts, which Tetra Tech has reviewed and found to be consistent with a mine of this type.

Required capital costs for the Rodeo mine consists of an estimated \$447k for closure and reclamation. No additional capital is required at the mine. No capital costs are estimated for Plant 2 for the life of the Project.

Mine and plant operating costs are developed from production actuals and cost projections for the remainder of the mine life and will average \$66.68/t-milled. Life of Mine (LOM) operating costs are estimated to total \$23.4M.

## 1.7 Economic Analysis

An economic analysis was performed for the expected life of mine of the Project. The economic analysis is based on Mineral Resources that, by definition, are unlike Mineral Reserves, and do not have demonstrated economic viability. Mineral Reserves have not been estimated for the Rodeo Project, however, the mine is in operation and is successfully selling doré for a profit. Production has validated the drilling, exploration, and Resource modeling at the site.

The LOM consists of 24 months of operation and assumes 12 months to perform closure and reclamation at the Rodeo property. The pre-tax NPV of the Project is \$22.9M at a discount rate of 8%.

## 1.8 Permitting Requirements

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The Rodeo Project began operations in 2021. To comply with applicable federal, state, and municipal laws and regulations regarding environmental protection and mining operations, Golden Minerals reports that it holds and/or has applied for the permits, agreements, and other instruments required by law. Details of the permits obtained for the Project are available in **Section 17.3**.

## 1.9 Conclusions and Recommendations

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### 1.9.1 Geology & Resources

The author has reviewed the Resource model for the Rodeo deposit estimated by Golden Minerals staff. The inputs, parameters, and estimation results are within industry best practices. The estimation, classification, and reporting of the Resources constrained by the mine design are conservative in nature. Production data validates the previous drilling and Resource estimates.

Exploration drilling efforts should continue to determine the limits of the deposit, where they have not already been defined. There is the potential for additional Resources in the area.

### 1.9.2 Mining

Open pit surface mining is performed at the Rodeo site using a diesel excavator and over highway trucks to transport the mineralized material to the processing plant at the company's Velardeña property. Mine production averages 2,100 tpd of total movement and the pit has an expected mine life of 24 months. Tetra Tech has reviewed the mine plan created by Golden Minerals staff and finds it to be within industry best practices. The pit parameters are considered to be conservative in nature.

Golden Minerals plans to process the stockpiled low-grade material after the high-grade Resource is mined out. This material has not been included in the economic analysis for this study.

### 1.9.3 Metallurgy and Processing

The metallurgical report prepared by RDi for the Rodeo Project provided data sufficient for use in this TRS. Golden Minerals demonstrated recovery of gold and silver approaching that achieved in the RDi studies from processing Rodeo mineralized material at Plant 2 in the 10 months of operation in 2021. Installation and commissioning of an additional ball mill circuit in April 2021 provided the ability to process harder material at a rate of 520 tpd or more.

The tailings pond at Plant 2 was expanded in 2019 making enough room available for the storage of the Rodeo Project's tailings. Golden Minerals has a permit that will allow further expansion of the pond if required.

### 1.9.4 Environmental Permitting

Tetra Tech has reviewed the available information on permits, agreements, and environmental aspects. Based on this information, the author does not know of any outstanding issues on this regard that will affect the current operations or mine life.

### **1.9.5 Economic Analysis**

An economic analysis was performed for the expected 24-month life of mine of the Project starting November 1, 2021. The economic analysis is based on Mineral Resources that are not Mineral Reserves and have not demonstrated economic viability. Mineral Reserves have not been estimated for the Rodeo Project. The pre-tax NPV of the Project is \$22.9M. The Project is sensitive to metal prices and operating costs.

### **1.9.6 Significant Risk Factors**

The mine is operating and selling a product at a demonstrated profit and has a relatively short mine life. These factors reduce some of the significant risk factors for the Project. Risks include changes in agreements with landowners for access, mining, and water use.

## 2. INTRODUCTION

This Technical Report Summary (TRS) is prepared for Golden Minerals Company (Golden Minerals) to report Mineral Resources for the Rodeo Project (the Project) in Rodeo, Durango, Mexico. The Project contains an open pit mine that is held by Minera de Cordilleras S.A. de R.L. de C.V. (Minera Cordilleras), and an existing oxide processing plant (Plant 2) that is held by Minera William S.A. de R.L. de C.V. Both Minera Cordilleras and Minera William are wholly owned Mexican subsidiaries of Golden Minerals. The purpose of this report is to summarize the results of an Initial Assessment for the property as defined under the U.S. Securities and Exchange Commission's Regulation S-K 1300. This is the first TRS prepared for the Project under the S-K 1300 guidelines.

All references to dollars in this report are US dollars (USD) unless otherwise noted. Distances, areas, volumes, and masses are expressed using metric units unless indicated otherwise. All tonnages are in tonnes (1,000 kilograms), precious metal grade values are reported in grams per tonne (g/t), and precious metal quantities are presented as troy ounces (oz).

Golden Minerals is a Delaware corporation based in Golden, Colorado, USA, and its shares are listed on the New York Stock Exchange and the Toronto Stock Exchange under the symbol AUMN.

### 2.1 Sources of Information

This TRS summarizes the information contained in the Canadian National Instrument 43-101 compliant Preliminary Economic Assessment/Initial Assessment level report *Preliminary Economic Assessment Update, Rodeo Project, Rodeo, Durango, Mexico* prepared by Tetra Tech, with an effective date of October 31, 2021. Additional sources of information include materials and comments provided to Tetra Tech by Golden Minerals personnel as described in **Section 25** and previous NI 43-101 compliant technical reports filed in 2017 and 2020.

### 2.2 Site Inspection

Dr. Guillermo Dante Ramírez-Rodríguez and Ms. Kira Johnson performed a site inspection January 18–21, 2022. During the inspection, they visited the Rodeo open pit mine, stockpiles, waste dumps, assay laboratory, and the processing plant.

### 3. PROPERTY DESCRIPTION

The Rodeo Project is located 2 km east of the town of Rodeo in Durango State, Mexico, at latitude 25°9'2.7"N, longitude 105°31'4.2"W (WGS84) as shown in **Figure 3-1**. Full services are available in the large regional cities of Torreón (189 km to the east) and Durango (157 km to the south), with basic amenities available in the town of Rodeo.



Figure 3-1: Rodeo Project location map

#### 3.1 Mineral Tenure

The property contains two mineral concessions totaling 1,865.7 hectares. The Rodeo R1 concession is held under an exploration agreement subject to advanced and actual royalty payments to La Cuesta International, S.A. de C.V., a wholly owned subsidiary of La Cuesta International, Inc. (La Cuesta). On commencement of commercial production, La Cuesta is entitled to a 2% NSR royalty from production. Once five million dollars has been paid under the agreement, the royalty reduces to 1%. The Rodeo 2 concession was purchased by Minera Cordilleras from Rojo Resources. Golden Minerals reports that it has filed an application with the Public Registry of Mining for an area reduction to 1,344.7 ha in the Rodeo 2 concession that has not yet been processed. The reduced concession boundaries are shown in **Figure 3-2**, and details of the concessions are listed in **Table 3-1**. All concessions are valid and there is no evidence of any lien, encumbrance, burden, or judicial proceeding currently affecting the concessions.

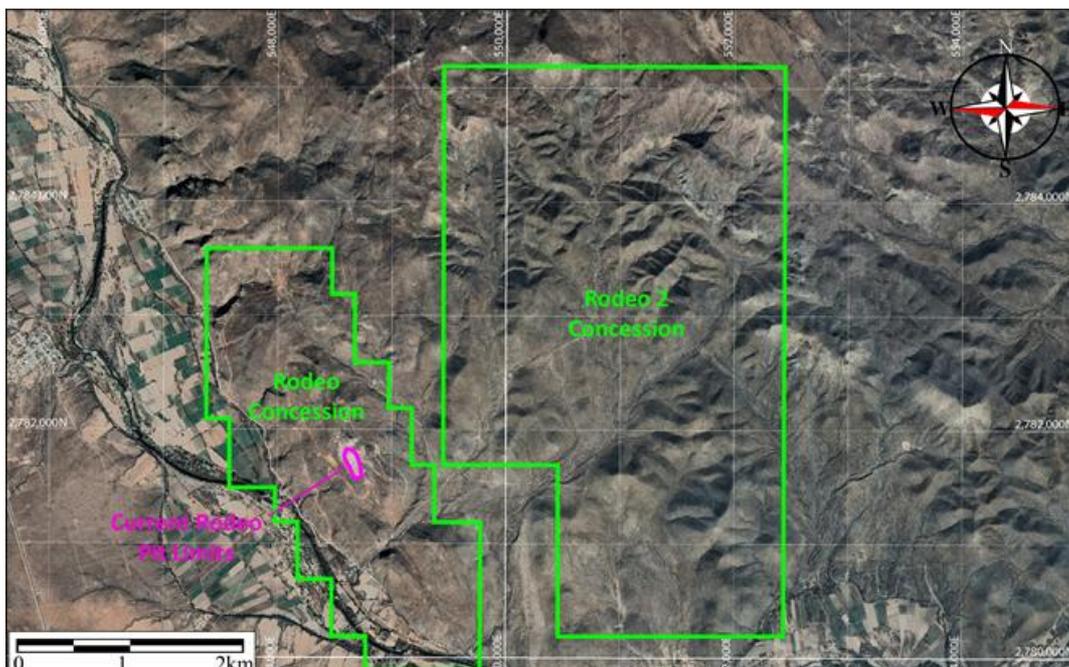


Figure 3 2: Map of mineral concessions

Table 3-1: Rodeo Mineral Concessions

	Lot	Holder	Area (ha)	Title	Type of Concession	Term	Location
1	Rodeo R1	La Cuesta Internacional	521.0000	246464	Mining	Sep 17, 2052	Rodeo, Durango
2	Rodeo 2	Minera de Cordilleras	1,344.7345 <sup>1</sup>	241666	Mining	Jul 20, 2054	Rodeo, Durango

<sup>1</sup> Current title shows 2,020.9592 ha; Golden Minerals has applied for a reduction in this concession to 1,344.7 ha.

### 3.2 Surface Rights

Surface rights to the concessions are held by ejidos (rural agricultural co-operatives) and private landowners. Access to the concession areas is through surface rights agreements with the Francisco Marquez Ejido and the private owner of the Rancho La Pequeña. These agreements were formalized before a notary and are in good standing.

The surface agreement with the Francisco Marquez Ejido allows Golden Minerals and its authorized contractors the right to access the concessions with equipment and personnel to perform exploration and mining activities. The agreement is dated March 29, 2020 and is valid for ten years.

The surface agreement with the private landowner of the Rancho La Pequeña allows Golden Minerals and its authorized contractors rights of access and to perform mineral exploration, exploitation, and transportation within a 40 ha area. To retain these rights, Golden Minerals has agreed to pay \$3,000 per hectare annually to the landowner, plus an additional fixed amount. The agreement is dated March 12, 2020 and is valid for ten years.

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### 3.3 Permitting

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The Rodeo Project began operations in December 2020. To comply with applicable federal, state, and municipal laws and regulations regarding environmental protection and mining operations, Golden Minerals reports that it holds and/or has applied for the permits, agreements, and other instruments required by law. Details of the required permits for the Project are available in **Section 17.3**.

### 3.4 Encumbrances

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The author is not aware of any encumbrances, violations, or fines affecting the Rodeo Project.

### 3.5 Other Significant Factors and Risks

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The claims are located on the Ejido Francisco Marquez, Ejido Animas, and Rancho La Pequeña (private). Access to the claim block is granted by agreement between the concession holder and the affected landowners. The author is unaware of any significant risk factors that may affect access, title, or right or ability to perform work on the property.

## 4. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

### 4.1 Topography, Elevation, and Vegetation

The property covers the hills and flatlands bordering the Nazas River valley, within the Mesa Central physiographic region, between the mountain ranges of the Sierra Madre Occidental and the Sierra Madre Oriental. The Nazas River valley is locally bounded to the west by the rugged mountains of the Pilar Sierra de San Francisco and to the east by the rolling hills and rounded mountains of the Pilar Sierra de Nazas. Bedrock exposures are common along ridge crests, road cuts, and drainages. Relief within the property is moderate with elevations ranging from approximately 1,130 m to over 1,800 m above sea level.

Vegetation is dominated by scrub brushes with various types of cacti, maguey, sage, coarse grasses, and yucca also present.

### 4.2 Access

There is a good network of roads in the region, including paved Mexican National Highways 45 and 34. Gravel roads intersecting the highways provide access to the concessions. The primary access road to the mine intersects Highway 34 and is in good condition for year-round use.

The major cities of Durango (157 km to the south) and Torreón (189 km to the east) have airports that are served by major regional and international carriers.

### 4.3 Climate

The climate is dry and semi-arid, typical of the high-altitude Mesa Central region. Annual precipitation for the area is approximately 700 mm, mostly during the rainy season in June and July. Temperatures commonly range from 20° to 45°C in the summer and 15° to 0°C in the winter. The climate is suitable for year-round operation.

### 4.4 Infrastructure

The Nazas River flows year-round and provides a water source for local agricultural operations. Golden Minerals has reached an agreement with the Ejido Francisco Marquez to construct a pump station along the Nazas River to provide water for use at Rodeo. As part of the agreement, Golden Minerals agrees to pay the ejido an annual sum of \$14,000 MXN (approximately \$675 USD). Power to the mine is provided by diesel generators. Tanks are located on the property for water and diesel storage. The cities of Durango and Torreón have a rich history of mining and are a source of services and supplies required for the project. Basic amenities and services are available in the nearby town of Rodeo. Experienced mining personnel are also available throughout the region. Personnel working at the mine live in the town of Rodeo.

## 5. HISTORY

Two prospects, called the Los Murcielagos gold-silver-lead-copper prospect and the Francisco Marquez gold-copper prospect, were identified in the vicinity of the Los Murcielagos arroyo on the Rodeo property. Little information is available on these historic prospects other than gold- and silver-bearing mineralization was apparently extracted from short adits driven in sheared and altered rhyolitic volcanic rocks.

Recent exploration work on the Rodeo property was carried out by La Cuesta and Monarch Resources de Mexico, S.A. de C.V. in the 1990s and by Canplats de Mexico, S.A. de C.V. a wholly owned subsidiary of Canplats Resource Corporation Mexico in 2003, 2004 and 2007.

In 2015 the property was acquired by Minera de Cordilleras, a subsidiary of Golden Minerals Company, from La Cuesta International. In 2016, Golden Minerals drilled 14 holes, totaling 2,083.7 m, exploring the NE down-dip continuation of the high-grade mineralization, conducted regional mapping and sampling, and conducted metallurgical test work on the Rodeo mineralization and completed a preliminary assessment report on the deposit.

In 2019 Golden Minerals conducted a regional mapping and sampling program that identified additional exploration targets and received permits to conduct a Resource definition program at Rodeo, which was completed in 2020 and led to the decision to start mining in December 2020. Doré production began in January 2021.

## 6. GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

### 6.1 Regional Geology

The Rodeo concessions lie on the eastern boundary of the Sierra Madre Occidental, a dissected volcanic plateau elongated in a NNW direction. It is approximately 1,200 km long with an average altitude of approximately 2,000 m above sea level. The geology of the Sierra Madre Occidental is divided into two principal volcanic groups:

- **Upper Volcanic Supergroup** (27-34 Mya): Rhyolitic and rhyodacitic ignimbrites, caldera complex with associated high level intrusives, minor andesites, and mafic lavas
- **Lower Volcanic Complex** (45-100 Mya): Andesitic to rhyolitic extrusives, intruded by batholithic complexes

The formation of these volcanic complexes can be related to late Mesozoic and Tertiary subduction processes along the Middle America Trench. The dominant structural event affecting these rocks, particularly the Upper Volcanic Supergroup, is a tensional one, possibly coeval with the spreading episode which was opening the Gulf of California to the Northwest. This event led to the formation of a complex of normal faults within and on the margins of the volcanics. Displacements on these faults is never very great, particularly on the eastern margin of the Sierra Madre Occidental but tilting of structural blocks was extensive. Wedges of coarse clastic rocks now fill the associated half grabens. A number of these faults have been the loci of possible late-stage volcanic alteration/silicification/mineralization events which are the targets for exploration efforts. **Figure 6-1** shows the stratigraphy of the regional geology.

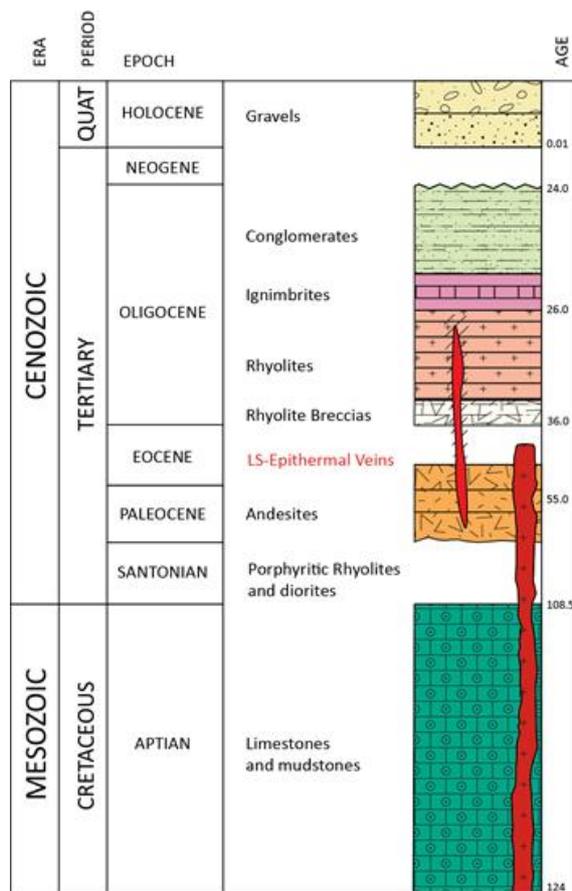


Figure 6-1: Regional geology stratigraphic column

To the East of Rodeo lies the morphotectonic province of the Sierra Madre Oriental. This is largely composed of Mesozoic sedimentary rocks, evolving from a mixed clastic continental and marine succession with minor volcanics in the early part of the era, to platform and basinal carbonates of Cretaceous time. These rocks were subjected to strong compressional tectonism-oriented WSW-ENE at the end of the Cretaceous. Again, this can be related to the subduction of the Cocos Plate beneath the North American Plate. The boundary between the two tectonomorphic provinces, with their highly contrasting regional facies and structural style, is marked by a NNW trending normal fault or complex of faults. On the property that is the subject of this report, the structural trend is expressed by the Rodeo Fault, also known as the Falla Héroes de Mexico.

## 6.2 Local Geology

Rodeo is located along a major northwest-trending system of basin-and-range normal faults juxtaposing silicified, iron-stained, and locally clay altered Tertiary intermediate-to-felsic volcanic and sub-volcanic rocks against altered, silicified, and brecciated Cretaceous silty limestones and shales. In the southern portion of the property, the Cretaceous rocks are on the NE side of the fault system (footwall) and the volcanic rocks are on

the SW side of the fault system (hanging wall). At the north end of the property, the fault system juxtaposed volcanic rocks against volcanic rocks.

Mapping carried out by Monarch indicated the geology consists primarily of Tertiary (Oligocene?) acidic volcanics to the WSW separated from Mesozoic (Cretaceous?) carbonates by the NNW trending Rodeo Fault. The latter have been ascribed as the Indidura Formation (Durning and Hillemeier, 1994 & 1995) and the former, while having no strict stratigraphic assignment, are referred as the Rodeo Volcanics.

- **Rodeo Volcanics** (Oligocene? 23-34 mya): Rhyolitic, rhyodacitic and andesitic lithologies; including welded and non-welded (ash flows) tuffs, ash flow breccias to volcanic breccias. Unfolded, dip at low angles (5-15) to West. Systematic and non-systematic joint sets with the dominant trend sub-parallel to the Rodeo Fault, i.e., NNW.
- **Rodeo Fault**: Normal fault, strikes NNW, dips 60-25 degrees WSW.
- **Grupo Mezcalera** (Cretaceous 97.5-124 mya): Thinly interbedded carbonates and clastics, ranging from and gradational between; limestones, argillaceous limestones, calcareous shales to black shales. Possibly interfingering with welded to non-welded tuffs in the northern part of the concession. Recumbent, sub-horizontal tight to isoclinal folds in thinly interbedded limestones and clastic to gently inclined sub-horizontal close chevron folds in more thickly interbedded units. Complex joint systems related to fold geometries. WSW-ENE compression.

Generally, exposure of the Rodeo Volcanics is good, particularly in the East-West oriented arroyos and canyons on the western margin of the concession.

The Rodeo Fault is a normal fault, which locally may vary from a single fracture to a multiple structure, dips at approximately 60° to the WSW (shallowing to 25° at depth). In addition to separating rocks of differing ages and origins, the rocks on either side of the Rodeo Fault also belong to different structural regimes.

An overview of the local geology is shown in **Figure 6-2** and **Figure 6-3**.

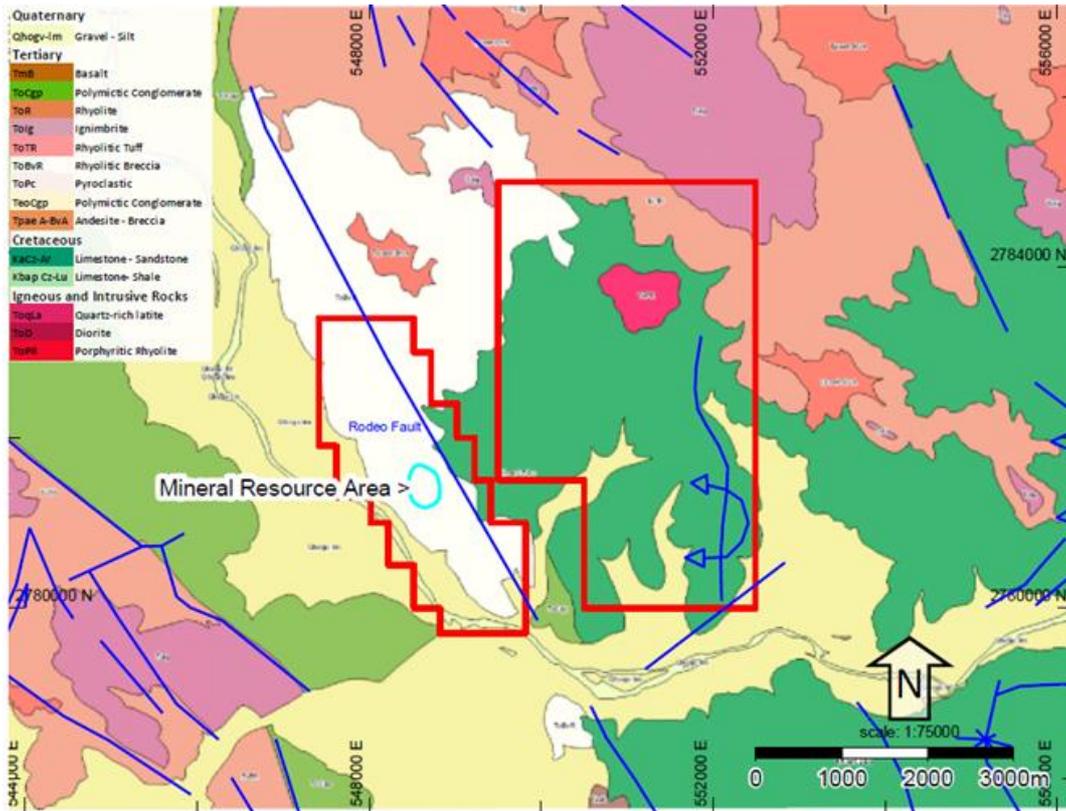


Figure 6-2: Local surface geology (Modified from GSM G13-D42, 2003)

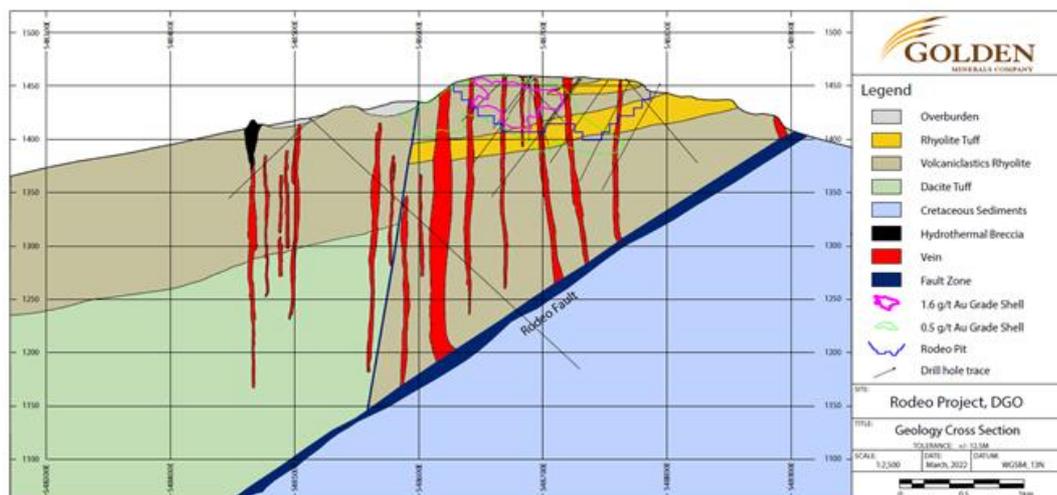


Figure 6-3: Rodeo geology cross-section

### 6.3 Property Geology

The immediate Rodeo deposit area is approximately 300 m along strike and 200 m wide and extends to a depth of 200 m below surface. The deposit strikes at 330° and dips to the ENE with various vein phases dipping from sub-vertical to 30°. The deposit is entirely hosted within Tertiary Rodeo volcanics that are strongly silicified and brecciated. The deposit is bounded to the east by the Rodeo Fault, however drilling to date has not demonstrated that the deposit reaches or is truncated by the fault. Along strike to the north and south, the mineralization is offset slightly by near vertical faulting; mineralization does not terminate at these faults, but the intensity of the trend is either diminished or high-grade mineralization has yet to be located.

Mineralization at the deposit is epithermal low-sulfidation (quartz-adularia) type. Although very little mineralization is hosted in or centered on the Rodeo Fault itself, it is possible that the fault played a role as a pathway at depth for the Rodeo deposit.

Quartz veins 15 m or greater in width have been located throughout the property. The high-grade Au mineralization appears limited to a distinctive veining event. Evidence of ancillary veining events pre- and post-dating the high-grade event carry low-grade to anomalous level of Au mineralization.

The gold event is associated with a restricted vein stage characterized by small smoky quartz veinlets cut by banded blue opaline quartz and later brecciated and cemented by glassy smoky quartz hosting very fine disseminated pyrite. In the main zone, the veinlets generally trend NNW and dip steeply to the east or west, but the core angle in some drill holes suggests these veins may also have developed along ENE to EW structures. The envelope of the high-grade event appears to be restricted to a preferential volcanic layer or elevation (or both). Movement on the Rodeo Fault is likely responsible for the current orientation of the envelope.

## 6.4 Deposit Types

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The Rodeo property hosts gold- and silver-bearing mineralization commonly associated with a low-sulfidation (adularia-sericite) epithermal mineralizing system. Epithermal systems are defined to occur from depths of less than 2 km to superficial hot spring settings. Mineral deposition occurs as hydrothermal fluids undergo cooling and degassing and are commonly zoned vertically over 250 to 350 m from a base metal-poor, gold- and silver-rich top to a relatively silver-rich base metal zone and an underlying base metal-rich zone grading at depth into a sparse base metal, pyritic zone.

## 7. EXPLORATION

Exploration activities conducted by Minera Cordilleras consist of:

- Surface geologic mapping of the property and immediate deposit area
- Trench sampling and surface sampling
- High-quality topography and aerial image from a drone survey conducted in 2020 and continued monthly drone images of the mine as development proceeds
- Regional ASTER survey
- Four drilling campaigns totaling 9,146 meters

The company is currently conducting a second phase of RC drilling of 30 holes totaling approximately 1,900 m; this program was completed in March 2022 with assays results expected in April 2022

Activities conducted by previous operators include:

- Surface geologic mapping of the property and immediate deposit area at 1:25,000 scale
- Alteration intensity mapping
- Airborne magnetic and radiometric survey, 1,519 line-kilometers in 2010 and 2011 (raw data has not been located or provided to the author)
- Induced polarization geophysical surveying, 42 line-kilometer in 2010 and 2011 (raw data has not been located or provided to the author)
- Large scale magnetic surveys are available from Servicio Geologico de Mexico (GSM)
- Landsat false color imagery to identify for alteration signatures
- Spectral analysis to determine alteration types
- The collection of approximately 1,500 rock samples
- Some of the rock samples have recorded length and direction information, samples that do have this information have been used where appropriate
- 467 soil samples and 100 stream sediment samples

The Rodeo and Rodeo 2 concession boundaries have been reduced since their initial staking, therefore portions of the activities of previous explorers have taken place outside the current concession boundaries.

### 7.1 Trench Samples

Minera Cordilleras cut eleven trenches in 2015. The trenches were cut perpendicular to the strike of the Rodeo deposit using a gasoline powered diamond saw and chipped into sample bags using a rock hammer. Care was taken to cut continuous samples but in many cases the terrain and vegetation caused gaps to exist in the lines. The trench lines are assumed to be continuous, although some have unsampled lengths greater than approximately 1 m where rock was not exposed. Trenches were mapped during collection followed by location corrections using a total station surveying instrument, as well as correction to the topographic surface.

The trenches are located 40 m west of the where the highest-grade portion of the deposit is located. The core of the deposit is not exposed at surface because it is covered by an apparently impermeable/less permeable volcanic layer. In the area of the trench samples this volcanic layer is absent and the silicification and mineralization is visible in outcrop. However, the Au grade is less than observed in the drilling in the best portion of the deposit. **Figure 7-1** shows the trench sample lines as well as colored coded Au grades.

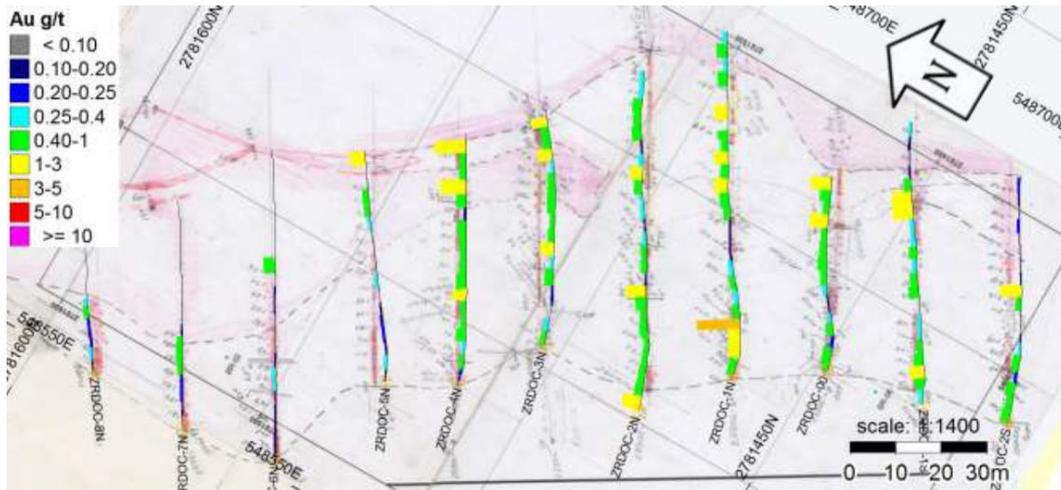


Figure 7-1: Trench sample location map

Figure 7-2 shows a picture of the Rodeo pit highwall (looking northwest) showing the low-angle fault separating post-mineral volcanics from underlying mineralized rhyodacites. The red rectangle shows the approximate trench locations on the periphery of the Rodeo mineralized system.

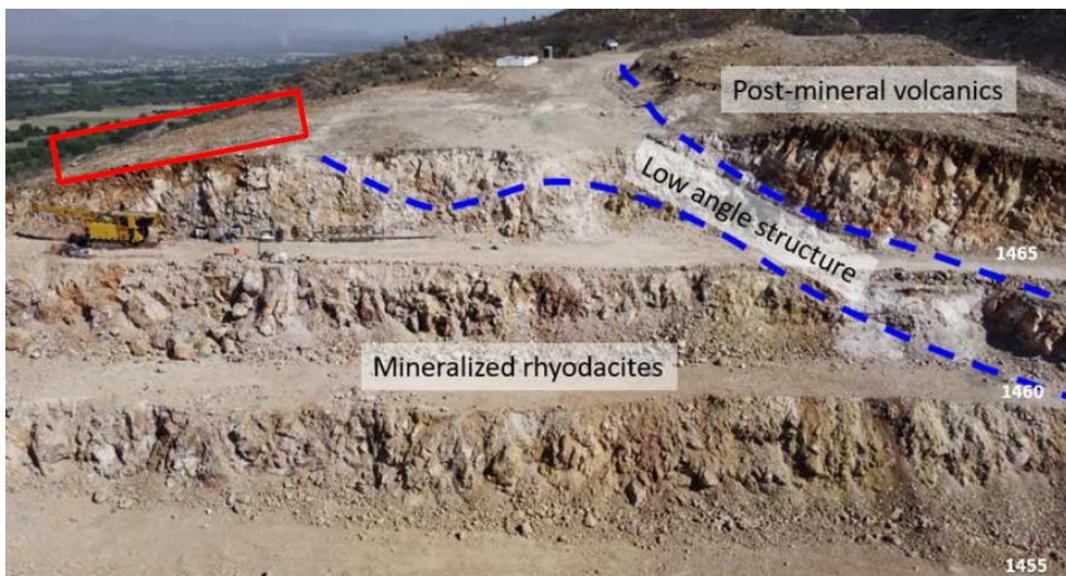


Figure 7-2: Rodeo trenching and pit highwall (looking NW)

A total of 178 samples were collected from the trenches and submitted to ALS Chemex for Au-AA24 and ICP ME-41 analysis. The samples have a mean Au grade of 0.55 Au g/t and a mean Ag grade of 1.4 Ag g/t. A summary of the significant trench samples is shown below in **Table 7-1**.

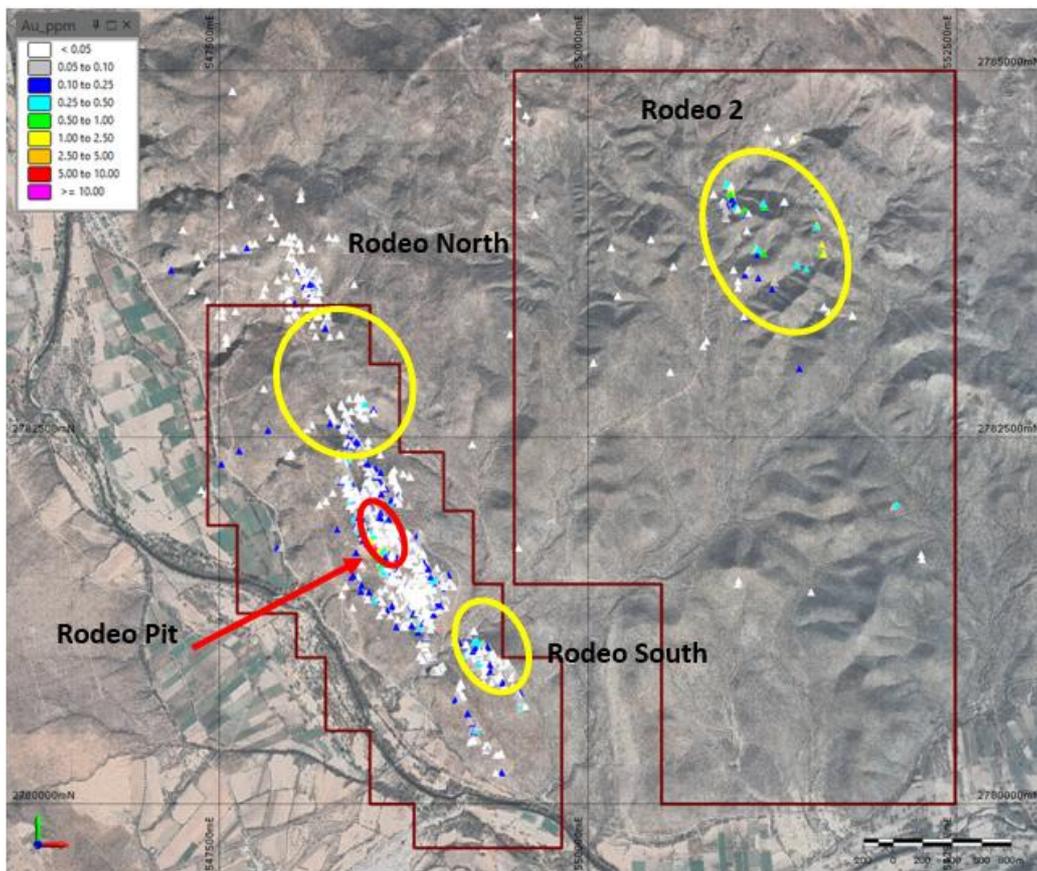
**Table 7-1: Significant high grade trench intervals**

Trench ID	Sample ID	From	To	Au (g/t)	Ag (g/t)
ZRDOC-1N	1500024	11.98	14.22	3.76	14.9
ZRDOC-4N	1500121	53.88	56.71	2.74	6.6
ZRDOC-4N	1500117	44.84	48.02	2.21	1.5
ZRDOC-2S	1500212	29.07	32.05	1.9	1.9
ZRDOC-00	1500019	43.79	46.69	1.765	3.8
ZRDOC-1S	1500135	43.96	47.07	1.74	2.7
ZRDOC-1S	1500136	47.07	50.04	1.73	2.3
ZRDOC-2N	1500054	26.94	29.73	1.7	4.9
ZRDOC-2N	1500045	0	3.46	1.61	7.6
ZRDOC-00	1500016	35.11	38.17	1.505	1.3
ZRDOC-3N	1500091	50.72	52.72	1.405	3.6
ZRDOC-5N	1500159	51.11	54.15	1.33	1.1
ZRDOC-3N	1500087	43.31	45.92	1.26	0.4
ZRDOC-4N	1500098	19.76	23.04	1.26	1.3
ZRDOC-1S	1500124	6.6	9.74	1.235	1.8
ZRDOC-1N	1500036	50.24	52.99	1.165	1.3
ZRDOC-1N	1500034	43.9	47	1.15	3.5
ZRDOC-1N	1500039	59.98	63.14	1.14	0.9
ZRDOC-3N	1500079	21.41	24.56	1.14	2.4
ZRDOC-2N	1500064	54.63	57.58	1.075	2
ZRDOC-1N	1500022	3.68	6.88	1.055	5.3
ZRDOC-1N	1500023	6.88	11.97	1.03	3.3
ZRDOC-1N	1500024	11.98	14.22	3.76	14.9
ZRDOC-4N	1500121	53.88	56.71	2.74	6.6
ZRDOC-4N	1500117	44.84	48.02	2.21	1.5
ZRDOC-2S	1500212	29.07	32.05	1.9	1.9
ZRDOC-00	1500019	43.79	46.69	1.765	3.8
ZRDOC-1S	1500135	43.96	47.07	1.74	2.7
ZRDOC-1S	1500136	47.07	50.04	1.73	2.3
ZRDOC-2N	1500054	26.94	29.73	1.7	4.9
ZRDOC-2N	1500045	0	3.46	1.61	7.6
ZRDOC-00	1500016	35.11	38.17	1.505	1.3

## 7.2 Geochemistry

Minera Cordilleras compiled historic rock, soil, and stream sediment samples collected by previous operators. All location data was converted into WGS84 datum, zone 12 to allow samples to be visualized for the identification of additional Au-Ag occurrences within the property boundary.

In total 1,600 rock chip and channel samples, excluding the trenches, have been collected from the Rodeo Project. They show evidence for a large low-sulphidation epithermal system that has been emplaced along a large NW-SE striking fault system.



**Figure 7-3: Rodeo property rock samples and gold values (in ppm), and exploration targets (yellow outlines)**

### 7.3 Drilling

The project database contains 199 exploration drill holes, totaling 20,918 m, drilled from 1995 to 2021. Of the total, 13,083 m were drilled using diamond drilling core (DD) equipment and 7,835 m with reverse circulation rotary (RC) equipment. **Table 7-2** summarizes the project drilling by company, year, and type.

**Table 7-2: Project drilling by company and type**

Company	Year	Type	Length (m)
Monarch Resources	1995	RC	2,251
Canplats Resources Corp.	2004	RC	2,396
Canplats Resources Corp.	2007	DD	1,034
Camino Minerals Corp.	2011	DD	6,090
Minera Cordilleras	2016	DD	2,084
Minera Cordilleras	2020	DD	1,414
Minera Cordilleras	2021	RC	3,187
Minera Cordilleras	2021	DD	2,462
<b>Total</b>			<b>20,918</b>

Minera Cordilleras has continued exploration at the Rodeo site. From 2020-2021, an additional 117 exploration holes were drilled at the site, for a total of 7,062 m meters of core and RC drilling. **Figure 7-4** shows a location map of the project drilling. Diamond drilling was completed by Eco Drilling, utilizing a track-mounted rig with a 1,000 m depth capacity. Drill holes started as HQ size and reduced to NQ where necessary. Three PQ-diameter holes were drilled in 2020 to collect material for metallurgical samples. Reverse circulation drilling was conducted by Major Drilling utilizing a MX-47 rig.

Surface drill hole collar locations were surveyed by handheld GPS and by a professional surveyor with the aid of a Differential GPS and Total Station. Drill hole orientations were established by measurements of casing using a field compass. For diamond drill holes the down-hole survey was conducted with a magnetic Reflex instrument. For the reverse circulation holes, down-hole surveys were conducted with an Axis gyro.

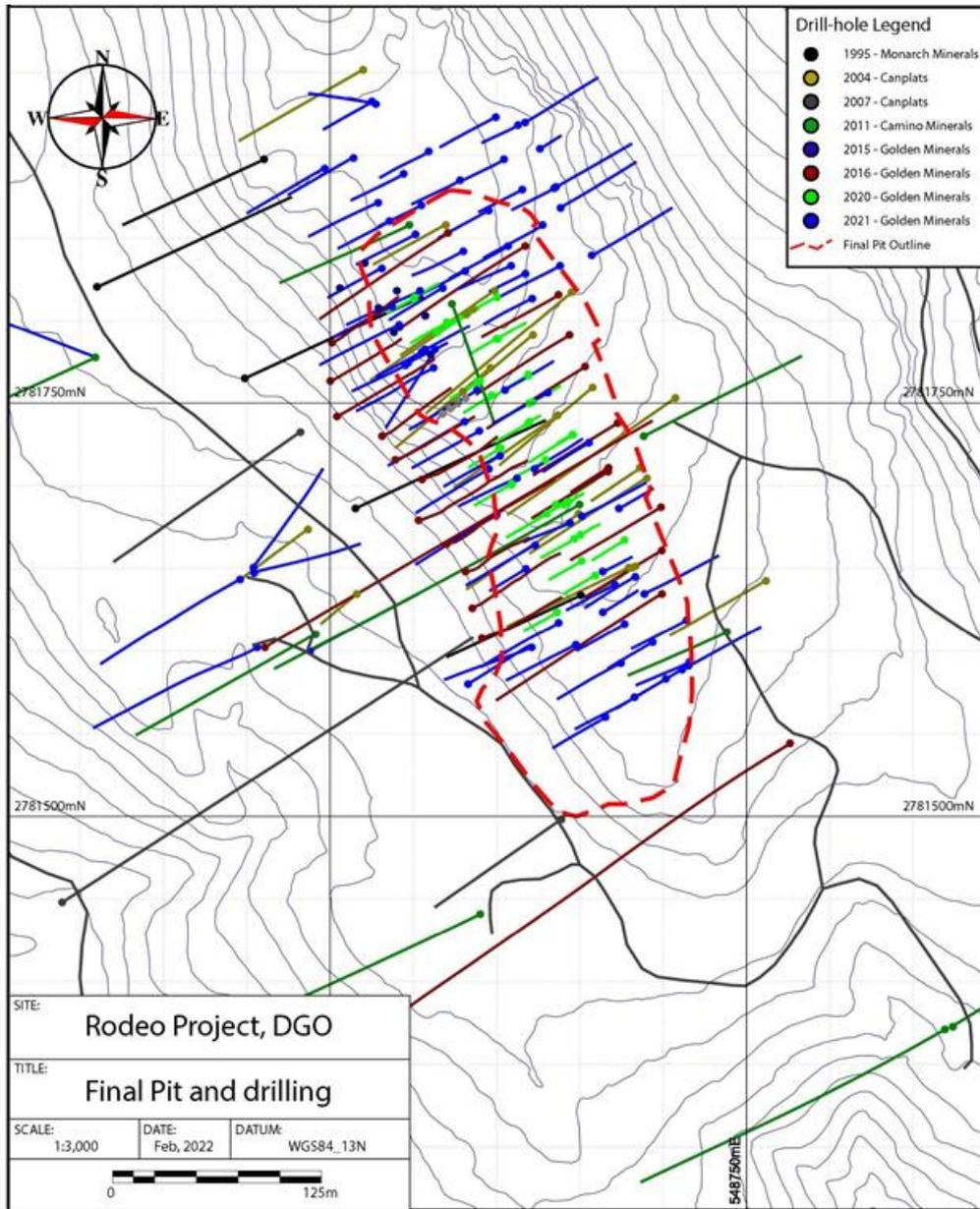


Figure 7-4: Drill hole location map for the Rodeo property

Drill holes have primarily been oriented perpendicular to strike and inclined at approximately 55 degrees. The prevailing silicification of the Rodeo deposit dips from 35 to 55 degrees ESE along with the volcanic host; drill orientations have been aligned to intersect this strike and dip. Varying vein stages and structural controls cause mineralization to exist at a range of dips from 35 degrees to near vertical.

Drilling is reported to be slow and difficult given the high level of silicification. However, in general recovery is high (91%), but a visual review of the drill-core show there are multiple zones of faulting, producing broken and rubbly core, which means that there is a low rock quality designation (RQD) of 38% for the deposit.

#### 7.4 Adequacy of Data

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The procedures followed by the Minera Cordilleras staff is within Industry Best Practices and the data is adequate for the use in this level of study.

## 8. SAMPLE PREPARATION, ANALYSES, AND SECURITY

Data summarized in this section and utilized for estimation of resources was collected by Minera Cordilleras staff. The sample preparation, analyses and security procedures implemented by Minera Cordilleras meet standard practices. The data collected is of adequate quality and reliability to support the estimation of mineral resources. Only project level staff are involved with the selection, preparation, and delivery of samples to the laboratory.

Blasthole samples and some exploration samples are analyzed at the laboratory owned by Golden Minerals at their Velardeña property. All exploration and Resource definition samples are submitted to ALS Chemex for analysis. The on-site laboratory is not considered independent, but umpire sampling is conducted on a regular basis to confirm best practices at the company owned laboratory. The property has experienced exploration and sampling by several companies and several campaigns, including open pit mining operations by Golden Minerals that commenced in late December 2020.

### 8.1 Sample Preparation and Analysis

#### 8.1.1 Drill Core

Diamond drill core is transported by truck from the rig to the core preparation site located in the city of Rodeo, by truck. Following geotechnical logging by field assistants, geologists log the core and select sample intervals. Sample intervals are selected only where the geologist anticipates mineralization to exist. In practice, the core is sampled extensively, but is not sampled continuously from top to bottom (note most holes from the 2020 and 2021 drilling campaigns were sampled from collar to end depth). Drill core that is selectively unsampled can be considered waste, however no numeric value or null place holder is inserted in the project database. Sample selection begins and terminates at alteration or lithologic contacts, sampled at a minimum length of 20 cm and maximum of 2 m, with few exceptions exceeding 4.0-5.0 m. During the process of sample selection, the geologist draws a centerline to guide the core cutters. The center line is rotated by the geologist to align with the apex of observable vein structures to minimize sample selection bias.

A sample sheet is provided to the core cutters containing sample numbers and from, to intervals. In addition to a cut sheet the sample number and meters are annotated on the white plastic core box using a marker. Sample numbering begins where the previous sample batch left off. The core cutters have been instructed to cut the core down the marked centerline using an electric powered wet diamond saw, and to always place the right-hand portion of the cut core in the sample bag. Sections of broken core or low recovery are carefully divided to reduce bias; however, these sections are inherently less reliable than sections of competent core. The core cutters write the sample number using a marker on a clear plastic bag and tie off the bag using twine when complete. A tear-away sample tag system has been implemented since Golden Minerals started drilling in 2016. Five samples are grouped and placed in a large rice sack. The beginning and ending number of the five samples contained in the sack is written on the outside of the bag. The sack is tied shut with twine when full. Sample batches are delivered to ALS Chihuahua for preparation and then shipped to Vancouver, British Columbia, Canada (ALS Vancouver) for analysis. The ALS Vancouver laboratory is independent of Golden Minerals and Minera Cordilleras and is ISO 17025 accredited, the accreditation of ALS Vancouver encompasses preparation processes completed at ALS Chihuahua.

Samples are initially analyzed for Au using fire assay with atomic absorption spectroscopy finish (AA24) with re-run for values exceeding 10 g/t Au using fire assay with gravimetric finish (GRA22); however, only quality control standard samples triggered the GRA22 rerun.

Drill hole samples were analyzed for the basic multi-element suite using four acid digestion followed by inductively coupled plasma-atomic emission spectroscopy (ME-ICP61).

### 8.1.2 RC Drilling

An RC drill rig was used for part of the 2021 drilling campaign in addition to a core drilling rig. The RC drill rig allowed for faster drilling of the deposit area where the geology, alteration, and structures were well known. The resulting rock chips are placed in plastic trays and logged by the geologist. Samples were collected and organized on 2.0 m regular intervals for the entire hole. A rotary splitter was used to better split the material to a representative sample, reducing the sample by 75% down to a 25% sample. Clear sample bags were then filled with 5-6 kg of sample material, tagged using a sample book, sample number written on the sample bag, and then transported to the Velardeña lab for analysis of Au and Ag.

Drill hole samples were analyzed for the basic multi-element suite using four acid digestion followed by inductively coupled plasma-atomic emission spectroscopy (ME-ICP61).

### 8.1.3 Trench Samples

Trench samples were cut using a gasoline powered diamond saw and chipped into sample bags using a rock hammer. Care was taken to cut continuous samples but in many cases the terrain and vegetation caused gaps to exist in the lines. The trench lines are assumed to be continuous with only runs of unsampled lengths greater than approximately 1 m being identified. Preparation, analyses, and security of trench and drill hole sampling are the same from placing the material in a clear plastic bag onward, until analysis.

Trench samples were analyzed at ALS Vancouver for the basic multi-element suite using aqua regia followed by inductively coupled plasma - atomic emission spectroscopy ME- (ICP41). Samples initially exceeding 100 g/t Ag are rerun using (Ag-OG62).

### 8.1.4 Blasthole Samples

Blasthole drilling and sampling commenced in December of 2020 with the start of the open pit mining operation. The blastholes are drilled with a track-mounted air core rig which produces core cuttings very similar to an RC drill rig. The blastholes are drilled on a 5 m bench height with a single sample per blasthole. Sample material is collected in a specially designed geometric pan which helps collect a more representative sample. Sample material is then filled in a clear plastic bag, tagged using a sample book, sample number written on the sample bag, and then transported to the Velardeña lab for analysis of Au and Ag. The sample weights vary depending on the length of the blasthole, with 5 m samples weighing around 4-7 kg.

### 8.1.5 Surface & Pit Highwall

Surface and pit highwall samples are collected on the property and around the pit area. Samples are collected by rock hammer or circular saw, typically on structures or alternation zones. Sample material is then filled in a clear plastic bag, tagged using a sample book, sample number written on the sample bag, and then transported to the Velardeña lab for analysis of Au and Ag. The sample weights are generally around 4-7 kg.

## 8.2 Security, Transport, and Storage

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The core preparation facility is located in the town of Rodeo and is enclosed by a cement wall and locked gate. Samples awaiting delivery to the ALS preparation facility in Chihuahua further stored within locked building in the facility when staff is not present. Samples are delivered to ALS Minerals in Chihuahua City, Chihuahua, Mexico (ALS Chihuahua) by Golden Minerals staff by road as needed, typically every two weeks during the drilling campaign.

## 8.3 Quality Control

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Minera Cordilleras' quality assurance (QA) measures involve the use of standard practice procedures for sample collection for both drill core and channel sampling as described above; and include oversight by experienced geologic staff during data collection. Quality control (QC) measures implemented by Minera Cordilleras include in-stream sample submittal of standard reference material, blank material, and duplicate sampling.

The insertion of control samples is dictated by the last digit of the sample id number, the sequence is independent of the drill hole or channel sample set and is continuous through the sampling campaign. For example, the first instance of a drill core sample id ending in "36" or "86" is a blank sample and is placed in a sample bag rather than a collected core sample. On the next instance of a "46" or "96" the lab is instructed on the sample submittal sheet to create and test a fine duplicate following pulverizing. The next instance of a "06" or "56" the lab is instructed to create a coarse duplicate at the crushing stage. On the next instance of "16" or "66" a low-grade standard sample is placed in the sample bag instead of a collected sample and the next "26" or "76" a high-grade standard.

The 2020-2021 campaigns operated a similar but reworked QA/QC workflow procedure using regularly inserted blanks, duplicates, and standards on fixed sample numbers, accounting for about 10% of samples as control samples for drill holes and about 5% for blastholes.

### 8.3.1 Standards

Standard material (CRM) from OREAS was used as they demonstrated greater performance and accuracy compared to other CRM brands used in the past (ex. Rock Labs). All standards used were checked thoroughly by both the on-site Velardeña lab and by ALS Chemex to ensure their integrity. Sampling is regularly performed by ALS Chemex in Chihuahua to verify lab results at the Velardeña laboratory.

### 8.3.2 Duplicates

Pulp duplicates are analyzed within the drill hole sample stream. Coarse duplicates are prepared in the field using a splitter to reduce potential sample bias. Review of the duplicates indicate good reproducibility. Any noted issues in the standards and duplicates are infrequent and do not suggest invalidation of the results from the on-site laboratory.

### 8.3.3 Blanks

Blanks are inserted into the sample stream. Previous work indicated a contamination of low-grade Ag in the blank material. The material being used for blanks was replaced and was sourced from Abrasivos de Laguna S.A. de C.V. Samples of the new blank material were submitted to both the Velardeña Lab and to ALS Chemex for analysis for Au and Ag to ensure that the material contained minimal Au and Ag. The results were in tolerance for blank material and both labs had similar results. The blank material is stored in a safe and secure location, in a very low contamination area, with material pre-packaged into individual plastic bags to be inserted into the sample stream.

As part of the updated QA/QC procedures, the QA/QC data is reviewed continually to check for problems with the analytical data including reviewing the standard, blank, and duplicate samples. Scheduled analytical maintenance occurs regularly with additional lab checks reviewed by lab management over short and long-term schedules.

## 8.4 Data Adequacy

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The procedures followed by the Minera Cordilleras staff is within Industry Best Practices and the data is adequate for the use in this level of study.

## 9. DATA VERIFICATION

The data collected by the mine staff is in support of operations planning and many of the data inputs provided by Minera Cordilleras are supported by current production actuals and through this activity have been verified. Additional verification procedures are described below.

### 9.1 Geologic Data Inputs

The quality of data collected by Minera Cordilleras meets industry standard practice and is sufficient to support the estimation of mineral resources. Data collected by previous operators has in part been verified by the corroborating data collected by Minera Cordilleras, as well as existing physical and digital records and verification sampling performed by Minera Cordilleras, as well as the previous operators. Coupled with the data collected by Minera Cordilleras, data from previous explorers is sufficient to support the estimation of mineral resources, however some details regarding QA/QC protocols and performance were not available for review.

Data verification conducted during the site visit included observations of drill hole collar locations and orientations, drill core, trench sample locations, review of previously drilled core, recently drilled core, and RC chip trays. Mineralization was witnessed in outcrop and orientations were observed. Confirmatory sampling of drill core while conducting the site visit was not deemed necessary because several generations of exploration by past explorers and the 2016 drilling campaign have confirmed the presence of mineralization, limited core resampling has been completed by previous authors.

Drill hole collars and their orientations were observed in the field and a handheld global positioning system (GPS) was used to check their location. Verification of collars locations and orientations were found to correspond to those provided by Minera Cordilleras.

For purposes of data verification collected by previous explorers Mineral Cordilleras reanalyzed 94 pulps from Canplats BR series holes. For both Au and Ag, the duplicated values compared well on a case-by-case basis with the original values stored in the project database.

### 9.2 Mine Plan Data Inputs

Tetra Tech conducted a site visit to the Rodeo mine to verify that parameters used in mine planning are adequate for use in this study. This site visit allowed for verification of mining parameters used in this study, confirming that the parameters are adequate.

### 9.3 Mineral Processing Inputs

Technical and cost data were obtained during the Project site visit and in subsequent communications with Golden Minerals personnel at the processing plant and in Golden Minerals' Golden, Colorado office. The data provided by Golden Minerals conforms to industry standards and is within the accuracy of this study and verified for use in this study.

### 9.4 Economic Data Inputs

A technical economic model template and cost data were obtained in communications with Golden Minerals. The data provided by Golden Minerals conforms to industry standards and is within the accuracy of this study and verified for use in this study.

## 9.5 Data Adequacy

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At no time was there any limitation to, or failure to provide the requested technical and cost data for the Rodeo mine during or after the site visit.

Data provided was adequate for the assemblage and production of this study.

## 10. MINERAL PROCESSING AND METALLURGICAL TESTING

Two metallurgical studies have been performed on mineralized material from the Rodeo Project: A study by Process Research Associates Ltd. (PRA) of Vancouver, BC, Canada in 2011, and a study by Resource Development Inc. (RDi) of Lakewood, CO, USA in 2017. Both laboratories are independent of Golden Minerals Company.

Both PRA and RDi found that the material was not amenable to a heap leach process but showed positive results from an agitated leach process. Results of RDi's testing showed a maximum gold extraction of 85.7% and silver extraction of 76.3%. A summary of the relevant test work completed by RDi in 2017 is provided in the following subsection.

### 10.1 2017 RDi Test Work Program

The objective of the RDi test program was to complete a leach test program to determine gold extractions from low grade and high-grade gold mineralized material from the Project. RDi received 30 kg of sample which was crushed and split into 1 kg charges. Representative samples of both the high and low grade were pulverized and submitted for head analysis using fire assay, atomic absorption, acid digestion, and ICP techniques. The low-grade sample assayed at 1.37 g/t Au and 5.6 g/t Ag, while the high-grade sample assayed at 3.31 g/t Au and 14.0 g/t Ag. Samples were also submitted for mineralogical analysis. The primary mineralogy for both samples was quartz, representing approximately 92% of the low-grade sample and 76% of the high-grade sample. Gold occurs as 2.5-to-5-micron grains locked in quartz.

The high-grade sample was subjected to flotation and cyanide bottle roll leach testing. Results of the flotation testing were poor, however the bottle leach tests resulted in gold recoveries of 80.0% to 85.6% and silver recoveries of 72.1% to 76.3%. **Table 10-1** shows the results of the bottle leach testing at various grind sizes.

**Table 10-1: Bottle leach test results**

Grind (P <sub>80</sub> )	Extraction %		Residue Grade		Calc Head Grade		NaCN Consumption (kg/mt)	Lime Consumption (kg/mt)
	Au	Ag	Au (g/t)	Ag (g/t)	Au (g/t)	Ag (g/t)		
0 mesh	80.0	72.1	0.54	2.8	2.70	10.1	1.648	9.114
150 mesh	83.8	76.3	0.47	2.4	2.90	10.1	1.584	9.227
200 mesh	85.7	73.4	0.40	3.0	2.79	11.3	1.786	11.102

The low-grade sample was subjected to static leach testing. Results showed unfavorable gold and silver extraction from static cyanide leaching.

Metal recovery in the bottle roll leach test was observed to be dependent on grind size. A Bond's Ball Mill Work Index test was completed with the sample at a closed size of 100 mesh (150 microns). The work index was determined to be 25.3 kWh per short ton which indicates that the sample is very hard. Due to the hardness of the mineralized material, economic analysis will be required to evaluate the most economical grind size for leaching. The author is unaware of any other processing factors or deleterious elements that could have a significant effect on potential economic extraction.

Based on the results of the metallurgical testing and production actuals from the process plant, metallurgical recovery assumptions used in this TRS are 80% for gold assuming a grind size of 80% passing 325 mesh.

## 10.2 Adequacy of Data for the Technical Report Summary

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The metallurgical report prepared by RDi for the Rodeo Project provided data sufficient for use in this TRS. Golden Minerals demonstrated recovery of gold and silver approaching that achieved in the RDi studies from processing Rodeo mineralized material at Plant 2 in the 10 months of operation in 2021.

## 11. MINERAL RESOURCE ESTIMATES

Mining from the Rodeo open pit began December 2020 and doré production from Plant 2 began in January 2021. Doré is being sold by the company for a profit. This mining validates the exploration, drilling, and Resource estimation methods being used. A 3D block model was created for the Rodeo deposit by Golden Minerals and validated by Tetra Tech. Wireframes of the mineralized domains were created using Leapfrog software as a guide. Three domains were modeled based on Au grade properties, as well as geological and structural considerations. A high-grade domain was modeled for grades above 1.6 g/t Au, a low-grade domain was modeled for material with a grade of 1 g/t to 1.6 g/t Au, and a third domain was created for mineralized material over 0.15 g/t Au. The Leapfrog wireframes were used as a guide to establish the domain wireframes in Micromine for estimation, using a sectional method to review and adjust the wireframes as appropriate. The deposit is steeply dipping, at approximately 75 degrees along a strike of 330. The block model estimation was completed using ordinary kriging (OK). Data was flagged by domain and a soft boundary was used between the high-grade and low-grade domains, as well as the low-grade and mineralized domain boundary, for the purposes of estimation.

The estimation was performed in four passes for each domain. Details of the estimation passes can be found in **Table 11-1**.

**Table 11-1: Estimation pass parameters**

Pass	Method	Search Ellipse (m)	Sectors	Max Comp Per Sector	Comp Min	Comp Max
<b>High Grade Domain</b>						
First	OK	34-20-10	4	3	10	12
Second	OK	64-36-20	2	5	6	10
Third	OK	120-68-36	1	10	4	10
Fourth	OK	240-136-72	1	10	3	10
<b>Low Grade Domain</b>						
First	OK	34-20-10	4	3	10	12
Second	OK	64-36-20	2	5	6	10
Third	OK	120-68-36	1	10	3	10
Fourth	OK	240-136-72	1	10	2	10
<b>Mineralized Domain</b>						
First	OK	34-20-10	2	5	5	12
Second	OK	64-36-20	2	6	4	10
Third	OK	120-68-36	1	10	3	10
Fourth	OK	240-136-72	1	10	2	10

## 11.1 Input Data

Data used to estimate the model included reverse circulation (RC) drill holes, diamond drilling/core drill holes (DD), blasthole samples, and a limited number of surface trenches and pit samples. Careful attention was given to the blastholes to prevent bias due to the high density of data available. Blastholes were only allowed to contribute to the estimation of blocks in Pass 1 in the high-grade domain and in Pass 1-2 in the low-grade and mineralized material domains. Based on a statistical review, the grades were capped at 17.0 g/t Au and 140 g/t Ag. **Table 11-2** shows the input intervals for the mineralized material by type before and after capping was applied.

**Table 11-2: Input data statistics**

Data Type	Count	Mean Au (g/t)	Capped Mean Au (g/t)	Mean Ag (g/t)	Capped Mean Ag (g/t)
RC	3,064	0.64	0.63	9.12	9.07
DD	4,455	0.78	0.77	7.39	7.35
Blasthole	9,700	1.38	1.35	3.83	3.83
Trench	193	0.57	0.57	1.38	1.38
Pit	16	1.21	1.21	3.00	3.00
All	17,428	1.09	1.07	5.64	5.63

Intervals were composited to 2 meters for exploration holes and 3.5 meters for trenches. A single composite was created for the blastholes.

## 11.2 Classification

Classification was considered using statistical analysis of the estimation pass, average and closest distance of the composites, and number of drill holes used to complete the estimation. Professional judgement was used to smooth out the classification boundaries using wireframes. **Table 11-3** lists the criteria for Measured, Indicated, and Inferred blocks. Blocks within the final mine design were designated as Inferred and coded with Indicated or Measured where the criteria are satisfied.

**Table 11-3: Classification parameters**

Classification	Closest Composite (m)	Average Distance to Composite (m)
<b>Pass 1</b>		
Measured	<15	<30
Indicated	<30	<60
<b>Pass 2</b>		
Measured	<10	<20
Indicated	<25	<50
<b>Pass 3</b>		
Measured	None	
Indicated	<30	<60 or 3 or more drill holes
Inferred	<60	<120 or 2 or more drill holes

Classification	Closest Composite (m)	Average Distance to Composite (m)
<b>Pass 4</b>		
Measured	None	
Indicated	<30	<60 or 4 or more drill holes
Inferred	<60	<120 or 3 or more drill holes

### 11.3 Resources

Resources were calculated through the effective date October 31, 2021. The Resources are reported at a cutoff of 1.0 g/t for stockpiling and 1.6 g/t for processing. Numbers reported as Resource are constrained to a mine design of 1.0 g/t and are reported in **Table 11-4**.

**Table 11-4: Estimated Rodeo Resources for stockpile and processing**

Classification	Cutoff Au (g/t)	Tonnes	Au (g/t)	Au (oz)	Ag (g/t)	Ag (oz)
<b>Low-Grade (Stockpile)</b>						
Measured	1.0	208,500	1.24	8,350	10.03	67,200
Indicated	1.0	56,400	1.18	2,140	5.18	9,400
Measured + Indicated	1.0	264,900	1.23	10,500	9.00	76,600
Inferred	1.0	1,500	1.20	58	4.09	198
<b>High-Grade</b>						
Measured	1.6	310,700	3.11	31,100	13.10	131,000
Indicated	1.6	43,700	3.17	4,500	10.67	15,000
Measured + Indicated	1.6	354,400	3.12	35,600	12.80	146,000

\*Columns may not total due to rounding

### 11.4 Cutoff Grade

Resources have been tabulated using a 1.0 g/t Au cutoff grade for stock piling and 1.6 g/t Au for processing based on the assumptions shown in **Table 11-5**. The Resource tabulation is presented using the previous year average metal prices, considered with bank projections for the life of mine. The prices used are US\$25/troy ounce Ag and US\$1,800/troy ounce Au.

**Table 11-5: Cutoff price assumptions**

Assumption	Value
Au Price	\$1,800
Au Recovery	80%
Mining Cost	\$16.93
Processing Cost	\$39

## 12. MINERAL RESERVE ESTIMATES

Mineral Reserves have not been estimated for the Rodeo Project.

### 13. MINING METHODS

Due to the near-surface nature and continuity of the orebody, mining at Rodeo is conducted with open pit mining methods. Blasted material is mined with a diesel excavator and loaded into on-highway trucks for haulage to the plant site approximately 115 km away from the mine. Loading and hauling to the plant is typically carried out on the weekdays during the morning, to ensure adequate mineralized material delivery while allowing for mining of waste and low-grade materials to occur later in the day. If needed to supply mill feed, haulage to the plant may continue over the weekend. Separating the mining activities based on haulage destinations allows for more efficient use of resources, while creating a safer working environment. There are four stockpiles at the mine site for stockpiling mineralized material for potential future processing, and additional stockpiling area exists at the plant to allow for better material management and potential blending. Mine production averages 2,100 tpd of total movement and the pit has an expected mine life of 22 months. **Figure 13-1** shows the final pit outline for the Rodeo Project.

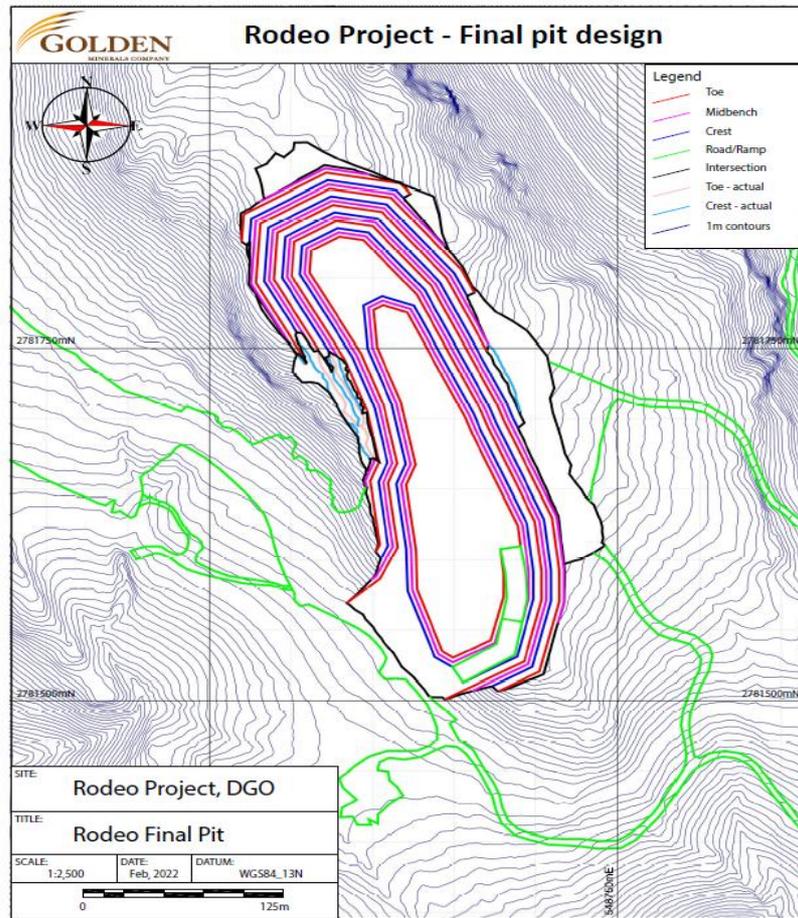


Figure 13-1: Rodeo final pit design

No detailed geotechnical or hydrogeological studies have been performed for Rodeo. Design parameters for pit design are shown in **Table 13-1**. Mining is conducted in 5 m benches which are double benched to 10 m.

Table 13-1: Rodeo pit design parameters

Parameter	Value
Bench Face Angle	60
Inter-ramp Angle	43
Bench Height	10 m (2x 5 m benches)
Catch Bench Width	10 m

Mining and hauling to the plant are carried out using contractors. The mining equipment fleet available for use at the Project is shown in **Table 13-2**. Haul truck quantities vary depending on scheduled weekly deliveries to the plant.

**Table 13-2: Contractor mining fleet**

Equipment Type	Available Quantity
Bulldozer	2
Wheel Loader	1
Track Excavator	1
Haul Truck	4
Road Grader	1
Water Truck	1
Track Drills	2
Drum Compactor	1

Labor requirements are minimal and are provided by the contractor. Golden Minerals personnel are responsible for blasthole sampling, supervisory, administrative, and engineering tasks.

## 14. PROCESSING AND RECOVERY METHODS

Mineralized material from the Rodeo mine is hauled approximately 115 km via on-highway trucks and stockpiled for process at the agitated leach plant in Velardeña, Durango (Plant 2). The plant is owned by Minera William S.A. de R.L. de C.V. and operated by Servicios Velardeña S.A. de C.V., both wholly owned subsidiaries of Golden Minerals. The plant has a design maximum throughput of 520 tpd and is currently operating at an average rate of 500 tpd. A jaw crusher followed by a cone crusher provide primary and secondary crushing of feed material. Crushed material enters a grinding circuit comprised of a 10.5 x 13 ft ball mill and a recently installed 8 x 22 ft regrind (secondary) mill, both in closed circuit with cyclones. The product from the mills at 80% passing 325 mesh is thickened and sent to a series of eight agitated lixiviation tanks where cyanide is added with a planned consumption of 3.0 to 3.1 kg/t, and precious metals are leached from the mineralized material at a design flow rate of 1,700 m<sup>3</sup>/day and a total leaching time of 84 hours. Rich solution is separated using counter-current decantation and sent to the Merrill-Crowe circuit for clarification and precipitation of the gold and silver that is then refined into gold and silver doré bars for transport. Tailings from the decantation is sent to the tailings storage facility at the plant site. A flowsheet of the recovery process at the Velardeña plant is shown in **Figure 14-1**.

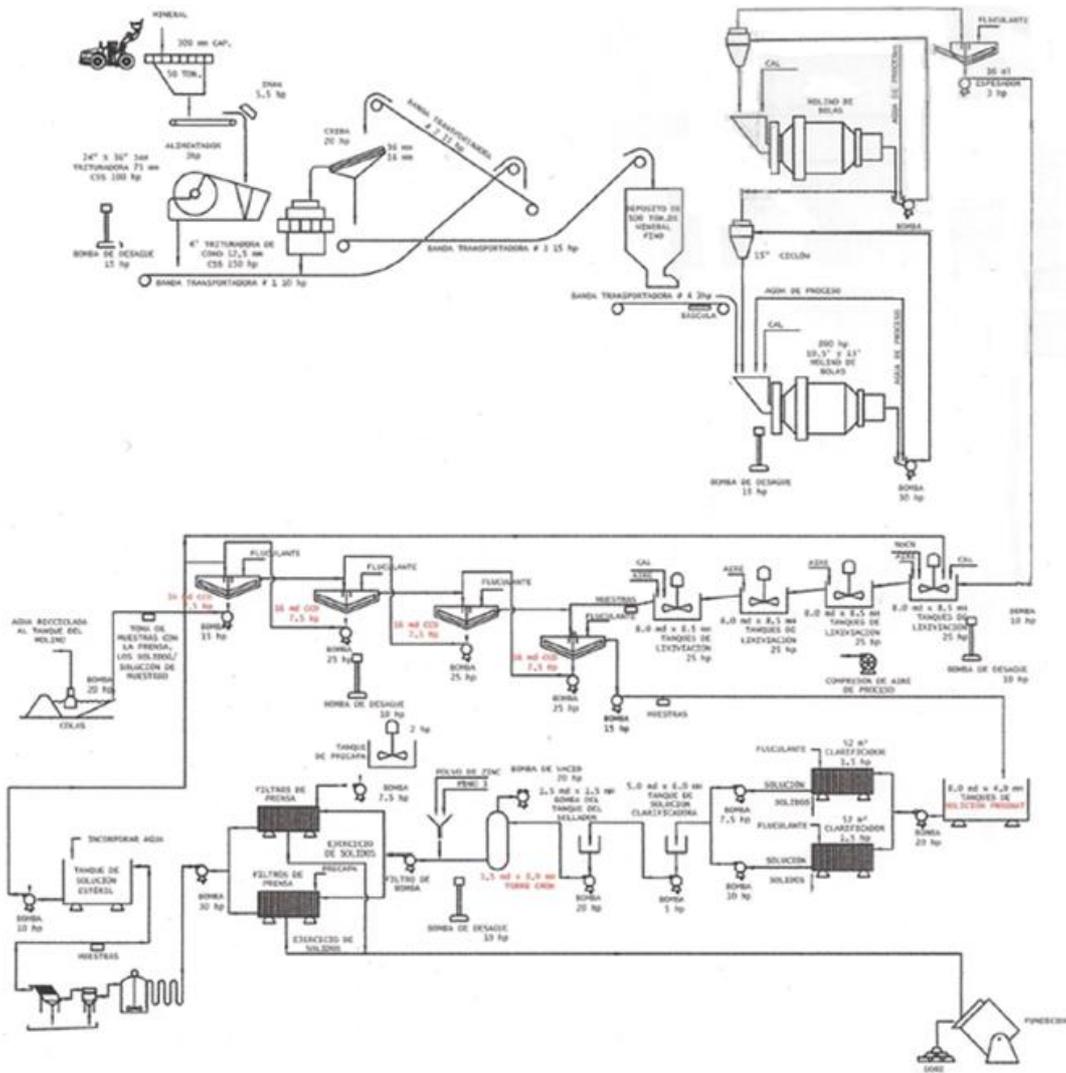


Figure 14-1: Plant 2 flowsheet

The plant facilities and equipment are in good operating condition. The tailings pond was recently expanded and is expected to have adequate capacity for the tailings generated by the Rodeo Project.

Budget and production results for January through October 2021 are summarized in **Table 14-1**. The plant has processed 119,848 t of mineralized material with an average head grade of 3.98 g/t-Au. Gold recovery has averaged 75.5%, and silver recovery has averaged 91.6%. In total, 2,084.82 kg of doré has been produced.

**Table 14-1: Budget and production results**

Parameter	Budget	Actual Jan-Oct 2021
<b>Throughput</b>		
t/h	18.6	17.0
t/d	446	409
<b>Grind</b>		
% -325 mesh	80	79
<b>Head Grade (g/t)</b>		
Au	3.39	3.98
Ag	8.81	10.97
NaCN Consumption (kg/t)	3.0-3.1	2.81
<b>Recovery (%)</b>		
Au	82.5	75.5
Ag		91.6
<b>Production (oz)</b>		
Au	10,901	11,196
Ag	24,147	42,571

Water consumption at Plant 2 averaged 0.80 m<sup>3</sup>/t from January through December 2021. Average power consumption at the plant was 831,000 kWh for the same period. The plant employs 98 workers.

Plant consumables for the January-October 2021 production period are summarized in **Table 14-2** below.

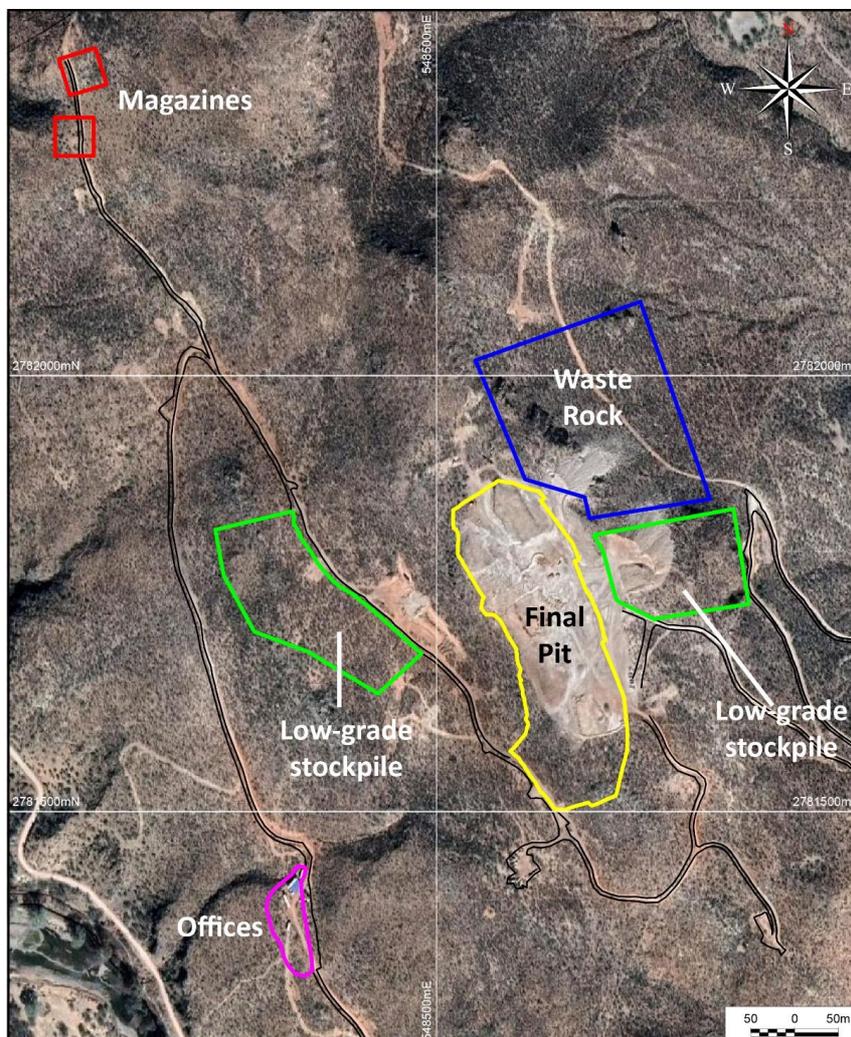
**Table 14-2: Plant 2 consumables**

Consumables – Jan. 2021-Oct. 2021							
	Cyanide	Calcium/Lime	Flocculant	Zinc	Diatomaceous Earth	3" Balls	1.25" Balls
Period	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
2021	336.35	220.01	1.27	45.57	12.02	361.98	80.90
	kg/tonne	kg/tonne	kg/tonne	kg/tonne	kg/tonne	kg/tonne	kg/tonne
2021	2.81	1.84	0.01	0.38	0.10	3.02	0.67

## 15. INFRASTRUCTURE

The Rodeo Project requires minimal infrastructure at the site due to the size and duration of the operation. As material is being processed off-site at the Velardeña plant, no processing infrastructure is present at Rodeo.

Infrastructure at the Rodeo Project includes access roads, a waste rock dump, and low-grade mineralized material stockpiles. The primary road for mine access is gravel and is maintained in good condition for year-round use. Its design is adequate for the transportation of supplies onto the site as well as haulage of mineralized material from the Rodeo pit to the Velardeña plant. The waste rock dump and low-grade stockpile have sufficient capacity to meet the expected production from the pit. A layout of the key project infrastructure is shown in **Figure 15-1**.



**Figure 15-1: Rodeo Project infrastructure**

## 16. MARKET STUDIES

Detailed market studies were not performed or reviewed for the purposes of this Initial Assessment TRS. The Rodeo Project is producing doré that meets industry standards for quality. Golden Minerals has a contract with Asahi Refining USA Inc. (Asahi) to refine the doré bars produced at the Velardeña plant. Asahi is independent of Golden Minerals, and is located in Salt Lake City, Utah, USA. Asahi will provide credit for 99.9% of the gold and 98.0% of the silver and apply a Treatment Charge of \$0.35/oz of doré and a Refining Charge of \$1.00/oz of recovered gold. The contract was renewed in March 2022 and will expire December 31, 2023.

The Rodeo mine is operating as a contract mining operation with Triturados del Guadiana, S.A. de C.V. (TRIGUSA). The contract has been executed and is valid through the expected life of the Project.

Commodity price assumptions used in this TRS are based on bank projections for the life of mine. Commodity prices for gold and silver are \$1,800/oz and \$25.00/oz respectively.

## 17. ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

### 17.1 Environmental Baseline Studies

The terrain of the sites proposed for development of the Project presents slopes, which are not very pronounced, and in some relatively flat areas its surroundings can be observed rough terrain, irregular features, and an open valley topography of mountains with low hills where the slopes are usually in average of 11.91°.

The soil represented is Chernozem (CH) and Leptosol (LP), which present a smooth surface layer of light brown, low in organic matter, and low base content. These soils are of medium texture with stony surface.

Wildlife is relatively average for the region, predominating the avifauna and mammals, however there are reptiles present. There is a river nearby the mine site, but due to terrain, there is no water on site.

The Environmental Impact Statement generated for this project indicates that the operations will be developed in an area with xerophilic vegetation, where there are some threatened/protected species will be considered for relocation. This zone contains 19 shrub species with ecological value, as well as 11 tree species, and 10 cacti and special plants.

Regarding fauna, 61 species of mammals (two threatened) have been identified, as well as 221 species of birds (seven threatened and 20 with special protection), 11 species of amphibians (one threatened and three with special protection), and 31 reptiles (eight threatened and six with special protection).

### 17.2 Requirements and Plans for Waste and Tailings Disposal, Site Monitoring, and Water Management during Operations and after Mine Closure

The open pit mine life will be short and will be focused in a small area. Waste generation will be managed during mine operations and the waste rock will be part of the closure plan for the site. No tailings will be generated on site. Tailings are produced at Plant 2, which has sufficient tailings storage capacity for the LOM of the Project. Golden Minerals has the necessary permits and agreements to obtain water from the nearby Nazas River for mine operations. The water amount required for operations at the open pit is minimal. There will be no water remaining on site at closure.

### 17.3 Project Permitting Requirements and Status

Permitting requirements, surface rights agreements, and commercial agreements are shown in **Table 17-1** and **Table 17-2** below. According to the information provided, and given the nature of the project, there is no reclamation bond required for this operation.

### 17.4 Plans, Negotiations, or Agreements with Local Individuals or Groups

Golden Minerals has reached several agreements with the communities and specific individuals of those communities. Agreements with the ejido for right of way of some specific zones of the project have been achieved. Owners of other private lands have agreed to lease portions of their land for mine operations. Tetra Tech has verified those agreements are in place and current.

### 17.5 Mine Closure Plans and Costs

Golden Minerals has generated a closure plan for the mine by an independent consultant, since the plant for mineral processing will continue to operate beyond the life of mine for another project Golden Minerals owns.

The plan is to stabilize the waste rock dumps, as well as the low-grade stockpiles, the pit area will be fenced, the explosive magazines will be dismantled, and the roads will be reforested. The estimated cost for these activities is approximately US\$447,000.

## 17.6 Data Adequacy and Compliance with Environmental Compliance, Permitting, and Local Individuals or Groups

The information provided by Golden Minerals contains legal documentation related to environmental compliance, and SEMARNAT, the governmental office in charge of the environmental aspects. Golden Minerals also has provided documents that support operations from the permitting side, which are official files for mine operations, haulage, waste, and water aspects. There are also documents related to agreements with the communities for other related activities that are described next. The data provided is in good standing to the knowledge and understanding of the QPs of this report.

## 17.7 Commitments to Ensure Local Procurement and Hiring

There are several agreements with the communities around the Project. These agreements are related to temporary use of land, local workforce for loading and hauling mineralized material from the mine to the plant, land leasing from the owners of the land required for mine operations, and other community related activities.

**Table 17-1** includes a summary of the Mexican Environmental authorities and documents that include descriptions of studies and procedures for obtaining the required permits according to SEMARNAT Durango for Environmental Studies, CONAGUA for Water use and Landowners, Communities and Private Owners, conditions, costs, and payments associated and time frames for operating the Rodeo Project by Minera de Cordilleras, a Mexican subsidiary of Golden Minerals.

**Table 17-2** includes a summary list of contracts and authorizations for operating the Rodeo Project, including contractors for diamond drilling, transportation of minerals from the open pit mining operations to the Processing Plant 2, located at Velardeña, within property controlled by Golden Minerals.

**Table 17-1: Environmental and legal documents for the Rodeo Project**

Authorization	Number	Effective Date	Type	Expiration/Duration
1.- Change Use of Soil (CUS) in Forest Land.	SG/130.2.2/01423/20	Sep 22, 2020.	CUSTF - 13.1887 Ha.	5 years.
2.A.- Solid Waste Management.	SRNyMA. SMA.0861.2021	Jan 2021.	RERET-1-SRNYMA-426-21	1 year
2.B.- Provisional Permit for Unloading. Contractor "HIDRO PLUS".	HLA190314B32.	Jan 4, 2021.	Direct Discharge from Plant.	Dec 31, 2021.
3.A.- Re-validation of General Permit for the Use of Explosives & Acc.	4596-Dgo.	Jan 1 to Dec 31, 2022.	Permit for use of Explosives.	Dec 31, 2022.
3.B.- Re-validation of General Permit for the use of Explosives & Acc.	5219-Dgo.	Jan 1 to Dec 31, 2022.	Permit for use of Explosives.	Dec 31, 2022.
4 A.- Re-validation of Permit for Management of Hazardous Waste.	MWIMJ1000421.	Nov 21,2014.	Mining Operations.	Extension 2025.

Authorization	Number	Effective Date	Type	Expiration/ Duration
4 B.- Re-validation of Permit for Management of Hazardous Waste.	10/EV-0561/05/08.	May 28, 2008.	Mining Operations.	Extension 2025.
4 C.- Re-validation of Permit for Management of Hazardous Waste.	10/EV-0312/10/09.	Oct 15, 2009.	Mining Operations.	Extension 2025.
4 D.- Re-validation of Permit for Management of Hazardous Waste.	10/EV-0225/04/18.	Apr 11, 2018.	Generator Operations.	Extension.
5.- Second Notification in Environmental Impact.	SG/130.2.1.1/0013/22.	Jan 18, 2022.	Extension of Tailings Dam.6 yrs.	Extension due to inactivity.
7.- Records of Management of Metallurgical Waste.	MWIMJ1000411.	Dec 11, 2017.	Application for Registration.	Approval July 31, 2018 (0006148).
8.- Extension of Tailings Dam III, Phase 2A and 3A	SG/130.2.2/0132/2022	Jan 18, 2022.	Application Extension 2 years.	Approval for 2 more years.
9.- Surface Rights Agreement with Ejido Francisco Marquez.	Ejido Francisco Marquez	Mar 29, 2020.	Rights to drive through Ejido.	Duration 10 years with ability to re-new

**Table 17-2: Commercial service contracts for Minera de Cordilleras**

Contract Name	Purpose	Effective Date	Description	Contractor	Term	Comment
10.- Mineral Transport from Rodeo Project to GM Velardeña Plant.	Transportation distance 115 km.	Contract from Aug 2, 2021.	Transportation via: Rodeo, Nazas, Prediceña and Velardeña.	Llanos de Zapata, S.P.R. Ced. AR6551/2021.	Duration to Dec 31, 2021 Renewable.	Insurance per Load \$4,000. US.
11 A.- Diamond Drilling Contract for Rodeo Project.+40 DHs t +-100 m depth.	Drilling 2,000 m in NQ, HQ and PQ	Duration of contract 4 months.	Drilling at the Rodeo Project 2,000m, +- 100 ea. Diam. NQ, HQ, PQ.	Contractor Site: Tlajomulco de Zuñiga, Jalisco.	Contract: 4 Mo. Drill 2,000 m in 40 DHs.	Advance pay. \$15,000 US + \$3,000 mobilization.
11 B.- Diamond Drilling Contract for Rodeo Project DH of 4.5" to 5.5" Diam.	Drilling 2,500 m minimum.	Contract from July 30, 2021/Copl.	Drilling at the Rodeo Project 2,500m, Diam. 4.5 to 5.5 Inches.	Major Drilling de Mexico, Calle Nogales 29,Hillo.	Contract: Drill 2,500 m minimum.	Payments upon presentation of Invoice c/15 days.
11 C.- Rental of Crushing Equipment for Excavation, Drilling & Construction (*).	Workings at Rodeo Project.	Duration to Dec 31, 2021.	Machinery and equipment rented includes operators.	Triturados del Guadiana, S.A.C.V.	Annual contract to Dec 31, 2021.	Contract may be extended by Minera Cordilleras.

## 18. CAPITAL AND OPERATING COSTS

The Rodeo Project is currently in operation without quoted Mineral Reserves. Capital and operating cost estimates have been provided to Tetra Tech by Golden Minerals based on past production data and internal forecasts, which Tetra Tech has reviewed and found to be consistent with a mine of this type. The cost information used in the model is based on production actuals, which are more accurate than the required 50% accuracy for a study of this level.

Required capital costs for the Rodeo mine consists of an estimated \$447k for closure and reclamation. No additional capital is required at the mine. No capital costs are estimated for Plant 2 for the life of the Project.

Mine and plant operating costs are developed from production actuals and cost projections for the remainder of the mine life and will average \$66.68/t-milled. These costs are summarized in **Table 18-1**.

**Table 18-1: Operating cost summary**

Description	LOM Cost (\$000s)	Unit Cost (\$/t-milled)
Mining	\$3,790	\$10.79
Processing	\$18,278	\$52.04
G&A	\$1,352	\$3.85
<b>Total</b>	<b>\$23,421</b>	<b>\$66.68</b>

## 19. ECONOMIC ANALYSIS

An economic analysis was performed for the expected life of mine of the Project. The economic analysis is based on Mineral Resources that, unlike Mineral Reserves, do not have demonstrated economic viability. Mineral Reserves have not been estimated for the Rodeo Project.

The LOM consists of 24 months of operation and assumes 12 months to perform closure and reclamation at the Rodeo property. The start point for the LOM is November 1, 2021. General assumptions used in the economic analysis are shown in **Table 19-1**.

**Table 19-1: Economic model assumptions**

Description	Units	Value
<b>Market Prices</b>		
Gold	\$/oz	\$1,800
Silver	\$/oz	\$25.00
<b>Taxes</b>		
La Cuesta Royalty	%	2.0%
Mexico Precious Metals Royalty	%	0.5%
<b>Financial</b>		
Discount Rate	%	8.0%

Results of the economic analysis are shown in **Table 19-2**. The pre-tax NPV of the Project is \$22.9M.

**Table 19-2: Economic model results**

Description	Unit Cost (\$/t-milled)	Total Value (\$000s)
NSR	\$141.70	\$49,767
<b>Net Revenue</b>	<b>\$141.70</b>	<b>\$49,767</b>
<b>Operating Costs</b>		
Mining	\$10.79	(\$3,790)
Processing	\$52.04	(\$18,278)
G&A	\$3.85	(\$1,352)
<b>Operating Costs</b>	<b>\$66.68</b>	<b>(\$23,421)</b>
<b>Operating Margin</b>	<b>\$75.01</b>	<b>\$26,346</b>
<b>Capital Costs</b>		
Mining	-	\$0
Process Plant	-	\$0
Infrastructure	-	\$0
Closure	-	(\$447)
<b>Capital Costs</b>	<b>-</b>	<b>(\$447)</b>

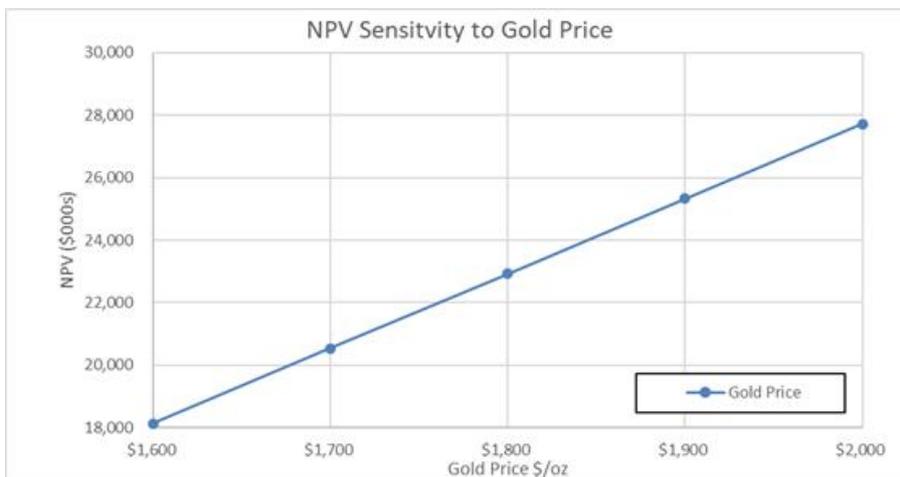
Description	Unit Cost (\$/t-milled)	Total Value (\$000s)
<b>Royalties</b>		
La Cuesta Royalty	-	(\$995)
Mexican Precious Metals Royalty	-	(\$249)
<b>Pre-Tax Cash Flow</b>	-	<b>\$24,655</b>
<b>Pre-Tax NPV<sub>8%</sub></b>	-	<b>\$22,928</b>

Table 19-3 shows the LOM cash flow on an annual basis.

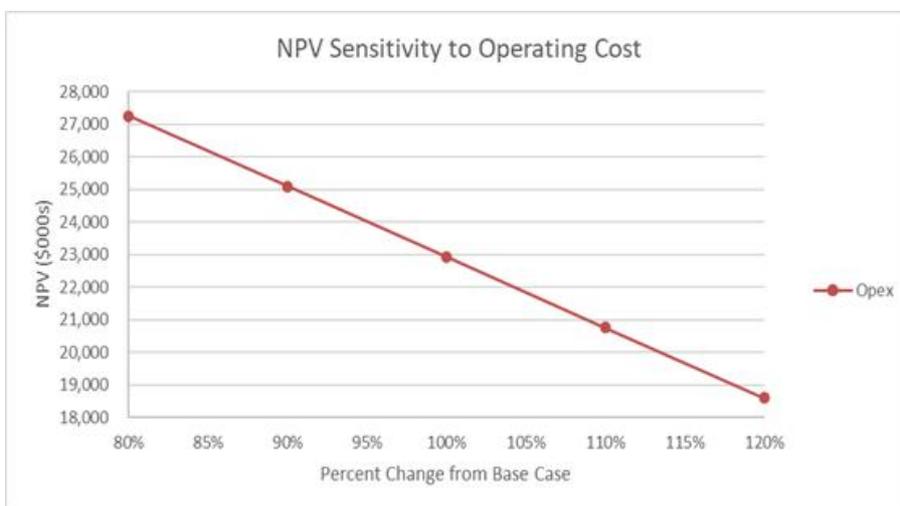
Table 19-3: LOM annual cash flow

LOM Cash Flow	\$000s			
Item	Total	Year 1	Year 2	Year 3
<b>NSR</b>				
<b>Gross Payable</b>	\$50,392	\$27,515	\$22,877	
<b>TCs, RCs, Freight</b>	(\$625)	(\$294)	(\$331)	
<b>NSR</b>	<b>\$49,767</b>	<b>\$27,221</b>	<b>\$22,546</b>	
<b>Operating Costs</b>				
<b>Mining Costs</b>	(\$3,790)	(\$2,100)	(\$1,690)	
<b>Milling Costs</b>	(\$18,278)	(\$9,561)	(\$8,717)	
<b>Contingency and Other</b>	(\$1,352)	(\$696)	(\$656)	
<b>Operating Costs</b>	<b>(\$23,421)</b>	<b>(\$12,358)</b>	<b>(\$11,063)</b>	
<b>Operating Margin</b>	<b>\$26,346</b>	<b>\$14,863</b>	<b>\$11,483</b>	
<b>Royalties</b>				
<b>La Cuesta Royalty</b>	(\$995)	(\$544)	(\$451)	
<b>Mexican Precious Metals Royalty</b>	(\$249)	(\$136)	(\$113)	
<b>Capital Costs</b>				
<b>Mine Capital Costs</b>				
<b>Processing Capital Costs</b>				
<b>Closure Costs</b>	(\$447)			(\$447)
<b>Contingency and Other</b>				
<b>Pre-Tax Cash Flow</b>	<b>\$24,655</b>	<b>\$14,183</b>	<b>\$10,919</b>	<b>(\$447)</b>
<b>Pre-Tax NPV<sub>8%</sub></b>	<b>\$22,928</b>			

Sensitivity analyses on metal price and operating costs were performed on the economic model results. Due to the lack of capital cost requirements, no sensitivity analysis was conducted on capital costs. The results of the sensitivity analyses are shown in **Figure 19-1** and **Figure 19-2**. Results show that a reduction in metal price by \$100/oz would result in a 10% reduction in NPV, while an increase in operating costs by 10% would result in a 9% decrease in NPV.



**Figure 19-1: NPV sensitivity to gold price**



**Figure 19-2: NPV sensitivity to operating cost**

## 20. ADJACENT PROPERTIES

There are no relevant adjacent properties to the Rodeo mine.

## 21. OTHER RELEVANT DATA AND INFORMATION

Relevant data pertaining to the Project is detailed in the other sections of this TRS and the authors do not consider any additional information necessary to provide a balanced and complete description of the Project.

## 22. INTERPRETATION AND CONCLUSIONS.

The Rodeo mine has been in production since Q1 2021. The operation utilizes contract drilling, mining, and hauling services, and processes mineralized material at their wholly owned processing plant in Velardeña. The Project has been successfully producing and selling doré to the market.

### 22.1 Geology and Resource

The author has reviewed the Resource model for the Rodeo deposit estimated by Golden Minerals staff. The inputs, parameters, and estimation results are within industry best practices. The estimation, classification, and reporting of the Resources constrained by the mine design are conservative in nature. Production data validates the previous drilling and Resource estimates.

### 22.2 Mining

Open pit surface mining is completed at the Rodeo site using a diesel excavator and over highway trucks to transport the mineralized material to the processing plant at the company's Velardeña property. Mine production averages 2,100 tpd of total movement and the pit has an expected mine life of 22 months, and the LOM includes two additional months of production from the high-grade stockpile at the plant. Tetra Tech has reviewed the mine plan created by Golden Minerals staff and finds it to be within industry best practices. The pit parameters are considered conservative in nature.

### 22.3 Metallurgy and Processing

The metallurgical report prepared by RDi for the Rodeo Project provided data sufficient for use in this TRS. Golden Minerals demonstrated recovery of gold and silver from Rodeo mineralized material at Plant 2 in 2021. Installation of an additional ball mill circuit in April 2021 provided the ability to process material with varying degrees of hardness at a rate of 520 tpd.

The tailings pond at Plant 2 was expanded in 2019 making enough room available for the storage of the Rodeo Project's tailings. Golden Minerals has a permit that will allow further expansion of the pond if required.

### 22.4 Environmental and Permitting

Tetra Tech has reviewed the available information on permits, agreements, and environmental aspects. Based on this information, the author does not know of any outstanding issues on this regard that will affect the current operations or mine life.

### 22.5 Economic Analysis

An economic analysis was performed for the expected 24-month life of mine of the Project, starting November 1, 2021. The economic analysis is based on Mineral Resources that are not Mineral Reserves and have not a demonstrated economic viability. Mineral Reserves have not been estimated for the Rodeo Project. The pre-tax NPV of the Project is \$22.9M. The Project is sensitive to metal prices and operating costs.

### 22.6 Significant Risk Factors

The mine is operating and selling a product and has a relatively short mine life. These factors reduce some of the significant risk factors for the Project. Risks include changes in agreements with landowners and/or communities for access, mining, and water use.

## 23. RECOMMENDATIONS

### 23.1 Geology and Resource

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Exploration drilling efforts should continue to determine the limits of the deposit, where they have not already been defined. There is the potential for additional Resources in the area.

### 23.2 Mining

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Golden Minerals should consider the economic viability of processing the stockpiled material, either after the mine life is exhausted, or through blending with the current mineralized material being sent to the processing plant.

### 23.3 Metallurgy and Processing

---

Based on the author's review of the metallurgical testing, it is recommended that Golden Minerals continue to investigate ways to improve gold leach recovery through mineralogical studies and laboratory leach test work.

## 24. REFERENCES

Mineral Resources Engineering. 2020. "Preliminary Economic Assessment, Rodeo Project." NI 43-101 Technical Report, Salt Lake City, UT.

Tetra Tech. 2022. "Preliminary Economic Assessment - Rodeo Project." NI 43-101 Technical Report, Golden, CO.

## 25. RELIANCE ON INFORMATION PROVIDED BY THE REGISTRANT

The authors are relying on documents and statements provided by Golden Minerals personnel regarding:

- Resource estimation
- Mine and plant production data
- Legal status of mineral concessions
- Status and timelines of permits, contracts, and agreements required for the future or that are under negotiation
- Material contracts
- Mine closure plans and associated costs



Velardeña Project  
**Technical Report Summary**  
Durango State, Mexico



March 2022

Project No. 117-8133004



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# Velardeña Project Technical Report Summary

117-8133004

March 2022

## PRESENTED TO

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## ACRONYMS & ABBREVIATIONS

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3D	Three dimensional
Ag	Silver
Ar	Argon
As	Arsenic
ASARCO	American Smelting and Refining Company
Au	Gold
BAT	Batch amenability tests
BIOX	Bio-oxidation
CAPEX	Capital expenditures
CCD	Counter current decantation
cm	Centimeter
Cu	Copper
cu ft	Cubic feet
DMT	Dry metric tonne
Fe	Iron
ft	Feet
g/t	Grams/tonne
HP	Horsepower
IDW	Inverse distanced weighted
IMMSA	Industrial Minera de México S.A
in	Inch
IRR	Internal rate of return
k	Thousand
kg	Kilogram
km	Kilometer
kt	Thousand tonnes
lb	Pound
LOM	Life of mine
m	Meter
M	Million
MI	Measured and Indicated
MII	Measured, Indicated, and Inferred
mm	Millimeters
Mt	Million tonnes
MXN	Mexican Pesos
mya	Million years ago
NPV	Net present value
NSR	Net smelter return
OPEX	Operating expenditure
oz	Troy ounce
Pb	Lead
PEA	Preliminary Economic Assessment

PLS	Pregnant leach solution
QA/QC	Quality assurance/quality control
QP	Qualified Person
ROM	Run of mine
SEMARNAT	Secretaria del Medio Ambiente y Recursos Naturales
t	Tonnes
tpd	Tonnes per day
tpy	Tonnes per year
TRS	Technical Report Summary
TSF	Tailings storage facility
USD	United States dollars
yd	Yard
yr	year
Zn	Zinc

# 1. EXECUTIVE SUMMARY

This Technical Report Summary (TRS) is prepared for Golden Minerals Company (Golden Minerals) to report Mineral Resources for the Velardeña Project (the Project) in Velardeña, Durango, Mexico. The purpose of this report is to summarize the results of an Initial Assessment for the property as defined under the U.S. Securities and Exchange Commission's Regulation S-K 1300. This is the first TRS prepared for the Project under S-K 1300 guidelines.

## 1.1 Property Description and Ownership

The Project is held by Minera William S.A. de R.L. de C.V. (Minera William), a wholly owned subsidiary of Golden Minerals, and is comprised of two properties:

- The Velardeña property is centered on UTM grid coordinates 2774300 N and 632200 E (WGS 84 datum, zone 13). This property contains the Santa Juana mine which has been the focus of mining efforts since 1995, as well as the historical Terneras, San Juanes, and San Mateo mines.
- The Chicago property is located approximately 2 km south of the Velardeña property and is centered at UTM grid coordinates 2772480 N and 631867 E (WGS 84 datum, zone 13). This property contains the historical Los Muertos-Chicago mine. The Project's location relative to the major cities of Torreón and Durango is shown in **Figure 1-1**.



Figure 1-1: Velardeña Project location

The Project also has two processing plants. Plant 1 treats sulfide material by conventional crush, grind, and differential flotation technologies to produce Pb, Zn, and pyrite concentrates, and Plant 2 is a typical agitated leach plant for processing oxide Au-Ag material to produce Au-Ag doré by cyanide leach/Merrill-Crowe.

The Project consists of 28 claims covering the Velardeña and Chicago properties controlled by Golden Minerals through its Mexican subsidiary Minera William, with a total area of 315.51 hectares. Surface rights pertaining to the Project are held by Golden Minerals as well as two local ejidos (rural cooperative communities). Golden Minerals has entered into agreements with the ejidos to obtain rights for surface access and to perform work.

## 1.2 Geology and Mineralization

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The Project is located at the easternmost limit of the Sierra Madre Occidental, near its boundary with the Sierra Madre Oriental (Mesa Central sub-province). The deposits of the Sierra de Santa María and Sierra San Lorenzo, like many other polymetallic, hydrothermal deposits in northern Mexico, are situated along this fundamental boundary which separates thick Tertiary volcanic sequences with Mesozoic basement rocks to the west from Mesozoic carbonates with Paleozoic and older basement to the east.

Regional Geology is characterized by a thick sequence of limestone and minor, calcareous clastic sediments of Cretaceous age, intruded by Tertiary plutons of mostly felsic to intermediate composition. During the Laramide geologic event, sediments were subject to an initial stage of compression which resulted in formation of large amplitude, upright to overturned folds generating the distinctive strike ridges of limestone, which dominate local topography. Fold axes trend northerly in the northern part of the region but are warped or deflected to west northwest azimuths in the south. The northeast trending hinge line or deflection which controls this fundamental change in strike passes through the Velardeña district.

Mineralization consists primarily of calcite-quartz veins with minor calc-silicate hosted (skarn) and massive sulfide replacement bodies. All mineralization is essentially polymetallic, Ag, Au, Pb, Zn plus or minus Cu. Individual veins are usually thin (0.2 m to 0.5 m) but remarkably consistent along strike and down dip. Coxcomb and rhythmically banded textures are common in some vein exposures. Historical production in the district has been primarily from the oxide portions of the veins that can extend to depths of several hundred meters.

## 1.3 Property Status

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The mines at the Project are in advanced development stages. Production stopped in 2015 and the mines are currently in care and maintenance. The Project has been extensively explored from the surface using geologic mapping, vein mapping, and vein sampling. Underground exploration consisted of diamond drilling, geologic level mapping, vein level mapping, vein sampling, and drift and stope development. Underground development includes 10,122 meters of drift and ramp development and 2,278 meters of raise development.

Plant 1 is under care and maintenance after operation ceased in 2015. Historical operational results support the existing process flow sheet for potential future production at the plant. Plant 2 is in operation, processing material from Golden Minerals' Rodeo mine. Test work has indicated that pyrite concentrate produced at the Project could be successfully oxidized with a BIOX® process prior to cyanidation, potentially improving gold recovery and project economics. This TRS incorporates a bio-oxidation process as part of the assessment of the Project.

## 1.4 Mineral Resource Estimates

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Estimated Mineral Resources with an effective date of March 1, 2022, for the Velardeña project are shown in **Table 1-1**. The Resource is reported by mineral type and Resource class for all veins. Resources were calculated as diluted to a minimum of 0.7 meters and are reported at a \$175 NSR cutoff.

**Table 1-1: Velardeña Project Resources**

Classification	Mineral Type	NSR Cutoff	Tonnes	Grade Ag g/t	Grade Au g/t	Grade Pb%	Grade Zn%	Ag oz	Au oz	Pb lb	Zn lb
Measured	Oxide	175	128,800	268	5.69	1.74	1.53	1,108,000	23,500	4,936,000	4,333,400
Indicated	Oxide	175	280,300	262	5.06	1.73	1.45	2,361,200	45,600	10,681,500	8,936,600
Measured + Indicated	Oxide	175	409,100	264	5.26	1.73	1.47	3,469,200	69,100	15,617,500	13,270,000
Inferred	Oxide	175	351,400	417	4.95	2.55	1.45	4,714,600	56,000	19,729,500	11,248,200
Measured	Sulfide	175	256,200	357	5.52	1.56	1.91	2,942,800	45,500	8,819,300	10,769,700
Indicated	Sulfide	175	603,500	341	4.79	1.46	1.91	6,619,400	92,900	19,475,600	25,408,900
Measured + Indicated	Sulfide	175	859,700	346	5.01	1.49	1.91	9,562,200	138,400	28,294,900	36,178,600
Inferred	Sulfide	175	1,357,700	348	4.76	1.52	1.97	15,179,000	207,800	45,534,200	58,952,900
Measured	All	175	385,000	327	5.58	1.62	1.78	4,050,800	69,000	13,755,300	15,103,100
Indicated	All	175	883,800	316	4.88	1.55	1.76	8,980,600	138,500	30,157,100	34,345,500
Measured + Indicated	All	175	1,268,800	319	5.09	1.57	1.77	13,031,400	207,500	43,912,400	49,448,600
Inferred	All	175	1,709,200	362	4.80	1.73	1.86	19,893,600	263,800	65,263,700	70,201,100

Notes:

- (1) Resources are reported as diluted Tonnes and grade to 0.7 m fixed width
- (2) Metal prices for NSR cutoff are: US\$23.70/troy ounce Ag, US\$1,744/troy ounce Au, US\$0.97/lb Pb, and US\$1.15/lb Zn
- (3) Columns may not total due to rounding

## 1.5 Mineral Reserve Estimates

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Mineral Reserves have not been estimated for the Velardeña Project.

## 1.6 Capital and Operating Costs

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Two capital and operating cost estimates were generated for the Project to support two economic analysis cases. One case considers Measured, Indicated, and Inferred (MII) Mineral Resources and the other considers only Measured and Indicated Mineral (MI) Resources. Capital and operating costs are based on Golden Minerals internal forecasts, which Tetra Tech has reviewed and found to be consistent with a mine of this type. Both capital and operating costs have a 10% contingency applied. Tetra Tech considers these cost estimates to be within 50%.

Capital costs total \$21M for the case considering the MII material, and \$18M for the MI case. Operating costs for the MII and MI cases total \$300M and \$106M, respectively.

## 1.7 Economic Analysis

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Two economic models were prepared for the Project: one includes Inferred Mineral Resources in the analysis (MII case), and the second excludes the Inferred material (MI case). The economic model results are based on Mineral Resources that, unlike Mineral Reserves, do not have demonstrated economic viability.

The MII case has a mine life of 11 years and a pre-tax NPV of \$119M with an IRR of 114%. The MI case has a mine life of 4 years and reports a pre-tax NPV of \$48M with an IRR of 101%. Both cases were discounted at 8%.

## 1.8 Permitting Requirements

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Areas with permitting requirements at the Project include the Velardeña mine, Plant 1, and Plant 2. Golden Minerals personnel report the Project holds and has retained the necessary permits to operate the mines and plants at Velardeña, and further there are no unresolved issues with the environmental regulatory agencies. They do not anticipate any limitations on the operations due to future inspections or evaluations by the environmental authorities. Details of the required permits and their status are contained in **Section 3.3**.

## 1.9 Conclusions and Recommendations

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### 1.9.1 Geology & Resources

Drill hole and channel samples have been collected and analyzed using industry standard methods and practices and are sufficient to support the characterization of grade and thickness and further support the estimation of Measured, Indicated, and Inferred Resources.

Recommendations for future work include:

- Continue to collect specific gravity measurements and refine current estimations of specific gravity. Additional measurement should ideally be made with a paraffin wax or epoxy coating
- Implement procedures of duplicate channel sampling by secondary sampling teams of drifts prior to stope development to ensure grade and thickness characteristics and to serve as field duplication of channel samples
- Setup of strict control sample review procedures and tolerances involving review of control sample failure on receipt of each batch's results, and automatic triggering of batch reanalysis immediately after being alerted to failures
- Improve sample data transcription methods to reduce control sample labeling errors and immediately resolve errors when encountered

- Perform a detailed model reconciliation on a completed stope early in the proposed mine life and alter the estimation methods if the result of the reconciliation suggest refinements should be made
- Continue to advance exploration drilling down dip of current Inferred Resources as new levels are established. Preferentially target the Terneras, San Mateo, Roca Negra, and A4 veins
- The costs for additional drilling have not been included in the TRS analysis but any further Resource expansion would be dependent on additional drilling

### 1.9.2 Mining

Results indicate mining is potentially economically viable with and without the Inferred Resources. The Inferred material accounts for approximately 57% of the total Resource, and, due to the nature of the mineralization and the scale of the operations, extensive Resource drilling of the deposit is not planned. For this reason, detailed long-term mine plans and schedules are not expected to be produced for the deposit. Consequently, residual risk remains for mining of the project.

The success of the proposed plan is sensitive to mining dilution, which could increase the costs of saleable products, but also provides opportunity as any potential reductions in dilution from the mining would greatly benefit the project. Test mining at the site has confirmed a minimum selective mining width of 0.7 m is achievable, which can contribute to reducing dilution.

It is recommended that Golden Minerals implements cut and fill mining where waste and vein material are blasted separately in order to reduce ore dilution. This practice would consider more total tonnes blasted in each section. Vein tonnes would be reduced, but the resulting grade would be higher. Recent tests on selective mining widths of 0.7 meters have proven to be achievable. Because this practice requires efficient operations control, Tetra Tech recommends having detailed control in drilling and blasting.

The mine plan developed for the study should be optimized and undertaken at a more detailed level, which will enable a greater understanding of mining constraints, costs and resulting mill feed. Currently, only sulfide material is being considered for the conceptual mine layout. In the future, it could be economical to include oxide material, as processing allows.

### 1.9.3 Metallurgy and Processing

There are no geological, lithological, or mineralogical changes in the process plant feed anticipated for the envisaged potential future production as compared to previous operations. Existing legacy operational data from Plant 1 and current processing of mineralized material from the Rodeo mine in Plant 2 supports the process flow sheet for future production.

The use of existing and refurbished equipment within the pre-existing facilities, and the production of marketable concentrates, is Golden Minerals' preferred method of treating potential future production.

Antimony and arsenic are penalty elements in the lead and zinc concentrates and could be added to the database and spatially modeled. Additional metallurgical test work is recommended to investigate the depression of antimony and arsenic from the final lead and zinc concentrates, and zinc from the pyrite concentrate.

Potential of a new bio-oxidation plant to improve gold recovery warrants further test work to confirm previous encouraging results.

### 1.9.4 Economic Analysis

Based on the two separate economic analyses, including, and excluding the Inferred Resources, the findings of this study suggest the Project is conceptually economically viable. The study has been based on Mineral Resources, which by definition, are not Mineral Reserves and do not have demonstrated economic viability. Currently, it is anticipated the

salvage sale of equipment will cover the cost of the reclamation costs. Due to changing parameters in the mine life and size, it is recommended to review this assumption in the future.

### 1.9.5 Significant Risk Factors

Factors that could affect the potential economic viability of the project could include underestimations of operating capital and declines in any or all the metal prices. Estimation of Resources could be affected by changes in metal prices and the actual mineralized shoot shapes and orientations. Successful implementation of the proposed mine plan is subject to the successful conversion of Inferred Resources to Indicated or Measured classification as well as conversion of Measured and Indicated Mineral Resources to Mineral Reserves, the prediction of stope layout and shape which is controlled by the actual shape of mineralized shoots and their orientations, and the ability of the mining operations to control waste dilution.

The performance of the BIOX® plant is key to the economics estimated in this study. If the expected results are not achieved, the BIOX® process would compromise an important part of the entire flow sheet.

## 2. INTRODUCTION

This Technical Report Summary (TRS) is prepared for Golden Minerals Company (Golden Minerals) to report Mineral Resources for the Velardeña Project (the Project) in Velardeña, Durango, Mexico. The Project is held by Minera William S.A. de R.L. de C.V. (Minera William), a wholly owned subsidiary of Golden Minerals. The purpose of this report is to summarize the results of an Initial Assessment level study for the property as defined under the U.S. Securities and Exchange Commission's Regulation S-K 1300. This is the first TRS prepared for the Velardeña Project.

All references to dollars in this report are to US dollars (USD) unless otherwise noted. Distances, areas, volumes, and masses are expressed using metric units unless indicated otherwise. All tonnages are in tonnes (1,000 kilograms), precious metal grade values are reported in grams per tonne (g/t), and precious metal quantities are presented as troy ounces (oz).

### 2.1 Sources of Information

This TRS summarizes the information contained in the Canadian National Instrument 43-101 compliant Preliminary Economic Assessment report entitled *Preliminary Economic Assessment Technical Report of the Velardeña Project, Durango State, Mexico* prepared by Tetra Tech, with an effective date of *March 1, 2022*. Additional sources of information include materials and comments provided to Tetra Tech by Golden Minerals personnel, as described in **Section 25**.

### 2.2 Site Inspection

Dr. Guillermo Dante Ramírez-Rodríguez, Mr. Randolph Schneider, and Ms. Kira Johnson visited the site on December 10, 2019. The visit included observations of geologic interpretations, mining, exploration drilling, channel sample locations, survey locations, underground mine accesses, the Santa Juana vein (San Mateo Ramp), the Chicago Veins (Chicago Ramp), drifts and stopes, stockpiled material, processing Plants 1 and 2, Golden Minerals Laboratory, and discussions with the mine staff regarding past estimation methods, database structure, and vein interpretations.

From January 18-21, 2022, Dr. Ramírez-Rodríguez and Ms. Johnson visited the assay laboratory, Plant 1, and Plant 2.

### 3. PROPERTY DESCRIPTION

The Project includes 28 mining concessions covering the Velardeña and Chicago mines controlled by Golden Minerals through its Mexican subsidiary Minera William and located within the Velardeña mining district. Processing Plants 1 and 2 are located within land owned by Golden Minerals. Surrounding ejido-owned land contains some of the associated installations and infrastructure. The project is comprised of two properties:

- The Velardeña property is centered on UTM grid coordinates 2774300 N and 632200 E (WGS 84 datum, zone 13). This property contains the Santa Juana mine which has been the focus of mining efforts since 1995, as well as the historical Terneras, San Juanes, and San Mateo mines.
- The Chicago property is located approximately 2 km south of the Velardeña property and is centered at UTM grid coordinates 2772480 N and 631867 E (WGS 84 datum, zone 13). This property contains the historical Los Muertos-Chicago mine.

The Project's location relative to the major cities of Torreón and Durango is shown in **Figure 3-1**.



**Figure 3-1: Velardeña property location**

### 3.1 Mineral Tenure

The Project consists of 28 claims covering the Velardeña and Chicago properties controlled by Golden Minerals through its Mexican subsidiary Minera William. Golden Minerals holds 315.51 hectares within all the concessions. Details of the concessions are shown in **Table 3-1**.

**Table 3-1: Project Mineral Concessions**

Location	Claim Name	Claim Owner	Concessions Title Nos.	Issue Date	Expiration Date	Concessions Area (Has)
Velardeña	AMPL. DEL ÁGUILA MEXICANA	Minera William	85580	10/13/1936	10/12/2061	19.86
Velardeña	ÁGUILA MEXICANA	Minera William	168290	4/2/1981	4/1/2031	18.94
Velardeña	LA CUBANA	Minera William	168291	4/2/1981	4/1/2031	2.55
Velardeña	TORNASOL	Minera William	168292	4/2/1981	4/1/2031	4
Velardeña	SAN MATEO NUEVO	Minera William	171981	9/21/1983	9/20/2033	8
Velardeña	SAN MATEO	Minera William	171982	9/21/1983	9/20/2033	4.61
Velardeña	RECUERDO	Minera William	171983	9/21/1983	9/20/2033	8.23
Velardeña	SAN LUIS	Minera William	171984	9/21/1983	9/20/2033	2.4
Velardeña	LA NUEVA ESPERANZA	Minera William	171985	9/21/1983	9/20/2033	9.93
Velardeña	LA PEQUEÑA	Minera William	171988	9/21/1983	9/20/2033	1
Velardeña	BUEN RETIRO	Minera William	172014	9/21/1983	9/21/2033	6.09
Velardeña	UNIFICACIÓN SAN JUAN EVANGELISTA	Minera William	172737	6/28/1984	6/27/2034	13.94
Velardeña	UNIFICACIÓN VIBORILLAS	Minera William	185900	12/14/1989	12/13/2039	46.43
Velardeña	BUENAVENTURA No. 3	Minera William	188507	11/29/1990	11/28/2040	6.01
Velardeña	EL PÁJARO AZÚL	Minera William	188508	11/29/1990	11/28/2040	15
Velardeña	BUENAVENTURA 2	Minera William	191305	12/20/1991	12/19/2041	5.37
Velardeña	BUENAVENTURA	Minera William	192126	12/19/1991	12/18/2041	30
Velardeña	LOS DOS AMIGOS	Minera William	193481	12/19/1991	12/18/2041	25.33
Velardeña	VIBORILLAS NO. 2	Minera William	211544	5/31/2000	5/30/2050	1.6
Velardeña	KELLY	Minera William	218681	12/3/2002	12/2/2052	3.91
Chicago	SANTA TERESA	Minera William	171326	9/20/1982	9/19/2032	22.34
Chicago	SAN JUAN	Minera William	171332	9/20/1982	9/19/2032	8.17
Chicago	LOS MUERTOS	Minera William	171986	9/21/1983	9/20/2033	3.53
Chicago	EL GAMBUSINO	Minera William	171987	9/21/1983	9/20/2033	6.65
Chicago	AMPLIACIÓN SAN JUAN	Minera William	183883	11/23/1988	11/22/2038	10.8
Chicago	MUÑEQUITA	Minera William	196313	7/16/1993	7/15/2043	15.45
Chicago	SAN AGUSTÍN	Minera William	210764	11/26/1999	11/25/2049	7.46
Chicago	LA CRUZ	Minera William	189474	12/6/1990	12/5/2040	7.91

### 3.2 Surface Rights

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Surface rights pertaining to the Project are held by Golden Minerals and two local ejidos (rural cooperative communities).

Ejido Velardeña holds surface rights at the Project's Velardeña property. Golden Minerals reports it has an agreement with the ejido for surface access and to perform work related to exploration and mining on the property. As part of this agreement, Golden Minerals makes quarterly payments of \$2,000 to the ejido. The agreement was formalized before a notary as required by law and, although the formal agreement expired in December 2021, Golden Minerals remains in good standing with the community and is finalizing renegotiation of the agreement.

Ejido Vista Hermosa holds surface rights for the Project's Chicago property. Golden Minerals reports it has an agreement with the ejido allowing access to the property to perform work related to mineral exploration and mining. The agreement was formalized before a notary and is valid until 2038. As part of the agreement, Golden Minerals makes a payment of \$400,000 MXN plus applicable taxes by the 24<sup>th</sup> of March each year.

Golden Minerals owns the surface of the land underlying the oxide mill and owns the land in the areas of surface installations at the entrance of the Velardeña mine (San Mateo ramp), the sulfide plant (Plant 1), the concentrate warehouse, and a well that provides water to the mill.

### 3.3 Permitting

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Areas with permitting requirements at the Project include the Velardeña mine, Plant 1, and Plant 2. Golden Minerals personnel report that the Project holds and has retained the necessary permits to operate the mines and plants at Velardeña, and further there are no unresolved issues with the environmental regulatory agencies. They do not anticipate any limitations on the operations due to future inspections or evaluations by the environmental authorities. Details of the permits required, and the status of the permits, are provided in **Section 17.3**.

In addition to these permits, Golden Minerals has enrolled in a voluntary National Environmental Auditing Program (NEAP) at Plant 1. Participation in the program was suspended when operations at the plant ceased; however, Golden Minerals is eligible to re-enroll in the program.

### 3.4 Encumbrances

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There is a lien reported in favor of IIG bank on some concession titles within the Velardeña property regarding a loan made to B.L.M. Minera Mexicana S.A. de C.V., an entity owned by ECU (now a part of Golden Minerals). Golden Minerals reports this loan was repaid in 2001; however, the lien notation on the concession titles was never cleared following the repayment and still shows as an active lien in the Mexican Mining Registry. Golden Minerals states it is 100% confident all debts with IIG have been settled and is continuing to pursue the removal of the lien with the Mexican authorities.

### 3.5 Other Significant Factors and Risks

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The author is unaware of any other significant risk factors that may affect access, title, or right or ability to perform work on the property.

## 4. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

### 4.1 Topography, Elevation, and Vegetation

The Project is located on the northwestern edge of the Mesa Central physiographical province on the eastern flank of the Sierra Madre Occidental mountain range, and is characterized by a mixed topography. The two properties that are the subject of this report are located within the Sierra San Lorenzo range at an elevation of approximately 1,680 to 2,000 meters above sea level.

According to INEGI's classification, the type of vegetation where the project is located corresponds to a vegetation type known as Desert Shrubland *rosetophilous* (rosette-forming vegetation) and sub montane scrub.

### 4.2 Access

The Project is in the State of Durango, approximately 65 km southwest of the city of Torreón, Coahuila, and 150 km northeast of the city of Durango, in the State of Durango. A four-lane toll highway connecting the cities of Torreón and Durango passes approximately 500 m east of the village of Velardeña. The village is connected to the mine site via a 7 km gravel road maintained in good condition for year-round use.

The major cities of Durango and Torreón have airports which are served by major regional and international carriers.

### 4.3 Climate

Climate at the Project is characterized as semi-arid, with a mean annual temperature of 21.1°C and an average annual rainfall of 243.7 mm/yr. Temperatures can drop below freezing in the winter and can reach the high 30s (°C) from July through September. The climate allows for a year-round operating season.

### 4.4 Infrastructure

The Project is located within an area with a long and active history of mineral exploration and mining. The nearby cities of Torreón, Gómez Palacio, and Lerdo de Tejada have an extensive history of manufacturing equipment for mining and metallurgical processing projects. Supplies and equipment are directly available from the cities of Monterrey, Chihuahua, and Durango, as well as from specialized suppliers elsewhere in Mexico, Canada, and the United States of America.

Fresh water for the Project is sourced from six wells which tap local aquifers. These wells are fully permitted and are fully controlled by Golden Minerals.

Golden Minerals owns two processing plants capable of processing mineralized material from the Velardeña mines. Plant 1 is a 300 tpd flotation mill which produces concentrates of Pb, Zn, and pyrite. The plant is located near the town of Velardeña and was upgraded in 2014. Plant 2 is a 550 tpd facility capable of treating oxide Au-Ag material using a Merrill-Crowe processing circuit to produce doré. The plant is currently processing mineralized material from Golden Minerals' Rodeo open pit mine at a rate of 500 tpd using the cyanide agitated leach Merrill-Crowe process.

The mines and processing plants are connected to the national electric grid via substations located near Plant 1 and the Peñoles Velardeña mine.

An experienced labor force is available in the town of Velardeña and in nearby cities and communities.

## 5. HISTORY

### 5.1 Early History

The earliest significant mining operation in the Velardeña District occurred in 1888 with the formation of the Velardeña Mining and Smelting Company. In 1902, the American Smelting and Refining Company (ASARCO) took over the operations and installed a new smelter processing 2,500 tpd from various mines in the area, with the most significant operations occurring in the Terneras and Santa Juana veins. ASARCO and various small independent operators worked the area until 1926.

In the 1960s, ASARCO became a minority shareholder in Industrial Minera de México S.A. (IMMSA), and exploration and development work recommenced in the Santa María and Reina del Cobre mines in 1968. In 1969 IMMSA abandoned several mining concessions, including those underlying the Terneras and San Diego mines, which were acquired by the Gaitán Group. Small-scale operations worked the concessions until 1992.

### 5.2 Mining and Exploration

William Resources acquired the concessions owned by the Gaitán Group via their Mexican affiliate BLM Minera in 1994. William Resources carried out surface mapping and sampling work on the concessions, with a focus on the Santa Juana vein system. William Resources also performed development work on the Terneras and Santa Juana mines and processed 600 tpd of dump material and development muck. Operations ceased in 1997.

In 1997 ECU Gold purchased 93.48% of BLM Minera and 100% of Minera William from William Resources, and in 2011 Golden Minerals merged with ECU. ECU resumed operations at the Project in 1998 and production continued through 2015 (as Golden Minerals after the merger), with a brief shutdown from July 2013 through June 2014. During the 2009-2011 period, ECU drove 8,030 m of drifts and ramps as well as 3,608 m of raises at the Project. Development work during the 2012-2014 period included a new ramp to access deeper levels of the Terneras and San Mateo veins, as well as the Roca Negra vein.

William Resources and ECU completed 10,714 m of surface and 6,278 m of underground exploration drilling during the period of 1995-2008. Exploration work during the period of 2009-2011 consists of underground drilling and sampling. This included 1,235 m of NQ drilling and 1,212 m of EX drilling. No surface drilling was conducted during this period. The NQ drill program yielded 483 samples and the EX drill program yielded 214 samples.

## 6. GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

The Project is located at the easternmost limit of the Sierra Madre Occidental, near its boundary with the Sierra Madre Oriental (Mesa Central sub-province). The deposits of the Sierra de Santa María and Sierra San Lorenzo, like many other polymetallic, hydrothermal deposits in northern Mexico, are situated along this fundamental boundary which separates thick Tertiary volcanic sequences with Mesozoic basement rocks to the west from Mesozoic carbonates with Paleozoic and older basement to the east.

### 6.1 Regional Geology

Regional geology is characterized by a thick sequence of limestone and minor, calcareous clastic sediment of Cretaceous age, intruded by Tertiary plutons mostly of felsic to intermediate composition. During the Laramide event, sediments were subject to an initial stage of compression which resulted in formation of large amplitude, upright to overturned folds generating the distinctive strike ridges of limestone which dominate topography. Fold axes trend northerly in the northern part of the region but are warped or deflected to west northwest azimuths in the south. The northeast trending hinge line or deflection which controls this fundamental change in strike passes through the Velardeña district. **Figure 6-1** illustrates the location of the Velardeña mining district with respect to regional lithologic and structural features.

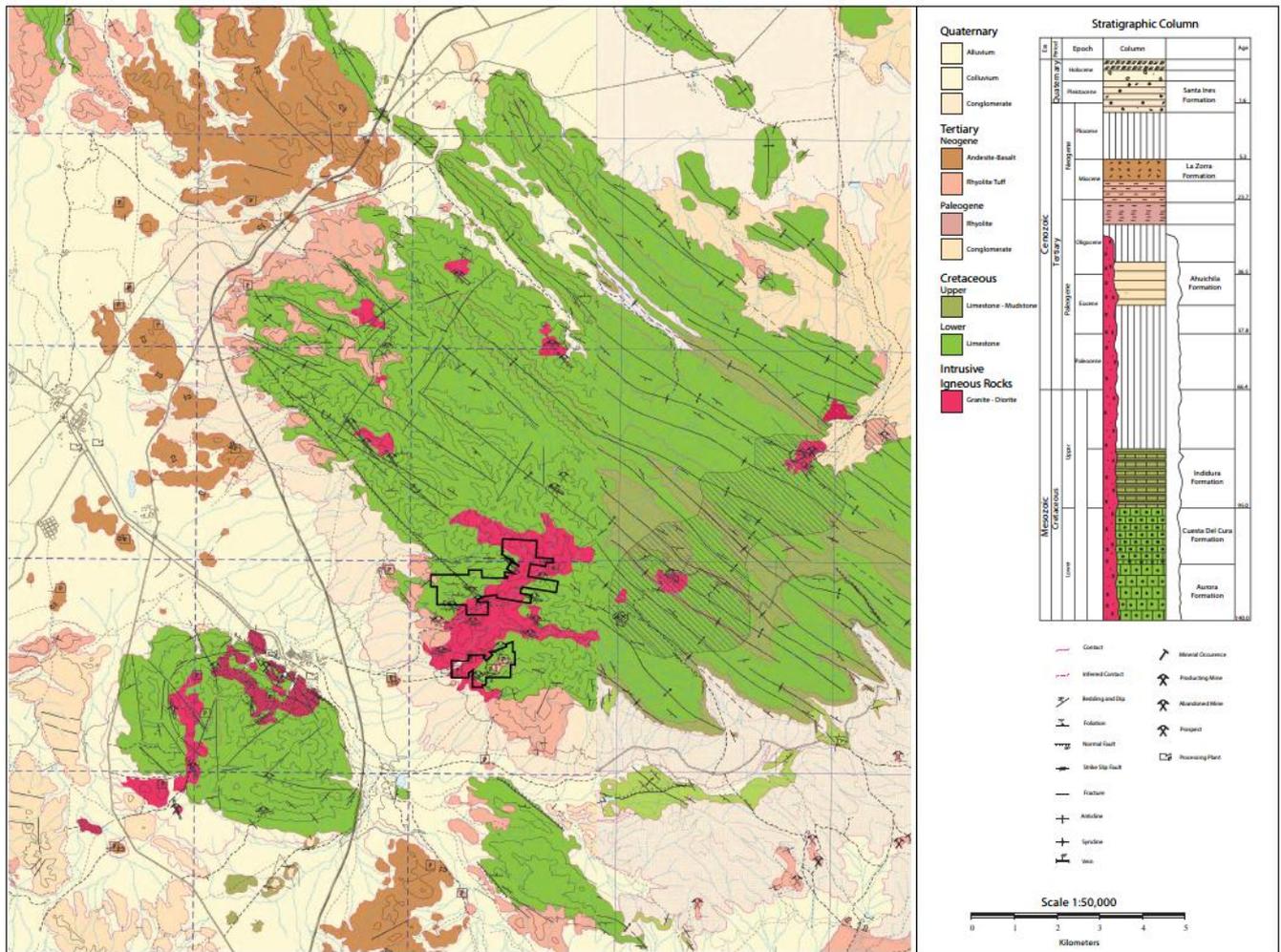


Figure 6-1: Velardeña regional geology

Tertiary volcanic and semi-consolidated alluvial sediments survive as erosional remnants on earlier basement rocks. The volcanic rocks may have been derived from an eruptive center located west of the pueblo of Velardeña where andesites have yielded age dates of 45 mya.

Tertiary stocks intruded the Cretaceous sediments in the Velardeña area along an axis subparallel to the hinge line described above, resulting in formation of a series of complex limestone domes cored by the younger intrusive rocks (i.e., the Sierra de Santa María, Sierra de San Lorenzo, and San Diego Dome). The Santa María quartz latite porphyry intrusion, west of the village of Velardeña, has yielded a potassium-argon (K-Ar) date of 33.1 mya.

Intrusions range in composition from mafic diorite to felsic alaskite and rhyolite. Thermal metamorphism of sediments at and near intrusive contacts is widespread, generating calc-silicates, hornfels, and bleached/marbleized limestone. Higher temperature, calc-silicate rocks are characterized by the prograde assemblage garnet - wollastonite and by the absence of pyroxene. The various mineral deposits of the Velardeña District occur near intrusive centers, contact aureoles, and accompanying alteration zones. Mineralization has been dated at approximately 31 mya, suggesting a genetic as well as spatial association with the intrusions.

Multiple, high angle, northwest trending faults have been mapped throughout the district; these are sub-parallel to the terrain boundary described above and are therefore likely candidates for deep, basement-penetrating structures which may have served as magma conduits. Reactivation of the northwest structures and formation of northeast trending faults resulted in a grid of younger, calcite-filled structures which off-set mineralized veins. This is well demonstrated at the Terneras mine where the northeast trending Tres Águilas fault offsets the mineralized northwest trending Santa Juana veins.

## 6.2 Property Geology

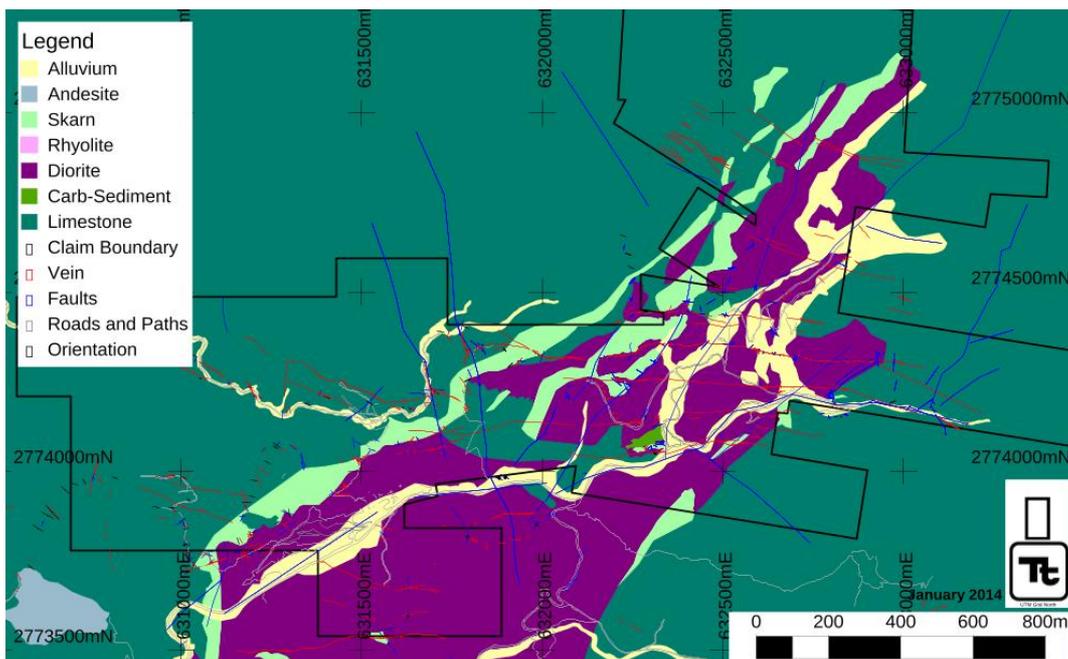
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### 6.2.1 Velardeña Property

Medium to thick-bedded limestone of the Cretaceous Aurora Formation comprises basement rocks in the project area. Limestone was first folded then intruded by the multiphase diorite/monzo-diorite Terneras stock and related dikes of Tertiary age that outcrop over a strike length of approximately 2.5 km. In detail, intrusive contacts range from sharp to broad zones characterized by the presence of numerous large, partially metamorphosed blocks of limestone. Alteration of host carbonates consists of a broad front of bleaching and marble formation, with more localized calc-silicate and hornfels. Although intrusive rocks appear fresh in general, alteration and local endoskarn development occurs near contacts. The diorite stock and the contact zone between limestone and intrusive rock primarily host the veins of the Santa Juana, Terneras, San Juanes, and San Mateo deposits. Veins extend into relatively unaltered limestone especially in the northwestern portion of the Santa Juana veins and eastern portion of the San Juanes vein.

The Velardeña property is transected by a series of northeast to northwest striking, west dipping, post-mineral normal faults. From east to west these are the Tres Águilas, Los Bancos, Buenaventura and Ordenanza faults which are generally characterized by meters-thick banded calcite vein filling. These normal faults demonstrate west-side-down displacements with the result that veins in the western blocks are exposed in higher portions of the hydrothermal system, have a higher calcite content, and generally lower precious metal contents.

Two main vein systems are present on the Velardeña property. The first is the northwest striking system found in the Santa Juana deposit, while the second is the east-west trending vein array which includes the Terneras, San Juanes, Roca Negra, and San Mateo deposits. In **Figure 6-2** vein traces are projected to surface and do not cut alluvium.



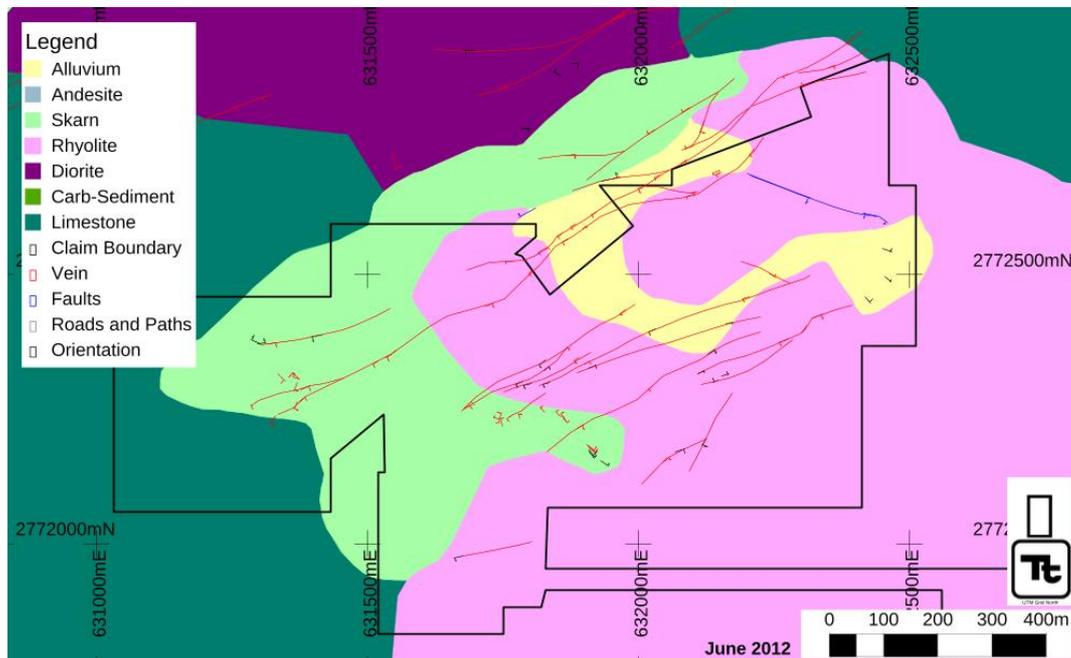
**Figure 6-2: Velardeña property geology map**

### 6.2.2 Chicago Property

The geologic setting of the Chicago property is similar to the geology at Velardeña. The oldest rocks outcropping at Chicago are folded limestone of the Aurora Formation, which were intruded by Tertiary diorite stocks and dikes. Intrusive rocks occupy the western portion of the property with a northeast orientation. The limestone-diorite contact exhibits widespread recrystallization and marble formation overprinted by a distinctive green calc-silicate alteration dominated by grossular garnet and lesser wollastonite.

As at Velardeña, a system of post-mineralization faults striking northwest-southeast cuts and locally displaces mineralized structures. These faults are normally filled with calcite and can have widths up to 10 m near the surface.

In the Chicago mine, rhyolitic volcanic rocks and calcareous conglomerate of the Ahuichila Formation unconformably overlie the mineralized sequence across the eastern half of the area. Mineralization is similar to that encountered at the Santa Juana mine in terms of mineralogy, host rocks, geometry of the structures and vein continuity. The difference between the two is orientation: northwest strike, dipping to the northeast for the Santa Juana system; instead of northeast strike, dipping to the southeast for the Chicago system. **Figure 6-3** shows the geology of the Chicago area with vein traces projected to their assumed surface intersection. Veins are not hosted in alluvial material.



**Figure 6-3: Chicago property geology map**

### 6.3 Mineralization

Mineralization consists primarily of calcite-quartz veins with minor calc-silicate hosted skarn and massive sulfide replacement bodies. All mineralization is essentially polymetallic, Ag, Au, Pb, and Zn plus or minus Cu. Individual veins are usually thin (0.2 m to 0.5 m), but remarkably consistent along strike and down dip. Coxcomb and rhythmically banded textures are common in some vein exposures. Historical production in the district has been primarily from the oxide portions of the veins that can extend to depths of several hundred meters. Physical characteristics of the main vein sets at Velardeña are summarized in **Table 6-1**.

**Table 6-1: Physical characteristics of select veins and vein sets at Velardeña**

Vein	Orientation	Width	Minimum Dimensions Strike m x Vertical m	Host Rocks
Santa Juana NW Subset 1 (Santa Juana, A 5-7)	NW curvilinear	0.2 - 1.0	350 x 400	limestone, intrusive, skarn
Santa Juana NW Subset 2 (CO, CC, C1, G1, A 1-4, B's, D1, DD, E)	NW linear	0.2 - 1.0	Variable by vein, up to 600 x 1200 (CC)	limestone, intrusive, skarn
Trans Set	EW/steep S	0.2 - 1.0	100 x 600	limestone, intrusive skarn
Ternereras	EW/70-85N	0.3 - 2	1500 x 650	Intrusive>limestone
San Juanes	EW/85N	0.05 - 1.9	950 x 600	limestone, intrusive, skarn
San Mateo	EW/75N	0.4 - 0.5	700 x 500	intrusive, skarn>limestone
Roca Negra	EW/75N	0.15 - 1.15	500 x 600	intrusive, skarn

Mineralization at the Chicago property is similar to the Santa Juana mine in terms of mineralogy, host rocks, geometry of the structures, and continuity.

The oxide portions of the veins are composed of oxides, halides, carbonates, and remnants of sulfide minerals. Within the sulfide zone, mineralization consists primarily of galena and sphalerite with lesser amounts of chalcopyrite, tetrahedrite, freibergite, and sulfosalts. Accessory sulfides including arsenopyrite, stibnite, pyrite, and pyrrhotite are locally abundant. Disseminated and stringer pyrite is common in all rock types below 500 m depth and persists to much shallower levels within intrusive and calc-silicate host rocks.

Veins in the district are localized in intrusive rocks and near contacts between intrusions and thermally metamorphosed country rocks but extend up to one kilometer away from these contacts. In detail, however, veins do not conform to these contacts, but in many cases cross at high angles to limestone, skarn/marble, and intrusive hosts. Observations summarized above suggest that, on average, veins within intrusive rocks are narrower, more regular in form, and higher grade than those in limestone. Skarn is typically a poor vein host with widths and grades less than in diorite or limestone hosts. Although data are sparse, it seems likely that at least some of the deeper, massive sulfide mineralization intersected in past drilling will possess more obvious control by stratigraphy, particularly skarn assemblages, than is typical at shallower levels.

Observations underground confirm at least some veins show an intimate relationship with brittle faulting. In the Santa Juana deposit, two main fracture sets are observed. The most economically significant is a steeply dipping, northwest-trending set which has created dilatant zones that acted as a major control for vein emplacement. A second more spatially extensive fracture swarm trends 110° and, although less obvious, appears to control the orientation of the Trans veins. These veins dip steeply south and, where they intersect the northwest-trending vein set, produce broader stockwork or breccia zones which can be up to seven meters in width. The east-west fracture set also controlled the localization of the parallel Ternereras, San Juanes, San Mateo, and Roca Negra veins. Cross-cutting relationships between the two vein systems are ambiguous, indicating that the two vein sets probably formed contemporaneously as part of a conjugate fault system. A similar structural setting is reported to occur in the Santa María mine. **Figure 6-4** shows a cross-section of the Velardeña mineralization.

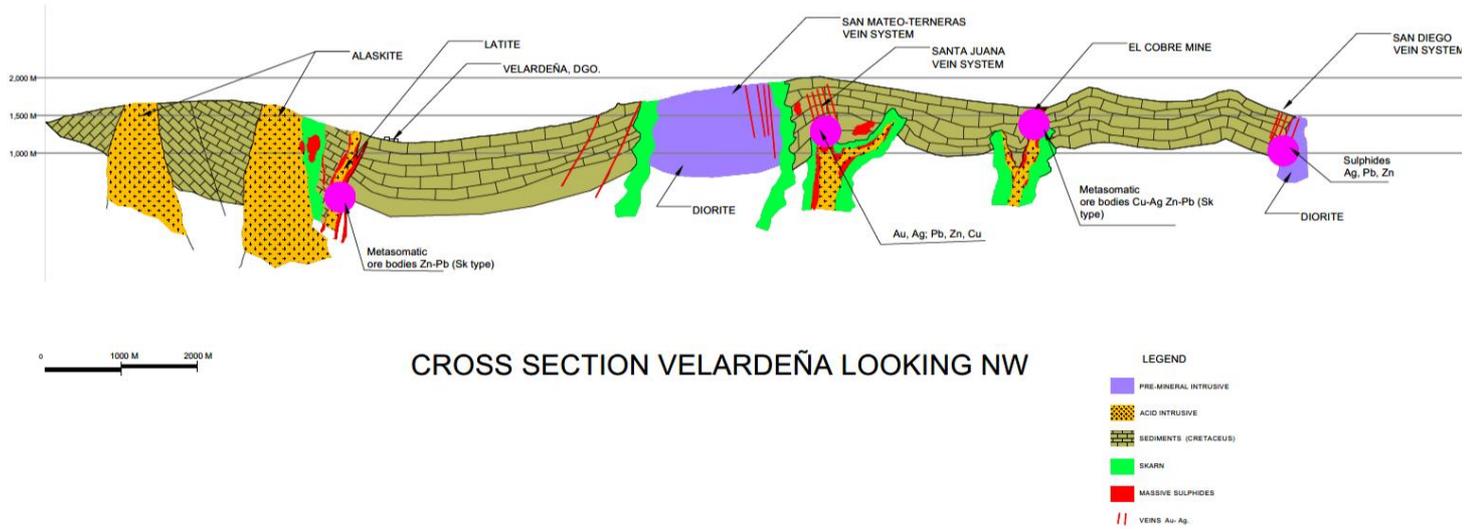


Figure 6-4: Velardeña section looking northwest

## 6.4 Deposit Types

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Although detailed petrologic studies of veins in the Velardeña property have not been completed, individual deposits within the nearby Santa María dome have been studied in some detail and found to correspond to both shallow epithermal and deeper-seated mesothermal styles of mineralization. Epithermal veins, often displaying banded and open-space-filling quartz, describe the higher-level veins at Velardeña. Many veins, especially at deeper levels in the Santa Juana and Ternereras mines, are dominated by high modal percentages of coarse and fine grained, polymetallic sulfides, have little silicate gangue, and occupy a position within and proximal to intrusions and their thermally metamorphosed aureoles.

True epithermal veins occur at Velardeña, but at depth most veins, breccias, and massive sulfide replacements are mesothermal in character, commonly contain arsenopyrite, and may be related to a deeper intrusive source.

## 7. EXPLORATION

The Project has been extensively explored from the surface using geologic mapping, vein mapping, and vein sampling. Underground exploration consisted of diamond drilling, geologic level mapping, vein level mapping, vein sampling, and drift and stope development. Underground development includes 10,122 meters of drift and ramp development and 2,278 meters of raise development. Channel samples are collected from drift faces, crosscuts, and stope walls and/or backs.

### 7.1 Channel Samples

Channel samples are collected using the following guidelines:

- During level mapping, geologists paint sample locations on the back or development face to guide samplers
- Samples are collected by chiseling out the painted area, ideally cutting a 5-7 cm wide sample. Often this is not achievable due to rock hardness
- The sample widths range from 0.2 m to 2.5 m
- The sample's weight is usually between two kg and five kg. The sample contains a minimum of ten rock pieces (<20 cm in size) as well as fine material
- Sampling is carried out as perpendicular to the vein strike as possible and the true width is measured by sighting the vein dip and tilting the measuring tape accordingly
- Stope and face samples are collected at 3 m intervals across strike. Wall rock and vein material are sampled separately. When dictated by geological features, samples are taken at closer intervals
- Sampling along cross cuts is carried out continuously

The channel database contains 32,006 sample intervals, of which 14,534 intervals have been interpreted as intersecting a named vein. **Table 7-1** shows grade statistics for channel intervals within the database and those identified as on-vein.

**Table 7-1: Channel sample data statistics**

Dataset	Selection	Count	Mean Ag g/t	Mean Au g/t	Mean Pb%	Mean Zn%	Mean Apparent Thickness
Channel	All	32,006	281	5.1	1.6	1.6	0.66
Channel	On Vein	14,534	518	9.2	2.8	2.7	0.47

Channel sampling is subject to numerous sources of error, particularly relating to the differential hardness of material being sampled, and the tendency to include a disproportionate volume of softer rock. Diligent and systematic collection of channel samples generates a large data set which in most cases is statistically representative, but never completely free of errors or potential bias.

The collection of several channel samples was observed for previous studies in the Chicago mine and it was noted the procedures used conformed to those outlined above and follow accepted engineering practices for channel sampling. Due to the mine being in a state of care and maintenance, the author has not observed the collection of channels at the Project, but has spot checked sample locations throughout the mine and thoroughly discussed procedure with the mine staff. The author concludes channel sampling procedures used at the Project result in samples which are reasonably representative of the mineralization and meet industry best practice guidelines for this type of sampling. The resulting data is sufficient to support the estimation of Resources.

## 7.2 Drilling

Historic exploration drilling statistics for the period 1995-2008 are summarized in **Table 7-2**. These results have been summarized by Micon (2009) and have not been independently verified by the author.

**Table 7-2: Summary of historic drilling on the Velardeña Properties (1995-2008)**

Company	Drill Program	Number of Drill Holes	Total Length (m)
William Resources	Underground	94	6,438
William Resources	Surface	6	973
William Resources	Surface	3	282
William Resources	Surface	6	750
<b>Total</b>		<b>109</b>	<b>8,443</b>
ECU	Surface	14	8,709
ECU	Underground BQ	11	5,533
ECU	Underground EX	59	2,750
<b>Total</b>		<b>84</b>	<b>16,992</b>

*Data taken and modified from Micon 2009 report.*

The objectives of the 2009-2011 program conducted by ECU were to confirm the continuity of the known veins, to discover new veins, and to test for deep projections of massive sulfide veins in the Santa Juana area. The completed holes are summarized in **Table 7-3**. Based on a review of drill cores and data on-site, these objectives were at least partially achieved, notably with the discovery of deep, massive sulfide mineralization down dip of the A4 vein structure.

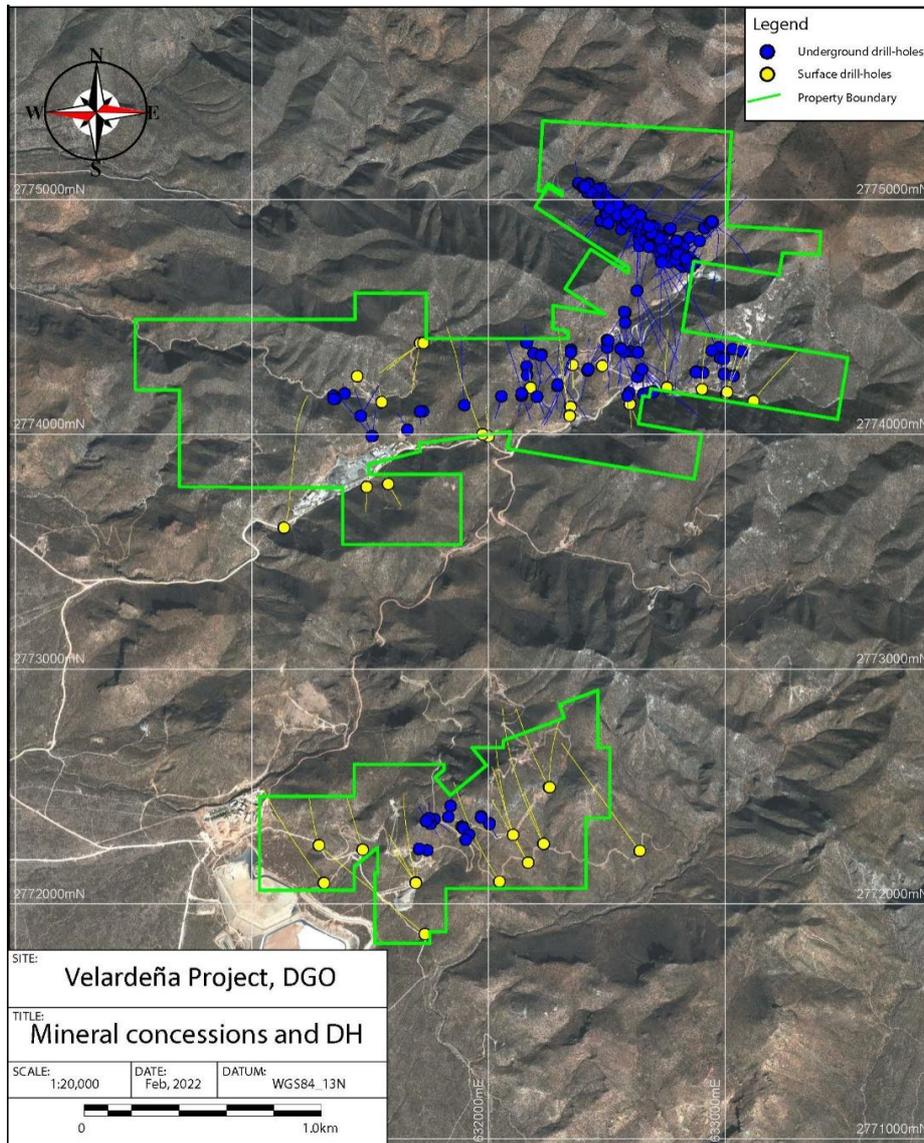
**Table 7-3: Summary of ECU's drilling programs (2009-2011)**

Description	Number of Drill Holes	Total Meters
Underground (NQ)	3	1,235
Underground (EX)	35	1,212
<b>Total</b>	<b>38</b>	<b>2,447</b>

Golden Minerals conducted drilling in 2012-2014 and drilled from underground targeting the San Mateo, Terneras, and Roca Negra veins. Four holes were drilled from underground in the Santa Juana area targeting primarily the A4 vein. **Table 7-4** shows the summary of the drilling from 2013-2014 completed by Golden Minerals. **Figure 7-1** shows the location of the drill holes at the site.

**Table 7-4: Summary of Golden Minerals drilling (2012-2014)**

Year	Description	Number of Drill Holes	Length (m)
2012	Underground	4	186
2014	Underground	43	8,875
	<b>Total</b>	<b>47</b>	<b>9,062</b>



**Figure 7-1: Drill hole locations for the Velardeña Project**

Diamond drill core samples are taken according to the following criteria:

- Drill core is split using a manual rock splitting device or using a core saw
- Samples are taken from core sections with visible evidence of mineralization and from 1.5 to 2.0 m of surrounding wall rock
- Wall rock between two veins is sampled when the distance is less than 6 m

- The information recorded in the drill logs for each sample includes depth, length, core angle and rock/ore type

Mineralized sample intervals for either the HQ, NQ, or BQ size core have a minimum core length of 20 cm and a maximum length of 1 m. For areas sampled outside of the mineralization the maximum sample length for the NQ core is 1.20 m and for BQ core the maximum sample length is 1.50 m. In general, the maximum sample length is 1.50 m except for those areas in which two veins can be joined together in which case the maximum sample length is 2 m.

Sampling was conducted on core not only with visible evidence of mineralization, such as veins and stringers, but also on barren core to preserve the sampling continuity in between mineralized zones and to test for broad zones of lower grade material as well. The sampling of the wall rock next to the zone of mineralization also assists in understanding the grade of the external dilution associated with mining some of the mineralized zones on the Velardeña properties.

Manual splitting of the core can be subject to several sampling biases based usually on the hardness of the material being split. In the case of very hard core, the core may twist in the splitter which may result in uneven core fragments and in a slightly greater split than 50% being sent to the assay laboratory or left in the box as a representative sample. In the case of soft core, the core may crumble when being split or may split along natural fracture lines which again results in uneven core representation. Also, to prevent contamination, the splitter and pans used to collect the samples must be cleaned after each sample. Despite the potential to introduce a bias into the sampling procedure as a result of uneven sample sizes, the splitting of drill core continues to remain a common practice in the exploration and mining industries.

Bazooka drilling is undertaken from the development headings in order to identify the width of a zone where the hanging wall is not visible or where a secondary mineralized system is suspected as in the case of the sheeted veins. Cores obtained from these programs are not split and are sampled completely.

In the case of large diameter core (HQ, NX, BX), recoveries were reported to average around 60% in oxide mineralization and 90% - 97% in the sulfides. For the smaller Bazooka (EX) drill cores, overall recoveries ranged from 30% - 40%. Recovery for Bazooka cores are poor and may result in underestimation of mineralized widths and grades. In the case of bazooka drilling, drifting is usually conducted afterward to identify the true nature of the mineralization, especially if a secondary zone or vein is suspected.

### 7.3 Data Adequacy

These drill core sampling procedures are consistent with commonly practiced procedures used throughout the mineral industry. Along with in-house standards, blanks, and duplicates included in the sample stream, routine check assays are conducted on the samples by a certified, independent laboratory as well.

Drill core sampling practices are consistent with industry standards adequate for use in preparing a Mineral Resource estimate.

## 8. SAMPLE PREPARATION, ANALYSES, AND SECURITY

Sample preparation, analyses, and security procedures followed by Minera William meet industry common practice standards and are adequate to support the estimation of Resources. The quality control (QC) sampling results throughout the campaigns and laboratories are typical of an operation given the amount of throughput and data handling. Current drill hole analyses are completed by ALS Chemex in Vancouver, Canada (ALS Chemex) and mine channel and mill samples are tested at the on-site Labri laboratory facility (Labri), constructed in 2013. A review of QC samples analyzed from 2012-2017 suggested the on-site laboratory could benefit from further improvements and increased real-time review of performance. In 2017 a lab audit and review were conducted by both internal and external resources. Frequent annual and quarterly ongoing reviews, including and not limited to analytical and mechanical instruments, processes, and an enhanced rigorous QAQC protocol for all Velardeña samples are performed. Based on recent (2017-2021) QC sample review, the analytical results determined by the on-site laboratory are within tolerance to those determined by ALS Chemex.

Previous quality control procedures and results have been reviewed by previous authors and those reviews have resulted in improved protocols and performance, but ultimately previous authors concluded the data is sufficient to support estimation of Resources. The drill hole and channel analytical databases are extensive and include results from several campaigns and laboratories. **Table 8-1** details when each laboratory has been used, and the accompanying umpire laboratory.

**Table 8-2** details the accreditation and the relationship to Golden Minerals of each laboratory used. Data within both databases, regardless of testing laboratory, is considered current and equivalent.

**Table 8-1: Analytical laboratory listing**

Time Period	Laboratory Used	Umpire Laboratory Used
Pre-2009	Labri (on-site), Ensayes y Representaciones, S.A. (ERSA)	Servicio Geológico Mexicano (SGM), ALS Chemex
2009 to 2013	Labri (on-site), Ensayes y Representaciones, S.A. (ERSA), SGS	SGS
2013 to Present	Labri (on-site), ALS Chemex	Pulp Duplicate Resubmittal to ALS Chemex

**Table 8-2: Laboratory accreditation and independence**

Laboratory	Accreditation	Relationship
Labri	Not Accredited	Not independent, operated by Golden Minerals
SGM	Not Accredited	Independent of Golden Minerals
ERSA	Not Accredited	Independent of Golden Minerals
SGS	ISO 17025	Independent of Golden Minerals
ALS Chemex	ISO 17025	Independent of Golden Minerals

Current drill hole analyses are completed by ALS Chemex and channel samples are tested on-site at the Labri laboratory. ALS Chemex is independent of the issuer and is ISO 17025 accredited: the accreditation of ALS Vancouver encompasses preparation processes completed at ALS Chihuahua. The on-site laboratory is not independent of the issuer and is not accredited. Tetra Tech inspected the on-site laboratory in January 2022 and found the facility and the procedures followed to be of adequate standard for the purpose of this study.

## 8.1 Sample Preparation and Analysis

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### 8.1.1 Diamond Drill Core Samples

Drill hole samples are prepared by splitting the core with a manual rock splitting device or core saw using personnel who have been hired by Minera William for this purpose. The Minera William personnel who conduct the core splitting and sampling are supervised by Minera William's geological staff to ensure the integrity of the core splitting and sampling procedures. Half of the core remains in the core box with its identifying ticket while the other half is bagged with a matching ticket. The samples are delivered by mine staff to ALS Chemex's preparation laboratory in Chihuahua or Zacatecas where they are shipped to ALS Chemex in Vancouver for analysis.

Drill hole samples are analyzed by ALS Chemex initially for Au using fire assay with atomic absorption spectroscopy finish (AA24) with re-run for values exceeding 10 g/t Au using fire assay with gravimetric finish (GRA22).

Samples are initially analyzed for Ag, Pb, Zn, Cu, and 32 additional elements using aqua regia inductively coupled plasma - atomic emission spectroscopy (ICP41) with re-run for values exceeding 100 g/t Ag, and 1% Pb, Zn, or Cu using aqua regia digestion and inductively coupled plasma - atomic emission spectroscopy (OG46).

### 8.1.2 Underground Chip Samples

Development chip samples are collected by sampling support staff who are instructed to chip away sample transects painted by the geologist. Sampling is observed by geologic staff. Samples are bagged and transported to the on-site laboratory for preparation and analysis.

Channel samples are prepared and then analyzed by the on-site facility for Au, Ag, Pb, Zn, Cu, and As. Gravimetric fire assay is used to determine Au and Ag grade. Pb, Zn, Cu, and As are analyzed by atomic absorption spectroscopy with hydrochloric acid and nitric acid digestion.

## 8.2 Security, Storage, and Transport

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The core is stored at the Santa Juana mine site in either a closed building, a shed, or on a prepared uncovered area (in which case durable plastic covering is provided) behind a fence. In each case the core remains in a securely locked area. Pulps and rejects are stored in closed areas and are individually packed in plastic bags to avoid contamination. The mine facility is guarded by security personnel 24 hours a day.

The chip sampling pulps and rejects are obtained from the assay laboratory and are stored in a secured area at the Santa Juana mine site in either a closed building or a shed. The chip sample rejects and pulps remain in a securely locked area.

## 8.3 Quality Control

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For the current drill hole and channel sampling programs, Golden Minerals inserts standards, blanks, and duplicates in the sample stream. Quality control samples are inserted in a repeating order depending on the last digit of the sample identification (ID). The effective QC submittal for the drill core and channel campaign is approximately one control sample for ten collected samples. The control samples include standards, duplicates, and blanks, which is in line with industry best practices.

### 8.3.1 Standards

A total of four standards are utilized for QAQC. The high- and low-grade standards for 2014 were custom made and tested by SGS. The standard results were reviewed and demonstrate adequate performance. The few errors observed are likely attributed to sample ID mislabeling and should be addressed prior to performance analysis.

Two of the standards used in the drill hole stream are used in the channel sample stream as well, which provides a check of both labs. The standard results were reviewed and demonstrate reasonable performance.

Sampling and QAQC protocols were updated in 2017 using verified blank material and standards to better reflect the vein grades (low-, medium-, and high-grade) and deposit type. Additional sample analysis verification for blank and standard material is conducted on a routine basis to ensure the results are as expected. This review work led Golden Minerals to identify better performing standards, along with having more confidence in the QAQC program.

### 8.3.2 Duplicates

Pulp duplicates are analyzed within the drill hole sample stream. Review of the duplicates indicate good reproducibility. Noted issues in the standards and duplicates are infrequent and do not suggest invalidation of the results from the on-site laboratory.

### 8.3.3 Blanks

Blanks are inserted into the sample stream. Previous work indicated a contamination of low-grade Ag in the blank material. The material being used for blanks was replaced and was sourced from Abrasivos de Laguna SA de CV. Golden Minerals submitted five samples of the new blank material to both the Velardeña Lab and to ALS Chemex for analysis for Au and Ag to ensure that the material contained minimal Au and Ag. The results were within tolerance for blank material and both labs had similar results.

As part of the updated QAQC procedures, the QAQC data is reviewed continually to check for problems with the analytical data including reviewing the standard, blank, and duplicate samples. Scheduled analytical maintenance occurs regularly, with additional lab checks reviewed by lab management over short and long-term schedules.

To check potential contamination during sample preparation, a batch of high-grade samples from the Rodeo mine was submitted with a blank sample being inserted into the sample stream after each high-grade sample.

## 8.4 Adequacy of Data

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The procedures followed by Minera William are within Industry Best Practices and the data is adequate for the use in this level of study.

## 9. DATA VERIFICATION

The data collected by the mine staff is in support of operations planning and many of the data inputs provided by Golden Minerals are supported by historic production actuals and, through this activity, have been verified. Additional verification procedures are described below.

### 9.1 Geologic Data Inputs

To verify geologic data inputs the qualified person reviewed provided digital data in context with other data provided along with physical observations while on site. For example: the level mapping was reviewed alongside selected vein samples, geologic mapping was reviewed in conjunction with drill hole geologic interval logging, on-vein development was compared to sample locations, mine stopes were compared to development and channel sampling.

Traditional drill hole database validation checks were run on the drill hole and channel database and errors were provided to Minera William staff for correction. Each provided on-vein interval for every modeled vein was reviewed in three-dimensional (3D) view, level plan, and in section during model construction and was checked for consistency of location and grade in context of nearby samples. The quantity of data provided is immense and is not free of errors and omissions, but is at a level of confidence to be utilized in a study of this level.

After the 2015 PEA was released, Minera William examined the database intervals that intercept the vein. Each interval was examined alongside the mine level maps, as well as existing wireframes. If it was deemed that the vein code was not correct, the database was corrected. Special attention was also given to intervals and whether they contain dilution or not in the sampling. This recoding of intervals was used for the Resource update in this study.

### 9.2 Mine Planning Data Inputs

Tetra Tech conducted a site visit to the Velardeña mine to verify parameters used in mine planning are adequate for use in this study. This included visiting underground workings, as well as test mining areas. This site visit allowed for verification of mining parameters used in the study, confirming the parameters are adequate.

### 9.3 Mineral Processing Data Inputs

Technical and cost data were obtained during the Project site visit and in subsequent communications with Golden Minerals personnel at the Velardeña site and in Golden Minerals' Golden, Colorado office. The data provided by Golden Minerals conforms to industry standards and is within the accuracy of this study and verified for use in this study.

At no time was there any limitation to, or failure to provide, the requested technical and cost data for the processing plants or infrastructure to Tetra Tech's metallurgical or infrastructure personnel during or after the Project site visit.

The technical and cost data for the processing plants and infrastructure collected during the site visit to Velardeña and subsequent communications with Golden Minerals are adequate for the assemblage and production of this study.

### 9.4 Economic Data Inputs

A technical economic model template and cost data were obtained in communications with Golden Minerals. The data provided by Golden Minerals conforms to industry standards and is within the accuracy of this study and verified for use in this study.

## 9.5 Environmental Information

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A list of current permits was obtained from Golden Minerals. The information provided by Golden Minerals conforms to the requirements of Mexican environmental regulations; however, no information regarding an environmental monitoring program or adherence thereto was reviewed and the waste rock area permits will need to be updated before mining recommences.

## 9.6 Data Adequacy

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At no time was there any limitation to, or failure to provide, the requested technical and cost data for the Rodeo mine during or after the site visit. Data provided was adequate for the assemblage and production of this study.

## 10. MINERAL PROCESSING AND METALLURGICAL TESTING

There are two processing plants at the Project. Plant 1 is designed to treat sulfide material by conventional crush, grind, and differential flotation to produce Pb, Zn and pyrite concentrates. Process Plant 2 is an agitated cyanide leach plant that produces Au-Ag doré by using a Merrill-Crowe circuit.

Operation of Plant 1 was discontinued in late 2015 due to a combination of low metal prices, dilution, and metallurgical challenges. Plant 2 was leased to Hecla Mining Company from July 2015 through November 2020, after which the lease expired. Mineralized material from the Golden Minerals Rodeo Project has been processed through Plant 2 since January 2021.

Because of the historical production for Plant 1, the liberation characteristics of the material and subsequent response to differential flotation are within typical design criteria and known by the operations personnel. There are no geological, lithological, or mineralogical changes in the process plant feed anticipated for the envisaged future production as compared to previous operations. Historical operational results support the existing process flowsheet for potential future production at Plant 1. Further, the use of existing and refurbished equipment within the pre-existing facilities is Golden Minerals' preferred method of future treatment.

In 2007 the potential to increase gold recovery from Plant 1 and improve project economics by installing a bio-oxidation circuit to treat pyrite concentrates on site and recover gold and silver to doré was explored by sending samples to SGS in South Africa for test work. Since then, in 2019 and 2020, two additional sets of representative gold-bearing iron pyrite concentrate samples were sent to Outotec in South Africa to confirm uniformity of the BIOX® process results and to further define the bio-oxidation residence time required for subsequent gold recovery by cyanide leaching. The Metso Outotec BIOX® process for the treatment of refractory gold concentrates has been in commercial operation for over 30 years with 13 successful plants commissioned worldwide. To date, over 22 million ounces of gold have been produced through this process. SGS and Outotec are independent of Golden Minerals.

An abbreviated Outotec description of the process follows:

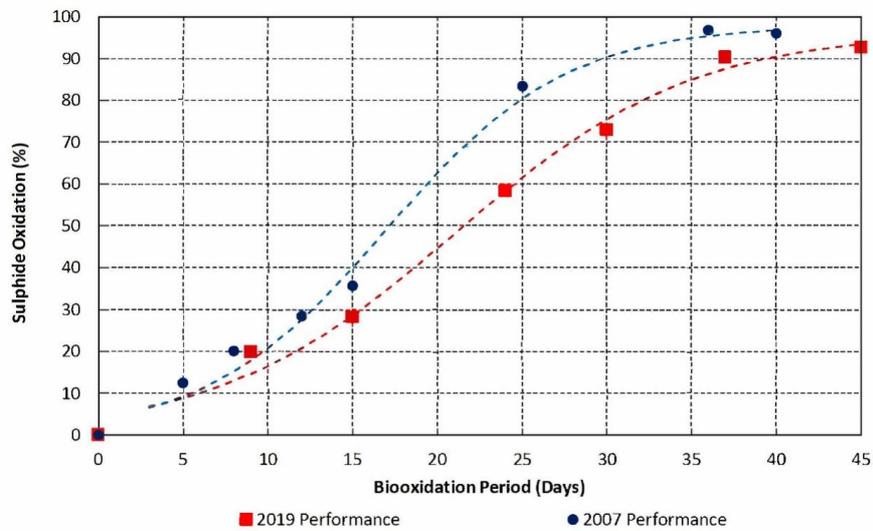
- The BIOX® process was developed for the pre-treatment of sulfide refractory ores and concentrates ahead of a conventional cyanide leach for gold recovery. The gold in these ores is encapsulated in sulfide minerals such as pyrite, arsenopyrite and pyrrhotite thus preventing the gold from being leached by cyanide. The BIOX® process destroys the sulfide minerals and exposes the gold for subsequent cyanidation, thereby increasing the overall gold recovery that can be achieved.
- The heart of the BIOX® process is a mixed culture of naturally occurring microbes which, under controlled conditions, can oxidize gold-bearing sulfide ores or concentrates due to a chemo lithotrophic mode of metabolism. This means that they require inorganic compounds for the acquisition of both energy and carbon.
- The carbon requirements of the microbes for biosynthesis of cellular biomass are met by CO<sub>2</sub> in the atmosphere or from the dissolution of carbonate minerals in the ore.
- The microbial culture in the BIOX® reactors is not controlled, but rather allowed to adapt, to the concentrate and operating conditions.
- The species, viz. *Acidithiobacillus ferrooxidans*, *Leptospirillum ferrooxidans*, *Leptospirillum ferriphilum*, *Ferroplasma cupricumulans*, as well as many *archaea* species make up the dominant species of the BIOX® microbial consortia. Detailed laboratory and pilot plant studies have indicated that the microbes produce an acidic environment, a temperature of between 35°C and 45°C and a steady supply of oxygen and carbon dioxide for optimum growth and activity. The unusual operating conditions, which are optimal for the BIOX® microbes, are not favorable for the growth of most other microbes, thus eliminating the need for sterility during the BIOX® process. The BIOX® microbes

are non-pathogenic and incapable of causing disease. The microbes employed in the BIOX® process do not, therefore, pose a health risk to humans, animals, or plant life.

- The oxidation reactions are also highly exothermic. In addition to the direct oxidation of sulfide minerals, several indirect chemical and microbial assisted reactions occur.

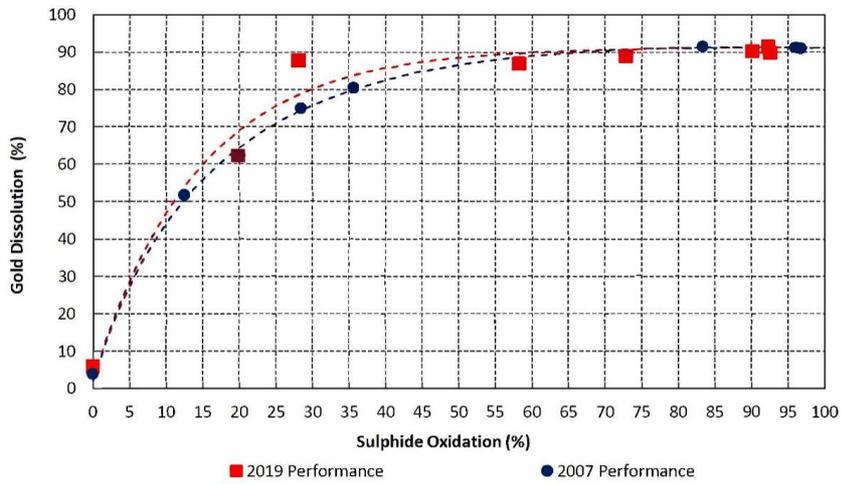
Three series of Batch Amenable Tests (BAT) were performed on different samples of pyrite concentrate; in 2007 at SGS LAKEFIELD Research Africa and in 2019 at Outotec BIOMIN (Pty) Ltd RSA. Based on results of the test work, the reports concluded the refractory Velardeña Fe concentrate is amenable to bio-oxidation treatment and the results in the tests were uniform. The oxidized sulfides yielded improved gold and silver dissolutions in a cyanide leach from single digits before treatment to greater than 90% for Au, and from less than 20% to 90-95% for Ag.

Operating conditions, reagent consumptions and results for a BIOX® BAT treatment period of three days was chosen for evaluation in this assessment. **Figure 10-1** shows the increase in oxidation with time for the two series of BATs. The batch system delivers a different, protracted set of kinetics compared to the kinetics achieved in a continuous operating system. In continuous operation, maximum growth is sustained as the organisms receive fresh sulfur substrate continuously, while in batch mode, the culture must first progress through an initial lag phase before reaching an optimal growth phase. This high growth rate is only sustained for a short period. The 24-day bio-oxidation period shown in the graph is reduced to three days when the process is continuous. Gold dissolution approaching 90% was achieved in both test reports after sulfide oxidation to near 60%, corresponding to plateauing of the Gold Dissolution vs. Sulfide Oxidation curve **Figure 10-2**.



**BIOX® Sulphide Oxidation Profiles of the Velardeña Samples Described by the Logistic Model**

**Figure 10-1: Oxidation vs. time**



**Gold Dissolution versus Sulphide Oxidation for the Velardeña Concentrates**

**Figure 10-2: Dissolution vs. oxidation**

With the success of the testing programs, this report includes a BIOX® circuit to oxidize the pyrite concentrate for recovery of the contained gold and silver to doré on-site.

**10.1 Data Adequacy**

The data provided by Golden Minerals conforms to industry standards and is within the accuracy of this study and verified for use in this study. Historic production from multiple veins at the mine demonstrates the capability of the plant to process the mineralized material. Pyrite concentrates tested for bio-oxidation amenability are typical of those produced at Velardeña.

## 11. MINERAL RESOURCE ESTIMATES

Initial vein intervals were provided by Golden Minerals as an attribute in the project database along with indicative vein surface models. The provided vein intervals and surfaces models were reviewed in 3D in context of the vein mapping and underground development mapping. Intervals were evaluated and coded by vein, which were used to create wireframe vein models. Resources have been estimated independently for 60 vein surfaces representing main veins, fault offsets, and splits of 39 known veins. The primary veins include CC, C1, A4, F1, G1, San Mateo, Roca Negra, Hiletas, Terneras, Chicago, and Escondida. Point models were used to estimate the Resource models for each vein. Attributes have been estimated using inverse distance to a power of 2.5 (IDW 2.5).

Block attributes were estimated in three passes from small to large. Estimation was completed using anisotropic inverse distance weighting for each block in the model in Micromine software. **Table 11-1** details the search ellipse sizes, orientations along with sample selection criteria, and classification. Resource classification was assessed by pass (maximum search), number of samples and the nearest composite and average distance. Measured or Indicated classification was only permitted in pass one, 75 m maximum search, and was primarily, but not exclusively, defined within blocks haloing the existing drifts and stopes.

**Table 11-1: Pass parameters and classification**

Pass	Method	Max Search	Ratio 1st:2nd:3rd	Sectors	Max Comp Per Sector	Comp Min	Comp Max	Classification
First	IDW 2.5	75	Variable	4	2	1	8	Inferred, Indicated if; comps >=3 and nearest comp <= 50m, Measured if; comps >=4 and nearest comp <= 16m and average comp distance <= 25
Second	IDW 2.5	150	1:0.25:0.5	1	2	1	2	Not classified, Inferred if; nearest comp <= 125m
Third	IDW 2.5	200	1:0.5:0.5	1	2	1	2	Not classified

Estimated Mineral Resources with an effective date of March 1, 2022 for the Velardeña project are shown in **Table 11-2**. The Resource is reported by mineral type and Resource class for all veins. Resources were calculated as diluted to a minimum of 0.7 meters and are reported at a \$175 NSR cutoff.

**Table 11-2: Velardeña Project Resources**

Classification	Mineral Type	NSR Cut-off	Tonnes	Grade Ag g/t	Grade Au g/t	Grade Pb%	Grade Zn%	Ag oz	Au oz	Pb lb	Zn lb
Measured	Oxide	175	128,800	268	5.69	1.74	1.53	1,108,000	23,500	4,936,000	4,333,400
Indicated	Oxide	175	280,300	262	5.06	1.73	1.45	2,361,200	45,600	10,681,500	8,936,600
Measured + Indicated	Oxide	175	409,100	264	5.26	1.73	1.47	3,469,200	69,100	15,617,500	13,270,000
Inferred	Oxide	175	351,400	417	4.95	2.55	1.45	4,714,600	56,000	19,729,500	11,248,200
Measured	Sulfide	175	256,200	357	5.52	1.56	1.91	2,942,800	45,500	8,819,300	10,769,700
Indicated	Sulfide	175	603,500	341	4.79	1.46	1.91	6,619,400	92,900	19,475,600	25,408,900
Measured + Indicated	Sulfide	175	859,700	346	5.01	1.49	1.91	9,562,200	138,400	28,294,900	36,178,600
Inferred	Sulfide	175	1,357,700	348	4.76	1.52	1.97	15,179,000	207,800	45,534,200	58,952,900
Measured	All	175	385,000	327	5.58	1.62	1.78	4,050,800	69,000	13,755,300	15,103,100
Indicated	All	175	883,800	316	4.88	1.55	1.76	8,980,600	138,500	30,157,100	34,345,500
Measured + Indicated	All	175	1,268,800	319	5.09	1.57	1.77	13,031,400	207,500	43,912,400	49,448,600
Inferred	All	175	1,709,200	362	4.80	1.73	1.86	19,893,600	263,800	65,263,700	70,201,100

**Notes:**

- (1) Resources are reported as diluted Tonnes and grade to 0.7 m fixed width
- (2) Metal prices for NSR cutoff are: US\$23.70/troy ounce Ag, US\$1,744/troy ounce Au, US\$0.97/lb Pb, and US\$1.15/lb Zn
- (3) Columns may not total due to rounding

Mineral Resources have been tabulated using a US\$175/t NSR cutoff grade based on the price assumptions shown in **Table 11-3**. The Resource tabulation is presented based on the long-term average consensus prices from 40 banks. The prices used are US\$23.70/troy ounce Ag, US\$1,744/troy ounce Au, US\$0.97/lb Pb, and US\$1.15/lb Zn.

**Table 11-3: Cutoff price assumptions**

Assumption	Value
Ag Price \$/oz	23.70
Au Price \$/oz	1,744
Pb Price \$/lb	0.97
Zn Price \$/lb	1.15

NSR has been calculated with concentrate characteristics and marketing terms supplied by Golden Minerals. Metal contributions are dependent on the concentrate and mineral type, and the overall recoveries are shown in **Table 11-4**.

**Table 11-4: NSR metallurgical recovery assumptions**

Metal	Sulfide Metallurgical Recovery %
Au	67
Ag	90
Pb	72
Zn	77

For the oxide and mixed NSR equations the payable terms were combined as single factors with the recoveries and were provided by Golden Minerals. Oxide and mixed mineral types are not the subject of the subsequent sections of this report that assess preliminary economics. The sulfide NSR equation has been updated for proposed mining areas that are the subject of this report and is based on metallurgical testing from that area.

The qualified person considers the information provided for this Resource estimate to be at a level of detail to be used for an Initial Assessment. If subsequently converted to Reserves and mined, the inability to precisely predict the true shape and orientation of mineralized shoots could materially affect the Mineral Resources. The geologic controls dictating the extents of the mineralized shoots are not currently known in much of the Inferred Resource areas. Interpolation and extrapolation of channel and drill hole samples represent an unbiased approximation of mineralized shoot shape but will generally not predict the exact shape.

NSR calculations are based on reasonable price and contract assumptions. The inability to market concentrates or changes in prices or contract terms could materially affect the quantified Resources in relation to the NSR cutoff. The estimation of in-situ tonnage and grade attributes estimated would not be affected.

There are no additional environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that the author of this report is aware of that could materially affect the Mineral Resource estimate. The property has been in operation and many of the above factors have been studied in detail and addressed in the initial permitting process and have not affected the Resource estimates to date. It is possible complications with any or all the above-mentioned factors could arise in the future, but currently no material complications are known.

## 12. MINERAL RESERVE ESTIMATES

Mineral Reserves have not been estimated for the Velardeña project.

## 13. MINING METHODS

The Project is planned to be operated as an exclusively underground operation. The current mine plan includes only the sulfide material from the principal veins, which include veins CC, C1, A4, F1, G1, San Mateo, Roca Negra, Hiletas, Terneras, Chicago, and Escondida. The plan targets an annual maximum of 112,775 tonnes.

### 13.1 Geotechnical Analysis

A geotechnical analysis for the Project has not been conducted or reviewed by the author. The mine has historically operated without significant underground support. Several areas of the underground workings were inspected during the site visit, and it was observed that the rock mass is competent and self-supporting. No areas of concern were noted. It is recommended the services of rock engineering firms are engaged to provide expertise on stope layout and future potential rock mass stability concerns that may arise due to increased stress and/or depth.

### 13.2 Dewatering

Neither a water balance nor dewatering investigations were performed for this study. The water handling system currently in place relies on a chain of submersible dirty water pumps to evacuate the inflow from the mine. No significant water infiltration was noted at the underground mine site during the site visit. Seepage and dewatering are not expected to be of concern, and it is not anticipated that excessive dewatering costs will be incurred during the life of mine, but further studies are recommended to confirm this.

### 13.3 Mine Layout Parameters

Tetra Tech has conceptually planned stopes for two scenarios to determine potentially mineable Resources, targeting a mill feed of 325 tonnes per day. Scenario 1 includes Measured, Indicated, and Inferred Resources, and Scenario 2, excluding the Inferred material. Scenario 1 contains a potentially Mineable Resource totaling 1.24 Mt tonnes for mining over 11 years, from and stope development. Scenario 2 contains a potentially Mineable Resource of 443 kt for mining for 4 years.

An underground site visit was conducted on December 10, 2019. The past extraction methods observed during the visit were Mechanized Cut and Fill stoping and Mechanized Resuing Cut and Fill stoping. These two techniques are considered for the conceptual plan and are suitable for the steeply dipping veins found at the Project.

Resue mining methods considered a minimum width of 0.7 meters, which was demonstrated in recent test mining at the site. Main access ramps will be 4 meters high by 4 meters wide. Cross Cuts and footwall development were considered in the plan. The loss of Resources available to mining through mining extraction losses has been considered. The considerations include stoping with both shrinkage and resue mining which require the leaving of rib, sill, and crown pillars. For the conceptual plan rib, sill, and crown pillars have been included as 3 m in width.

A mining loss of 5% has been included, which accounts for blasted material left in-situ in stopes, above pillars and in stope drifts after stope completion.

## 13.4 Other Mining Requirements

### 13.4.1 Ventilation

The current underground workings at the Project are naturally ventilated, with the main ramp used as an intake airway and the old Santa Juana mining areas and shafts for exhausting air. However, Golden Minerals is installing a booster fan which will force air from the San Mateo and Terneras areas, down the main adit, and out of the old Santa Juana mining areas.

Access to the old shafts within the Santa Juana Mine is still possible and provides access for inspections to ensure the old excavations remain open to provide exhaust.

Ventilation circuits are created in stoping areas through forced ventilation, via fans and ducting of various sizes. Stopes are set up to have a minimum of two entrances, which when connected provide for thorough ventilation.

No further evaluation on the ventilation has been performed, but it is expected the main booster fan, once installed, will be adequate for mine ventilation.

### 13.4.2 Access and Development

Existing underground development includes 10,122 meters of drift and ramp development and 2,278 meters of raise development. Development requirements to restart mining are minimal.

The main access ramps are 4 meters high by 4 meters wide. The ramps are driven at slopes no greater than 15%. The ramps are equipped with HDPE lines carrying compressed air, drill water, and mine water drainage. The Velardeña planned advance rate for ramps is 4.4 meters per day. Single boom hydraulic jumbos will be used to drill and 6 cubic yard capacity LHD units will be used to muck.

Cross cuts and footwall development are required to access each stope. Stope size will vary by vein width.

## 13.5 Mining Equipment and Personnel

Golden Minerals owns the equipment required for mining. The key pieces of equipment include scoop-trams, underground trucks and drilling jumbos. The current equipment fleet is expected to be adequate to achieve the targeted 373 tpd of mill feed for processing and, as such, no additional equipment is expected to be purchased. Golden Minerals also owns the jacklegs required for stoping and underground development (narrow drifts) and ventilation equipment in use underground. **Table 13-1** shows the required mine personnel. Shift personnel manpower is required to be 1.5 men on payroll per man on shift.

**Table 13-1: Mine personnel requirements**

Staff Title	Number
Mine operations	52
Maintenance	16
Stope miners	140
Development crew	18
Raise Crew	18
Loaders and haul trucks	24
<b>Total</b>	<b>268</b>

## 14. PROCESSING AND RECOVERY METHODS

There are two existing process plants, Plant 1 and Plant 2, at the Project. Plant 1 is designed to treat sulfide material to produce Pb, Zn and pyrite concentrates and is located near the village of Velardeña, approximately eight kilometers from the mining operations. Plant 1 has an operating capacity of 340 tpd with net capacity of 325 tpd at 95% operating time, equal to 112,775 tonnes per year (tpy) on a 347-day schedule. Plant 2 is an agitated leach plant for treating oxide Au-Ag mineralized material to produce Au-Ag doré. Plant 2 was purchased by William Resources in 1996. Operations were suspended at both plants in June 2013. In July 2014, Golden Minerals restarted mining operations to feed Plant 1, which started production on November 3, 2014. During the shutdown, Golden Minerals completed several capital projects at Plant 1 prior to restart including: overhauling the electrical system, installing new concentrate filters, and refurbishing the flotation cells. Operation of Plant 1 was discontinued in late 2015 due to a combination of low metal prices, dilution, and metallurgical challenges. Plant 2 was leased to Hecla Mining Company from July 2015 through November 2020. Mineralized material from the Golden Minerals Rodeo Project has been processed through Plant 2 since January 2021.

### 14.1 Plant 1

Plant 1 is designed to process sulfide material in a conventional flow sheet of crushing, grinding, and differential flotation to produce three separate concentrates: Pb-Ag, Zn, and pyrite.

**Figure 14-1** shows the processing flow sheet for Plant 1, and **Figure 14-2** shows a layout of Plant 1 and the tailings dams. **Table 14-1** and **Table 14-2** list the major equipment and process materials in use at Plant 1. Reagents used in Plant 1 include lime, collectors, depressants, and frothers.

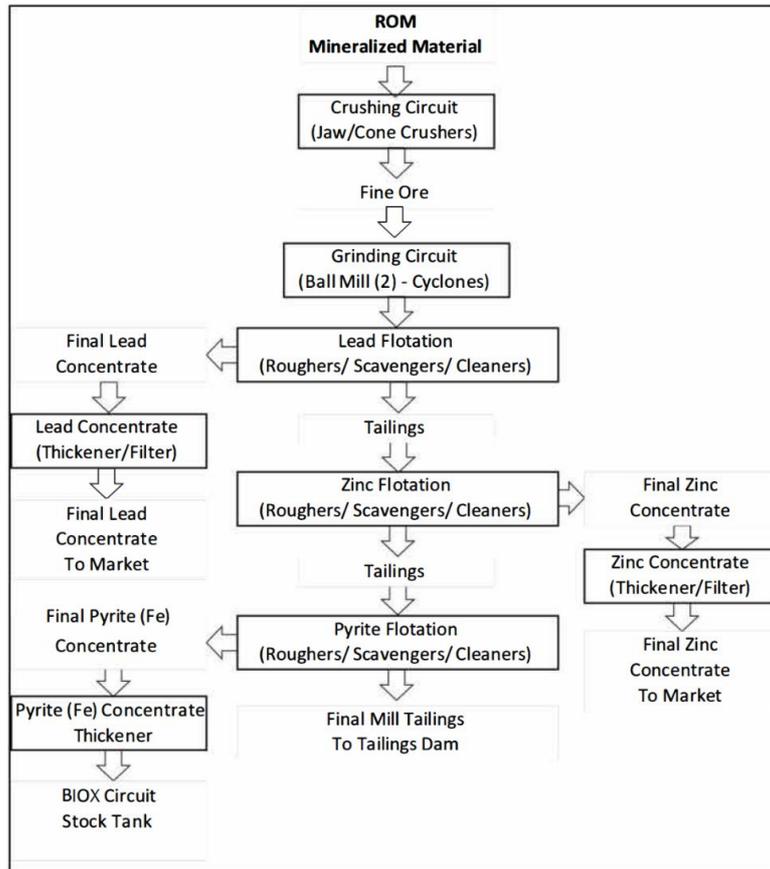


Figure 14-1: Process plant flow sheet for Plant 1

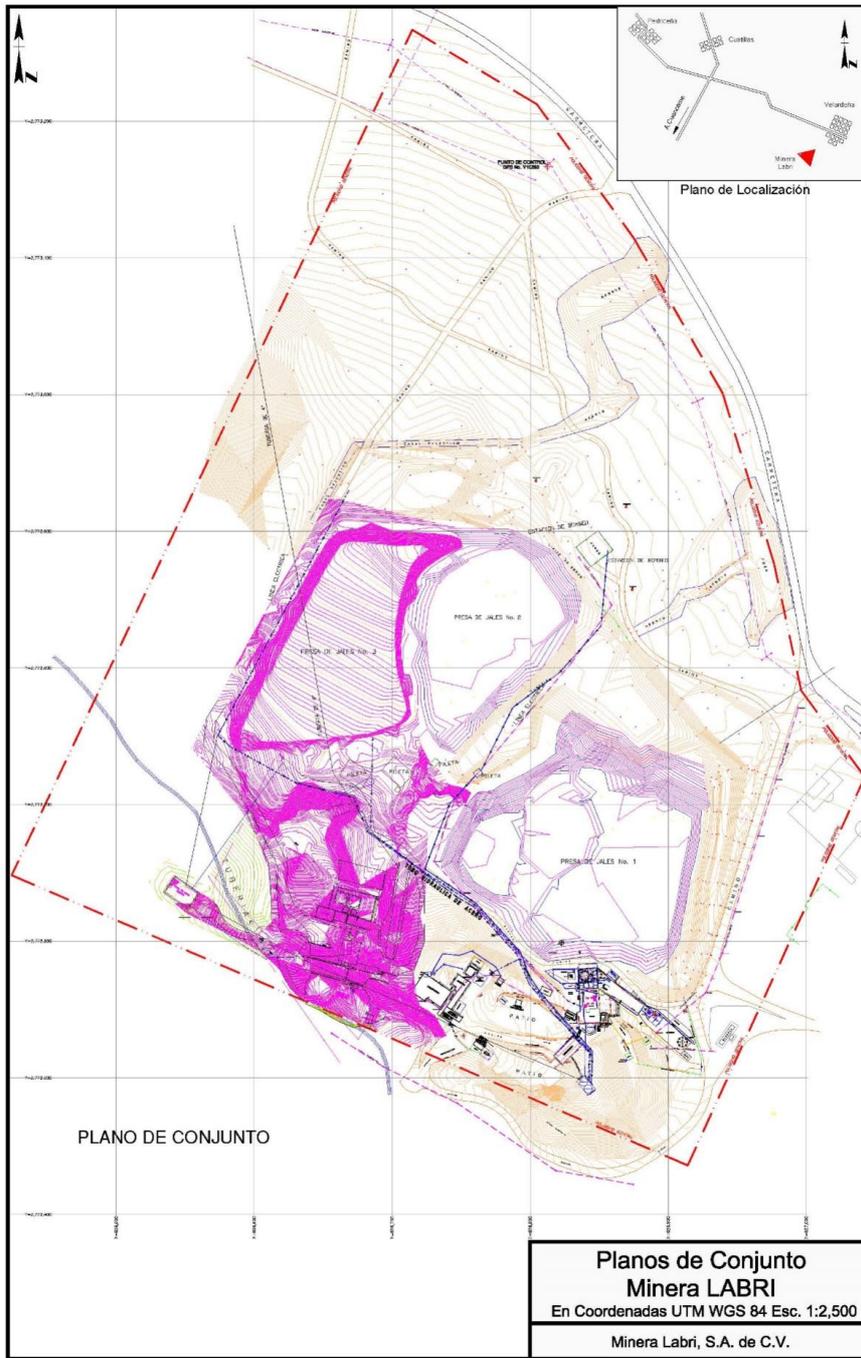


Figure 14-2: Site layout for Plant 1

**Table 14-1: Major process plant equipment for Plant 1**

Description	Quantity	Function
Coarse Ore Bin; 120 t Capacity	1	ROM Feed Ore Bin
Jaw Crusher; 10 in. by 30 in.; 100 HP	1	Primary Crusher
Cone Crusher; Sandvik Model H3800; 200 HP	1	Secondary Crusher
Vibrating Screen; FIMSA 4 ft by 6 ft; 10 HP	1	Size Classification
Fine Ore Bin; 350 t Capacity	1	Surge Capacity
Ball Mill #1; FIMSA; 7 ft by 10 ft; 200 HP	1	Ore Grinding
Ball Mill #2: MERCY; 5 ft by 8 ft; 125 HP	1	Ore Grinding
Cyclones; D6	3	Size Classification
Lead Conditioning Tank; 6 ft by 6 ft; 10 HP	1	Conditioning
Lead Rougher Flotation Cells; FIMSA; 100 cu ft; 60 HP	4	Lead Rougher Flotation
Lead Scavenger Flotation Cells; FIMSA; 100 cu ft; 20/30 HP	4	Lead Scavenger Flotation
Lead Cleaner Flotation Cells; FIMSA; 3 stages; 24 cu ft; 7.5/10 HP	6	Lead Cleaner Flotation
Lead Concentrate Thickener; 25 ft diameter; 2 HP	1	Thicken Final Lead Concentrate
Lead Concentrate Filter; SEW; 6 ft diameter; 3 Discs; 2 HP	1	Filter Lead Concentrate
Zinc Conditioning Tank; 6 ft by 6 ft; 10 HP	1	Conditioning
Zinc Rougher Flotation Cells; Denver; 100 cu ft; 15 HP	6	Zinc Rougher Flotation
Zinc Primary Scavenger Flotation Cells; Denver; 50 cu ft; 15 HP	6	Zinc Scavenger Flotation
Zinc Secondary Scavenger Flotation Cells; Denver; 50 cu ft; 15 HP	4	Zinc Scavenger Flotation
Zinc Cleaner Flotation Cells; Denver; 3 stages; 24 cu ft; 7.5 HP	6	Zinc Cleaner Flotation
Zinc Concentrate Thickener; 25 ft diameter; 2 HP	1	Thicken Final Zinc Concentrate
Zinc Concentrate Filter; Filter Press; 0.25 HP	1	Filter Zinc Concentrate
Pyrite Conditioning Tank; 6 ft by 6 ft; 10 HP	1	Conditioning
Pyrite Rougher Flotation Cells; MINPRO; 100 cu ft; 30 HP	4	Pyrite Rougher Flotation
Pyrite Scavenger Flotation Cells; Denver; 50 cu ft; 25/30 HP	5	Pyrite Scavenger Flotation
Pyrite Cleaner Flotation Cells; Denver; 2 stages; 25 cu ft; 7.5 HP	8	Pyrite Cleaner Flotation
Pyrite Concentrate Thickener; 25 ft diameter; 2 HP	1	Thicken Final Pyrite Concentrate
Pyrite Concentrate Filter; 0.25 HP	1	Filter Pyrite Concentrate

**Table 14-2: Process materials for Plant 1**

Process Materials	Consumption Rate (kg/t processed)
Grinding Balls - 2.5 in. diameter	0.83
Grinding Balls - 2 in. diameter	0.72
Grinding Balls - 1.5 in. diameter	0.17
Lime	1.16
Sodium Cyanide	0.07
Sulfate	0.88
Xanthate 350	0.8505
Aeropromoter 211	0.02
Aeropromoter 3416	0.0675
Aerofloat 31	0.054

Process Materials	Consumption Rate (kg/t processed)
Frother 1065	0.0945
Aerofloat 70	0.01
P404	0.03
P242	0.04
Copper Sulfate	0.92

Run of Mine (ROM) material is received from the underground mines by truck and unloaded onto a small area near the Plant 1 crushing circuit. The ROM material is reclaimed by a front-end loader and fed to a jaw crusher for primary crushing. The primary crushed material is sized by a vibrating screen operating in closed-circuit with a secondary cone crusher. The crushed fine material is conveyed to a 350-t fine ore bin ahead of the grinding circuit. The fine material is ground in two ball mills operating in parallel. The ball mill discharge is classified by cyclones, with the cyclone underflow (oversize material) returned to the ball mills and the cyclone overflow (product), at 80% minus 200 mesh, advances to a conditioning tank ahead of Pb flotation. After conditioning, the slurry is fed to the Pb flotation circuit comprised of rougher, scavenger, and three stages of cleaner cells. The Pb concentrate from the cleaner cells represents the final Pb concentrate, which is then thickened and filtered to a moisture content of 10-12%, by weight, for shipment. The final Pb concentrate has a low projected grade of 35-40% Pb, which is rich in Au and Ag byproducts. The Pb and Ag recoveries to the Pb concentrate are projected to be over 65% and about 70% respectively.

The tailings from the Pb flotation circuit are fed to a conditioning tank ahead of the Zn flotation circuit. The conditioned slurry is fed to the Zn flotation circuit comprised of rougher, scavenger, and three stages of cleaner cells. The Zn concentrate from the cleaner cells represents the final Zn concentrate, which is then thickened and filtered to a moisture of 10-12%, by weight, for shipment. The final Zn concentrate is projected to contain over 40% Zn. The Zn recovery to the Zn concentrate is projected to be over 70%. Both the Pb and Zn concentrates contain levels of As and Sb impurities.

Tailings from the Zn flotation circuit are fed to a conditioning tank ahead of the pyrite flotation circuit. The conditioned slurry advances to the pyrite flotation circuit comprised of roughers, scavengers, and two stages of cleaner cells. The concentrate from the cleaners represents the final pyrite concentrate, containing high Au and Ag values, and would be thickened for transport as a slurry to a BIOX® plant constructed near Plant 2 for oxidization, leaching, and recovery of the precious metals into doré.

The tailings from pyrite flotation represent the final flotation plant tailings that are pumped to Tailings Dam #3 located adjacent to Plant 2. Tailings Dam 3 has sufficient capacity to hold 3.9 years of tailings from Plant 1. Any additional capacity in Tailings Dam 3 would need to be permitted.

Plant 1 obtains power from the national Comisión Federal de Electricidad (CFE) power grid. The nominal electrical consumption for Plant 1 is approximately 33 kWh/t of material processed. Fresh water for Plant 1 is obtained from existing water wells located near Plant 1 and Plant 2 at an average consumption rate of 184 cubic meters per day. Historically, some fresh water has been trucked from Plant 2 to Plant 1 during periods of insufficient water flow. Golden Minerals plans to construct a 4-in diameter water line from Plant 2 to Plant 1, approximately five kilometers.

Nine personnel are required for day shift operations along with eight mechanics, and night shifts require seven operators.

## 14.2 Plant 2

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Plant 2 is a conventional 550-tpd agitated cyanide leach facility that includes crushing and grinding circuits to process ROM mineralized material that would not be utilized for the treatment of pyrite concentrates from Plant 1. **Figure 14-3** shows the processing flow sheet for Plant 2. **Table 14-3** and **Table 14-4** list the major equipment and reagents at Plant 2. Plant 2 is located approximately four kilometers from Plant 1. Oxidized pyrite concentrate from a BIOX® plant constructed nearby would be slurried and fed to the eight-tank agitation unit. Slurry from the agitation tanks passes to a four-unit counter-current decantation circuit where the pregnant solution is recovered and passed to storage tanks before filtering and processing in the Merrill-Crowe circuit. The pregnant solution is filtered in horizontal pressurized disk filters using diatomaceous earth as the filtering medium. Zn dust is used to precipitate precious metals in the Merrill-Crowe circuit. Underflow of the counter-current decantation circuit is pumped to the plant's Tailings Storage Facility (TSF), which is a lined constructed impoundment. Solution is recovered from the TSF and pumped back to the plant for re-use. The precipitate from the Merrill-Crowe circuit is refined to bars of Au-Ag doré in an on-site refinery with a single 100-kg charge induction furnace. Reagents used in the Plant 2 leach and Merrill-Crowe circuits are cyanide, Zn dust, diatomaceous earth, flocculants, and lime.



**Table 14-3: Major Process plant equipment for Plant 2**

Description	Number	Function
Coarse Ore Bin; 7 ft by 11 ft by 14 ft; 50 t Capacity	1	ROM Feed Ore Bin
Coarse Ore Apron Feeder; 4 ft by 17 ft; 3 HP	1	Feed Jaw Crusher
Jaw Crusher; 24 in. by 36 in.; Allis-Chalmers; 100 HP	1	Primary Crusher
Cone Crusher; 4 ft diameter Standard; Symons; 100 HP	1	Secondary Crusher
Vibrating Screen; Double-Deck; TYLER, 6 ft by 10 ft; 20 HP	1	Size Classification
Fine Ore Bin; 8 m by 9 m; 500 t Capacity	1	Surge Capacity
Ball Mill; Allis-Chalmers; 10.5 ft by 13 ft; 800 HP	1	Ore Grinding
Cyclones; Krebs D6	10	Size Classification
Ball Mill; 8 ft by 22 ft	1	Secondary Ore Grinding
Cyclones		Size Classification
Primary Thickener; 16 m diameter by 3 m high; 3 HP	1	Thicken Cyclone Overflow
Leach Tanks; Agitated; 8 m by 8.5 m; 25 HP	8	Cyanide leach Au and Ag
CCD Thickeners; 60 ft diameter; 5 HP	4	Solid-liquid separation; PLS
PLS Tank; 8 m diameter by 4 m high	1	PLS Surge Tank
Clarifiers; 52 sq. m; Diatomaceous Earth; 1.5 HP	2	Clarify PLS
Clarified PLS Tank; 5 m diameter by 6 m high	1	Clarified PLS Surge Tank
Zinc Filter Presses; 1.84 m diameter by 1.84 m high; 4.89 cu m	2	Filter Zinc Precipitate
Primary Flotation Cells; WEMCO; 75 cu m; 15 HP	3	Au-Ag rougher flotation
Cleaner Flotation Cells; First Stage; DENVER; 25 cu ft; 5 HP	2	First stage cleaners
Cleaner Flotation Cells; Second Stage; DENVER; 45 cu ft; 10 HP	4	Second stage cleaners
Conditioner; 1.7 m diameter by 2 m high; 25 HP	1	Conditioning
Concentrate Thickener; 6.84 m diameter by 2.45 m high; 3 HP	1	Thicken Final Concentrate
Concentrate Filter; Vacuum; Komline-Sanderson	1	Concentrate Filter
Smelting Furnace; INDUCTOTHERM, 650 kg charge; 150 KW	1	Precipitate Smelting
Filter Presses; DURCO/PERRIN/HYSTAR	3	Filter

**Table 14-4: Process reagents for the leach circuit at Plant 2**

Process Materials	Consumption Rate (kg/t processed)
Lime	4.4
Sodium Cyanide	7.5
Flocculant	0.05

The plant is currently processing material from Golden Minerals' Rodeo mine. Water consumption at Plant 2 averaged 0.80 m<sup>3</sup>/t from January through December 2021. Average power consumption at the plant was 831,000 kWh for the same period. The plant employs 98 workers.

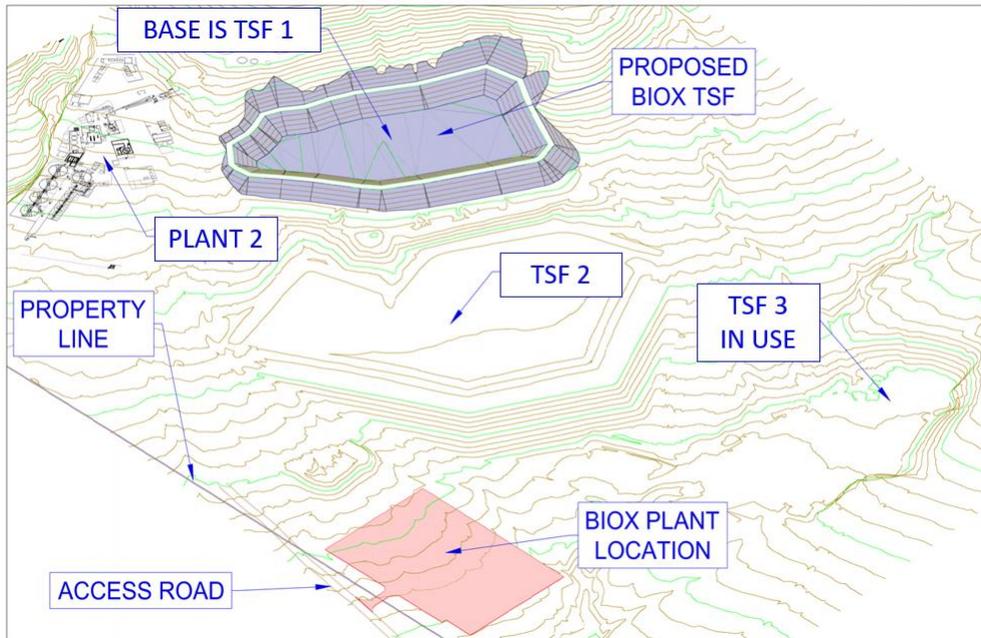
### 14.3 Proposed BIOX® Plant

Plant 2 is a conventional 550-tpd agitated cyanide leach facility that includes crushing and grinding circuits to process ROM mineralized material that would not be utilized for the treatment of pyrite concentrates from Plant 1. **Figure 14-3** shows the processing flow sheet for Plant 2. **Table 14-3** and **Table 14-4** list the major equipment and reagents at Plant 2. Plant 2 is located approximately four kilometers from Plant 1. Oxidized pyrite concentrate from a BIOX® plant constructed nearby would be slurried and fed to the eight-tank agitation unit. Slurry from the agitation tanks passes to a four-unit counter-current decantation circuit where the pregnant solution is recovered and passed to storage tanks before filtering and processing in the Merrill-Crowe circuit. The pregnant solution is filtered in horizontal pressurized disk filters using diatomaceous earth as the filtering medium. Zn dust is used to precipitate precious metals in the Merrill-Crowe circuit. Underflow of the counter-current decantation circuit is pumped to the plant's Tailings Storage Facility (TSF), which is a lined constructed impoundment. Solution is recovered from the TSF and pumped back to the plant for re-use. The precipitate from the Merrill-Crowe circuit is refined to bars of Au-Ag doré in an on-site refinery with a single 100-kg charge induction furnace. Reagents used in the Plant 2 leach and Merrill-Crowe circuits are cyanide, Zn dust, diatomaceous earth, flocculants, and lime.

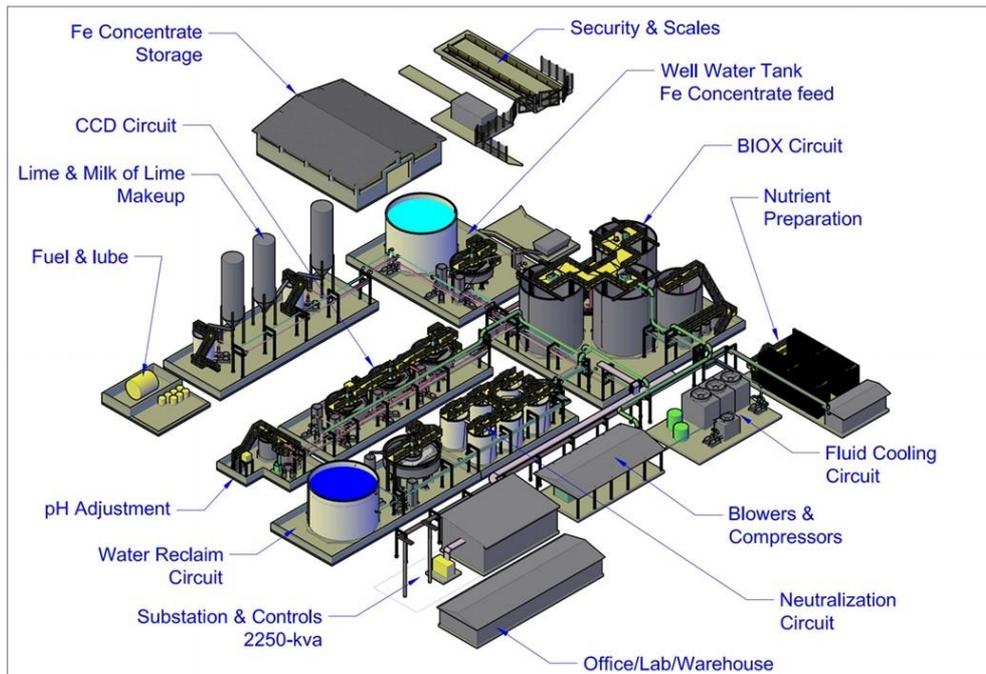
**Table 14-5** is a list of the major equipment that will be required in the construction of the BIOX® plant.

**Table 14-5: Major process plant equipment for BIOX® plant**

Description	Number	Function
500 kW Prime Diesel Generators; 440/277 volt, 3-phase	3	Backup Power
CCD Thickeners; 20 ft diameter; 5 HP	1	Solid-liquid separation; Fe Con
BIOX® Tanks; 9 m diameter x 9 m high Standard; Agitator; 25 HP	3	Bio-oxidation
CCD Thickeners; 20 ft diameter; 5 HP	3	Solid-liquid separation; Slurry
CCD Thickener; 30 ft diameter; 5 HP	1	Solid-liquid separation; WRT
pH Adjustment tanks; 3 m Dia. X 3 m high; Agitator; 10 HP	2	Slurry pH Conditioning
Water Conditioning Tanks; 4 m Dia. X 5 m high; Agitator; 25 HP	6	Water Recovery Circuit (WRT)
High Volume Blowers;	3	Bio-oxidation Air
Evaporative Cooling Towers;	4	Bio-oxidation/Blower Cooling
BIOX® Transfer Tank; 6 m diameter x 6 m high Standard; Agitator; 15 HP	1	Temp. Storage Fe Con
BIOX® Transfer Tank; 2 m diameter x 2 m high Standard; Agitator; 5 HP	2	Temp. Storage Nutrients
BIOX® Transfer Tank; 1.5 m diameter x 1.5 m high Standard; Agitator; 5 HP	2	Temp. Storage Reagents
100-DMT Limestone/Lime Silos	3	Lime Slurry Circuit
Process Pumps; Various sizes	30	Slurry and Solution handling



**Figure 14-4: Proposed BIOX® Plant location, relative to Plant 2 and the required TSF**

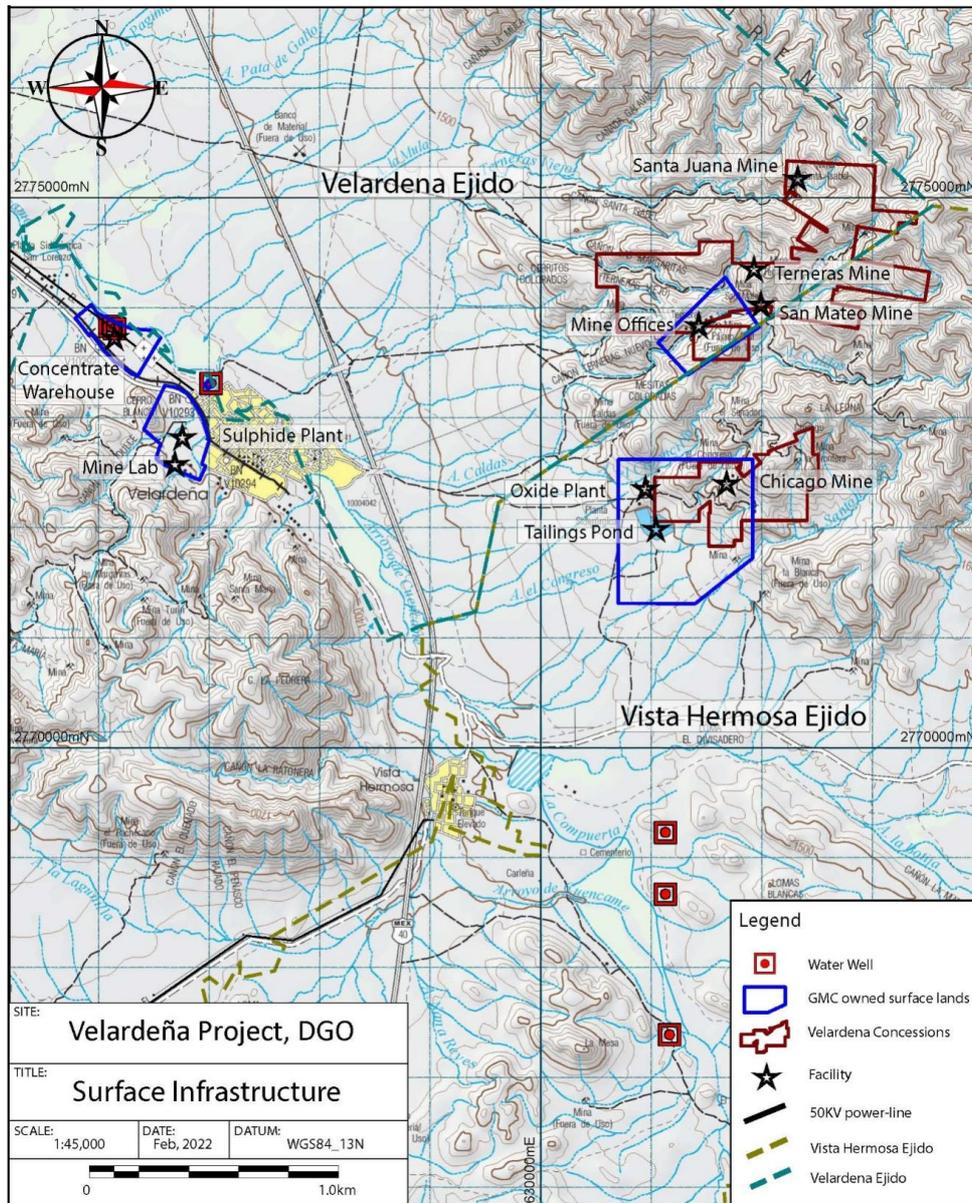


**Figure 14-5: Conceptual BIOX® Plant proposed for Velardeña**



## 15. INFRASTRUCTURE

Infrastructure for the project currently includes access roads, power, ancillary buildings, and water wells. No additional infrastructure is required for the site to resume production. **Figure 15-1** shows the site infrastructure.



**Figure 15-1: Surface infrastructure**

## 15.1 Access Roads

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The Project is located in the Mexican state of Durango, approximately 65 kilometers southwest of the city of Torreón and 150 kilometers northeast of the city of Durango. A major 4-lane highway, Highway 40, connects these cities. Plant 1 is located adjacent to the village of Velardeña, which is approximately 500 meters west of the highway. The Velardeña mines are located about eight kilometers from Plant 1 via a gravel road. Plant 2 is located approximately 3.5 kilometers from the Velardeña mine, also via gravel roads.

## 15.2 Waste Rock

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Waste rock from the underground mine consists of tonnage from the ramp, lateral development, and stopes. Since the mining methods include cut and fill, the waste from the stopes would either be stored underground in mined out stopes, hauled to the surface, or transported to the mill with the diluted mined material. Currently limited cut and fill mining is undertaken and, as such, most of the waste rock is planned for surface storage.

The waste rock not stored underground will be deposited along the valley between the San Mateo adit and the Santa Juana adit.

## 15.3 Tailings

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The dry tailings from Plant 1 are suitable for spreading on the fill of each cut to eliminate or reduce the dilution and losses associated with blasting and mucking process grade material on coarse placed fill. Tailings will be hauled from Plant 1 to the active mine and dumped at a central area. Trucks will then haul the tailings underground to a stope area where an LHD will spread the material on top of the recently placed coarse fill, a cover of approximately 15 centimeters. The planning and calculated production rates used in this estimate contain time for placing the tailings cover.

## 15.4 Power

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The underground power is available from a primary substation located at the portal. The power taken into the mine is stepped down at the substation to 4,160 volts. The 4,160 is stepped down to a typical working voltage of 440 volts using mobile mine load centers or pad mount transformers set on concrete. The power is stepped down to 120/240 single phase in many locations at the load centers. The mine power system was modernized in 2011.

## 15.5 Water Wells

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There are six existing water wells (three associated with Plant 1 and three associated with Plant 2) for extracting water from local aquifers. These wells are authorized, regulated, and permitted by CONAGUA, the Mexican *Comisión Nacional del Agua*.

## 16. MARKET STUDIES

Detailed market studies have not been performed for the Velardeña project. Markets for the Pb and Zn concentrates include metal brokers and direct sales to smelters. Doré produced at Plant 2 can be sold to downstream metal refiners. The concentrates and doré produced are typical within the Mexican mining industry and the concentrate and doré markets within Mexico and worldwide are liquid. For purposes of this study, it is assumed that Golden Minerals will be successful in securing buyers for its concentrates and doré.

The metal prices used for this study are an average of the long-term consensus pricing forecasts from 40 global banks. The prices used are US\$23.70/troy ounce Ag, US\$1,744/troy ounce Au, US\$0.97/lb Pb, and US\$1.15/lb Zn.

### 16.1 Doré

Golden Minerals currently has a contract to sell doré produced from processing material from the Rodeo mine at Plant 2 to a refinery based in the USA. It is expected the doré resulting from processing material from Velardeña will be of similar quality, and Golden Minerals expects it will be able to secure a similar contract. For the purposes of this TRS, the bars produced are expected to contain approximately 85-90% silver and 4-6% gold. It is assumed the Velardeña Operations will be paid for 97% of the contained gold and silver in the doré, with a treatment charge of \$5 per kilogram of doré and a refining charge of \$6 per ounce of gold and \$0.60 per ounce of silver. Marketing studies with potential buyers of doré have not been completed and therefore have not been reviewed by the author of this section.

### 16.2 Concentrates

The lead and zinc concentrates are expected to be sold to various customers under annual contracts which are generally re-negotiated each calendar year. Marketing studies with potential buyers for lead and zinc concentrates have not been completed, however the quality of the concentrates is expected to be typical of those produced in Mexico and it is expected Golden Minerals will be able to secure a buyer for these products.

#### 16.2.1 Lead Concentrates

The lead concentrates have typical assays as follows: 35-40% lead, 8,000-10,000 g/t silver, and 40-50 g/t gold. After metal deductions, the company is generally paid for 90-95% of the contained lead, silver, and gold. Concentrate treatment charges are negotiated annually and generally reflect market terms for the industry for similar products. For the purposes of this TRS, it is assumed the lead concentrates will be subject to a treatment charge of \$200/t, an Au refining charge of \$15.00/oz-payable, and an Ag refining charge of \$0.95/oz-payable.

#### 16.2.2 Zinc Concentrates

The zinc concentrates have typical assays as follows: 40-45% zinc, 90-100 g/t silver, and 5-6 g/t gold. After metal deductions, the Company is generally paid for approximately 85% of contained zinc and 60-70% of silver with lesser amounts payable for the contained gold. Concentrate treatment charges are negotiated annually and generally reflect market terms for the industry for similar products. For the purposes of this TRS, it is assumed the zinc concentrates will be subject to a treatment charge of \$300/t, with no additional refining charges.

## 17. ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

### 17.1 Environmental Baseline Studies

A variety of studies have been completed to characterize the natural environment of the Project area. The most recent Environmental Impact Statement for the Project was completed in April 2013.

According to INEGI-INE classification, the type of vegetation in the Project area corresponds to Desert Shrubland (rosette-forming vegetation) and sub-montane scrub, however; there is no demarcation that determines the separation between the ecosystems, so it is possible to find species from both. The vegetation in the vicinity of the Project is diverse and abundant but has been deteriorated in areas with significant traffic. The arid ecosystem provides for a predominately shrub vegetation cover which contributes to soil stability. An indication of the stability maintained in this environment is shown by the abundance of various cacti species. Of the 24 species of flora recorded for the Project area, only one species is reported within a risk category: *Mammillaria candida* (snowball cactus), which falls under the category of endangered according to SEMARNAT.

Mammal species identified in the Project area include two species considered threatened, *Vulpes macrotis*, (kit fox) and *Peromyscus boylii* (brush mouse); and one species considered endangered, *Erethizon dorsatum* (North American porcupine). Of the bird species identified at the Project, four are under special protection (red-tailed hawk, peregrine falcon, pine siskin, and Townsend's solitaire); one is considered endangered (*Falco mexicanus* or prairie falcon); and one is considered threatened (black-capped vireo). Of the amphibian and reptile fauna in the Project area, two are considered threatened (black racer and coachwhip snake) and two are identified under special protection (New Mexico whiptail and rock rattlesnake).

### 17.2 Requirements and Plans for Waste and Tailings Disposal

As part of the Environmental Impact Statement for the Project and in compliance with environmental regulations, Minera William has established an Environmental Monitoring Program that identifies potential impacts during each of the phases of the project along with actions to prevent, mitigate, and compensate the effects. The program requires internal control and periodic reporting to verify compliance with the program. Golden Minerals has retained an independent consultant to evaluate compliance with current environmental reporting and requirements.

The waste rock not stored underground will be contained along the valley between the San Mateo adit and the Santa Juana adit.

The dry tailings from Plant 1 are suitable for spreading on the fill of each cut to eliminate or reduce the dilution and losses associated with blasting and mucking process grade material on coarse placed fill.

### 17.3 Permitting Requirements and Status

Permitting requirements and status are shown in **Table 17-1** below. There is no reclamation bond required for this operation.

**Table 17-1: Permitting requirements**

Authorization, Procedure, or Project	Number	Authorization Date	Comment
<b>Plant 1 Permitting</b>			
Environmental Risk Study	NA	Aug. 27, 2008	Valid
Accident Prevention Program	DGGIMAR.710/004071	May 21, 2021	Valid
Single Environmental License (LAU)	SG/130.2.1/001312	Jul 4, 2008	Valid
Special Conditions for Ducts and Chimneys	DGGCARETC/0418/2011	Aug 19, 2011	Valid as long as the conditions of the equipment do not change
La Discordia Well	B00-L-0459-21-09-15	Dec 4, 2015	Valid through December 5, 2025
El Rancho Well	B00.909.01.02/1508	Jul 7, 2018	Valid through July 8, 2028
La Noria Well	BOO.E.231.1/0478 002927	Sep 29, 2014	Valid
<b>Plant 2 and Velardeña Mine Sites Permitting</b>			
Environmental Impact Study for the Production and Operation of the Velardeña Mines	SG/130.2.1.1/002387/13	Aug 29, 2013	Valid
Environmental Impact Study for Plant 2 and Tailings Dam IV	SG/130.2.1.1/001783/12	Jul 16, 2012	Valid for operations through June 2025 and for closure to June 2028
Environmental Risk Assessment – Plant 2	NA	Oct 30, 2015	Valid but must be modified if the hazardous substances or quantities to be used at the plant change
Accident Prevention Program	DGGIMAR.710/006062	Jul 27, 2016	Valid but must be modified if the hazardous substances or quantities to be used at the plant change
Single Environmental License	SG/130.2.1/002086	Nov 3, 2009	Valid
Single Environmental License Update	SG/130.2.1/001398/17	May 24, 2017	Valid
Special Conditions for Ducts and Chimneys	DGGCARETC/774/2017	Dec 19, 2017	Valid
Mine Waste Management Plan	DGGIMAR.710/0006148	Jul 31, 2018	Valid through July 31, 2048
Hazardous Waste Management Plan	DGGIMAR.710/0004490	Jun 13, 2018	Valid
Water Well #1	B00.E.23.1.1/0481002930	Sep 17, 2014	Valid
Water Well #2	B00.E.23.1.1/0479002928	Sep 17, 2014	Valid
Water Well #2	B00.3.23.1.1/0480002929	Sep 17, 2014	Valid
Environmental Impact Statement for Tailings Dam III	SG/130.2.1.1/002292/11	Dec 7, 2011	Valid for operations through July 2031 and for closure to July 2033
Preventive Report of the Tailings Dam Expansion Phase 2A and 3A	SG/130.2.1.1/2126/16	Nov 28, 2016	Valid through September 2024, including closure stage
Technical Justification Study for Change of Land Use for Tailings Dam III Phase 2A and 3A	SG/130.2.2/000098/16	Jan 12, 2017	Currently valid; a request was submitted to SEMARNAT for a 2-year extension at time of authorization

Authorization, Procedure, or Project	Number	Authorization Date	Comment
Extension Authorization	SG/130.2.2/0053/2020	Jan 13, 2020	Valid
Explosives Permit	4596-Dgo	Oct 15, 2021	Valid; renewable each year

### 17.4 Plans, Negotiations, or Agreements with Local Individuals or Groups

Surface rights to some of the Project’s concession areas are held by local ejidos (rural co-operative communities).

Ejido Velardeña holds surface rights at the Project’s Velardeña property. Golden Minerals reports that it has an agreement with the ejido for surface access and to perform work related to exploration and mining on the property. As part of this agreement, Golden Minerals makes quarterly payments of \$2,000 to the ejido. The agreement was formalized before a notary as required by law and, although the formal agreement expired in December 2021, Golden Minerals remains in good standing with the community and is finalizing renegotiation of the agreement.

Ejido Vista Hermosa holds surface rights for the Project’s Chicago property. Golden Minerals reports that it has an agreement with the ejido allowing access to the property to perform work related to mineral exploration and mining. The agreement was formalized before a notary and is valid until 2038. As part of the agreement, Golden Minerals makes a payment of \$400,000 MXN plus applicable taxes by the 24<sup>th</sup> of March each year.

### 17.5 Mine Closure Plans and Costs

Golden Minerals has developed closure plans for the mines and processing plants presented in this TRS in conjunction with an independent consulting firm.

Closure and reclamation costs for the Plant 1 area are estimated to total \$1.5M, and the estimated closure costs for Plant 2 are estimated to total \$2.4M.

### 17.6 Qualified Person’s Opinion on Adequacy of Current Plans

The information provided by Golden Minerals contains legal documentation related to environmental compliance, and SEMARNAT, the governmental office in charge of the environmental aspects. Golden Minerals also has provided documents that support operations from the permitting side, which are official files for mine operations, haulage, waste, and water aspects. There are also documents related to agreements with the communities for other related activities that are described next. The data provided is in good standing to the knowledge and understanding of the QPs of this report

## 18. CAPITAL AND OPERATING COSTS

Two capital and operating cost estimates were generated for the Project to support two economic analysis cases. One case considers Measured, Indicated, and Inferred (MII) Mineral Resources and the other considers only Measured and Indicated Mineral (MI) Resources. Capital and operating costs are based on Golden Minerals internal forecasts, which Tetra Tech has reviewed and found to be consistent with a mine of this type. Both capital and operating costs have a 10% contingency applied. Tetra Tech considers these cost estimates to be within 50%.

### 18.1 Capital Costs

Capital costs for the two cases are summarized in **Table 18-1** and **Table 18-2**. The capital cost estimate for the plan including Inferred Mineral Resources contains a tailings expansion provision of \$0.3M that is not required for the plan based on Measured and Indicated Resources only.

**Table 18-1: Capital cost estimates - MII plan**

Item	Total \$000s
Mine Development	\$788
Process Plant	\$17,248
Contingency and Other	\$3,130
<b>Total Capital</b>	<b>\$21,166</b>

**Table 18-2: Capital cost estimates - MI plan**

Item	Total \$000s
Mine Development	\$788
Process Plant	\$15,384
Contingency and Other	\$2,174
<b>Total Capital</b>	<b>\$18,345</b>

### 18.2 Operating Costs

Operating costs for the two cases are summarized in **Table 18-3** and **Table 18-4**.

**Table 18-3: Operating cost estimates - MII plan**

Item	Total (\$000s)	Unit Cost (\$/t-milled)
Mining Costs - Stoping	\$131,261	\$106.09
Mining Costs - Development	\$33,653	\$27.20
Milling costs	\$105,234	\$85.05
<b>Mine &amp; Process</b>	<b>\$270,148</b>	<b>\$218.34</b>
Contingency and Other	\$27,015	\$21.83
Precious Metal Royalty	\$2,532	\$2.05
<b>Total Operating</b>	<b>\$299,695</b>	<b>\$242.23</b>

**Table 18-4: Operating cost estimates - MI plan**

Item	Total (\$000s)	Unit Cost (\$/t-milled)
Mining Costs - Stopping	\$47,214	\$106.64
Mining Costs - Development	\$12,043	\$27.20
Milling costs	\$36,453	\$82.33
<b>Mine &amp; Process</b>	<b>\$95,710</b>	<b>\$216.17</b>
Contingency and Other	\$9,571	\$21.62
Precious Metal Royalty	\$935	\$2.11
<b>Total Operating</b>	<b>\$106,216</b>	<b>\$239.90</b>

## 19. ECONOMIC ANALYSIS

Two economic models were prepared for the Project: one includes Inferred Mineral Resources (MII Plan) in the analysis, and the second excludes the Inferred material (MI Plan). The economic model results are based on Mineral Resources that, by definition, are not Mineral Reserves, and do not have demonstrated economic viability. The economic assumptions shared between both models are summarized in **Table 19-1**. For both economic analyses, reclamation costs are assumed to be canceled by salvage value and are therefore not included. Economic results are reported pre-tax.

**Table 19-1: Economic model input parameters**

Description	Value	Units
Market Prices:		
Gold (Au)	\$1,744.00	/oz
Silver (Ag)	\$23.70	/oz
Lead (Pb)	\$0.97	/lb
Zinc (Zn)	\$1.15	/lb
Taxes:		
Federal Precious Metal Royalty	0.50	%
Financial:		
Discount Rate	8	%

## 19.1 Economic Model Results – MII Plan

Economic model results for the mine plan including Measured, Indicated, and Inferred Mineral Resources are summarized in **Table 19-2**. The life of mine is 11 years, with a pre-tax NPV of \$119M.

**Table 19-2: Economic model results - MII**

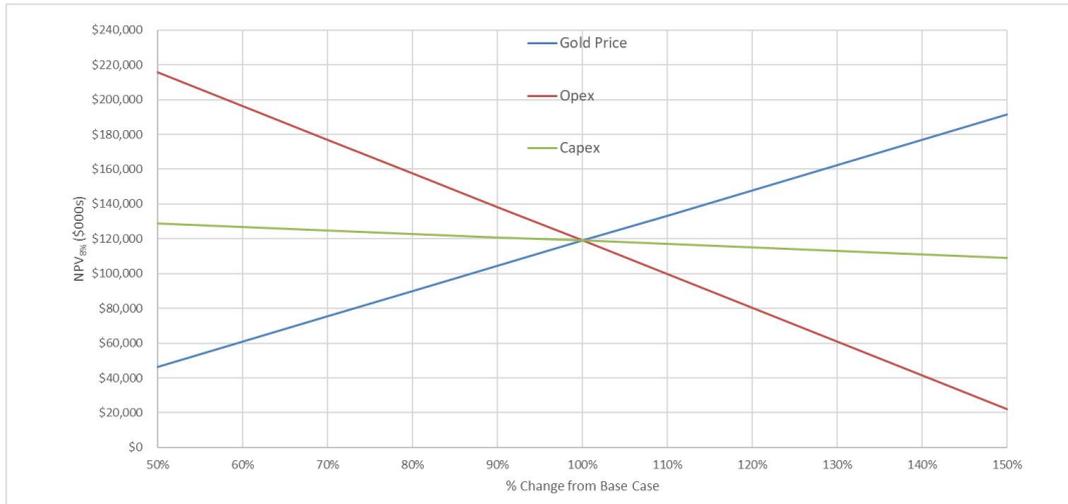
Item	Total (\$000s)	Pb Concentrate	Zn Concentrate	Doré
Gross Payable	\$556,905	\$311,680	\$59,772	\$185,453
TCs, RCs, and penalties	(\$35,939)	(\$19,791)	(\$14,663)	(\$1,485)
Freight & Insurance	(\$14,512)	(\$5,885)	(\$5,195)	(\$3,432)
<b>NSR</b>	<b>\$506,454</b>	<b>\$286,004</b>	<b>\$39,914</b>	<b>\$180,536</b>
<b>Operating Costs</b>				
Mining Costs - Stopping	(\$131,261)			
Mining Costs - Development	(\$33,653)			
Milling costs	(\$105,234)			
Contingency and Other	(\$27,015)			
Federal Mining Royalty	(\$2,532)			
	(\$299,695)			
<b>\$/t-milled</b>	<b>(\$242.23)</b>			
<b>Operating Margin</b>	<b>\$206,759</b>			
<b>Capital Costs</b>	<b>Full LOM</b>	<b>Pre-Production</b>	<b>LOM</b>	
Pre-Production Development	(\$788)	(\$788)	\$0	
Process Plant	(\$17,248)	(\$14,498)	(\$2,750)	
Contingency and Other	(\$3,130)	(\$1,755)	(\$1,375)	
Cash Flow	\$185,594			
<b>Pre-Tax NPV<sub>8%</sub></b>	<b>\$118,933</b>			
<b>IRR</b>	<b>114%</b>			
<b>Payback (years)</b>	<b>1</b>			

Annual cash flow for the Project is summarized in **Table 19-3**.

Table 19-3: LOM cash flow - MII plan

Item	Total	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
<b>NSR</b>													
Gross Payable	\$556,905		\$50,312	\$52,463	\$55,817	\$62,526	\$52,967	\$52,776	\$48,695	\$43,629	\$49,314	\$42,240	\$46,166
TCS, RCs, Freight	(\$50,451)		(\$6,831)	(\$4,464)	(\$6,776)	(\$5,338)	(\$4,933)	(\$4,674)	(\$4,167)	(\$3,456)	(\$3,213)	(\$3,375)	(\$3,225)
<b>NSR</b>	<b>\$506,454</b>		<b>\$43,481</b>	<b>\$47,998</b>	<b>\$49,041</b>	<b>\$57,188</b>	<b>\$48,035</b>	<b>\$48,102</b>	<b>\$44,528</b>	<b>\$40,173</b>	<b>\$46,101</b>	<b>\$38,865</b>	<b>\$42,941</b>
<b>Operating Costs</b>													
Mining Costs - Stoping	(\$131,261)		(\$11,965)	(\$11,965)	(\$11,965)	(\$11,965)	(\$11,965)	(\$11,965)	(\$11,965)	(\$11,965)	(\$11,965)	(\$11,965)	(\$11,615)
Mining Costs - Development	(\$33,653)		(\$3,067)	(\$3,067)	(\$3,067)	(\$3,067)	(\$3,067)	(\$3,067)	(\$3,067)	(\$3,067)	(\$3,067)	(\$3,067)	(\$2,979)
Milling Costs	(\$105,234)		(\$8,140)	(\$9,388)	(\$8,711)	(\$11,021)	(\$9,067)	(\$9,471)	(\$9,329)	(\$10,080)	(\$10,275)	(\$10,059)	(\$9,693)
Contingency and Other	(\$27,015)		(\$2,317)	(\$2,442)	(\$2,374)	(\$2,605)	(\$2,410)	(\$2,450)	(\$2,436)	(\$2,511)	(\$2,531)	(\$2,509)	(\$2,429)
Precious Metal Royalty	(\$2,532)		(\$217)	(\$240)	(\$245)	(\$286)	(\$240)	(\$241)	(\$223)	(\$201)	(\$231)	(\$194)	(\$215)
<b>Operating Costs</b>	<b>(\$299,695)</b>		<b>(\$25,706)</b>	<b>(\$27,102)</b>	<b>(\$26,363)</b>	<b>(\$28,944)</b>	<b>(\$26,749)</b>	<b>(\$27,194)</b>	<b>(\$27,020)</b>	<b>(\$27,825)</b>	<b>(\$28,068)</b>	<b>(\$27,795)</b>	<b>(\$26,930)</b>
<b>Operating Margin</b>	<b>\$206,759</b>		<b>\$17,775</b>	<b>\$20,897</b>	<b>\$22,679</b>	<b>\$28,244</b>	<b>\$21,286</b>	<b>\$20,908</b>	<b>\$17,508</b>	<b>\$12,349</b>	<b>\$18,033</b>	<b>\$11,070</b>	<b>\$16,011</b>
<b>Capital Costs</b>													
Pre-production Development	(\$788)	(\$788)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Process Plant	(\$17,248)	(\$14,498)	(\$226)	(\$226)	(\$226)	(\$501)	(\$226)	(\$226)	(\$226)	(\$226)	(\$226)	(\$226)	(\$219)
Contingency and Other	(\$3,130)	(\$1,755)	(\$133)	(\$133)	(\$133)	(\$160)	(\$133)	(\$133)	(\$133)	(\$133)	(\$133)	(\$133)	(\$22)
<b>Pre-Tax Cash Flow</b>	<b>\$185,594</b>	<b>(\$17,041)</b>	<b>\$17,417</b>	<b>\$20,539</b>	<b>\$22,321</b>	<b>\$27,583</b>	<b>\$20,928</b>	<b>\$20,550</b>	<b>\$17,150</b>	<b>\$11,991</b>	<b>\$17,675</b>	<b>\$10,712</b>	<b>\$15,770</b>
<b>Pre-Tax NPV<sub>8%</sub></b>	<b>\$118,933</b>												
<b>IRR</b>	<b>114%</b>												
<b>Payback (years)</b>	<b>1</b>												

Sensitivity analyses were performed on gold price, capital costs, and operating costs, and are shown in **Figure 19-1**.



**Figure 19-1: Sensitivity study results-MII plan**

Results of the sensitivity analyses show the project is most sensitive to operating costs and gold price. A 10% increase in operating costs results in a 16% reduction in project NPV. Due to the sensitivity to operating costs, efforts to control or reduce the operating costs are material to the economic success of the Project.

## 19.2 Economic Model Results – MI Plan

Economic model results for the mine plan including Measured and Indicated Mineral Resources are summarized in **Table 19-4**. The life of mine is four years, with a pre-tax NPV of \$48.3M.

**Table 19-4: Economic model results - MI**

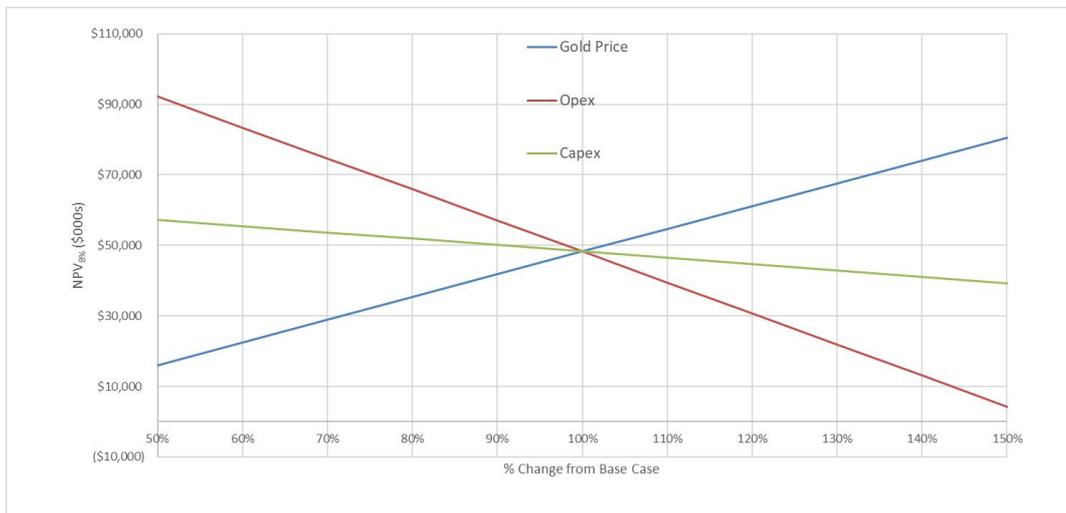
Item	Total (\$000s)	Pb Concentrate	Zn Concentrate	Doré
Gross Payable	\$208,950	\$120,237	\$23,997	\$64,715
TCS, RCs and penalties	(\$15,795)	(\$8,773)	(\$6,522)	(\$500)
Freight & Insurance	(\$6,205)	(\$2,722)	(\$2,298)	(\$1,185)
<b>NSR</b>	<b>\$186,951</b>	<b>\$108,742</b>	<b>\$15,178</b>	<b>\$63,031</b>
<b>Operating Costs</b>				
Mining Costs - Stopping	(\$47,214)			
Mining Costs - Development	(\$12,043)			
Milling costs	(\$36,453)			
Contingency and Other	(\$9,571)			
Federal Mining Royalty	(\$935)			
<b>Total</b>	<b>(\$106,216)</b>			
<b>\$/t-milled</b>	<b>(\$239.90)</b>			
<b>Operating Margin</b>	<b>\$80,735</b>			
<b>Capital Costs</b>				
	<b>Full LOM</b>	<b>Preproduction</b>	<b>LOM</b>	
Mine Development	(\$788)	(\$788)	\$0	
Process Plant	(\$15,384)	(\$14,498)	(\$886)	
Other Non-Operating Costs	(\$2,174)	(\$1,755)	(\$419)	
<b>Cash Flow</b>	<b>\$62,390</b>			
<b>Pre-Tax NPV<sub>8%</sub></b>	<b>\$48,265</b>			
<b>IRR</b>	<b>101%</b>			
<b>Payback (years)</b>	<b>1</b>			

Annual cash flow for the Measured and Indicated plan is summarized in **Table 19-5**.

**Table 19-5: LOM cash flow - MI plan**

Item	Total	Year -1	Year 1	Year 2	Year 3	Year 4
<b>NSR</b>						
Gross Payable	\$208,950		\$48,628	\$52,041	\$59,151	\$49,131
TCs, RCs, Freight	(\$22,000)		(\$5,838)	(\$6,004)	(\$5,396)	(\$4,761)
<b>NSR</b>	<b>\$186,951</b>		<b>\$42,790</b>	<b>\$46,037</b>	<b>\$53,754</b>	<b>\$44,369</b>
<b>Operating Costs</b>						
Mining Costs - Stopping	(\$47,214)		(\$11,965)	(\$11,965)	(\$11,965)	(\$11,320)
Mining Costs - Development	(\$12,043)		(\$3,067)	(\$3,067)	(\$3,067)	(\$2,840)
Milling costs	(\$36,453)		(\$8,609)	(\$8,933)	(\$10,186)	(\$8,725)
Contingency and Other	(\$9,571)		(\$2,364)	(\$2,397)	(\$2,522)	(\$2,289)
Precious Metal Royalty	(\$935)		(\$214)	(\$230)	(\$269)	(\$222)
<b>Total</b>	<b>(\$106,216)</b>		<b>(\$26,592)</b>	<b>(\$26,592)</b>	<b>(\$28,009)</b>	<b>(\$25,396)</b>
<b>Operating Margin</b>	<b>\$80,735</b>		<b>\$16,571</b>	<b>\$19,445</b>	<b>\$25,746</b>	<b>\$18,974</b>
<b>Capital Costs</b>						
Pre-Production Development	(\$788)	(\$788)	\$0	\$0	\$0	\$0
Process Plant	(\$15,384)	(\$14,498)	(\$226)	(\$226)	(\$226)	(\$209)
Contingency and Other	(\$2,174)	(\$1,755)	(\$133)	(\$133)	(\$133)	(\$21)
<b>Pre-Tax Cash Flow</b>	<b>\$62,390</b>	<b>(\$17,041)</b>	<b>\$16,213</b>	<b>\$19,087</b>	<b>\$25,387</b>	<b>\$18,744</b>
<b>Pre-Tax NPV<sub>8%</sub></b>	<b>\$48,265</b>					
<b>IRR</b>	<b>101%</b>					
<b>Payback (years)</b>	<b>1</b>					

Sensitivity analyses were performed on gold price, capital costs, and operating costs, and are shown in **Figure 19-2**.



**Figure 19-2: Sensitivity results - MI plan**

Results of the sensitivity analyses show the project is most sensitive to operating costs and gold price. A 10% increase in operating costs results in a 18% reduction in project NPV. Due to the sensitivity to operating costs, efforts to control or reduce the operating costs are material to the economic success of the Project.

## 20. ADJACENT PROPERTIES

The Project is surrounded by claims held by various entities, with the most significant holdings controlled by Industrias Peñoles, S.A.B. de C.V. (Peñoles) and Grupo México S.A.B. de C.V. (Grupo Mexico). Publicly available data regarding exploration results, Mineral Resources, and Mineral Reserves for adjacent properties were not located.

The Velardeña property is located within a broader district of the same name, which is host to a number of significant, past-producing Ag-Au-Pb-Zn mines. The most important of these cluster within the Santa Maria Dome, west of the pueblo of Velardeña, and include the Santa Maria, Industria, San Nicholas, and Los Azules mines.

## 21. OTHER RELEVANT DATA AND INFORMATION

Relevant data pertaining to the Project is detailed in the other sections of this TRS and the authors do not consider any additional information necessary to provide a balanced and complete description of the Project.

## 22. INTERPRETATIONS AND CONCLUSIONS

### 22.1 Geology & Resources

Drill hole and channel samples have been collected and analyzed using industry standard methods and practices and are sufficient to support the characterization of grade and thickness and further support the estimation of Measured, Indicated, and Inferred Resources.

### 22.2 Mining

Results indicate mining is potentially economically viable with and without the Inferred Resources. The Inferred material accounts for approximately 57% of the total Resource, and, due to the nature of the mineralization and the scale of the operations, extensive Resource drilling of the deposit is not planned. For this reason, detailed mine plans and schedules are not expected to be produced for the deposit. The consequence of this is that residual risk remains for mining of the project and planning of grades and stope tonnages can only be completed on a short-term basis.

The success of the proposed plan is sensitive to mining dilution, which could increase the costs of saleable products, but also provides opportunity as any potential reductions in dilution from the mining would greatly benefit the project. Recent test mining at the site has confirmed a minimum selective mining width of 0.7 m is achievable, which can contribute to reducing dilution.

### 22.3 Metallurgy & Process

There are no geological, lithological, or mineralogical changes in the process plant feed anticipated for the envisaged potential future production as compared to previous operations. Existing legacy operational data and current processing of mineralized material from the Rodeo mine supports the process flow sheet for future production.

The use of existing and refurbished equipment within the pre-existing facilities, and the production of marketable concentrates, is Golden Minerals' preferred method of treating potential future production.

### 22.4 Economic Analysis

Based on the two separate economic analyses, including and excluding the Inferred Resources, the findings of this study suggest the Project is conceptually economically viable. The study has been based on Mineral Resources, which by definition are not Mineral Reserves and have not demonstrated economic viability.

### 22.5 Significant Risk Factors

Factors that could affect the potential economic viability of the project could include underestimations of operating capital and declines in any or all the metal prices. Estimation of Resources could be affected by changes in metal prices and the actual mineralized shoot shapes and orientations. Successful implementation of the proposed mine plan is subject to the successful conversion of Inferred Resources to Indicated or Measured classification as well as conversion of Measured and Indicated Mineral Resources to Mineral Reserves, the prediction of stope layout and shape which is controlled by the actual shape of mineralized shoots and their orientations, and the ability of the mining operations to control waste dilution.

The performance of the BIOX® plant is key to the economics estimated in this study. If the expected results are not achieved, the BIOX® process would compromise an important part of the entire process.

## 23. RECOMMENDATIONS

The following recommendations are made to refine the current operation but are not integral to the implementation of the plan proposed in the study. **Table 23-1** outlines estimated significant costs if the following recommendations were completed.

**Table 23-1: Estimated costs associated with recommendations**

Description	\$USD
Exploration Drilling (\$100/m) <sup>1</sup>	500,000
Mining Trade-off Studies	35,000
Metallurgical Test work	100,000
<b>Total</b>	<b>635,000</b>

Note  
<sup>1</sup> Assuming 5,000 m drill program.

### 23.1 Geology & Resources

- Continue to collect specific gravity measurements and refine current estimations of specific gravity. Additional measurement should ideally be made with a paraffin wax or epoxy coating
- Implement procedures of duplicate channel sampling by secondary sampling teams of drifts prior to stope development to ensure grade and thickness characteristics and to serve as field duplication of channel samples
- Setup of strict control sample review procedures and tolerances involving review of control sample failure on receipt of each batch's results, and automatic triggering of batch reanalysis immediately after being alerted to failures
- Improve sample data transcription methods to reduce control sample labeling errors and immediately resolve errors when encountered
- Perform a detailed model reconciliation on a completed stope early in the proposed mine life and alter the estimation methods if the results of the reconciliation suggest refinements should be made
- Continue to advance exploration drilling down dip of current Inferred Resources as new levels are established. Preferentially target the Terneras, San Mateo, Roca Negra and A4 veins
- The costs for additional drilling have not been included in the TRS analysis but any further Resource expansion would be dependent on additional drilling

### 23.2 Mining

It is recommended that Golden Minerals implements cut and fill mining where waste and vein material are blasted separately in order to reduce ore dilution. This practice would consider more total tonnes blasted in each section. Vein tonnes would be reduced, but the resulting grade would be higher. Recent tests on selective mining widths of 0.7 meters have proven to be achievable. Because this practice requires efficient operations control, Tetra Tech recommends having detailed control in drilling and blasting.

The mine plan developed for the study should be optimized and undertaken at a more detailed level, which will enable a greater understanding of mining constraints, costs and resulting mill feed. Currently, only sulfide material is being considered for the conceptual mine layout. In the future, it could be economical to include oxide material, as processing allows.

### 23.3 Metallurgy & Process

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Antimony and arsenic are penalty elements in the lead and zinc concentrates and could be added to the database and spatially modeled. Additional metallurgical test work is recommended to investigate the depression of antimony and arsenic from the final lead and zinc concentrates, and zinc from the pyrite concentrate.

Potential of a new bio-oxidation plant to improve gold recovery warrants further test work to confirm previous encouraging results.

### 23.4 Economic Analysis

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It is anticipated that the salvage sale of equipment will cover the cost of the reclamation costs. Due to changing parameters in the mine life and size, it is recommended to review this assumption in the future.

## 24. REFERENCES

Tetra Tech. 2022. "Preliminary Economic Assessment - Velardeña Project." NI 43-101 Technical Report, Golden, CO.

## 25. RELIANCE ON INFORMATION PROVIDED BY THE REGISTRANT

Tetra Tech is relying on documents and statements provided by Golden Minerals personnel regarding:

- Resource block model estimation
- Mine and plant production data
- Status of mineral concessions
- Status and timelines of permits, contracts, and agreements required for operation
- Capital and operating cost estimates
- Mine and plant closure plans and associated costs