UNITED STATES SECURITIES AND EXCHANGE COMMISSION WASHINGTON, D.C. 20549

Form 10-K

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

For the fiscal year ended December 31, 2023

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 No. 1-8491

HECLA MINING COMPANY

(Exact name of registrant as specified in its Charter)

Delaware	77–0664171
State or Other Jurisdiction of Incorporation or Organization	L.R.S. Employer Identification No.
6500 N. Mineral Drive, Suite 200 Coeur d'Alene, Idaho	83815-9408
Address of Principal Executive Offices	Zip Code

208-769-4100

Registrant's Telephone Number, Including Area Code

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

Title of each class	Trading Symbol(s)	on which registered
Common Stock, par value \$0.25 per share	HL	New York Stock Exchange
Series B Cumulative Convertible Preferred	HL-PB	New York Stock Exchange

Stock, par value \$0.25 per share

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, 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	\boxtimes	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 check mark 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.

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). \Box

The aggregate market value of the registrant's voting Common Stock held by non-affiliates was \$3,068,556,667 as of June 30, 2023. There were 613,682,159 shares of the registrant's Common Stock outstanding as of June 30, 2023, and 625,117,775 shares outstanding as of February 9, 2024.

Documents incorporated by reference herein:

To the extent herein specifically referenced in Part III, the information contained in the Proxy Statement for the 2024 Annual Meeting of Shareholders of the registrant, which will be filed with the Commission pursuant to Regulation 14A within 120 days of the end of the registrant's 2023 fiscal year, is incorporated herein by reference. See Part III.

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Special Note on Forward-Looking Statements

Certain statements contained in this report (including information incorporated by reference) are "forward-looking statements" and are intended to be covered by the safe harbor provided for under Section 27A of the Securities Act of 1933, as amended ("Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended ("Exchange Act"). Our forward-looking statements include our current expectations and projections about future production, results, performance, prospects and opportunities, including reserves and resources. We have tried to identify these forward-looking statements by using words such as "may," "might," "will," "expect," "anticipate," "believe," "could," "intend," "plan," "estimate," "project" and similar expressions. These forward-looking statements are based on information currently available to us and are expressed in good faith and believed to have a reasonable basis. However, our forward-looking statements are subject to a number of risks, uncertainties and other factors that could cause our actual production, results, performance, prospects or opportunities, including reserves and resources, to differ materially from those expressed in, or implied by, these forward-looking statements.

These risks, uncertainties and other factors include, but are not limited to, those set forth under *Item 1A. Risk Factors* and *Item 7. Management's Discussion* and Analysis of Financial Condition and Results of Operations. Given these risks and uncertainties, readers are cautioned not to place undue reliance on our forward-looking statements. Projections and other forward-looking statements included in this report have been prepared based on assumptions, which we believe to be reasonable, but not in accordance with United States generally accepted accounting principles ("GAAP") or any guidelines of the Securities and Exchange Commission ("SEC"). Actual results may vary, perhaps materially. You are strongly cautioned not to place undue reliance on such projections and other forward-looking statements. All subsequent written and oral forward-looking statements attributable to Hecla Mining Company or to persons acting on our behalf are expressly qualified in their entirety by these cautionary statements. Except as required by federal securities laws, we disclaim any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

Risk Factors Summary

The following is a summary of the principal risks that could adversely affect our business, operations and financial results. These risks are described in more detail under *Item 1A. Risk Factors* of this report.

Financial Risks

- A substantial or extended decline in metals prices would have a material adverse effect on us.
- An extended decline in metals prices, an increase in operating or capital costs or treatment charges, mine accidents or closures, increasing regulatory
 obligations, or our inability to convert resources or exploration targets to reserves may cause us to record write-downs, which could negatively impact our
 results of operations.
- We have a substantial amount of debt that could impair our financial health and prevent us from fulfilling our obligations under our existing and future indebtedness.
- We have had losses that could reoccur in the future. Our ability to recognize the benefits of deferred tax assets related to net operating loss carryforwards and other items is dependent upon future cash flows and taxable income.
- Our accounting and other estimates may be imprecise.
- Commodity and currency risk management activities could prevent us from realizing possible revenues or lower costs or expose us to losses.

Operation, Climate, Development, Exploration and Acquisition Risks

- Natural disasters, public health crises, political crises, and other catastrophic events or other events outside of our control may materially and adversely
 affect our business or financial results.
- Our operations are subject to a range of risks related to climate change and transitioning the business to meet regulatory, societal and investor expectations
 for operating in a low-carbon economy
- Mining accidents or other adverse events at an operation could decrease our anticipated production or otherwise adversely affect our operations. Our
 operations may be adversely affected by risks and hazards associated with the mining industry that may not be fully covered by insurance.
- Efforts to expand the finite lives of our mines may not be successful or could result in significant demands on our liquidity, and our costs of development of new orebodies and other capital costs may be higher than estimated. Our mineral reserve and resource estimates may be imprecise.
- Our ability to market our metals production depends on the availability of smelters and/or refining facilities, and our operations and financial results may
 be affected by the disruptions or unavailability of such facilities. Shortages of critical parts and equipment may adversely affect our development projects.
- We derive a significant amount of revenue from a relatively small number of customers.
- Certain of our mines and exploration properties are located on land that is or may become subject to competing title claims and/or claims of cultural significance.
- We may be subject to a number of unanticipated risks related to inadequate infrastructure.
- We face inherent risks in acquisitions of other mining companies or properties that may adversely impact our growth strategy. The properties we have
 acquired or may acquire may not produce as expected, and we may be unable to accurately determine reserve potential or identify associated liabilities.
 We may be unable to successfully integrate the operations of the properties we acquire. We may not realize all of the anticipated benefits from our
 acquisitions. These risks continue to apply to our Keno Hill unit which we acquired through our 2022 acquisition of Alexco Resource Corp. ("Alexco"),
 which has not yet achieved profitability.



- Issues we have faced at certain segments could require us to write-down the carrying value of associated long-lived assets. We could face similar issues at our other operations.
- We face risks relating to transporting our products from our mines, as well as transporting employees and materials at our Greens Creek, Casa Berardi and Keno Hill sites.

Legal, Regulatory and Compliance Risks

- Our operations are subject to complex, evolving and increasingly stringent environmental laws and regulations. Compliance with environmental
 regulations, and litigation based on such laws and regulations, involves significant costs and can threaten existing operations or constrain expansion
 opportunities. Mine closure and reclamation regulations impose substantial costs on our operations and include requirements that we provide financial
 assurance supporting those obligations. These costs could significantly increase and we might not be able to provide financial assurance.
- We are required to obtain governmental permits and other approvals in order to conduct mining operations. We face substantial governmental regulation, including the Mine Safety and Health Act, various environmental laws and regulations and the 1872 Mining Law. Additionally, new federal, state, provincial, territorial and first nations laws, regulations and initiatives could impact our operations.
- We are currently involved in ongoing legal disputes. Legal challenges could prevent our projects in Montana from ever being developed. The titles to some of our properties may be defective or challenged.
- Our environmental and asset retirement obligations may exceed the provisions we have made.

Risks Relating to Our Common Stock and Our Indebtedness

- We may be unable to generate sufficient cash to service all of our debt and meet our other ongoing liquidity needs and may be forced to take other actions to satisfy our obligations, which may be unsuccessful.
- The price of our stock has a history of volatility and could decline in the future. We may not be able to pay common or preferred stock dividends in the future. The issuance of additional shares of our preferred or common stock in the future could adversely affect holders of common stock.
- Our existing stockholders are effectively subordinated to the holders of our 7.25% Senior Notes due February 15, 2028 ("Senior Notes").
- The provisions in our certificate of incorporation, our by-laws and Delaware law could delay or deter tender offers or takeover attempts. The terms of our debt impose restrictions on our operations.



PART I

Item 1. Business

For information regarding the organization of our business segments and our significant customers, see Note 4 of Notes to Consolidated Financial Statements.

Information set forth in Items 1A and 2 below are incorporated by reference into this Item 1.

Introduction

Hecla Mining Company and its subsidiaries have provided precious and base metals to the U.S. and the world since 1891 (in this report, "we" or "our" or "us" refers to Hecla Mining Company and our affiliates and subsidiaries, unless the context requires otherwise). We discover, acquire and develop mines and other mineral interests and produce and market (i) concentrates containing silver, gold and other metals, (ii) carbon material containing silver and gold, and (iii) unrefined doré containing silver and gold. In doing so, we intend to manage our business activities in a safe, environmentally responsible and cost-effective manner.

The silver, zinc and precious metals concentrates and carbon material we produce are sold to custom smelters, metal traders and third-party processors, and the unrefined doré we produce is sold to refiners or further refined before sale of the metals to traders. We are organized and managed in five segments that encompass our operating mines and significant assets being Greens Creek, Lucky Friday, Keno Hill, Casa Berardi and the Nevada Operations.

Our current business strategy is to focus our financial and human capital in the following areas:

- Developing the Keno Hill properties located in the Yukon Territory, Canada
- Operating our properties safely, and in an environmentally responsible and cost-effective manner.
- Maintaining and investing in exploration and pre-development projects in the vicinities of mining districts and projects we believe to be under-explored and under-invested: Greens Creek on Alaska's Admiralty Island located near Juneau; North Idaho's Silver Valley in the historic Coeur d'Alene Mining District; the silver-producing district near Durango, Mexico; in the vicinity of our Casa Berardi mine and the Heva-Hosco project in the Abitibi region of northwestern Quebec, Canada; our projects in the Keno Hill mining district in the Yukon Territory, Canada; our projects located in three districts in Nevada; northwestern Montana; the Creede district of southwestern Colorado; the Kinskuch project in British Columbia, Canada; and the Republic mining district in Washington state.
- Improving operations at each of our mines, which includes incurring costs for new technologies and equipment.
- Expanding our proven and probable reserves, minerals resources and production capacity at our properties.
- Conducting our business with financial stewardship to preserve our financial position in varying metals price and operational environments.
- Advancing permitting at our Montana exploration project.
- Continuing to seek opportunities to acquire and invest in mining and exploration properties and companies.

Metals Prices

Our operating results are substantially dependent upon the prices of silver, gold, lead and zinc, which can fluctuate widely. The volatility of such prices is illustrated in the following table, which sets forth our average realized prices and the high, low and average daily closing market prices for silver, gold, lead and zinc over the last three years. The sources for the market prices are the London Market Fixing prices from the London Bullion Market Association for silver and gold and the Cash Official prices from the London Metals Exchange for lead and zinc.

	2023	2022	2021
Silver (per oz.):			
Realized average	\$ 23.33	\$ 21.53	\$ 25.24
Market average	\$ 23.39	\$ 21.75	\$ 25.17
Market high	\$ 26.03	\$ 26.36	\$ 28.48
Market low	\$ 20.09	\$ 17.81	\$ 21.53
Gold (per oz.):			
Realized average	\$ 1,939	\$ 1,803	\$ 1,796
Market average	\$ 1,943	\$ 1,801	\$ 1,800
Market high	\$ 2,049	\$ 2,053	\$ 1,940
Market low	\$ 1,811	\$ 1,622	\$ 1,684
Lead (per lb.):			
Realized average	\$ 1.03	\$ 1.01	\$ 1.03
Market average	\$ 0.97	\$ 0.98	\$ 1.00
Market high	\$ 1.06	\$ 1.15	\$ 1.14
Market low	\$ 0.90	\$ 0.80	\$ 0.86
Zinc (per lb.):			
Realized average	\$ 1.35	\$ 1.41	\$ 1.44
Market average	\$ 1.20	\$ 1.58	\$ 1.36
Market high	\$ 1.59	\$ 2.05	\$ 1.73
Market low	\$ 1.01	\$ 1.23	\$ 1.15

The prices of silver, gold, lead and zinc are affected by numerous factors beyond our control. See *Item 1A. Risk Factors – A substantial or extended decline in metals prices would have a material adverse effect on us* for information on a number of the factors that can impact prices of the metals we produce. Our 2023 realized average prices for all metals we sold, except zinc, were higher compared to 2022. In 2022, realized average prices for all metals we sold, except gold, were lower compared to 2021. We are unable to predict fluctuations in prices for metals and have limited control over the timing of our concentrate shipments which impacts our realized prices. However, we utilize financially-settled forward contracts for the metals we produce with the objective of managing the exposure to changes in prices of those metals contained in our concentrate shipments between the time of sale and final settlement. In addition, at times we utilize a similar program to manage the exposure to changes in prices of zinc and lead contained in our forecasted future concentrate shipments. See *Note 10* of *Notes to Consolidated Financial Statements* for more information on our base and precious metal forward contract programs.

A comprehensive discussion of our financial results for the years ended December 31, 2023, 2022 and 2021, individual operation performance and other significant items can be found in *Item 7. Management's Discussion and Analysis of Consolidated Financial Condition and Results of Operations*, as well as the *Consolidated Financial Statements* and *Notes* thereto.

Products and Segments

Our segments are differentiated by geographic region. We produce zinc, silver and precious metals flotation concentrates at Greens Creek and silver and zinc flotation concentrates at Lucky Friday, each of which we sell to custom smelters and metal traders. The flotation concentrates produced at Greens Creek and Lucky Friday contain payable silver, zinc and lead, and at Greens Creek they also contain payable gold. At Greens Creek, we also produce gravity concentrate containing payable silver, gold and lead. Unrefined bullion (doré) is produced from the gravity concentrate by a third-party processor, and shipped to a refiner before sale of the metals to precious metal traders. While Keno Hill has not yet reached commercial productions levels, it is currently in ramp-up and producing silver and zinc flotation concentrates. We also produce unrefined gold and silver bullion bars (doré) and loaded carbon and precipitates at Casa Berardi, which are shipped to refiners before sale of the metals to precious metal traders. At times, we sell loaded carbon and precipitates directly to refiners. Payable metals are those included in our products which we are paid for by smelters, metal traders and refiners. Our segments as of December 31, 2023 included:

- Greens Creek located on Admiralty Island, near Juneau, Alaska. Greens Creek is 100% owned and has been in production since 1989.
- Lucky Friday located in northern Idaho. Lucky Friday is 100% owned and has been a producing mine for us since 1958.
- Keno Hill located in the Keno Hill Silver District in Canada's Yukon Territory. Keno Hill is 100% owned and was acquired as part of our acquisition of Alexco in September 2022. Production ramp-up commenced in June 2023.
- Casa Berardi located in the Abitibi region of northwestern Quebec, Canada. Casa Berardi is 100% owned and has been in production since late 2006.
- The Nevada Operations is located in northern Nevada. Nevada Operations is 100% owned and consists of four land packages in northern Nevada totaling approximately 110 square miles and containing four previously-operating mines with a history of high-grade gold production: Fire Creek, Hollister, Midas and Aurora. As discussed in *Item 7. Management's Discussion and Analysis of Consolidated Financial Condition and Results of Operations Nevada Operations*, production was suspended in the second half of 2021. During 2022, we mined and sold remnant refractory underground ore from our stockpile.

San Sebastian in Mexico was also considered a segment prior to 2021. Production ceased in the fourth quarter of 2020, and exploration activities are currently ongoing. San Sebastian's activity for all periods presented in this Annual Report on Form 10-K is included in "other".

The contributions to our total metals sales by our significant operations in 2023 were 53.7% from Greens Creek, 24.9% from Casa Berardi, 16.3% from Lucky Friday and 5.0% from Keno Hill. Lucky Friday's production for 2023 was impacted by an underground fire in the secondary egress in August, which suspended production for the remainder of 2023.

Governmental Regulation

The following is a summary of governmental regulation compliance areas which we believe are significant to our business and may have a material effect on our consolidated financial statements, earnings and/or competitive position.

Health and Safety

We are subject to the regulations of the Mine Safety and Health Administration ("MSHA") in the United States, the Commission of Labor Standards, Pay Equity and Occupational Health and Safety in Quebec, Workers' Safety and Compensation Board in the Yukon and the Mexico Ministry of Economy and Mining, and work with these agencies to address issues outlined in any investigations and inspections and continue to evaluate our safety practices. We strive to achieve excellent mine safety and health performance, and attempt to implement reasonable best practices with respect to mine safety and emergency preparedness. Achieving and maintaining compliance with regulations will be challenging and may increase our operating costs. See *Human Capital - Health and Safety* below and *Item 1A. Risk Factors – We face substantial governmental regulation, including the Mine Safety and Health Act, various environmental laws and regulations and the 1872 Mining Law.*

Environmental

Our operations are subject to various environmental laws and regulations at the federal and state/provincial level. Compliance with environmental regulations, and litigation based on environmental laws and regulations, involves significant costs and can threaten existing operations or constrain expansion opportunities. For example, since acquiring the Keno Hill mine in September 2022, the site has experienced permit exceedances involving the quality of water discharged into the environment. We are working to assess the existing infrastructure and implement improvements to the environmental management system that was put in place by the previous owners. As part of this process, we have submitted plans to the Yukon Department of Energy, Mines and Resources to upgrade the water treatment plan at the Bermingham mine within our Keno Hill operations. We are committed to making changes to ensure compliance with our authorizations and all environmental regulations. See *Note 16* of *Notes to Consolidated Financial Statements* for more information on permit issues at Keno Hill.

Keno Hill is located at a site in the Yukon Territory where extensive historical mining activity occurred. The mining claims and rights that comprise our Keno Hill mine are owned by two of our indirect, wholly-owned subsidiaries, Alexco Keno Hill Mining Company and Elsa Reclamation & Development Company Ltd. ("ERDC"). ERDC and Alexco are parties to the Amended and Restated Subsidiary Agreement ("ARSA") dated July 18, 2013, among them and Her Majesty the Queen in right of Canada ("Canada") which addresses the pre-existing environmental condition and the environmental care and maintenance and reclamation of the historical Keno Hill site. Under the ARSA and related documents, ERDC, as a paid contractor for the Yukon Government, is responsible for the development and eventual implementation of the district wide reclamation and closure plan ("Reclamation Plan") which addresses the historic environmental liabilities of the district from past mining activities pre-dating Alexco's and Hecla's acquisition of the Keno Hill project, as well as for carrying out care and maintenance at various locations within the historical Keno Hill site until the Reclamation Plan is implemented (Hecla's predecessor, Alexco, previously deposited CDN\$10 million in a trust which funds ERDC's maximum contribution toward implementing the Reclamation Plan, and agreed to a 1.5% net smelter royalty capped at CAD\$4 million, of which approximately CAD\$1.2 million paid or accrued for as of December 31, 2023). ERDC receives agreed-to commercial contractor rates when retained by Canada to provide environmental services in the historical Keno Hill site outside the scope of care and maintenance and closure and reclamation planning under the ARSA (in the latter case, for which ERDC receives an annual fee of \$900,000 from Canada, adjustable for material changes in scope). The potential liabilities associated with the pre-existing environmental conditions at Keno Hill are indemnified by Canada under the terms and conditions of the ARSA, subject to the requirement for ERDC to develop, permit, and implement the Reclamation Plan, or if Hecla and the Government agree to transfer portions of the historic area to active mining operations within the Keno Hill unit, then such indemnification ceases to the extent of such transferred area. Completing the Reclamation Plan is expected to take approximately 5 more years and is estimated to cost approximately \$140 million over that time, for which we expect ERDC to be reimbursed for all material costs incurred. However, we are at risk for any variance in timing between expending funds by ERDC and reimbursement by Canada, as well as for any disputed or otherwise non-reimbursed costs (for example if ERDC were to act outside of the scope of the ARSA). In addition, ERDC is responsible for sharing with Canada (i) under certain circumstances, care and maintenance costs pending implementation of the Reclamation Plan, (ii) detailed design and engineering costs to support the Reclamation Plan and (iii) under certain circumstances, post active reclamation costs (i.e. in the event Hecla has brought a historical area with pre-existing environmental conditions into active operations at the Keno Hill unit), which, in each case and in the aggregate, we do not anticipate will have a material impact on our financial results as a whole.

Mine closure and reclamation regulations impose substantial costs on our operations and include requirements that we provide financial assurance supporting those obligations. We currently have \$195.4 million of financial assurances, primarily in the form of surety bonds, for reclamation company-wide. We anticipate approximately \$13.5 million in expenditures in 2024 for environmental permit compliance and idle property management. We also plan to invest approximately \$5.5 million for on-going reclamation works at the former Troy Mine in Montana. The projected remaining cost for reclamation at the site is included in our accrued reclamation and closure costs liability. See *Item 1A. Risk Factors – We face substantial governmental regulation, including the Mine Safety and Health Act, various environmental laws and regulations and the 1872 Mining Law; Our operations are subject to complex, evolving and increasingly stringent environmental laws and regulations; Compliance with environmental regulations, and litigation based on such regulations, involves significant costs and can threaten existing operations or constrain expansion opportunities; Our environmental and asset retirement obligations may exceed the provisions we have made; and New federal and state laws, regulations and initiatives could impact our operations.*

Licenses, Permits and Claims/Concessions

We are required to obtain various licenses and permits to operate our mines and conduct exploration and reclamation activities. See *Item 1A. Risk Factors – We are required to obtain governmental permits and other approvals in order to conduct mining operations*. We can only engage in exploration at our San Sebastian (Mexico), Hatter Graben (Nevada) and Libby Exploration (Montana) projects if we are successful in obtaining necessary permits. Similarly, mining at our planned open pits at Casa Berardi requires permits we don't yet have. And in February 2022, we submitted letters to the United States Forest Service ("USFS") withdrawing from its consideration the former Plan of Operations for each of the Rock Creek and Libby Exploration (formerly known as Montanore) projects in Montana.

A new Plan of Operations for the Libby Exploration project limited to underground exploration and evaluation activities was submitted to the USFS is currently under an Environmental Assessment review ("EA") under the National Environmental Policy Act ("NEPA"). These actions reflect our consolidated ownership of the two projects and new ideas that we bring, rather than the separate ownership and ineffective strategies of the projects' prior owners. Upon successful completion of the EA process under the NEPA, and if subsequent data collection and analysis activities suggest development of a mine is feasible, then it is anticipated that a new Plan of Operations for the construction and development of a mine at the Libby Exploration site would be submitted for approval. While no activities beyond care and maintenance are currently proposed for Rock Creek, mineral and other property rights there should not be impacted by our current focus on evaluation of the Libby Exploration site.

We are party to a Comprehensive Cooperation and Benefits Agreement ("CCBA") with the First Nation of Na-Cho Nyäk Dun ("FNNND") that recognizes the rights, obligations, and opportunities of the two parties. Individual chapters in the CCBA include Hecla's ongoing obligations to consult with FNNND and annual financial contributions, including for FNNND expense reimbursement, education and training, and wealth sharing. The wealth sharing component has not yet been agreed to, but we expect to resume negotiations in the near future and/or upon Keno Hill reaching commercial production, and such arrangement could have a material impact on Keno Hill's profitability.

See Item 1A. Risk Factors – We are required to obtain governmental permits and other approvals in order to conduct mining operations and Legal challenges could prevent our projects in Montana from ever being developed. In addition, our operations and exploration activities at Keno Hill and the Yukon, Casa Berardi and San Sebastian are conducted pursuant to claims or concessions granted by the host government, and otherwise are subject to claims renewal and minimum work commitment requirements, which are subject to certain political risks associated with foreign operations. See Item 1A. Risk Factors – Our foreign activities are subject to additional inherent risks. , Our operations and properties in Canada expose us to additional political risks and Certain of our mines and exploration properties are located on land that is or may become subject to traditional territory, title claims and/or claims of cultural significance, and such claims and the attendant obligations of the federal government to those tribal communities and stakeholders may affect our current and future operations.

Taxes and Royalties

We are subject to various taxes and government royalties in the jurisdictions where we operate, including those specific to mining activities. These include: federal income taxes; state/provincial income taxes; county/city and bureau property taxes and sales and use tax in the U.S.; goods and services tax in Canada; value added tax in Mexico; mining-specific taxes in Alaska, Idaho, Nevada, Quebec and the Yukon; and mining royalties in Alaska, Nevada and Canada. Accrual and payment of taxes and accounting for deferred taxes can involve significant estimates and assumptions and can have a material impact on our consolidated financial statements. Tax rates and the calculations of taxes can change significantly and are influenced by changes in political administrations and other factors. See *Item 1A. Risk Factors – Our accounting and other estimates may be imprecise; Our ability to recognize the benefits of deferred tax assets related to net operating loss carryforwards and other items is dependent on future cash flows generating taxable income; Our foreign activities are subject to additional inherent risks; and We face substantial governmental regulation, including the Mine Safety and Health Act, various environmental laws and regulations and the 1872 Mining Law. Also, see Note 7 of Notes to Consolidated Financial Statements for more information on income and mining taxes.*

Physical Assets

Our business is capital intensive and requires ongoing capital investment for the replacement, modernization and expansion of equipment and facilities and to develop new mineral reserves. At December 31, 2023, the book value of our properties, plants, equipment and mineral interests, net of accumulated depreciation, was approximately \$2.7 billion. For more information see *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.* We maintain insurance policies against property loss and business interruption. However, such insurance contains exclusions and limitations on coverage, and there can be no assurance that claims would be paid under such insurance policies in connection with a particular event. And when we do experience insurable losses – such as with the fire at the Lucky Friday in August and September of 2023 – it can take a long period of time before we receive any or all insurance proceeds. See *Item 1A. Risk Factors – Our operations may be adversely affected by risks and hazards associated with the mining industry that may not be fully covered by insurance.*

Human Capital

As of December 31, 2023, we had approximately 1,775 employees, of which approximately 990 were employed in the United States, 765 in Canada, and 20 in Mexico. The vast majority of our employees are full-time. Approximately 260 of our employees at the Lucky Friday were covered by a collective bargaining agreement.

The attraction, development and retention of people is critical to delivering our business strategy. Key areas of focus for us include:

Health and Safety

The safety and health of our employees is of paramount importance. Our goal is to achieve world-class safety and health performance by promoting a deeply rooted value-based culture of safety and utilizing technology and innovation to continually improve the safety at our operations. We know that employees' and contractors' safety awareness is fundamental to making our workplace as safe as possible. Therefore, we invest in training and workforce development programs that focus on safety first. All employees and contractors receive training that complies with or exceeds the applicable safety and health regulations as set by the governing body in the jurisdiction in which each operation is located. As part of our commitment to safety, we track a variety of safety performance indicators, including injuries, near misses, observations, and equipment damages. Our goal is to reduce safety incidents. Our All Injury Frequency Rate ("AIFR") is calculated as the number of incidents in the period multiplied by 200,000 hours and divided by the number of hours worked in the period. Company-wide, our AIFR was 1.45 for 2023.

Compensation and Benefits

We are among the largest private-sector employers in the communities in which we operate providing a compensation and benefits package that attracts, motivates, and retains employees. In addition to competitive base wages and incentive compensation, we offer retirement benefits, health insurance plans and paid time off.

Retention and Employee Development

We are committed to hiring talented people, developing effective leaders, providing an inclusive workplace and retaining a large portion of the workforce for long periods of time. The mining workforce of the future, like all industries, will see a continual change in the jobs and skill sets required as we adopt new technologies and make our workplace safer and more efficient. We are also committed to helping employees update their skills. For example, in conjunction with a trade school in Val-d'Or, Quebec, the leadership at our Casa Berardi mine has developed a customized training program for new and existing supervisors to develop their skills in the areas of leadership, communications, roles and responsibilities, and health and safety. In addition, we have long supported the Pathways to Mining Careers program, a career training partnership with the University of Alaska Southeast in Juneau. We also offer a reimbursement program to assist with educational expenses for employees who are interested in furthering their education. Advanced education can improve job performance and increase advancement opportunities for the employee, while providing flexibility to our company by increasing the employee's knowledge base and skill set.

Annual employee surveys are conducted to gauge employee concerns and morale. The results of the surveys, and any responsive measures, are shared with our board of directors. Strategic talent reviews and succession planning reviews are conducted periodically across all business areas, and our training programs are adapted accordingly. The Chief Executive Officer ("CEO"), senior level company leadership and board of directors periodically review Hecla's top talent. Creating more opportunities for women and indigenous people are among our priorities for employee development. We also strive to maintain an inclusive workplace and provide periodic training to employees to help meet that goal. Our employees are required to abide by our Code of Conduct, which is provided to employees upon being hired and thereafter annually, and is available on our website, to promote the conduct of our business in a consistently legal and ethical manner. Among other provisions, the Code of Conduct reflects our policy and practice not to discriminate against any employee because of race, color, religion, national origin, sex, sexual orientation, gender identity or expression, age, or physical or other disability. We expect our leaders to set the example by being positive role models and good mentors for our employees.

We employ our Senior Vice President - Chief Administrative Officer who is responsible for developing and executing our human capital strategy. The position is an executive-level position to reflect the priority we place on utilizing our human capital resources to meet our business strategy.

Available Information

Hecla Mining Company is a Delaware corporation. Our current holding company structure dates from the incorporation of Hecla Mining Company in 2006 and the renaming of our subsidiary (previously Hecla Mining Company) as Hecla Limited. Our principal executive offices are located at 6500 N. Mineral Drive, Suite 200, Coeur d'Alene, Idaho 83815-9408. Our telephone number is (208) 769-4100. Our web site address is <u>www.hecla.com</u>. Information on our web site is not incorporated into this Annual Report on Form 10-K. We file our annual, quarterly and current reports and any amendments to these reports with the SEC, copies of which are available on our website or from the SEC free of charge (<u>www.sec.gov</u> or <u>800-SEC-0330</u>). Our restated certificate of incorporation, bylaws, charters of our audit, compensation, and governance and social responsibility committees, as well as our Code of Ethics for the Chief Executive Officer and Senior Financial Officers and our Code of Conduct, are also available on our website. In addition, any amendments

to our Code of Ethics or waivers granted to our directors and executive officers will be posted on our website. Each of these documents may be periodically revised, so you are encouraged to visit our website for any updated terms. We will provide copies of these materials to stockholders upon request using the above-listed contact information, directed to the attention of Investor Relations, or via e-mail request sent to <u>hmc-info@hecla.com</u>.

We routinely post important information for investors on our web site, <u>www.hecla.com</u>, in the "Investors" section. We also may use our web site as a means of disclosing material, non-public information and for complying with our disclosure obligations under Regulation FD. Accordingly, investors should monitor the Investors section of our web site, in addition to following our press releases, SEC filings, public conference calls, presentations and webcasts. The information contained on, or that may be accessed through, our web site is not incorporated by reference into, and is not a part of, this document.

Item 1A. Risk Factors

The following risks and uncertainties, together with the other information set forth in this report, should be carefully considered by those who invest in our securities. Any of the following material risk factors could adversely affect our business, financial condition or operating results and could decrease the value of our common or preferred stock or other outstanding securities. These are not all of the risks we face, and other factors not presently known to us or that we currently believe are immaterial may also affect our business if they occur.

Financial Risks

A substantial or extended decline in metals prices would have a material adverse effect on us.

Our revenue is derived primarily from the sale of concentrates and doré containing silver, gold, lead and zinc and, as a result, our earnings are directly related to the prices of these metals. Silver, gold, lead and zinc prices fluctuate widely and are affected by numerous factors, including:

- speculative activities;
- relative exchange rates of the U.S. dollar;
- global and regional demand and production;
- political instability;
- inflation, recession or increased or reduced economic activity; and
- other political, regulatory and economic conditions.

These factors are largely beyond our control and are difficult to predict. If the market prices for these metals fall below our production or development costs for a sustained period of time, we will experience losses and may have to discontinue exploration, development or operations, and we may also incur asset writedowns at one or more of our properties. See *Item 1. Business - Introduction* for information on the average, high, and low daily closing prices for silver, gold, lead and zinc for the last three years. On February 9, 2024, the closing prices for silver, gold, lead and zinc were \$22.66 per ounce, \$2,023.50 per ounce, \$0.93 per pound and \$1.04 per pound, respectively.

An extended decline in metals prices, an increase in operating or capital costs or treatment charges, mine accidents or closures, increasing regulatory obligations, or our inability to convert resources or exploration targets to reserves may cause us to record write-downs, which could negatively impact our results of operations.

When events or changes in circumstances indicate the carrying value of our long-lived assets may not be recoverable, we review the recoverability of the carrying value by estimating the future undiscounted cash flows expected to result from the use and eventual disposition of the asset. Impairment must be recognized when the carrying value of the asset exceeds these cash flows. Recognizing impairment write-downs could negatively impact our results of operations. Metals price estimates are a key component used in the evaluation of the carrying values of our assets, as the evaluation involves comparing carrying values to the average estimated undiscounted cash flows resulting from operating plans using various metals price scenarios. Our estimates of undiscounted cash flows for our long-lived assets also include an estimate of the market value of the resources and exploration targets beyond the current operating plans.

We determined no impairments were required for triggering events identified during 2023. For more discussion, see the below risk factors, "We may not realize all of the anticipated benefits from our acquisitions, including our 2022 acquisition of Alexco" and "Issues we have faced at certain segments could require us to write-down the carrying value of associated long-lived assets. We could face similar issues at our other operations. Such write-downs may adversely affect our results of operations and financial condition." If the prices of silver, gold, zinc and lead decline for an extended period of time, if we fail to control production or capital costs, if regulatory issues increase costs or decrease production, or if we do not realize the mineable mineral reserves, resources or exploration targets at our mining properties, we may be required to recognize asset write-downs in the future. In addition, the perceived market value of the resources and exploration targets to reserves could significantly reduce our estimates of the value of the resources or exploration targets at our or unability to convert resources or exploration targets to reserves could significantly reduce our estimates of the value of the resources or exploration targets at our properties and result in asset write-downs.

We have a substantial amount of debt that could impair our financial health and prevent us from fulfilling our obligations under our existing and future indebtedness.

As of December 31, 2023, we had total indebtedness of approximately \$671.4 million, primarily in the form of our Senior Notes and Credit Agreement. Our level of debt, debt service obligations and covenant requirements may have adverse effects on our business, financial condition, cash flows or results of operations, including:

- making it more difficult for us to satisfy our obligations with respect to the Senior Notes;
- reducing the amount of funds available to finance our operations, capital expenditures and other activities;
- increasing our vulnerability to economic downturns and industry conditions;
- limiting our flexibility in responding to changing business and economic conditions;
- jeopardizing our ability to execute our business plans;
- placing us at a disadvantage when compared to our competitors that have less debt;
- increasing our cost of borrowing; and
- limiting our ability to borrow additional funds.

We and our subsidiaries may incur substantial additional indebtedness in the future. Although the indenture governing our Senior Notes contains restrictions on the incurrence of additional indebtedness, these restrictions are subject to a number of significant qualifications and exceptions and, under certain circumstances, the amount of additional indebtedness that could be incurred in compliance with these restrictions could be substantial. In July 2022, we entered into our \$150 million revolving credit facility (with the option to increase to \$225 million). Like the indenture, the credit agreement governing the revolving credit facility also has restrictions on the incurrence of additional indebtedness but with a number of significant qualifications and exceptions. If new debt is added to our and our subsidiaries' existing debt levels, the risks associated with such debt that we currently face would increase. In addition, the indenture governing the Senior Notes does not prevent us from incurring additional indebtedness under the indenture.

We have had losses that could reoccur in the future.

We have experienced volatility in our net (loss) income reported in the last three years, as shown in our *Consolidated Statement of Operations and Comprehensive (Loss) Income*, including net loss of \$84.2 million in 2023, \$37.3 million in 2022 and net income of \$35.1 million in 2021. A comparison of operating results over the past three years can be found in *Results of Operations* in *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations*.

Many of the factors affecting our operating results are beyond our control, including, but not limited to, the volatility of metals prices; smelter terms; rock and soil conditions; seismic events; cybersecurity attacks; availability of hydroelectric power; diesel fuel prices; interest rates; foreign exchange rates; global or regional political or economic policies; inflation; availability and cost of labor; economic developments and crises; governmental regulations; continuity of orebodies; ore grades; recoveries; performance of equipment; uninsured losses; price speculation by certain investors; and purchases and sales by central banks and other holders and producers of gold and silver in response to these factors. We cannot assure you that we will not experience net losses in the future.

Our accounting and other estimates may be imprecise.

Preparing consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts and related disclosure of assets, liabilities, revenue and expenses at the date of the consolidated financial statements and reporting periods. The more significant areas requiring the use of management assumptions and estimates relate to:

- mineral reserves, resources, and exploration targets that are the basis for future income and cash flow estimates and units-of-production depreciation, depletion and amortization calculations;
- future ore grades, throughput and recoveries;
- future metals prices;
- future capital and operating costs;
- environmental, reclamation and closure obligations;
- permitting and other regulatory considerations;
- asset impairments;
- valuation of business combinations;
- insurance proceeds;
- future foreign exchange rates, inflation rates and applicable tax rates;
- reserves for contingencies and litigation; and
- deferred tax asset valuation allowance.

Future estimates and actual results may differ materially from these estimates as a result of using different assumptions or conditions. For additional information, see *Critical Accounting Estimates* in *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, Note 2* of *Notes to Consolidated Financial Statements,* and the risk factors set forth below: "Our costs of extending existing reserves or development of new orebodies and other capital costs may be higher and provide less return than we estimated," "Our mineral reserve and resource estimates may be imprecise," "We are currently involved in ongoing legal disputes that may materially adversely affect us," and "Our environmental and asset retirement obligations may exceed the provisions we have made."

Commodity and currency risk management activities could prevent us from realizing possible revenues or lower costs or expose us to losses.

We periodically enter into risk management activities to manage the exposure to changes in prices of silver, gold, lead and zinc contained in our concentrate shipments between the time of sale and final settlement. We also utilize such programs to manage the exposure to changes in the prices of lead and zinc contained in our forecasted future shipments. Such activities are utilized in an attempt to partially insulate our operating results from changes in prices for those metals. However, such activities may prevent us from realizing revenues in the event that the market price of a metal exceeds the price stated in a contract, and may also result in significant mark-to-market fair value adjustments, which may have a material adverse impact on our reported financial results. In addition, we are exposed to credit risk with our counterparties, and we may experience losses if a counterparty fails to purchase under a contract when the contract price exceeds the spot price of a commodity.

We also use financially-settled forward contract programs to manage exposure to fluctuations in the exchange rates between the U.S. dollar ("USD") and the Canadian dollar ("CAD") and the impact on our future operating costs denominated in CAD. We use a similar program related to future development costs denominated in CAD. As with our metals derivatives, when utilized, such activities may prevent us from realizing possible lower costs on a USD-basis in the event that the USD strengthens relative to the CAD compared to the exchange rates stated in the forward contracts, and also expose us to counterparty credit risk.

See Note 10 of Notes to Consolidated Financial Statements for more information on these forward contract programs.

Our ability to recognize the benefits of deferred tax assets related to net operating loss carryforwards and other items is dependent on future cash flows generating taxable income.

We recognize the expected future tax benefit from deferred tax assets when the tax benefit is considered to be more likely than not of being realized. Otherwise, a valuation allowance is applied against deferred tax assets, reducing the value of such assets. Assessing the recoverability of deferred tax assets requires management to make significant estimates related to expectations of future taxable income. Estimates of future taxable income are based on forecasted income from operations and the application of existing tax laws in each jurisdiction. Metal prices, reserve, production and cost estimates are key components to determine the expected future benefit of our deferred tax assets. To the extent that future taxable income differs significantly from estimates as a result of a decline in metals prices or other factors, our ability to realize the deferred tax assets could be impacted. Additionally, significant future issuances of common stock or common stock equivalents, or changes in the direct or indirect ownership of our common stock or common stock equivalents, could limit our ability to utilize our net operating loss carryforwards pursuant to Section 382 of the Internal Revenue Code. Future changes in tax law or changes in ownership structure could limit our ability to utilize our recorded tax assets. We determined as of December 31, 2021, that we expect to realize an additional \$58.4 million of the Hecla U.S. tax group deferred tax assets and released the valuation allowance by a corresponding amount, reflecting our current expectations. The Nevada U.S tax group and certain foreign jurisdictions have a valuation allowance on a portion of their deferred tax asset we have determined are more-likely-than-not to not be realized. Our deferred tax assets as of December 31, 2023 were \$280.4 million, net of \$100.9 million in valuation allowances. See *Note 7* of *Notes to Consolidated Financial Statements* for further discussion of our deferred tax assets.

Returns for investments in pension plans and pension plan funding requirements are uncertain.

We maintain defined benefit pension plans for most U.S. employees, which provide for defined benefit payments after retirement for those employees. Canadian and Mexican employees participate in public retirement systems for those countries and are not eligible to participate in the defined benefit pension plans that we maintain for U.S. employees. The ability of the pension plans maintained for U.S. employees to provide the specified benefits depends on our funding of the plans and returns on investments made by the plans. Returns, if any, on investments are subject to fluctuations based on investment choices and market conditions. In addition, we have a supplemental excess retirement plan which was funded as of December 31, 2023. A sustained period of low returns or losses on investments, or future benefit obligations that exceed our estimates, could require us to fund the pension plans to a greater extent than anticipated. See *Note 6* of *Notes to Consolidated Financial Statements* for more information on our pension plans.

Operation, Climate, Development, Exploration and Acquisition Risks

Natural disasters, public health crises, political crises, and other catastrophic events or other events outside of our control may materially and adversely affect our business or financial results.

If any of our facilities or the facilities of our suppliers, third-party service providers, or customers is affected by natural disasters, such as earthquakes, floods, fires, power shortages or outages, public health crises (such as pandemics and epidemics), political crises (such as terrorism, war, political instability or other conflict), or other events outside of our control, our operations or financial results could suffer. Any of these events could materially and adversely impact us in a number of ways, including through decreased production, increased costs, decreased demand for our products due to reduced economic activity or other factors, or the failure by counterparties to perform under contracts or similar arrangements.

For example, the COVID-19 pandemic impacted our operations and financial results between 2020 and 2022. Restrictions imposed by governments in Alaska, Quebec and Mexico caused us to temporarily suspend operations and revise operating procedures during that time period. COVID-19 is still a disease that is occurring throughout the world. In the event it were to flare up in a manner similar to the past, or worse, our operations and financial results could again be negatively impacted

Our operations are subject to a range of risks related to climate change and transitioning the business to meet regulatory, societal and investor expectations for operating in a low-carbon economy.

Climate change is expected to create more extreme weather patterns that can increase frequency or severity of forest fires (such as our Casa Berardi unit experienced in summer 2023) and droughts and sudden heavy rainfall (such as our Greens Creek unit has periodically experienced). These latter two events require careful water management. Potential key material physical risks to Hecla from climate change include, but are not limited to:

- increased volumes of mine contact water requiring storage and treatment;
- increased design requirements for stormwater diversion and associated water management systems;

- reduced freshwater availability due to potential drought conditions;
- · damage to roads and other infrastructure at our sites due to extreme weather events including intense rainfalls and related events such as landslides; and
- unpermitted or otherwise non-compliant discharge of wastewater due to an increased frequency of extreme weather events exceeding the design capacity
 of existing tailings storage facilities and other stormwater management infrastructure.

Such events can temporarily slow or halt operations due to physical damage to assets, reduced worker productivity for safety protocols on site related to extreme weather events, worker aviation and bus transport to or from the site, and local or global supply route disruptions that may limit transport of essential materials and supplies. Additional financial impacts could include increased capital or operating costs to increase water storage and treatment capacity, obtain or develop maintenance and monitoring technologies, increase resiliency of facilities and establish supplier climate resiliency and contingency plans. The occurrence of weather and climate events have in the past and could in the future cause us to incur unplanned costs, which may be material, to address or prevent resulting damage.

In addition, we have identified opportunities and potential risks for Hecla as we shift toward a low-carbon economy. Technologies that support decarbonization include renewable energy sources, electric vehicles, and energy storage, all of which require the metals we produce. However, renewable energies currently may not have the same reliability as conventional energy sources. Thus, as we transition toward renewable energy sources, we could experience a possible curtailment of our energy supply, and these new energy sources may cost more in the future than our current supplies, which could negatively impact our financial performance. Further, transitioning to a lower-carbon economy will require significant investment and may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, focus and jurisdiction of these changes, transition risks may pose varying levels of financial and reputational risk to our business.

Policy and regulatory risk related to actual and proposed changes in climate and water-related laws, regulations and taxes developed to regulate the transition to a low-carbon economy may result in increased costs for our operations, third-party smelters and refiners and our suppliers, including increased energy, capital equipment, environmental monitoring and reporting and other costs to comply with such regulations. Regulatory uncertainty may cause higher costs and lower economic returns than originally estimated for new development projects and operations, including closure reclamation and remediation obligations.

The development and deployment of technological improvements or innovations will be required to support the transition to a low-carbon economy, which could result in write-offs and early retirement of existing assets, increased costs to adopt and deploy new practices and processing including planning and design for mines, development of alternative power sources, site level efficiencies and other capital investments.

A failure to meet our climate strategy commitments and/or societal or investor expectations could also result in damage to our reputation, decreased investor confidence and challenges in maintaining positive community relations, which can pose additional obstacles to our ability to conduct our operations and develop our projects, which may result in a material adverse impact on our business, financial position, results of operations and growth prospects.

Mining accidents or other adverse events at an operation could decrease our anticipated production or otherwise adversely affect our operations.

Production may be reduced below our historical or estimated levels for many reasons, including, but not limited to, mining accidents; unfavorable ground or shaft conditions; fire, influx of water or other insured and uninsured events; work stoppages or slow-downs; lower than expected ore grades; cybersecurity attacks; unexpected regulatory actions; if the metallurgical characteristics of ore are less economic than anticipated; or because our equipment or facilities fail to operate properly or as expected. Our mines are subject to risks relating to ground instability, including, but not limited to, pit wall failure, crown pillar collapse, seismic events, backfill and stope failure or the breach or failure of a tailings impoundment. Both the Lucky Friday and Casa Berardi mines have a history of ground instability underground and related incidents which in the past have resulted in loss of production at these facilities and some of the other effects described below. The occurrence of an event such as those described above could result in loss of life or temporary or permanent cessation of operations, any of which could have a material adverse effect on our financial condition and results of operations. Other closures or impacts on operations or production may occur at any of our mines at any time, whether related to accidents, changes in conditions, changes to regulatory policy, or as precautionary measures.

In addition, our operations are typically in remote locations, where conditions can be inhospitable, including with respect to weather, surface conditions, interactions with wildlife or otherwise in or near dangerous conditions. In the past we have had employees, contractors, or employees of contractors get injured, sometimes fatally, while working in such challenging locations. An accident or injury to a person at or near one of our operations could have a material adverse effect on our financial condition and results of operations.

At the Lucky Friday mine we are mining ever deeper deposits and have been utilizing our patented Underhand Closed Bench ("UCB") mining method. See *Item 2. Properties - Lucky Friday* for a description of the UCB method. We started testing the UCB method in 2020 and it was used for approximately 87%, 88% and 86% of the tons mined at Lucky Friday in 2023, 2022 and 2021, respectively. The UCB method has not been used at other mines. Although we believe the testing has resulted in better management of the Lucky Friday mine's seismicity, which increases as we mine deeper, we cannot predict unknown hazards that the UCB method or our deeper mining activities might cause.

Our operations may be adversely affected by risks and hazards associated with the mining industry that may not be fully covered by insurance.

Our business is capital intensive, requiring ongoing investment for the replacement, modernization or expansion of equipment and facilities. Our mining and milling operations are subject to risks of process disruptions and equipment malfunctions. Equipment and supplies may from time to time be unavailable on a timely basis. Our business is subject to a number of other risks and hazards including:

- environmental hazards;
- unusual or unexpected geologic formations;
- rock bursts, ground falls, pit wall failures, or tailings impoundment breaches or failures;
- seismic activity;
- shaft failure;
- road and bridge failures;
- underground floods or fires (such as we experienced in August 2023 when there was a fire deep within the #2 shaft at our Lucky Friday unit which caused production there to stop for approximately 5 months, before production resumed in January 2024, with the ramp up to full production ongoing);
- unanticipated hydrologic conditions, including flooding and periodic interruptions due to inclement or hazardous weather conditions;
- civil unrest or terrorism;
- cybersecurity attacks;
- · changes in interpretation or enforcement of regulatory and permitting requirements;
- industrial accidents;
- disruption, damage or failure of power, technology or other systems related to operation of equipment and other aspects of our mine operations;
- labor disputes or strikes; and
- our operating mines have tailing ponds which could fail or leak as a result of seismic activity, unusual weather or for other reasons.

Such risks could result in:

- personal injury or fatalities;
- damage to or destruction of mineral properties or producing facilities;
- environmental damage and financial penalties;
- delays in exploration, development or mining;



- monetary losses;
- inability to meet our financial obligations;
- asset impairment charges;
- legal liability; and
- temporary or permanent closure of facilities.

We maintain insurance to protect against losses that may result from some of these risks, such as property loss and business interruption, in amounts we believe to be reasonably consistent with our historical experience, industry practice and circumstances surrounding each identified risk. Such insurance, however, contains exclusions and limitations on coverage, particularly with respect to environmental liability, political risk and seismic events. We cannot assure you that claims would be paid under such insurance policies in connection with a particular event. Insurance specific to environmental risks is generally either unavailable or, we believe, cost prohibitive, and we therefore do not maintain environmental insurance. Occurrence of events for which we are not insured may have an adverse effect on our business.

Our costs of extending existing reserves or development of new orebodies and other capital costs may be higher and provide less return than we estimated.

Capitalized development projects may cost more and provide less return than we estimate. If we are unable to realize a return on these investments, we may incur a related asset write-down that could adversely affect our financial results or condition.

Our ability to sustain or increase our current level of metals production partly depends on our ability to develop new orebodies and/or expand existing mining operations. Before we can begin a development project, we must first determine whether it is economically feasible to do so. This determination is based on estimates of several factors, including:

- mineral reserves and resources;
- expected ore grades and recovery rates of metals from the ore;
- future metals prices;
- facility and equipment costs;
- availability of adequate staffing;
- availability of affordable sources of power and adequacy of water supply;
- exploration and drilling success;
- capital and operating costs of a development project;
- environmental and closure, permitting and other regulatory considerations and costs;
- adequate access to the site, including competing land uses (such as agriculture);
- applicable tax rates;
- foreign currency fluctuation and inflation rates; and
- availability and cost of financing.

Many of these estimates are based on geological and other interpretive data, which may be imprecise. As a result, actual operating and capital costs and returns from a development project may differ substantially from our estimates, and, as such, it may not be economically feasible to continue with a development project.

Our mineral reserve and resource estimates may be imprecise.

Our mineral reserve figures are primarily estimates and are not guarantees that we will recover the indicated quantities of these metals. You are cautioned not to place undue reliance on estimates of reserves (or resource estimates or exploration targets). Reserves are estimates made by our professional technical personnel of the amount of metals that they believe could be economically and legally extracted or produced at the time of the reserve determination. No assurance can be given that the estimated amount of metal or the indicated level of recovery of these metals will be realized. Reserve and resource estimation is an interpretive process based upon available data and various assumptions. Our reserve and resource estimates may change. Reserves are valued based on estimates of costs and metals prices, which may not be consistent among our properties or across the industry. The estimated quantities and economic value of mineral reserves may be adversely affected by:

- declines in the market price of the various metals we mine;
- increased production or capital costs;
- reduction in the grade or tonnage of the deposit;
- decrease in throughput;
- increase in the dilution of the ore;
- future foreign currency rates, inflation rates and applicable tax rates;
- reduced metal recovery; and
- changes in environmental, permitting or other regulatory requirements.

Furthermore, short-term operating factors relating to our mineral reserves, such as the need to sequentially develop orebodies and the processing of new or different ore grades, may adversely affect our cash flow.

If the prices of metals that we produce decline substantially below the levels used to calculate reserves for an extended period, we could experience:

- delays in new project development;
- net losses;
- reduced cash flow;
- reductions in reserves and resources;
- write-downs of asset values; and
- mine closure.

Additionally, reserve estimates are subject to further development and preproduction drilling, resource estimates and exploration targets are subject to further exploration and development, and are, therefore, subject to considerable uncertainty. Despite our history of converting resources and exploration targets to reserves through additional drilling and study work, we cannot be certain that any part or parts of resources or exploration targets will ever be confirmed or converted into reserves as defined by the SEC.

Efforts to expand the finite lives of our mines may not be successful or could result in significant demands on our liquidity, which could hinder our growth.

One of the risks we face is that mines are depleting assets. Thus, in order to maintain or increase production we must continually replace depleted mineral reserves by locating and developing additional ore. Our ability to expand or replace mineral reserves primarily depends on the success of our exploration programs. Mineral exploration, particularly for silver and gold, is highly speculative and expensive. It involves many risks and is often non-productive. Even if we believe we have found a valuable mineral deposit, it may be several years before production from that deposit is possible. During that time, it may become no longer feasible to produce those

minerals for economic, regulatory, political or other reasons. As a result of high costs and other uncertainties, we may not be able to expand or replace our existing mineral reserves as they are depleted, which would adversely affect our business and financial position in the future.

Our ability to market our metals production depends on the availability of smelters and/or refining facilities and our operations and financial results may be affected by disruptions or closures or the unavailability of smelters and/or refining facilities for other reasons.

We sell our metals products to smelters and metal traders. Our doré bars are sent to refiners for further processing before being sold to metal traders. Access to refiners and smelters on terms which are economic is critical to sell our products to buyers and generate revenues. If smelters or refiners are unavailable or unwilling to accept our products, or we are otherwise unable to sell our products to customers on acceptable commercial and legal terms, our operations and financial results could be adversely affected. See *Note 4* of *Notes to Consolidated Financial Statements* for more information on the distribution of our sales and our significant customers.

We derive a significant amount of revenue from a relatively small number of customers and occasionally enter into concentrate spot market sales with metal traders.

For the fiscal year ended December 31, 2023, our three largest customers accounted for approximately 24%, 16% and 16%, respectively, of our total revenues. Given our operations produce unique qualities of concentrates, which a limited number of smelters can process effectively, we enter into long-term benchmark contracts for a majority of our total concentrates production. We expose lesser portions of our concentrates production to spot market sales to metal traders to benefit from favorable spot market sales terms from time to time. Our results of operations, financial condition and cash flows could be materially adversely affected if one or more of our long-term customers were to decide to interrupt or curtail their activities, terminate their contracts with us or fail to renew existing contracts. Additionally, if spot market conditions deteriorate rapidly, we could have difficulty selling a portion of our concentrates, and metal traders could refuse to perform under existing contracts, which could also result in materially adverse effects on our results of operations, financial conditions and cash flows. See *Note 4* of *Notes to Consolidated Financial Statements* for more information on the distribution of our sales and our significant customers.

Shortages of critical parts and equipment may adversely affect our operations and development projects.

We have been impacted, from time to time, by increased demand for critical resources such as input commodities, drilling equipment, trucks, shovels and tires. These shortages have, at times, impacted the efficiency of our operations, and resulted in cost increases and delays in construction of projects; thereby impacting operating costs, capital expenditures and production and construction schedules.

Our foreign activities are subject to additional inherent risks.

We currently have foreign operations in Mexico and Canada, and we expect to continue to conduct operations there and possibly other international locations in the future. Because we conduct operations internationally, we are subject to political, social, legal and economic risks such as:

- the effects of local political, labor and economic developments and unrest;
- significant or abrupt changes in the applicable regulatory or legal climate;
- significant changes to regulations or laws or the interpretation or enforcement of them;
- exchange controls and export restrictions;
- expropriation or nationalization of assets with inadequate compensation;
- unfavorable currency fluctuations, particularly in the exchange rate between the U.S. dollar and the Canadian dollar and Mexican Peso;
- repatriation restrictions;
- invalidation and unavailability of governmental orders, permits or agreements;
- property ownership disputes;



- renegotiation or nullification of existing concessions, licenses, permits and contracts;
- · criminal activity, corruption, demands for improper payments, expropriation, and uncertain legal enforcement and physical security;
- · failure to maintain compliance with corruption and transparency statutes, including the U.S. Foreign Corrupt Practices Act;
- disadvantages of competing against companies from countries that are not subject to U.S. laws and regulations;
- fuel or other commodity shortages;
- illegal mining;
- laws or policies of foreign countries and the United States affecting trade, investment and taxation;
- opposition to our presence, operations, properties or plans by governmental or non-governmental organizations or civic groups;
- · civil disturbances, war and terrorist actions; and
- seizures of assets.

The occurrence of any one or combination of these events, many of which are beyond our control, could materially adversely affect our financial condition or results of operations.

Our operations and properties in Canada expose us to additional political risks.

Our properties in Canada may be of particular interest or sensitivity to one or more interest groups, including aboriginal groups (which are generally referred to as "First Nations"). We have mineral projects in Quebec, the Yukon and British Columbia that are or may be in areas with a First Nations presence. The nature and extent of First Nation rights and title remains the subject of active debate, claims and litigation in Canada. Intergovernmental relations between First Nation authorities and federal, provincial and territorial authorities are evolving. It is our practice to work closely with and consult with First Nations in areas in which our projects are located or which could be impacted by our activities. However, there is no assurance that relationships with such groups will be positive. Accordingly, it is possible that our permitting activities, profitable production, exploration or development activities on our Canadian properties could be delayed, interrupted or otherwise adversely affected in the future by political uncertainty, native land claims entitlements, expropriations of property, financial arrangements, changes in applicable law, governmental policies and policies of relevant interest groups, including those of First Nations. Any changes in law or relations or shifts in political conditions may be beyond our control, or we may enter into agreements with First Nations, all of which may adversely affect our business and operations and if significant, may result in the impairment or loss of mineral concessions or other mineral rights, or may make it impossible to continue our mineral production, exploration or development activities on our financial condition and results of operations.

Certain of our mines and exploration properties are located on land that is or may become subject to traditional territory, title claims and/or claims of cultural significance, and such claims and the attendant obligations of the federal government to those tribal communities and stakeholders may affect our current and future operations.

Indigenous interests and rights as well as related consultation issues may impact our ability to pursue exploration, development and mining at certain of our properties in Nevada, Montana, Alaska, British Columbia, the Yukon and Quebec. There is no assurance that claims or other assertion of rights by tribal communities and stakeholders or consultation issues will not arise on or with respect to our properties or activities. These could result in significant costs and delays or materially restrict our activities. Opposition by tribal communities and stakeholders to our presence, operations or development on land subject to their traditional territory or title claims or in areas of cultural significance could negatively impact us in terms of permitting delay, public perception, costly legal proceedings, potential blockades or other interference by third parties in our operations, or court-ordered relief impacting our operations. In addition, we may be required to, or may voluntarily, enter into certain agreements with such tribal communities in order to facilitate development of our properties, which could reduce the expected earnings or income from any future production.

We may be subject to a number of unanticipated risks related to inadequate infrastructure.

Mining, processing, development, exploration and other activities depend on adequate infrastructure. Reliable roads, bridges, ports, power sources, internet access and water supply are important to our operations, and their availability and condition affect capital and operating costs. Unusual, infrequent or extreme weather phenomena, sabotage, amount or complexity of required investment, or other interference in the maintenance or provision of such infrastructure, or government intervention, could adversely affect our mining operations.

We face inherent risks in acquisitions of other mining companies or properties that may adversely impact our growth strategy.

We are actively evaluating opportunities to expand our mineral reserves and resources by acquiring other mining companies or properties. Although we are pursuing opportunities that we feel are in the best interest of our stockholders, these pursuits are costly and often unproductive.

There is a limited supply of desirable mineral properties available in the United States and foreign countries where we would consider conducting exploration and/or production activities. For those that exist, we face strong competition from other mining companies, many of which have greater financial resources than we do. Therefore, we may be unable to acquire attractive companies or mining properties on terms that we consider acceptable.

Furthermore, there are inherent risks in any acquisition we may undertake which could adversely affect our current business and financial condition and our growth. For example, we may not realize the expected value of the companies or properties that are acquired due to declines in metals prices, lower than expected quality of orebodies, inability to achieve the expected or minimum level of operating performance, failure to obtain permits, labor problems, changes in regulatory environment, failure to achieve anticipated synergies, an inability to obtain financing, and other factors described in these risk factors. Acquisitions of other mining companies or properties may also expose us to new legal, geographic, political, operating, and geological risks.

See the risk factor below, "We may not realize all of the anticipated benefits from our acquisitions, including our 2022 acquisition of Alexco."

We may be unable to successfully integrate the operations of the properties we acquire.

Integration of the businesses or the properties we acquire with our existing business, including the Keno Hill project acquired as part of the Alexco acquisition in September 2022, is a complex, time-consuming and costly process. Failure to successfully integrate the acquired properties and operations in a timely manner may have a material adverse effect on our business, financial condition, results of operations and cash flows. The difficulties of combining the acquired operations with our existing business include, among other things:

- operating a larger organization;
- operating in multiple legal jurisdictions;
- coordinating geographically and linguistically disparate organizations, systems and facilities;
- adapting to additional political, regulatory, legal and social requirements;
- integrating corporate, technological and administrative functions; and
- diverting management's attention from other business concerns.

The process of integrating operations could cause an interruption of, or a slowdown in, the activities of our business. Members of our senior management may be required to devote considerable amounts of time to this integration process, which will decrease the time they will have to manage other parts of our business. If our senior management is not able to effectively manage the integration process, or if any business activities are interrupted as a result of the integration process, our business could suffer. See the risk factor below, "We may not realize all of the anticipated benefits from our acquisitions, including our 2022 acquisition of Alexco."

Issues we have faced at certain segments could require us to write-down the carrying value of associated long-lived assets. We could face similar issues at our other operations. Such write-downs may adversely affect our results of operations and financial condition.



We review our long-lived assets for recoverability pursuant to the Financial Accounting Standard Board's Accounting Standards Codification Section 360. Under that standard, we review the recoverability of our long-lived assets, such as our mining properties, upon a triggering event. Such review involves comparing an asset's carrying value to its fair value. When the carrying value of the asset exceeds its fair value (which is based on estimating the future undiscounted cash flows expected to result from the use and eventual disposition of the asset or a market value approach), an impairment must be recognized. We conduct a review of the financial performance of our mines in connection with the preparation of our financial statements for each reporting period and determine whether any triggering events are indicated.

We determined the continued suspension of production in Nevada and reduced 2024 budgeted exploration program represented a triggering event requiring an assessment of recoverability of the carrying value of our long-lived assets in Nevada. We also identified a triggering event for Casa Berardi in 2023. Although we concluded the carrying value assessment indicated no impairment at either segment at the time the analysis was undertaken, each analysis was, and any future analysis will be, based on estimates, judgments and assumptions which may turn out to be incorrect or inaccurate.

The estimates, judgments and assumptions we use in any fair value/impairment assessment of our long-lived assets relate to factors impacting the future cash flows estimated at any of our operations, including, but not limited to: (i) metals to be extracted and recovered from proven and probable mineral reserves and, to some extent, identified mineralization beyond proven and probable reserves, (ii) future operating and capital costs, and (iii) future metals prices. These estimates, judgments and assumptions are made in good faith and using management's best judgments; however, there can be no assurance that any of them will prove to be accurate. Evaluation of the possibility of a future impairment loss, as well as the calculation of the amount of any impairment loss, involve significant estimates, judgment and assumptions, and no assurance can be given as to whether or not we will recognize an impairment loss in the future, or if the amount of loss would be within any estimated range we may disclose. As a result, in future periods we could face another triggering event which could lead to an impairment charge, and any such impairment charge could be material.

We may not realize all of the anticipated benefits from our acquisitions, including our 2022 acquisition of Alexco.

We may not realize all (or any) of the anticipated benefits from any acquisition, such as increased earnings, cost savings and revenue enhancements, for various reasons, including difficulties integrating operations and personnel, higher than expected acquisition and operating costs or other difficulties, unknown liabilities which may be significant, inaccurate reserve estimates, unrealized exploration targets, ore grades or mill recoveries that are lower than required for portions of the orebodies to be economic, and fluctuations in market prices.

At our Nevada Operations, mine production at Fire Creek continued through the first half of 2021, and was then suspended as we continue studies of hydrology, mining and milling. Revenues exceeded total capital and production costs in 2020 and 2021. However, we anticipate incurring care-and-maintenance costs in the future unless and until we have enough exploration success and development to resume mining operations. In September 2022, we completed the acquisition of Alexco and gained ownership of the Keno Hill project in the Yukon Territory, Canada. Although we produced silver at that mine in 2023, achieving acceptable safety and environmental performance has prevented us from reaching anticipated production levels and has required capital expenditures higher than we anticipated. See the risk factors above, "An extended decline in metals prices, an increase in operating or capital costs or treatment charges, mine accidents or closures, increasing regulatory obligations, or our inability to convert resources or exploration targets to reserves may cause us to record write-downs, which could negatively impact our results of operations," and "Issues we have faced at certain segments could require us to write-down the associated long-lived assets. We could face similar issues at our other operations. Such write-downs may adversely affect our results of operations and financial condition."

The properties we may acquire may not produce as expected, and we may be unable to determine reserve potential, identify liabilities associated with the acquired properties or obtain protection from sellers against such liabilities.

The properties we acquire in any acquisition, including Keno Hill, may not produce as expected, may be in an unexpected condition and we may be subject to increased costs and liabilities, including environmental liabilities. Although we review properties prior to acquisition in a manner consistent with industry practices, such reviews are not capable of identifying all existing or potential adverse conditions. Generally, it is not feasible to review in depth every individual property involved in each acquisition. Even a detailed review of records and properties may not necessarily reveal existing or potential problems or permit a buyer to become sufficiently familiar with the properties to fully assess their condition, any deficiencies, and development potential. See the risk factors above, "We may not realize all of the anticipated benefits from our acquisitions, including our 2022 acquisition of Alexco" and "An extended decline in metals prices, an increase in operating or capital costs or treatment charges, mine accidents or closures, increasing regulatory obligations, or our inability to convert resources or exploration targets to reserves may cause us to record write-downs, which could negatively impact our results of operations."

We face risks relating to transporting our products from our mines, as well as transporting employees and materials at our Greens Creek, Casa Berardi and Keno Hill sites.

Certain of the products we ship to our customers are subject to regulatory requirements regarding shipping, packaging, and handling of products that may be considered dangerous to human health or the environment. Although we believe we are currently in compliance with all material regulations applicable to shipping, packaging, and handling our products, the chemical properties of our products or existing regulations could change and cause us to fall out of compliance or force us to incur substantial additional expenditures to maintain compliance with applicable regulations. Further, we do not ship our own products but instead rely on third party carriers to ship our products to our customers. To the extent that any of our carriers are unable or unwilling to ship our products in accordance with applicable regulations, including because of difficulty in obtaining, or increased cost of, insurance, or are involved in accidents during transit, we could be forced to find alternative shipping arrangements, assuming such alternatives would be available, and we could face liability as a result of any accident. Any such changes to our current shipping arrangements or accidents involving the shipment of our products could have a material adverse impact on our operations and financial results.

In addition, each of Greens Creek, Casa Berardi and Keno Hill are in remote locations. Greens Creek operates on an island and is substantially dependent on various forms of marine transportation for the transportation of employees and materials to the mine and for the export of its products from the mine. Further, Keno Hill requires its employees to fly in to its remote location and marine transportation depends on access to a limited number of ports. Casa Berardi can only be accessed by a long motor vehicle ride over a gravel road. Any disruption to these forms of marine, air and surface transportation could adversely impact mine operations, and possible effects could include suspension of operations.

Legal, Regulatory and Compliance Risks

We face substantial governmental regulation, including in the United States the Mine Safety and Health Act, various environmental laws and regulations and the 1872 Mining Law.

Our business is subject to extensive U.S. and foreign federal, state, provincial and local laws and regulations governing environmental protection, natural resources, prospecting, development, production, post-closure reclamation, taxes, labor standards and occupational health and safety laws and regulations, including mine safety, toxic substances and other matters. The costs associated with compliance with such laws and regulations are substantial. Possible future laws and regulations, or more restrictive interpretations of current laws and regulations by governmental authorities, could cause additional expense, capital expenditures, restrictions on or suspensions of operations and delays in the development of new properties.

U.S. mines like those at our Lucky Friday, Greens Creek and Nevada Operations are inspected at least quarterly by MSHA, which inspections often lead to notices of violation under the Mine Safety and Health Act. Any of our U.S. mines could be subject to a temporary or extended shutdown as a result of a violation alleged by MSHA.

In addition, we have been and are currently involved in lawsuits or regulatory actions in which allegations have been made that we caused environmental damage, are responsible for environmental damage caused by others, or violated environmental laws or permits, and we may be subject to similar lawsuits or actions in the future. Moreover, such environmental matters have involved both our current and historical operations as well as the historical operations of entities and properties we have acquired. See the risk factors below titled "Our operations are subject to complex, evolving and increasingly stringent environmental laws and regulations," "Compliance with environmental regulations, and litigation based on such regulations, involves significant costs and can threaten existing operations or constrain expansion opportunities," and "Our environmental and asset retirement obligations may exceed the provisions we have made."

Some mining laws prevent mining companies that have been found to (i) have engaged in environmentally-harmful conduct or (ii) be responsible for environmentally-harmful conduct engaged in by affiliates or other third parties, including in other jurisdictions, from maintaining current or obtaining future permits until remediation or restitution has occurred. If we are found to be responsible for any such conduct, our ability to operate existing projects or develop new projects might be impaired until we satisfy costly conditions. For example, in June 2021, the State of Nevada passed a law that would limit an applicant's ability to obtain an exploration or a mining operation permit from the Nevada Division of Environmental Protection if the applicant, or each person who has a controlling interest in the applicant (if the applicant is a business entity), has either (1) defaulted on a reclamation obligation under Nevada law (including by forfeiting a surety or failing to pay the costs or penalties associated with reclamation) or (2) is otherwise not in good standing with a governmental agency in relation to reclamation of an exploration project or mining operation situated outside the State of Nevada. Although we believe this new statute does not currently apply to us or any of our affiliates, it is possible that it could cause us compliance issues in the future, including with respect to ongoing litigation in the State of Montana. See the risk factor below, "*Legal challenges could prevent our projects in Montana from ever being developed.*"

We cannot assure you that we will at all times be in compliance with applicable laws, regulations and permitting requirements. Failure to comply with applicable laws, regulations and permitting requirements may result in lawsuits or regulatory actions, including orders issued by regulatory or judicial authorities causing operations to cease or be curtailed, which may require corrective measures including capital expenditures, installation of additional equipment or remedial actions. Any one or more of these liabilities could have a material adverse impact on our financial condition.

In addition to existing regulatory requirements, legislation and regulations may be adopted, regulatory procedures modified, or permit limits reduced at any time, any of which could result in additional exposure to liability, operating expense, capital expenditures or restrictions and delays in the mining, production or development of our properties. Mining accidents and fatalities or toxic waste releases, whether or not at our mines or related to metals mining, may increase the likelihood of additional regulation or changes in law or enhanced regulatory scrutiny. In addition, enforcement or regulatory tools and methods available to regulatory bodies such as MSHA or the U.S. Environmental Protection Agency ("EPA"), which have not been or have infrequently been used against us or the mining industry, in the future could be used against us or the industry in general.

From time to time, the U.S. Congress considers proposed amendments to the 1872 Mining Law, which governs mining claims and related activities on federal lands. The extent of any future changes is not known and the potential impact on us as a result of U.S. Congressional action is difficult to predict. Changes to the 1872 Mining Law, if adopted, could adversely affect our ability to economically develop mineral reserves on federal lands. For example, from time to time the U.S. Congress debates imposing royalties on minerals extracted from federal lands. Although such legislation has not passed as of the date of this report, it is possible that in the future royalties or taxes will be imposed on mining operations conducted on federal land, which could adversely impact our financial results.

Our operations are subject to complex, evolving and increasingly stringent environmental laws and regulations. Compliance with environmental regulations, and litigation based on such regulations, involves significant costs and can threaten existing operations or constrain expansion opportunities.

Our operations, both in the United States and internationally, are subject to extensive environmental laws and regulations governing wastewater discharges; remediation, restoration and reclamation of environmental contamination; the generation, storage, treatment, transportation and disposal of hazardous substances; solid waste disposal; air emissions; protection of endangered and protected species and designation of critical habitats; mine closures and reclamation; and other related matters. In recent years, each of our Greens Creek, Lucky Friday and Keno Hill units have had compliance challenges and alleged violations of the Resource Conservation and Recovery Act ("RCRA"), the Clean Water Act ("CWA") and similar Yukon regulations, respectively (some of which are not yet resolved). Failure to resolve pending or avoid future alleged permit exceedances or other legal violations could have a material negative impact on operations or financial performance.

In addition for continuing our current operations, we must obtain regulatory permits, permit modifications or other approvals to start and expand operations. New or revised environmental regulatory requirements are frequently proposed, many of which result in substantially increased costs for our business. See the risk factor above, "We are required to obtain governmental permits and other approvals in order to conduct mining operations" and the risk factor below, "Mine closure and reclamation regulations impose substantial costs on our operations, and include requirements that we provide financial assurance supporting those obligations. These costs could significantly increase and we might not be able to provide financial assurance."

Our U.S. operations are subject to the CWA, which requires permits for certain discharges into waters of the United States. Such permitting has been a frequent subject of litigation and enforcement activity by environmental advocacy groups and the EPA, respectively, which has resulted in declines in such permits or extensive delays in receiving them, as well as the imposition of penalties for permit violations. Adverse outcomes in lawsuits challenging permits or failure to comply with applicable regulations or permits could result in the suspension, denial, or revocation of required permits, or the imposition of penalties, any of which could have a material adverse impact on our cash flows, results of operations, or financial condition. See *Note 16* of *Notes to Consolidated Financial Statements*.

Some of the mining wastes from our U.S. mines currently are exempt to a limited extent from the extensive set of EPA regulations governing hazardous waste under RCRA. If the EPA were to repeal this exemption, and designate these mining wastes as hazardous under RCRA, we would be required to expend additional amounts on the handling of such wastes and to make significant expenditures to construct hazardous waste storage or disposal facilities. In addition, if any of these wastes or other substances we release or cause to be released into the environment cause or has caused contamination in or damage to the environment at a U.S. mining facility, that facility could be designated as a "Superfund" site under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"). Under CERCLA, any present owner or operator of a Superfund site or the owner or operator at the time of contamination may be held jointly and severally liable regardless of fault and may be forced to undertake extensive remedial cleanup action or to pay for the cleanup efforts. The owner or operator also may be liable to federal, state and tribal governmental entities for



the cost of damages to natural resources, which could be substantial. Additional regulations or requirements also are imposed on our tailings and waste disposal areas in Alaska under the federal CWA. See *Note 16* of *Notes to Consolidated Financial Statements*.

Legislative and regulatory measures to address climate change and greenhouse gas emissions are in various phases of consideration. If adopted, such measures could increase our cost of environmental compliance and also delay or otherwise negatively affect efforts to obtain permits and other regulatory approvals with regard to existing and new facilities. Proposed measures could also result in increased cost of fuel and other consumables used at our operations, including the diesel generation of electricity at our Greens Creek operation, used when we are unable to access hydroelectric power. Climate change legislation may also affect our smelter customers that burn fossil fuels, resulting in fewer customers or increased costs to us, and may affect the market for the metals we produce with effects on prices that are not possible for us to predict.

Adoption of these or similar new environmental regulations or more stringent application of existing regulations may materially increase our costs, threaten certain operating activities and constrain our expansion opportunities.

Some of our facilities are located in or near environmentally sensitive areas such as salmon fisheries, endangered species habitats, wilderness areas, national monuments and national forests, and we may incur additional costs to mitigate potential environmental harm in such areas.

In addition to evolving and expanding environmental regulations providing governmental authorities with the means to make claims against us, private parties have in the past and may in the future bring claims against us based upon damage to property and injury to persons resulting from the environmental, health and safety impacts of prior and current operations (including for exposure to or contamination by lead). Laws in the U.S. such as CERCLA and similar state laws may expose us to joint and several liability or claims for contribution made by the government (state or federal) or private parties. Moreover, exposure to these liabilities arises not only from our existing but also from closed operations, operations sold to third parties, or operations in which we had a leasehold, joint venture, or other interest. Because liability under CERCLA is often alleged on a joint and several basis against any property owner or operator or arranger for the transport of hazardous waste, and because we have been in operation since 1891, our exposure to environmental claims may be greater because of the bankruptcy or dissolution of other mining companies which may have engaged in more significant activities at a mining site than we but which are no longer available for governmental agencies or other claims against to make claims against or obtain judgments from. Similarly, there is also the potential for claims against us based on agreements entered into by certain affiliates and predecessor companies relating to the transfer of businesses or properties, which contained indemnification provisions relating to environmental matters. In each of the types of cases described in this paragraph, the government (federal or state) or private parties could seek to hold Hecla Limited or Hecla Mining Company liable for the actions of their subsidiaries or predecessors.

The laws and regulations, changes in such laws and regulations, and lawsuits and enforcement actions described in this risk factor could lead to the imposition of substantial fines, remediation costs, penalties and other civil and criminal sanctions against us. Further, substantial costs and liabilities, including for restoring the environment after the closure of mines, are inherent in our operations. There is no assurance that any such law, regulation, enforcement or private claim, or reclamation activity, would not have a material adverse effect on our financial condition, results of operations or cash flows.

Mine closure and reclamation regulations impose substantial costs on our operations and include requirements that we provide financial assurance supporting those obligations. These costs could significantly increase and we might not be able to provide financial assurance.

We are required by U.S. federal and state laws and regulations and by laws and regulations in the foreign jurisdictions in which we operate to reclaim our mining properties. The specific requirements may change and vary among jurisdictions, but they are similar in that they aim to minimize long term effects of exploration and mining disturbance by requiring the control of possible deleterious effluents and re-establishment to some degree of pre-disturbance land forms and vegetation. In some cases, we are required to provide financial assurances as security for reclamation costs, which may exceed our estimates for such costs. Conversely, our reclamation costs may exceed the financial assurances in place and those assurances may ultimately be unavailable to us.

The EPA and other state, provincial or federal agencies may also require financial assurance for investigation and remediation actions that are required under settlements of enforcement actions under CERCLA or equivalent state regulations. Currently there are no financial assurance requirements for active mining operations under CERCLA, and a lawsuit filed by several environmental organizations which sought to require the EPA to adopt financial assurance rules for mining companies with active mining operations was dismissed by a federal court. In the future, financial assurance rules under CERCLA, if adopted, could be financially material and adverse to us. See the risk factors, "Our operations are subject to complex, evolving and increasingly stringent environmental laws and regulations. Compliance with environmental regulations, and litigation based on such regulations, involves significant costs and can threaten existing operations or constrain expansion opportunities" and "We are required to obtain governmental permits and other approvals in order to conduct mining operations."

We are required to obtain governmental permits and other approvals in order to conduct mining operations.

In the ordinary course of business, mining companies are required to seek governmental permits and other approvals for continuation or expansion of existing operations or for the commencement of new operations. Obtaining the necessary governmental permits is a complex, time-consuming and costly process. The duration and success of our efforts to obtain permits are contingent upon many variables not within our control. Obtaining environmental permits, including the approval of reclamation plans, may increase costs and cause delays or halt the continuation of mining operations depending on the nature of the activity to be permitted and the interpretation of applicable requirements established by the permitting authority. Interested parties, including governmental agencies and non-governmental organizations or civic groups, may seek to prevent issuance of permits and intervene in the process or pursue extensive appeal rights. Past or ongoing violations of laws or regulations involving obtaining or complying with permits could provide a basis to revoke existing permits, deny the issuance of additional permits, or commence a regulatory enforcement action, each of which could have a material adverse impact on our operations or financial condition. In addition, evolving reclamation or environmental concerns may threaten our ability to renew existing permits or obtain new permits in connection with future development, expansions and operations. We cannot assure you that all necessary approvals and permits will be obtained and, if obtained, that the costs involved will not exceed those that we previously estimated. It is possible that the costs and delays associated with the compliance with evolving standards and regulations could become such that we would not proceed with a particular development or operation.

Specific examples of where we face permitting risk include the following:

- Continued extension of the planned life of mine at Greens Creek will require expansion of the tailings storage facility. The mine has received a draft record of decision from the United States Forest Service allowing for 12-18 years of additional tailings storage space. That dcision is currently in the objection period of the NEPA process and a final record of decision is expected in Q2 of 2024. Once the record of decision is final, it could be subject to litigation from parties who participated in the objection process. Additional federal, state and local permits will also be required before construction of the expanded facility can commence. The existing tailings storage facility currently contains enough space to support mine operations through September 2030 and our permitting and construction schedule for the expansion indicates that the additional authorized space will be available after that time.
- At Casa Berardi, obtaining new or modified permits and modifications to the mine license area will be required to successfully develop the planned open
 pit extensions at the site and for long term management of tailings and waste rock generated through mining operations.
- At San Sebastian, regulatory approvals and landowner consents are required to successfully develop new mineralization and to finalize ongoing reclamation.
- At Hollister in Nevada, state and federal approvals will be required for waste rock and underground water management from development of the Hatter Graben or other mine expansions. This permitting will require coordination with the Western Shoshone who have long-standing ties to this land area.
- At Lucky Friday, an expansion of the current tailings storage facility or new, separate tailings storage facility will be required to achieve the planned life of mine. We have begun site selection, permitting, and engineering in advance of need for the additional storage capacity.
- At Keno Hill, it is likely that permit modifications will be required for it to reach planned production levels in 2024 and possibly for long-term, uninterrupted and larger mining and milling operations. Such modification to existing permits or the requirement for new permits could be a lengthy process that will be required for profitable operations. There can be no assurance we will receive any such modified or new permits.

See the risk factors above, "Certain of our mines and exploration properties are located on land that is or may become subject to traditional territory, title claims and/or claims of cultural significance, and such claims and the attendant obligations of the federal government to those tribal communities and stakeholders may affect our current and future operations" and "Legal challenges could prevent our projects in Montana from ever being developed."

We are often required to post surety bonds or cash collateral to secure our reclamation obligations and we may be unable to obtain the required surety bonds or may not have the resources to provide cash collateral, and the bonds or collateral may not fully cover the cost of reclamation and any such shortfall could have a material adverse impact on our financial condition. Further, when we use the services of a surety company to provide the required bond for reclamation, the surety companies often require us to post collateral with them. Currently we utilize letters of credit issued under our revolving credit facility as the source of such collateral, and as a result, there are less funds available for us to borrow under the facility for other purposes. In the event that we are unable to obtain necessary bonds or to post sufficient collateral, we may experience a material adverse effect on our operations or financial results. See the risk factors below, "*Our existing stockholders are effectively subordinated to the holders of our Senior Notes*", "*Any downgrade in the credit ratings*

assigned to us or our debt securities could increase future borrowing costs, adversely affect the availability of new financing and may result in increased collateral requirements under our existing surety bond portfolio," and "Mine closure and reclamation regulations impose substantial costs on our operations, and include requirements that we provide financial assurance supporting those obligations. These costs could significantly increase and we might not be able to provide financial assurance."

We are currently involved in ongoing legal disputes that may materially adversely affect us.

There are several ongoing legal disputes in which we are involved, including a putative class action lawsuit filed against us and certain current and former directors and officers involving our Nevada Operations, and additional actions may be filed. We may be subject to future claims, including additional claims relating to our Nevada Operations. Further, we have experienced in the past, and could experience in the future, claims regarding environmental damage or compliance, safety conditions or other matters at our mines. The outcomes of these pending and potential claims are uncertain. We may not resolve these claims favorably. Depending on the outcome, these actions could cause adverse financial effects or reputational harm to us. If any of these disputes result in a substantial monetary judgment against us, are settled on terms unfavorable to us, or otherwise impact our operations (such as by limiting our ability to obtain permits or approvals), our financial results or condition could be materially adversely affected. For a description of some of the lawsuits and other claims in which we are involved, see *Note 16* of *Notes to Consolidated Financial Statements*.

Our environmental and asset retirement obligations may exceed the provisions we have made.

We are subject to significant environmental obligations. At December 31, 2023, we had accrued \$120.5 million as a provision for environmental and asset retirement obligations. We cannot assure you that we have accurately estimated these obligations, and in the future our accrual could materially change and we could voluntarily incur expenditures in excess of our accrual. Our environmental and asset retirement obligations and voluntary expenditures could have a material adverse impact on our cash flows, results of operations, or financial condition. For information on our potential environmental liabilities and asset retirement obligations, see *Note 5* and *Note 16* of *Notes to Consolidated Financial Statements*.

New federal and state laws, regulations and initiatives could impact our operations.

In recent years there have been several proposed or implemented ballot initiatives that sought to directly or indirectly curtail or eliminate mining in certain states, including Alaska, where our Greens Creek mine operates, and Montana, where we are seeking to explore at the Libby Exploration project, and possibly develop depending on the results of exploration activities, and may in the future seek to explore or develop the Rock Creek project. While both a salmon initiative in Alaska and a water treatment initiative in Montana were defeated by voters in November 2018, in the future similar or other initiatives that could impact our operations may be on the ballot in these states or other jurisdictions (including local or international) in which we currently or may in the future operate. To the extent any such initiative was passed and became law, there could be a material adverse impact on our financial condition, results of operations or cash flows.

Legal challenges could prevent our projects in Montana from ever being developed.

A joint final Environmental Impact Statement with respect to the Montanore site (now known as the Libby Exploration site), which is located in the state of Montana, was issued in December 2015 by the USFS and the Montana Department of Environmental Quality ("DEQ"), and each agency issued a Record of Decision ("ROD") in February 2016 providing approval for development of Montanore. However, private conservation groups have taken and may in the future take actions to oppose or delay activities at Montanore. On May 30, 2017, the Montana Federal District Court issued Opinions and Orders in three lawsuits challenging previously granted environmental approvals for the Libby Exploration project. The Orders overturned the approvals for the project granted by the USFS and the United States Fish and Wildlife Service ("USFWS"), and in each case remanded the ROD and associated planning documents for further review by the agencies consistent with the Court's Opinions. In June 2017, the Court vacated the agencies' approvals for the project. In addition, the Libby Exploration Project's updated water discharge permit under Montana law was found to be invalid by the Montana Supreme Court in November 2020. As a result, the site is operating under the previously issued permit as authorized by law.

In 2022, our subsidiary withdrew the Plan of Operations for the Libby Exploration project from USFS consideration and submitted a new Plan of Operations proposing only underground exploration and evaluation activities at the site. In conjunction with this narrower scope of activity, the USFS withdrew its previously issued Supplemental Environmental Impact Statement ("SEIS"). The proposed exploration activities are currently undergoing an EA under NEPA.

The proposed development of our Rock Creek site, also located in Montana, has been challenged by several regional and national conservation groups at various times since the USFS issued its initial ROD in 2003 approving Revett Mining Company's plan of operation (Revett is now our wholly-owned subsidiary, named Hecla Montana, Inc.). In February 2022, our subsidiary withdrew the



Plan of Operations for Rock Creek from USFS consideration. . However, we report inferred mineral resources at Rock Creek below in *Item 2. Properties* and we expect that should we resume permitting at that project, it would again be met with litigation by non-governmental organizations.

In March 2018, each of Hecla Mining Company and our CEO was notified by the DEQ of alleged violations of Montana's mine reclamation statutes and related regulations due to our CEO having been an officer of a mining company that declared bankruptcy in 1998, together with the fact that subsequently, proceeds from that company's sureties were insufficient to fully fund reclamation at that company's mine sites in Montana. The allegations of DEQ led to litigation between Hecla and certain of our subsidiaries and DEQ. However, on August 2, 2021, the DEQ voluntarily moved to dismiss the litigation, and on September 22, 2021, the Court dismissed the case. Certain environmental and other groups have sued the DEQ in an effort to attempt to force DEQ to re-initiate litigation against us, our subsidiaries or our CEO. In December 2022, the court in Montana largely, but not fully, dismissed the lawsuit, and it remains unclear what actions, if any, the plaintiffs may next take.

As a result of the legal challenges and other circumstances related to our Montana projects, we are now focused on obtaining the permits necessary to conduct underground exploration and evaluation activities at the Libby Exploration site and are not currently engaged in permitting activities for Rock Creek. Generally speaking, permitting has been delayed and further delays are likely, along with increased costs, and ultimately we may be prevented from ever fully permitting or further exploring or developing a project at either of the two sites.

The titles to some of our properties may be defective or challenged.

Unpatented mining claims constitute a significant portion of our undeveloped property holdings in the United States. For our operations in Canada and Mexico, we hold mining claims, mineral concession titles and mining leases that are obtained and held in accordance with the laws of the respective countries, which provide Hecla the right to exploit and explore the properties. The validity of the claims, concessions and leases could be uncertain and may be contested. Although we have conducted title reviews of our property holdings, title review does not necessarily preclude third parties (including governments) from challenging our title. In accordance with mining industry practice, we do not generally obtain title opinions until we decide to develop a property. Therefore, while we have attempted to acquire satisfactory title to our undeveloped properties, some titles may be defective.

Risks Relating to Our Common Stock and Our Indebtedness

We may be unable to generate sufficient cash to service all of our debt and meet our other ongoing liquidity needs and may be forced to take other actions to satisfy our obligations, which may be unsuccessful.

Our ability to make scheduled payments or to refinance our debt obligations and to fund our planned capital expenditures and other ongoing liquidity needs depends on our financial and operating performance, which is subject to prevailing economic and competitive conditions and to certain financial, business and other factors beyond our control. There can be no assurance that our business will generate sufficient cash flow from operations or that borrowings will be available to us to pay the principal, premium, if any, and interest on our debt or to fund our other liquidity needs. Throughout 2023, we were in a negative cash position, which means the cash and cash equivalents disclosed on our consolidated balance sheets, including as at December 31, 2023, was the result of borrowings under our revolving credit facility. Absent price increases for the metals we produce or financing transactions such as asset sales or equity offerings, including under our "at-the-market" (ATM) equity program, it is likely that we will be in a negative cash position throughout 2024, and we will be dependent on borrowings under our revolving credit facility for our cash and cash equivalents balance on our consolidated balance sheets. See the below risk factor "*The terms of our debt impose restrictions on our operations.*" We may need to refinance all or a portion of our debt on or before maturity. We may be unable to refinance any of our debt on commercially reasonable terms or at all.

In addition, we conduct substantially all of our operations through our subsidiaries, certain of which are not guarantors of our debt. Accordingly, repayment of our debt is dependent on the generation of cash flow by our subsidiaries and their ability to make such cash available to us, by dividend, debt repayment or otherwise. Unless they are guarantors of our debt, our subsidiaries do not have any obligation to pay amounts due on our debt or to make funds available for that purpose. Our subsidiaries may not be able to, or may not be permitted to, make distributions to enable us to make payments in respect of our debt. Each subsidiary is a distinct legal entity and, under certain circumstances, legal and contractual restrictions may limit our ability to obtain cash from our subsidiaries. While the credit agreement governing our revolving credit facility and the indenture governing our Senior Notes limit the ability of our subsidiaries to incur consensual restrictions on their ability to pay dividends or make other intercompany payments to us, these limitations are subject to qualifications and exceptions. In the event that we do not receive distributions from our subsidiaries, we may be unable to make required principal and interest payments on our debt. If our cash flows and capital resources are insufficient to fund our debt service obligations, we may be forced to reduce or delay investments and capital expenditures or to sell assets, seek additional capital or restructure or refinance our debt. Our ability to restructure or refinance our debt will depend on the condition of the capital markets and our financial condition at such time. Any refinancing of our debt could be at higher interest rates and may require us to comply with more onerous covenants, which could further restrict our business operations. The terms of existing or future debt instruments and the indenture governing our Senior Notes may restrict us from adopting some of these alternatives. Further, these alternative measures may not be successful and may not permit us to meet our scheduled debt service obligations. In addition, any failure to make payments of interest and principal on our outstanding debt on a timely basis would likely result in a reduction of our credit rating, which could harm our ability to incur additional debt.

The price of our stock has a history of volatility and could decline in the future.

Shares of our common and outstanding preferred stock are listed on the New York Stock Exchange ("NYSE"). The market price for our stock has been volatile, often based on:

- changes in metals prices, particularly silver and gold;
- our results of operations and financial condition as reflected in our public news releases or periodic filings with the SEC;
- fluctuating proven and probable reserves;
- factors unrelated to our financial performance or future prospects, such as global economic developments, market perceptions of the attractiveness of
 particular industries, or the reliability of metals markets;
- market prices of our publicly traded debt;
- political and regulatory risk;
- the success of our exploration, pre-development, and capital programs;
- ability to meet production estimates;
- environmental, safety and legal risk;
- ability to defend against cyber security attacks;
- the extent and nature of analytical coverage concerning our business; and
- the trading volume and general market interest in our securities.

The market price of our stock at any given point in time may not accurately reflect our value, and may prevent stockholders from realizing a profit on, or recovering, their investment.

We may not be able to pay common or preferred stock dividends in the future.

Since January 2010, we have paid all regular quarterly dividends on our Series B preferred stock. The annual dividend payable on the Series B preferred stock is currently \$0.6 million. Prior to 2010, there were numerous occasions when we did not declare dividends on the Series B Preferred Stock, but instead deferred them. We cannot assure you that we will continue to pay preferred stock dividends in the future.

Our board of directors adopted a common stock dividend policy that has two components: (1) a dividend that links the amount of dividends on our common stock to our average quarterly realized silver price in the preceding quarter, and (2) a minimum annual dividend of \$0.015 per share of common stock, in each case payable quarterly, when declared. See *Note 12* of *Notes to Consolidated Financial Statements* for more information on our common stock dividend policy.

From the fourth quarter of 2011 through and including the fourth quarter of 2023, our board of directors has declared a common stock dividend under the policy described above. The declaration and payment of common stock dividends, whether pursuant to the policy or in addition thereto, is at the sole discretion of our board of directors, and we cannot assure you that we will continue to declare and pay common stock dividends in the future. In addition, the indenture governing our Senior Notes limits our ability to pay dividends.

Our existing stockholders are effectively subordinated to the holders of our Senior Notes.

In the event of our liquidation or dissolution, stockholders' entitlement to share ratably in any distribution of our assets would be subordinated to the holders of our Senior Notes. Any rights that a stockholder may have in the event of bankruptcy, liquidation or a reorganization of us or any of our subsidiaries, and any consequent rights of stockholders to realize on the proceeds from the sale of any of our or our subsidiaries' assets, will be effectively subordinated to the claims of the holders of our Senior Notes.

The issuance of additional shares of our preferred or common stock in the future could adversely affect holders of common stock.

The market price of our common stock may be influenced by any preferred or common stock we may issue. Our board of directors is authorized to issue additional classes or series of preferred stock without any action on the part of our stockholders. This includes the power to set the terms of any such classes or series of preferred stock that may be issued, including voting rights, dividend rights and preferences over common stock with respect to dividends or upon the liquidation, dissolution or winding up of the business and other terms. If we issue preferred stock in the future that has preference over our common stock with respect to the payment of dividends or upon liquidation, dissolution or winding up, or if we issue preferred stock with voting rights that dilute the voting power of our common stock, the rights of holders of the common stock or the market price of the common stock could be adversely affected.

The provisions in our certificate of incorporation, our by-laws and Delaware law could delay or deter tender offers or takeover attempts.

Certain provisions in our restated certificate of incorporation, our by-laws and Delaware law could make it more difficult for a third party to acquire control of us, even if that transaction could be beneficial to stockholders. These impediments include:

- the classification of our board of directors into three classes serving staggered three-year terms, which makes it more difficult to quickly replace board members;
- the ability of our board of directors to issue shares of preferred stock with rights as it deems appropriate without stockholder approval;
- a provision that special meetings of our board of directors may be called only by our chief executive officer or a majority of our board of directors;
- a provision that special meetings of stockholders may only be called pursuant to a resolution approved by a majority of our board of directors;
- a prohibition against action by written consent of our stockholders;
- a provision that our board members may only be removed for cause and by an affirmative vote of at least 80% of the outstanding voting stock;
- a provision that our stockholders comply with advance-notice provisions to bring director nominations or other matters before meetings of our stockholders;
- a prohibition against certain business combinations with an acquirer of 15% or more of our common stock for three years after such acquisition unless the stock acquisition or the business combination is approved by our board prior to the acquisition of the 15% interest, or after such acquisition our board and the holders of two-thirds of the other common stock approve the business combination; and
- a prohibition against our entering into certain business combinations with interested stockholders without the affirmative vote of the holders of at least 80% of the voting power of the then outstanding shares of voting stock.

In addition, amendment of most of the provisions described above requires approval of at least 80% of the outstanding voting stock.

The terms of our debt impose restrictions on our operations.

The indenture governing our Senior Notes includes several significant covenants. These covenants could adversely affect us by limiting our ability to plan for or react to market conditions or to meet our capital needs. These covenants, among other things:

- make it more difficult for us to satisfy our obligations with respect to the Senior Notes and our other debt;
- limit our ability to obtain additional financing to fund future working capital, capital expenditures, acquisitions or other general corporate requirements, or require us to make divestiture;
- require a substantial portion of our cash flows to be dedicated to debt service payments instead of other purposes, thereby reducing the amount of cash flows available for working capital, capital expenditures, acquisitions and other general corporate purposes;
- increase our vulnerability to general adverse economic and industry conditions;
- limit our flexibility in planning for and reacting to changes in the industry in which we compete;
- place us at a disadvantage compared to other, less leveraged competitors; and
- increase our cost of borrowing additional funds.

These restrictions may affect our ability to grow in accordance with our strategy. Further, our financial results, our substantial indebtedness and our credit ratings could adversely affect the availability and terms of any financing.

In addition, our revolving credit facility requires us to comply with various covenants, including certain financial ratios, that restrict management's discretion to operate our business in certain circumstances. For example, these restrictions include limitations that could affect our ability to incur additional indebtedness, place liens or mortgages on our assets, sell assets or release collateral. These restrictions could make it more difficult for us to obtain additional financing or take advantage of business opportunities. Furthermore, a breach of any of these covenants could result in an event of default under the agreement governing our revolving credit facility that, if not cured or waived, could give the holders of the defaulted debt the right to terminate commitments to lend and cause all amounts outstanding with respect to the debt to be due and payable immediately. Acceleration of any of our debt could result in cross-defaults under our other debt instruments, including the indenture governing our Senior Notes, as well as certain forward sales contracts which may be outstanding from time to time. Our assets and cash flow may be insufficient to repay borrowings fully under all of our outstanding debt instruments if any of our debt instruments are accelerated upon an event of default, which could force us into bankruptcy or liquidation. In such an event, we may be unable to repay our debt obligations. In addition, in some instances, this would create an event of default under the indenture governing our Senior Notes.

Our variable rate indebtedness subjects us to interest rate risk, which could cause our indebtedness service obligations to increase significantly.

Borrowings under our credit facility are at variable rates of interest and expose us to interest rate risk. If interest rates increase, our debt service obligations on the variable rate indebtedness would increase even though the amount borrowed remained the same, and our net income and cash flows, including cash available for servicing our indebtedness, would correspondingly decrease. Assuming all revolving loans currently available to us were fully drawn, each one percentage point change in interest rates would result in a \$2.2 million change in annual cash interest expense on our credit facility.

General Risk Factors

Global financial events or developments impacting major industrial or developing countries may have an impact on our business and financial condition in ways that we currently cannot predict.

The COVID-19 pandemic and 2008 credit crisis and related turmoil in the global financial system and ensuing recession had an impact on our business and financial position, and similar events in the future could also impact us. The re-emergence of a financial crisis or recession or reduced economic activity in the United States, China, India and other industrialized or developing countries, or disruption of key sectors of the economy such as oil and gas, may have a significant effect on our results of operations or limit our ability to raise capital through credit and equity markets. The prices of the metals that we produce are affected by a number of factors, and it is unknown how these factors may be impacted by a global financial event or developments impacting major industrial or developing countries.

Tariffs, other potential changes to tariff and import/export regulations, and ongoing trade disputes between the United States and other jurisdictions may have a negative effect on global economic conditions and our business, financial results and financial condition.

In 2018, the United States imposed and enacted tariffs on certain items. Since their enactment, there have been ongoing discussions and activities regarding changes to other U.S. trade policies and treaties. In response, a number of markets, including China, into which we have in the past and may in the future sell our products, have implemented tariffs on U.S. imports, or are threatening to impose tariffs on U.S. imports or to take other measures in response to these U.S. actions. These developments may have a material adverse effect on global economic conditions and the stability of global financial markets, and they may significantly reduce global trade and, in particular, trade between China and the United States. Any of these factors could depress economic activity, restrict our access to customers and have a material adverse effect on our business, financial condition and results of operations. In addition, any actions by foreign markets to implement further trade policy changes, including limiting foreign investment or trade, increasing regulatory scrutiny or taking other actions which impact U.S. companies' ability to obtain necessary licenses or approvals could negatively impact our business.

In September 2018, in response to tariffs on Chinese goods implemented by the United States, China imposed a 10% tariff on lead concentrates and a 20% tariff on silver concentrates, which we produce and ship to China from time to time. However, tariff exemptions were granted to a number of smelters in China in 2023, 2022 and 2021, and we sold silver concentrates to China representing approximately 15%, 19%, and 6% of our total revenues for 2023, 2022 and 2021, respectively, which were not subject to tariffs due to the exemptions. While to date the direct impact of tariffs has been immaterial on our sales and treatment charges outside of China, and there can be no assurance that the tariff exemptions will continue.

These tariffs are relatively recent and are subject to a number of uncertainties as they are implemented, including future adjustments and changes in the countries excluded from such tariffs. The ultimate reaction of other countries, and businesses in those countries, and the impact of these tariffs or other actions on the United States, China, the global economy and our business, financial condition and results of operations, cannot be predicted at this time, nor can we predict the impact of any other developments with respect to global trade.

Our profitability could be affected by inflation, including the prices of other commodities.

Our profitability is sensitive to cost inflation, including, but not limited to the costs of commodities such as fuel (in particular as used at Greens Creek to generate electricity when hydropower is unavailable), steel, and cement, as well as other consumables and labor. Recently the prices we pay for commodities and consumables have increased which has increased the operating costs at our mine sites. In addition, labor costs have increased, including under the terms of our new labor agreement with the union at the Lucky Friday mine. Increased or persistent inflation or other upward pressures could continue to increase our costs, and could have a material impact on our results of operations.

Our business depends on availability of skilled miners and good relations with employees.

We are dependent upon the ability and experience of our executive officers, managers, employees, contractors and their employees, and other personnel, and we cannot assure you that we will be able to retain such employees or contractors. We compete with other companies both in and outside the mining industry in recruiting and retaining qualified employees and contractors knowledgeable about the mining business. From time to time, we have encountered, and may in the future encounter, difficulty recruiting skilled mining personnel at acceptable wage and benefit levels in a competitive labor market, and may be required to utilize contractors, which can be more costly. Temporary or extended lay-offs due to mine closures may exacerbate such issues and result in vacancies or the need to hire less skilled or efficient employees or contractors. The loss of skilled employees or contractors or our inability to attract and retain additional highly skilled employees and contractors could have an adverse effect on our business and future operations.

We or our contractors may experience labor disputes, work stoppages or other disruptions in production that could adversely affect our business and results of operations. The Lucky Friday mine is our only operation where some of our employees are subject to a collective bargaining agreement, and the unionized employees were on strike from March 13, 2017 until January 7, 2020, when the union ratified a new collective bargaining agreement ("CBA"), which expired on January 6, 2023 (a new six year CBA was approved by the union in January 2023). The strike significantly impacted production at the Lucky Friday and caused significant costs and expenses during each year of the strike. Any future strikes or other labor or related disruptions could adversely affect our financial condition and results of operations.

Our information technology systems may be vulnerable to disruption which could place our systems at risk from data loss, operational failure, or compromise of confidential information.

We rely on various information technology systems and on third party developers and contractors in connection with operations, including production, equipment operation and financial support systems. While we regularly monitor the security of our systems, they remain vulnerable to disruption, damage or failure from a variety of sources, including errors by employees or contractors, computer viruses, cyber-attacks including phishing, ransomware and similar malware, misappropriation of data by outside parties, and various other threats. In particular, we make large use of cloud systems which could be vulnerable to external intrusions. Techniques used to obtain unauthorized access to or sabotage our systems are under continuous and rapid evolution, and we may be unable to detect efforts to disrupt our data and systems in advance. Breaches and unauthorized access carry the potential to cause losses of assets or production, operational delays, equipment failure that could cause other risks to be realized, inaccurate recordkeeping, or disclosure of confidential information, any of which could result in financial losses and regulatory or legal exposure, and could have a material adverse effect on our cash flows, financial condition or results of operations.

We could also be adversely affected by system or network disruptions due to disasters or if new or upgraded information technology systems are defective, not installed properly or not properly integrated into our operations. Disaster recovery failure or system modification failures could have a material adverse effect on our business, financial position and results of operations and could, if not successfully implemented, adversely impact the effectiveness of our internal controls over financial reporting.

Competition from other mining companies may harm our business.

We compete with other mining companies, some of which have greater financial resources than we do or other advantages, in various areas which include:

- attracting and retaining key executives, skilled labor, and other employees;
- for the services of other skilled personnel and contractors and their specialized equipment, components and supplies, such as drill rigs, necessary for exploration and development;
- · for contractors that perform mining and other activities and milling facilities which we lease or toll mill through; and
- for rights to mine properties.

Additional issuances of equity securities by us would dilute the ownership of our existing stockholders and could reduce our earnings per share.

We may issue securities in the future in connection with raising capital, acquisitions, strategic transactions or for other purposes. To the extent we issue any additional equity securities (or securities convertible into equity), the ownership of our existing stockholders would be diluted and our earnings per share could be reduced.

If a large number of shares of our common stock are sold in the public market, the sales could reduce the trading price of our common stock and impede our ability to raise future capital.

We cannot predict what effect, if any, future issuances by us of our common stock or other equity will have on the market price of our common stock. Any shares that we may issue may not have any resale restrictions, and therefore could be immediately sold by the holders. The market price of our common stock could decline if certain large holders of our common stock, or recipients of our common stock, sell all or a significant portion of their shares of common stock or are perceived by the market as intending to sell these shares other than in an orderly manner. In addition, these sales could also impair our ability to raise capital through the sale of additional common stock in the capital markets.

Any downgrade in the credit ratings assigned to us or our debt securities could increase future borrowing costs, adversely affect the availability of new financing and may result in increased collateral requirements under our existing surety bond portfolio.

As of February 9, 2024, our Senior Notes were rated "BB-" by Standard & Poor's and "B2" by Moody's Investors Service. We cannot assure you that any rating currently assigned by Standard & Poor's or Moody's to us or our debt securities (including the Senior Notes) will remain unchanged for any given period of time or that a rating will not be lowered if, in that rating agency's judgment, future circumstances relating to the basis of the rating so warrant. If we are unable to maintain our outstanding debt and financial ratios at levels acceptable to the credit rating agencies, or should our business prospects or financial results deteriorate, including as a result of declines in silver and gold prices or other factors beyond our control, our ratings could be downgraded by the rating agencies.

Downgrading the credit rating of our debt securities or placing us on a watch list for possible future downgrading would likely adversely impact us, including our ability to obtain financing on favorable terms, if at all, increase borrowing costs, result in increased collateral requirements under our surety bond portfolio, and have an adverse effect on the market price of our securities, including our Senior Notes.

Damage to our reputation may result in decreased investor confidence, challenges in maintaining positive community relations and can pose additional obstacles to our ability to develop our projects, which may result in a material adverse impact on our business, financial position, results of operations and growth prospects.

Damage to our reputation can be the result of the actual or perceived occurrence of a variety of events and circumstances, and could result in negative publicity (for example, with respect to handling of environmental, safety and security matters, dealings with local community organizations or individuals, community commitments, handling of cultural sites or resources, and various other matters).

We have also provided greater transparency on environmental, social and governance performance in response to stakeholder engagement and requests in recent years, and provide supplemental disclosures in our annual Sustainability Report and other sustainability reports on our website in connection with stakeholder concerns and issues. Such increased transparency may result in greater scrutiny and impact how we are perceived.

The growing use of social media to generate, publish and discuss community news and issues and to connect with others has made it significantly easier, among other things, for individuals and groups to share their opinions of us and our activities, whether true or not. We do not have direct control over how we are perceived by others and any resulting loss of reputation could have a material adverse effect on our business, financial position and results of operations.

Item 1B. Unresolved Staff Comments

None.

Item 1C. Cybersecurity

Risk Management and Strategy

Hecla's cybersecurity program uses multiple security measures to protect our assets, designed so that if one line of defense is compromised, additional layers exist as a backup in an effort to ensure that threats are stopped along the way. This program actively identifies internal and external threats and protects computer systems from attack, detects known threats and suspicious activity within the network, and supports response and recovery should a cyber incident occur. As part of this program, we engage third party resources to augment monitoring capabilities and review and assess the security program and advise on improvements. Additionally, we conduct a National Institute of Security and Technology (NIST) self-assessment annually to determine overall security program health. Approximately 10% of our corporate information systems technology ("IT") budget is devoted to security programming, training, and management. Acceptable IT use policies are in place and communicated to employees and contract staff, and periodic training takes place to educate employees on the importance of cybersecurity and steps to be taken to avoid incidents.

Any material cybersecurity incident that we become aware of follows our standard guidelines for crisis communications and response, engaging personnel, management, and the board of directors as appropriate. In cases where the materiality of a cybersecurity incident is not immediately apparent, our Vice President, Information Technology ("VP, IT") would report the incident to his supervisor, our Senior Vice President - Chief Administrative Officer ("CAO"), and to our General Counsel. This is consistent with our overall risk management system which relies, in part, on a "chain of command" reporting system in which supervisors monitor their respective departments and constantly seek feedback from employees or vendors in their department for potentially material events. This system is designed to ensure that information reaches the appropriate levels of the Company, including the Board of Directors. In cases where a question of materiality, public disclosure or legal exposure is in question, our CAO or General Counsel will direct the flow of information to other members of management or the Board as appropriate. Additionally, we have standing weekly senior staff meetings where the President and CEO along with each vice president and occasionally other employees meet for two hours to discuss issues facing the Company. We expect that any cybersecurity incident that our VP, IT believes may be material to the Company will be discussed at these meetings and next steps considered.

When a cybersecurity incident is detected, we conduct an impact assessment, determine materiality, and take appropriate actions as described above. This process is also followed when notified that a software/services supplier has a cybersecurity incident.
There were no material cyber security incidents discovered in 2023. See Item 1A. Risk Factors - We have had losses that could reoccur in the future; Mining accidents or other adverse events at an operation could decrease our anticipated production or otherwise adversely affect our operations; Our operations may be adversely affected by risks and hazards associated with the mining industry that may not be fully covered by insurance; The price of our stock has a history of volatility and could decline in the future; and Our information technology systems may be vulnerable to disruption which could place our systems at risk from data loss, operational failure, or compromise of confidential information.

Board and Management Oversight

Through the risk management processes identified above, we are confident that any material cybersecurity threats will be brought to the attention to the Board of Directors, either directly or through the Audit Committee which is governed by its charter, including the affirmative responsibility to "periodically review risk assessments from management with respect to cybersecurity, including assessments of the overall threat landscape and related strategies and investments." One way in which the Audit Committee fulfills that requirement is by receiving regular reports from management on not only known cybersecurity threats or incidents (including related risk assessments), but the landscape more generally, including with respect to known threats, technological advancements, best practices and current events.

In addition to the risk management policies described above, our management regularly reviews cyber security planning, including development and management of the program, budgeting, and participation in the incident response plan. The management team involved in this review includes our CEO, CAO, Chief Financial Officer ("CFO"), General Counsel, and the VP, IT. These reviews can also provide topics for discussion at Board and/or Audit Committee meetings.

Our VP, IT has a degree in Management Information Systems and over 35 years of experience. The fully staffed department includes resources dedicated to cybersecurity who monitors our threat detection and response tools for any attempted or successful hacks or other incursions into our IT environment, both externally and internally. These are reviewed and mitigated where appropriate, and escalated if necessary, via the processes noted above.

Item 2. Properties

Note on SEC Mining Disclosure Rules

Information concerning our mining properties in this Annual Report on Form 10-K has been prepared in accordance with the requirements of subpart 1300 of Regulation S-K. Subpart 1300 requires us to disclose our mineral resources, in addition to our mineral reserves, as of the end of our most recently completed fiscal year both in the aggregate and for each of our individually material mining properties.

You are cautioned that mineral resources do not have demonstrated economic value. Mineral resources are subject to further exploration and development, are subject to additional risks, and no assurance can be given that they will eventually convert to future reserves. Inferred Resources, in particular, have a great amount of uncertainty as to their existence and their economic and legal feasibility. Investors are cautioned not to assume that any part or all of the Inferred Resource exists or is economically or legally mineable. See *Item 1A, Risk Factors*.

Summary

The map below shows the locations of our operations and our exploration projects, as well as our corporate offices located in Coeur d'Alene, Idaho; Vancouver, British Columbia; Juneau, Alaska; Wallace, Idaho; Val d'Or, Quebec; Durango, Mexico and Whitehorse, Yukon.



The following table summarizes our aggregate metal quantities produced and sold for the last three years:

		Year Ended December 31,					
		2023	2022	2021			
Silver -	Ounces produced	14,342,863	14,182,987	12,887,240			
	Payable ounces sold	12,955,006	12,311,595	11,633,802			
Gold -	Ounces produced	151,259	175,807	201,327			
	Payable ounces sold	141,602	165,818	201,610			
Lead -	Tons produced	40,347	48,713	43,010			
	Payable tons sold	35,429	41,423	36,707			
Zinc -	Tons produced	60,579	64,748	63,617			
	Payable tons sold	43,050	43,658	43,626			

A summary overview of our mining operations and exploration and pre-development projects is shown in the following table:

Property	<u>Locat</u> Country	tion State/Province	Ownershin	Claims	Permit Conditions	Stage	Mine Type	Commodity	Mineralization Style
Greens Creek	United States	Alaska	100.0 %	440 unpatented lode claims, 58 unpatented millsite claims (8,072 acres), 21 patented lode claims and one patented millsite claim (328 acres); Land Exchange Properties (7,301 acres)	Private or USFS administered land, all required permits for production in place	Production	Underground	Ag, Au, Pb, Zn	Massive Sulfide
Lucky Friday	United States	Idaho	100.0 %	43 patented lode and millsite claims (710 acres); 53 unpatented lode claims (535 acres)	Private or USFS administered land, all required permits for production in place	Production	Underground	Ag, Pb, Zn	Vein
Casa Berardi	Canada	Quebec	100.0 %	394 claims; 48,704 acres (19,710 ha)	All required permits for production in place or in process	Production	Underground/Open Pit	Au	Vein/Shear Zone
Keno Hill	Canada	Yukon	100.0 %	703 quartz mining leases, 867 quartz mining claims, 2 Crown Grants; (238.12 km ² /23,812 ha)	All required permits for production in place or in process	Development	Underground	Ag, Au, Pb, Zn	Vein/Fault Zone
San Sebastian	Mexico	Durango	100.0 %	31 mining concessions; 99,643 acres (40,324 ha)	All required permits for exploration in place	Exploration	Underground/Open Pit	Ag, Au, Cu, Pb, Zn	Vein
Fire Creek	United States	Nevada	100.0 %	890 unpatented lode claims (18,400 acres); leases (409 acres); private land (3,208 acres)	BLM administered land, Plan of Operations and other required State permits in place	Exploration	Underground	Au, Ag	Vein
Hollister	United States	Nevada	100.0 %	1,005 unpatented lode claims, 11 unpatented mill site claims; 17,960 acres total	BLM administered land, Plan of Operations and other required State permits in place	Exploration	Underground	Au, Ag	Vein
Midas	United States	Nevada	100.0 %	1,489 unpatented lode claims (27,583 acres); private land (2,417 acres)	BLM administered land, Plan of Operations and other required State permits in place	Exploration	Underground	Au, Ag	Vein
Heva - Hosco	Canada	Quebec	100.0 %	102 claims; 9,506 acres (3,857 ha)	Annual intervention permits for exploration in place along with authorization for road building	Exploration	Underground/Open Pit	Au	Vein/Shear Zone
San Juan Silver	United States	Colorado	100.0 %	131 patented lode or millsite claims, 704 unpatented lode claims; 13,645 total acres	7 Notice-of-Intent areas for Exploration, Mining Plan of Operations (USFS); 112-d2 mining permit (CO DRMS)	Exploration	Underground	Ag, Pb, Zn	Vein
Star	United States	Idaho	100.0 %	174 patented lode and millsite claims; 2,376 total acres	Private land, required permits in place for exploration	Exploration	Underground	Ag, Zn, Pb	Vein
Monte Cristo	United States	Nevada	100.0 %	344 unpatented lode claims (6,880 acres)	BLM administered land, Notice of Intent required	Exploration	Underground/Open Pit	Au, Ag	Vein
Rock Creek	United States	Montana	100.0 %	99 patented lode claims, 463 unpatented lode claims, 5 tunnel sites: 1,809 total acres; Private land: 754 acres	Private or USFS administered land. Some State permits in- place; no Federal permits.	Exploration	Underground	Ag, Cu	Sediment Hosted - Stratabound
Libby Exploration	United States	Montana	100.0 %	2 patented lode claims, 36.84 acres (22.33 in wilderness, 14.51 outside wilderness)	Private or USFS administered land. Some State permits in- place; no Federal permits.	Exploration	Underground	Ag, Cu	Sediment Hosted - Stratabound
Republic	United States	Washington	100.0 %	114 patented claims and private land; 2,095 acres surface rights, 3,177 acres of mineral rights	Private or BLM administered land	Exploration	Underground/Open Pit	Au, Ag	Vein
Silver Valley	United States	Idaho	100.0 %	Various exploration properties and claim holdings	Private or USFS administered land	Exploration	Underground	Ag, Zn, Pb	Vein
Aurora	United States	Nevada	100.0 %	506 unpatented lode claims, 92 patented lode claims, 25 private parcels; 9,928 total acres	Private or USFS administered land, permit work in progress for USFS lands	Exploration	Underground/Open Pit	Au, Ag	Vein
Kinskuch	Canada	British Columbia	100.0 %	156 claims; 146,780 acres	Multi-use area-based permit with expiry 31 March 2024	Exploration	Underground/Open Pit	Au, Ag, Cu, Pb, Zn	Vein, Massive Sulfide, Porphyry

Opinaca/Wildcat	Canada	Quebec	50% / 100%	Opinaca: 248 claims (50%; 32,064 acres (12,976 ha)); Wildcat: 235 claims (100%; 30,528 acres (12,354 ha))	Intervention permits for exploration updated every year	Exploration	Underground	Au	Vein/Shear Zone
Rackla - Tiger	Canada	Yukon	100.0 %	3,315 quartz mineral claims; 164,547 acres (66,590 ha)	Class 3 Quartz Mining Land Use Approval LQ00531; approved by Yukon Environmental and Socio-economic Assessment Board	Exploration	Open Pit/Undergournd	Au	Carbonate hosted/replacement - reduced intrusion related
Rackla - Osiris	Canada	Yukon	100.0%	1,478 quartz mineral claims; 74,576 acres (30,180 ha)	Class 4 Quartz Mining Land Use Approval LQ00444; approved by Yukon Environmental and Socio-economic Assessment Board	Exploration	Open Pit/Undergournd	Au	Carbonate hosted, dissemintated (Carlin- style)

Hecla is the operator at all mines and exploration properties. Mineral processing plants and related facilities are part of the infrastructure at each operating mine.

The following table summarizes the in-situ mineral reserves for all properties as of December 31, 2023:

Asset	Tons (000)	Silver (oz/ton)	Gold (oz/ton)	Lead %	Zinc %	Silver (000 oz)	Gold (000 oz)	Lead Tons	Zinc Tons
Proven Reserves: ⁽¹⁾									
Greens Creek ^(2,3)	9	11.3	0.08	3.5	8.4	100	1	310	740
Lucky Friday ^(2,4)	5,299	12.8	_	8.0	3.8	67,595	_	424, 080	201,280
Casa Berardi Underground ^(2,5)	55		0.12		_		7		
Casa Berardi Open Pit ^(2,5)	4,240		0.09		_		379		_
Keno Hill ^(2,6)									
Total Proven	9,603					67,695	387	424, 390	202,020
Probable Reserves: ⁽⁷⁾									
Greens Creek ^(2,3)	10.009	10.5	0.09	2.5	6.6	105,12 2	880	250, 270	657,990
Lucky Friday ^(2,4)	966	10.8	_	7.1	2.9	10.411		68,3 20	28.100
Casa Berardi Underground ^(2,5)	175	_	0.15	_			26		
Casa Berardi Open Pit ^(2,5)	11,384		0.08				859		
Keno Hill ^(2,6)	2 069	26.6	0.01	2.8	2.5	55.068	13	58,1 70	52 380
Total Probable	24,603	20.0	0.01	2.0	2.3	170,60	1,77	376, 760	738,470
Proven and Probable Reserves: ^(1,7)									
Greens Creek ^(2,3)	10,018	10.5	0.09	2.5	6.6	105,22 2	881	250, — 580	— 658,730
Lucky Friday ^(2,4)	6,265	12.5	_	7.9	3.7	78,006		492, — 400	— 229,380
Casa Berardi Underground ^(2,5)	230		0.14				33		
Casa Berardi Open Pit ^(2,5)	15,624	_	0.08	_	_	_	1,23 8		_
Keno Hill ^(2,6)	2,069	26.6	0.01	2.8	2.5	55,068	13	58,1 70	52,380
Total Proven and Probable	34,206					238,29 6	2,16 5	801, 150	940,490

(1) The term "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. The term "proven reserves" means the economically mineable part of a measured mineral resource and can only result from conversion of a measured mineral resource. See footnotes 7 and 8 below.

(2) Mineral reserves are based on the following prices unless otherwise stated: \$17.00/oz for silver, \$1,650/oz for gold, \$0.90/lb for lead and \$1.15/lb for zinc. Underground mineral reserves at Casa Berardi were based on a gold price of \$1,850/oz. All Mineral Reserves are reported in-situ with estimates of mining dilution and mining loss.

(3) Due to multiple ore metals, and complex combinations of ore types, metal ratios and metallurgical performances at Greens Creek, the cutoff grade is expressed in terms of net smelter return ("NSR"), rather than metal grade. The reserve NSR cut-off values for Greens Creek are \$230/ton for all zones except the Gallagher Zone at \$235/ton; metallurgical recoveries (actual 2023): 80% for silver, 74% for gold, 82% for lead, and 89% for zinc.

(4) Due to multiple ore metals, and complex combinations of ore types, metal ratios and metallurgical performances at Lucky Friday, the cutoff grade is expressed in terms of NSR, rather than metal grade. The reserve NSR cut-off values for Lucky Friday are \$241.34 for the 30 Vein and \$268.67 for the Intermediate Veins; metallurgical recoveries (actual 2023): 96% for silver, 95% for lead, and 85% for zinc.

- The average reserve cut-off grades at Casa Berardi are 0.11 oz/ton gold underground and 0.03 oz/ton gold for open pit. Metallurgical recovery (actual 2023): 85% for (5) gold; US\$/CAN\$ exchange rate: 1:1.3.
- Due to multiple ore metals, and complex combinations of ore types, metal ratios and metallurgical performances at Keno Hill, the cutoff grade is expressed in terms of (6) NSR, rather than metal grade. The reserve NSR cut-off value at Keno Hill is \$244.24/ton (CAN\$350/tonne), Metallurgical recovery: (actual 2023) 96% for silver, 93% for lead, 81% for zinc; US\$/CAN\$ exchange rate: 1:1.3.
- (7) The term "probable reserves" means the economically mineable part of an indicated and, in some cases, a measured mineral resource. See footnotes 8 and 9 below.

The following table summarizes the in-situ mineral resources ⁽⁸⁾ for all properties, exclusive of mineral reserves, as of December 31, 2023:

Asset	Tons (000)	Silver (oz/ton)	Gold (oz/ton)	Lead %	Zinc %	Copper %	Silver (000 oz)	Gold (000 oz)	Lead Tons	Zinc Tons	Copper Tons
Measured Resources: (9)											
Greens Creek (12,13)	_	-	_	-	_	_	-	_	_	_	_
Lucky Friday (12,14)	5,326	8.6	_	5.6	2.7	_	45,785	_	299,360	146,420	_
Casa Berardi Underground (12,15)	1,099	_	0.21	_	_	_	_	234	_	_	_
Casa Berardi Open Pit ^(12,15)	67	—	0.03	_	_	_	_	2	_	_	_
Keno Hill (12,16)	_	_	_	_	_	_	_	_	_	_	_
San Sebastian - Oxide (17)	_	—	_	_	_	_	_	_	_	_	_
San Sebastian - Sulfide (17)	_	_	_	_	_	_	_	_	_	_	_
Fire Creek (18,19)	_	—	_	_	_	_	_	_	_	_	_
Hollister (18,20)	18	4.9	0.59	_	_	_	87	10	_	_	_
Midas (18,21)	2	7.6	0.68	_	_	_	14	1	_	_	_
Heva ⁽²²⁾	_	_	_	_	_	_	_	_	_	_	_
Hosco ⁽²²⁾	_	—	_	_	_	_	_	_	_	_	_
Star ^(12,23)	_	_	_	_	_	_	_	_	_	_	_
Tiger Underground (29)	881	_	0.09	_	_	_	_	75	_	_	_
Tiger Open Pit (29)	32	_	0.06	_	_	_	_	2	_	_	_
Osiris Underground (30)	_	_	_	_	_	_	_	_	_	_	_
Osiris Open Pit (30)	_	_	_	_	_	_	_	_	_	_	_
Total Measured	7,425						45,886	324	299,360	146,420	_

	Tons (000)	Silver (oz/ton)	Gold (oz/ton)	Lead%	Zinc%	Conner%	Silver (000 oz)	Gold (000 02)	Lead Tons	Zinc Tons	Copper Tops
Indicated Resources: (10)		(00.000)	(01100)								
Greens Creek (12,13)	8,040	13.9	0.10	3.0	8.0	_	111,526	800	239,250	643,950	_
Lucky Friday (12,14)	1,011	8.0	_	6.0	2.7	_	8,136	_	60,200	26,910	_
Casa Berardi Underground (12,15)	3,154	_	0.19	_	_	_	_	603	_	_	_
Casa Berardi Open Pit ^(12,15)	205	—	0.03	—	—	—	_	5	_	—	_
Keno Hill (12,16)	4,504	7.5	0.006	0.9	3.5	_	33,926	26	41,120	157,350	_
San Sebastian - Oxide (17)	1,453	6.5	0.09	—	—	—	9,430	135	_	—	_
San Sebastian - Sulfide (17)	1,187	5.5	0.01	1.9	2.9	1.2	6,579	16	22,420	34,100	14,650
Fire Creek (18,19)	114	1.0	0.46	—	—	—	113	53	_	—	_
Hollister ^(18,20)	70	1.9	0.58	—	_	_	130	40	_	_	_
Midas (18,21)	76	5.7	0.42	—	—	—	430	32	_	—	_
Heva ⁽²²⁾	1,266		0.06	—	_	_	_	76	_	_	_
Hosco ⁽²²⁾	29,287	—	0.04	—	—	—	_	1,202	_	—	_
Star ^(12,23)	1,068	3.0	_	6.4	7.7	_	3,177	_	67,970	82,040	_
Tiger Underground (29)	3,116	—	0.10	—	—	—	_	311	_	—	_
Tiger Open Pit (29)	960	_	0.08	—	—	_	—	76	—	—	_
Osiris Underground (30)	5,135	_	0.12	—	—	_	—	604	—	—	—
Osiris Open Pit (30)	960	_	0.13	_	_	_	_	128			
Total Indicated	61,606						173,447	4,107	430,960	944,350	14,650

	Tons (000)	Silver (oz/ton)	Gold (oz/ton)	Lead %	Zinc %	Copper %	Silver (000 oz)	Gold (000 oz)	Lead Tons	Zinc Tons	Copper Tons
Measured and Indicated Resources:											
Greens Creek (12,13)	8,040	13.9	0.10	3.0	8.0	_	111,526	800	239,250	643,950	_
Lucky Friday (12,14)	6,337	8.3	_	5.8	2.7	_	53,921	_	359,560	173,330	—
Casa Berardi Underground (12,15)	4,253	_	0.20	_	_		_	837	_	_	—
Casa Berardi Open Pit ^(12,15)	272	_	0.03	—	_	_	_	7	—	_	—
Keno Hill (12,16)	4,504	7.5	0.006	0.9	3.5		33,926	26	41,120	157,350	—
San Sebastian - Oxide (17)	1,453	6.5	0.09	_	_	_	9,430	135	_	_	—
San Sebastian - Sulfide (17)	1,187	5.5	0.01	1.9	2.9	1.2	6,579	16	22,420	34,100	14,650
Fire Creek (18,19)	114	1.0	0.46	_	_	_	113	53	_	_	_
Hollister (18,20)	88	2.5	0.58	_	_	_	217	50	_	_	_
Midas ^(18,21)	78	5.7	0.43	_	_	_	444	33	_	_	—
Heva ⁽²²⁾	1,266	_	0.06	_	_	_	_	76	_	_	_
Hosco ⁽²²⁾	29,287	_	0.04	_	_	_	—	1,202	_	_	—
Star (12,23)	1,068	3.0	_	6.4	7.7	_	3,177	_	67,970	82,040	_
Tiger Underground (29)	3,997	_	0.10	_	_	_	_	386	_	_	—
Tiger Open Pit (29)	992	_	0.08	_	_		_	78	_	_	—
Osiris Underground (30)	5,135	_	0.12	_	_	_	_	604	_	_	—
Osiris Open Pit (30)	960	_	0.13	_	_	_		128			
Total Measured and Indicated	69,031						219,333	4,431	730,320	1,090,77 0	14,650

	Tons (000)	Silver (oz/ton)	Gold (oz/ton)	Lead %	Zinc %	Copper %	Silver (000 oz)	Gold (000 oz)	Lead Tons	Zinc Tons	Copper Tons
Inferred Resources: (11)											
Greens Creek (12,13)	1,930	13.4	0.08	2.9	6.9	—	25,891	154	55,890	133,260	_
Lucky Friday (12,14)	3,600	7.8	—	5.9	2.8	—	27,934	_	211,340	100,630	_
Casa Berardi Underground (12,15)	1,475	—	0.22	_	_	—	_	332	_	_	_
Casa Berardi Open Pit ^(12,15)	828	_	0.08	_	_	_	_	64	_	_	_
Keno Hill (12,16)	2,836	11.2	0.003	1.1	1.8	_	31,791	9	32,040	51,870	_
San Sebastian - Oxide (17)	3,490	6.4	0.05	_	_	_	22,353	182	_	_	_
San Sebastian - Sulfide (17)	385	4.2	0.01	1.6	2.3	0.9	1,606	5	6,070	8,830	3,330
Fire Creek (18,19)	764	0.5	0.51	_	_	_	393	392	_	_	_
Fire Creek - Open Pit (24)	74,584	0.1	0.03	_	_	_	5,232	2,178	_	_	_
Hollister (18,20)	642	3.0	0.42	_	_	_	1,916	273	_	_	_

Midas (18,21)	1,232	6.3	0.50	_	_	_	7,723	615	_	_	_
Heva ⁽²²⁾	2,787	_	0.08	_	_	_	_	216	_	_	_
Hosco ⁽²²⁾	17,726		0.04	_	_	_	_	663	_	_	—
Star ^(12,23)	2,851	3.1	—	5.9	5.9	_	8,795	_	168,180	166,930	—
San Juan Silver (12,25)	2,570	14.9	0.01	1.4	1.1	_	38,203	34	49,400	39,850	—
Monte Cristo (26)	913	0.3	0.14	_	_	_	271	131	—	—	—
Rock Creek (12,27)	100,086	1.5	_	_	_	0.7	148,736	_	_	_	658,680
Libby Exploration (12,28)	112,185	1.6	—	_	_	0.7	183,346	_	—	—	759,420
Tiger Underground (29)	30		0.05	_	_	_	_	2	_	_	—
Tiger Open Pit (29)	152	_	0.07	_	_	_	_	10	—	—	—
Osiris Underground (30)	5,919		0.09	_	_	_	_	530	_	_	—
Osiris Open Pit (30)	4,398	_	0.12	_	_	_	—	514	—	_	—
Total Inferred	341,383						504,190	6,304	522,920	501,370	1,421,430

(8) The term "mineral resources" means a concentration or occurrence of material of economic interest in or on the Earth's crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. A mineral resource is a reasonable estimate of mineralization, taking into account relevant factors such as cut-off grade, likely mining dimensions, location or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all mineralization drilled or sampled.

- (9) The term "measured resources" 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.
- (10) The term "indicated resources" 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.
- (11) The term "inferred resources" 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 resource.
- (12) Mineral resources for operating properties are based on \$1,750/oz for gold, \$21.00/oz for silver, \$1.15/lb for lead, \$1.35/lb for zinc and \$3.00/lb for copper, unless otherwise stated. Mineral resources for non-operating resource projects are based on \$1,700/oz for gold, \$21.00/oz for silver, \$1.15/lb for lead, \$1.35/lb for zinc and \$3.00/lb for copper, unless otherwise stated. Mineral resources are reported for all resource projects regardless of the percentage of total measured and indicated resource.
- (13) The resource NSR cut-off values for Greens Creek are \$230/ton for all zones except the Gallagher Zone at \$235/ton; metallurgical recoveries (actual 2023): 80% for silver, 74% for gold, 82% for lead, and 89% for zinc.
- (14) The resource NSR cut-off values for Lucky Friday are \$200.57 for the 30 Vein, \$227.90 for the Intermediate Veins and \$198.48 for the Lucky Friday Vein; metallurgical recoveries (actual 2023): 96% for silver, 95% for lead, and 85% for zinc.
- (15) The average resource cut-off grades at Casa Berardi are 0.12 oz/ton gold for underground and 0.03 oz/ton gold for open pit; metallurgical recovery (actual 2023) 85% for gold; US\$/CAN\$ exchange rate: 1:1.3.
- (16) The resource NSR cut-off value at Keno Hill is \$129.10/ton (CAN\$185/tonne); using minimum width of 4.9 feet (1.5m); metallurgical recovery (actual 2023): 96% for silver, 93% for lead, 81% for zinc; US\$/CAN\$ exchange rate: 1:1.3.
- (17) Indicated resources for most zones at San Sebastian based on \$1,500/oz gold, \$21.00/oz silver, \$1.15/lb lead, \$1.35/lb zinc and \$3.00/lb copper using an NSR cut-off value of \$90.72/ton (\$100/tonne); \$1,700/oz gold used for Toro, Bronco, and Tigre zones. Metallurgical recoveries based on grade dependent recovery curves: recoveries at the mean resource grade average 89% for silver and 84% for gold for oxide material and 85% for silver, 83% for gold, 81% for lead, 86% for zinc, and 83% for copper for sulfide material. Resources reported at a minimum mining width of 8.2 feet (2.5m) for Middle Vein, North Vein, and East Francine, 6.5ft (1.98m) for El Toro, El Bronco, and El Tigre, and 4.9 feet (1.5 m) for Hugh Zone and Andrea.
- (18) Mineral resources for Fire Creek, Hollister and Midas are reported using \$1,500/oz for gold and \$21.00/oz for silver prices, unless otherwise noted. A minimum mining width is defined as four feet or the vein true thickness plus two feet, whichever is greater.
- (19) Fire Creek mineral resources are reported at a gold equivalent cut-off grade of 0.283 oz/ton. Metallurgical recoveries: 90% for gold and 70% for silver.
- (20) Hollister mineral resources, including the Hatter Graben are reported at a gold equivalent cut-off grade of 0.238 oz/ton. Metallurgical recoveries: 88% for gold and 66% for silver.
- (21) Midas mineral resources are reported at a gold equivalent cut-off grade of 0.237 oz/ton. Metallurgical recoveries: 90% for gold and 70% for silver. A gold-equivalent cut-off grade of 0.1 oz/ton and a gold price of \$1,700/oz used for Sinter Zone with resources undiluted.

- (22) Measured, indicated and inferred resources at Heva and Hosco are based on \$1,500/oz for gold. Resources are without dilution or material loss at a gold cut-off grade of 0.01 oz/ton (0.33 g/tonne) for open pit and 0.088 oz/ton (3.0 g/tonne) for underground. Metallurgical recovery: Heva: 95% for gold, Hosco: 88% for gold.
- (23) Indicated and Inferred resources at the Star property are reported using a minimum mining width of 4.3 feet and NSR cut-off value of \$150/ton; Metallurgical recovery: 93% for silver, 93% for lead, and 87% for zinc.
- (24) Inferred open-pit resources for Fire Creek calculated November 30, 2017 using gold and silver recoveries of 65% and 30% for oxide material and 60% and 25% for mixed oxide-sulfide material. Indicated Resources reclassified as Inferred in 2019. Open pit resources are calculated at \$1,400 for gold and \$19.83 for silver and cut-off grade of 0.01 Au Equivalent oz/ton and is inclusive of 10% mining dilution and 5% ore loss. Open pit mineral resources exclusive of underground mineral resources.
- (25) Inferred resources reported at a minimum mining width of 6.0 feet for Bulldog and an NSR cut-off value of \$175/ton and 5.0 feet for Equity and North Amethyst veins at an NSR cut-off value of \$100/ton; based on \$1,700/oz for gold, \$21.00/oz for silver, \$1.15/lb for lead, and \$1.35/lb for zinc. Metallurgical recoveries based on grade dependent recovery curves: recoveries at the mean resource grade average 89% for silver and 74% for lead and 81% zinc for the Bulldog and a constant 85% for gold and 85% for silver for North Amethyst and Equity.
- (26) Inferred resource at Monte Cristo reported at a minimum mining width of 5.0 feet; resources based on \$1,400/oz for gold, \$26.50/oz for silver using a 0.06 oz/ton gold cut-off grade. Metallurgical recovery: 90% for gold and 90% for silver.
- (27) Inferred resource at Rock Creek reported at a minimum thickness of 15 feet and an NSR cut-off value of \$24.50/ton; Metallurgical recoveries: 88% for silver and 92% for copper. Resources adjusted based on mining restrictions as defined by USFS, Kootenai National Forest in the June 2003 'Record of Decision, Rock Creek Project'.
- (28) Inferred resource at the Libby Exploration project reported at a minimum thickness of 15 feet and an NSR cut-off value of \$24.50/ton; Metallurgical recoveries: 88% for silver and 92% for copper. Resources adjusted based on mining restrictions as defined by USFS, Kootenai National Forest, Montana DEQ in December 2015 'Joint Final EIS, Montanore Project' and the February 2016 U.S Forest Service Kootenai National Forest 'Record of Decision, Montanore Project'.
- (29) Resources at the Rackla-Tiger project are based on a gold price of \$1,650/oz, metallurgical recovery of 95% for gold, and cut-off grades of 0.02 oz/ton gold for the open pit portion of the resources and 0.04 oz/ton gold for the underground portion of the resources.
- (30) Resources at the Rackla-Osiris project are based on a gold price of \$1,850/oz, metallurgical recovery of 83% for gold, and cut-off grade of 0.03 oz/ton gold for the open pit portion of the resources and 0.06 oz/ton gold for the underground portion of the resources.

Individual Properties

MATERIAL OPERATING PROPERTIES

Greens Creek

We own 100% of the Greens Creek mine, located on Admiralty Island near Juneau in southeast Alaska at 58° 4'57.00"N Latitude, 134°37'57.40"W Longitude (WGS84). Admiralty Island is accessed by boat, float plane, or helicopter. On the island, the mine site and various surface facilities are accessed by 13 miles of all-weather gravel roads. The Greens Creek mine has been in production since 1989, with a temporary care and maintenance period from April 1993 through July 1996. We report Greens Creek as a separate segment in our consolidated financial statements. See *Note 4* of *Notes to Consolidated Financial Statements* and *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Results of Operations - Greens Creek* for information on its financial performance.

Greens Creek is within the Admiralty Island National Monument, an environmentally sensitive area. The Greens Creek property includes 440 unpatented lode mining claims, 58 unpatented millsite claims, 21 patented lode claims and one patented millsite. In addition, the Greens Creek site includes properties under lease from the USFS for a road right-of-way, mine waste area and tailings storage facility. The USFS leases have varying expiration terms. Greens Creek also has title to mineral rights on 7,301 acress of federal land acquired through a land exchange with the USFS. We are currently exploring, but not mining, on such federal land. The claims and leases above comprise a total area of approximately 24 square miles.

The Greens Creek deposit is a volcanogenic massive sulfide deposit with a relatively high precious metal content compared to other deposits of its type. The host rock consists predominantly of marine sedimentary and mafic to ultramafic volcanic and plutonic rocks, which have been subjected to multiple periods of deformation. These deformational episodes imposed intense tectonic fabrics and folds within the rock. The deposits occur at the contact between Mississippian-age mafic meta-volcanic footwall and a hanging wall of Triassic-age argillite and basalt. Extensive hydrothermal alteration occurred within the meta-volcanic footwall prior to and during ore deposition, converting the basalts to sericite-rich, phyllitic schist. At ore deposition, thick and extensive lenses of base and precious metals, with pyrite and barite, formed at the footwall-hanging wall contact. Major sulfide minerals include pyrite, sphalerite, galena, and tetrahedrite/tennantite.

Greens Creek consists of the mine, an ore concentrating mill, a tailings storage area, a ship-loading facility, camp facilities, a ferry dock, and other related infrastructure. The map below illustrates the location and access to Greens Creek:



Greens Creek is an underground mine accessed by a ramp from surface which produces approximately 2,300 to 2,600 tons of ore per day. The primary mining methods are cut and fill and longhole stoping. The Greens Creek ore processing facility includes a SAG/ball mill grinding circuit to grind the run of mine ore to liberate the minerals and produce a slurry suitable for differential flotation of mineral concentrates. A gravity circuit recovers free gold that exists as electrum, a gold/silver alloy in the ore. Gravity concentrates are produced from this circuit prior to flotation. Three flotation concentrates are produced: a silver concentrate which is low in precious metals content; and a zinc-rich precious metals concentrate that contains gold, silver, zinc, and lead and must be marketed to a smelter utilizing an Imperial Smelting Furnace (ISF) which can simultaneously produce both zinc and lead. Doré is produced from the gravity concentrate by a third-party processor and further refined and sold to precious metal traders. The concentrate products are sold to a number of smelters and traders worldwide. See *Note 4* of *Notes to Consolidated Financial Statements* for information on the significant customers for Greens Creek's products. Concentrates are shipped from the Hawk Inlet marine terminal about nine miles from the mill.

For more information, see Exhibit 96.1, the Technical Report Summary on the Greens Creek Mine, Alaska, U.S.A., prepared for the Company by the Qualified Person under Section 1300 of SEC Regulation S-K ("QP"), SLR International Corporation ("SLR") with an effective date of December 31, 2021.

The employees at Greens Creek are employees of Hecla Greens Creek Mining Company, our wholly-owned subsidiary, and are not represented by a bargaining agent. There were 512 employees at Greens Creek at December 31, 2023.

As of December 31, 2023, we have recorded a \$39.9 million asset retirement obligation for reclamation and closure costs. We maintained a \$92.2 million reclamation and long-term water treatment bond for Greens Creek as of December 31, 2023. The net book value of the Greens Creek property and its associated plant, equipment and mineral interests was approximately \$522.6 million as of December 31, 2023. The vintage of the facilities at Greens Creek ranges from the 1980s to 2023.

The current mine plan at Greens Creek utilizes estimates of reserves and resources for approximately 14 years of production, through 2037.

Information with respect to Greens Creek's production, total cost of sales, average Cash Cost, After By-product Credits, Per Silver Ounce, All-In Sustaining Costs ("AISC"), After By-product Credits, Per Silver Ounce, and proven and probable mineral reserves for the past three years is set forth in the following table.

	 Years Ended December 31,					
Production	 2023		2022		2021	
Ore milled (tons)	914,796		881,445		841,967	
Silver (ounces)	9,731,752		9,741,935		9,243,222	
Gold (ounces)	60,896		48,216		46,088	
Zinc (tons)	51,496		52,312		53,648	
Lead (tons)	19,578		19,480		19,873	
Total cost of sales	\$ 259,895	\$	232,718	\$	213,113	
Cash Cost, After By-product Credits, Per Silver Ounce ⁽¹⁾	\$ 2.53	\$	0.70	\$	(0.65)	
AISC, After By-Product Credits, per Silver Ounce (1)	\$ 7.14	\$	5.17	\$	2.70	
Proven Mineral Reserves ^(2,3,4,5)						
Total tons	8.800		6.700		1.900	
Silver (ounces per ton)	11.3		16.1		9.6	
Gold (ounces per ton)	0.08		0.07		0.08	
Zinc (percent)	8.4		5.4		4.5	
Lead (percent)	3.5		2.3		1.7	
Contained silver (ounces)	99,500		107,500		17,900	
Contained gold (ounces)	700		400		100	
Contained zinc (tons)	740		360		80	
Contained lead (tons)	310		150		30	
Probable Mineral Reserves ^(2,2,4,5)						
Total tons	10,008,900		10,667,600		11,073,800	
Silver (ounces per ton)	10.5		10.9		11.3	
Gold (ounces per ton)	0.09		0.09		0.09	
Zinc (percent)	6.6		6.5		6.6	
Lead (percent)	2.5		2.5		2.5	
Contained silver (ounces)	105,121,700		116,748,100		125,200,900	
Contained gold (ounces)	879,700		934,700		945,600	
Contained zinc (tons)	657,990		694,800		725,830	
Contained lead (tons)	250,270		264,600		282,220	
Total Proven and Probable Mineral Reserves ^(2.3.4.5)						
Total tons	10,017,700		10,674,300		11,075,700	
Silver (ounces per ton)	10.5		11.0		11.3	
Gold (ounces per ton)	0.09		0.09		0.09	
Zinc (percent)	6.6		6.5		6.6	
Lead (percent)	2.5		2.5		2.5	
Contained silver (ounces)	105,221,200		116,855,600		125,218,800	
Contained gold (ounces)	880,400		935,100		945,700	
Contained zinc (tons)	658,730		695,160		725,910	
Contained lead (tons)	250,580		264,750		282,250	

(1) Includes by-product credits from gold, lead and zinc production. Cash Cost, After By-product Credits, Per Silver Ounce and AISC, After By-product Credits, Per Silver Ounce represent non-GAAP measurements that management uses to monitor and evaluate the performance of our mining operations. We believe these measurements provide indicators of economic performance and efficiency at each location and on a consolidated basis, as well as providing a meaningful basis to compare our results to those of other mining companies and other operating mining properties. A reconciliation of cost of sales and other direct production costs and depreciation, depletion and amortization, the most comparable GAAP measure, to these non-GAAP measures can be found in *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations*, under *Reconciliation of Total Costs of Sales (GAAP) to Cash Cost, Before By-product Credits and Cash Cost, After By-product Credits (non-GAAP) and All-In Sustaining Cost, Before By-product Credits (non-GAAP).*

(2) Proven and probable mineral reserves are calculated and reviewed in-house and are subject to periodic audit by others, although audits are not performed on an annual basis. Cutoff grade assumptions vary by ore body and are developed based on reserve metals price assumptions, anticipated mill recoveries and smelter payables, and cash operating costs. Due to multiple ore metals, and complex combinations of ore types, metal ratios and metallurgical performances at Greens Creek, the cutoff grade is expressed in terms of NSR, rather than metal grade. The cut-off grade at Greens Creek is \$230 per ton NSR for all zones except Gallagher, which has a cutoff grade of \$235 per ton NSR. The cut-off grade calculations include costs associated with mining, processing, surface operations, environmental, general administrative, sustaining capital, and royalty charges, if any. Our estimates of proven and probable reserves are based on the following metals prices:

	December 31,							
	2023			2021				
Silver (per ounce)	\$ 17.00	\$	17.00	\$	17.00			
Gold (per ounce)	\$ 1,600	\$	1,600	\$	1,600			
Lead (per pound)	\$ 0.90	\$	0.90	\$	0.90			
Zinc (per pound)	\$ 1.15	\$	1.15	\$	1.15			

(3) Reserves are in-situ materials that incorporate estimates of the amount of waste that must be mined along with the ore and expected mining recovery. The 2023 reserve model assumes average total mill recoveries of 80% for silver, 74% for gold, 89% for zinc and 82% for lead.

- (4) The change in reserves in 2023 versus 2022 was due to mining depletion and an increase in cut-off grade due to increased costs. These changes were partially offset by reserve increases from drilling with resources converting to reserves. The change in reserves in 2022 versus 2021 was due to due to data from new drill holes, partially offset by continued depletion of the deposit through production and reclassification of some material to indicated resource given proximity to previously mined areas.
- (5) Probable reserves at Greens Creek are based on average drill spacing of 50 to 100 feet. Proven reserves typically require that mining samples for the basis of the ore grade estimates used, while probable reserve grade estimates can be based entirely on drilling results. The proven reserves reported for Greens Creek for 2023 represent stockpiled ore.

Information on in-situ mineral resources for Greens Creek excluding reserves for the past three years is set forth in the following table.

	Years Ended December 31,				
	2023	2022	2021		
Measured Resources ^(1,2,3)					
Total tons	_		—		
Silver (ounces per ton)	—	—	—		
Gold (ounces per ton)	—	—	—		
Zinc (percent)	—	—	—		
Lead (percent)	—	—	—		
Silver (ounces)	—	—	—		
Gold (ounces)			—		
Zinc (tons)	—	—	—		
Lead (tons)	—		—		
Indicated Resources ^(1,2,3)					
Total tons	8,039,900	8,421,200	8,355,000		
Silver (ounces per ton)	13.9	12.9	12.8		
Gold (ounces per ton)	0.10	0.10	0.10		
Zinc (percent)	8.0	8.0	8.4		
Lead (percent)	3.0	2.9	3.0		
Silver (ounces)	111,526,000	108,717,200	106,670,300		
Gold (ounces)	800,000	810,300	835,900		
Zinc (tons)	643,950	675,740	701,520		
Lead (tons)	239,250	245,990	250,040		
Measured and Indicated Resources ^(1,2,3)					
Total tons	8,039,900	8,421,200	8,355,000		
Silver (ounces per ton)	13.9	12.9	12.8		
Gold (ounces per ton)	0.10	0.10	0.10		
Zinc (percent)	8.0	8.0	8.4		
Lead (percent)	3.0	2.9	3.0		
Silver (ounces)	111,526,000	108,717,200	106,670,300		
Gold (ounces)	800,000	810,300	835,900		
Zinc (tons)	643,950	675,740	701,520		
Lead (tons)	239,250	245,990	250,040		
Inferred Resources ^(1,2,3)					
Total tons	1,929,600	2,383,200	2,151,700		
Silver (ounces per ton)	13.4	12.2	12.8		
Gold (ounces per ton)	0.08	0.08	0.08		
Zinc (percent)	2.9	6.9	6.8		
Lead (percent)	6.9	2.8	2.8		
Silver (ounces)	25,891,000	28,949,200	27,507,500		
Gold (ounces)	154,000	178,100	163,700		
Zinc (tons)	133,260	164,080	146,020		
Lead (tons)	55,890	67,400	60,140		

(1) Mineral resources are based on \$1,750/oz for gold, \$21.00/oz for silver, \$1.15/lb for lead, \$1.35/lb for zinc and are reported in-situ and exclusive of mineral reserves.

(2) The resource NSR cut-off grades for Greens Creek are \$230/ton for all zones except the Gallagher Zone at \$235/ton; metallurgical recoveries (actual 2022): 81% for silver, 72% for gold, 82% for lead and 89% for zinc.

(3) Measured resources were not defined for year-end 2023; indicated resources for silver increased 5% from 2022 given additions from drilling and reclassification of some previously defined reserve material; inferred resources for silver decreased 6% from 2022 given conversion to indicated resources of reserves due to drilling.

Lucky Friday

We have owned and operated the Lucky Friday mine since 1958, which we have wholly owned since 1964. Lucky Friday is a deep underground silver, lead and zinc mine located in the Coeur d'Alene Mining District in northern Idaho at 47°28'15.70"N Latitude, 115°47'0.44"W Longitude (WGS84). Lucky Friday is onequarter mile east of Mullan, Idaho, and is adjacent to U.S. Interstate 90. We report Lucky Friday as a separate segment in our consolidated financial statements. See *Note 4* of *Notes to Consolidated Financial Statements* and *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Results of Operations - Lucky Friday* for information on its financial performance.

The Lucky Friday mine is comprised of 710 acres consisting of 43 patented mining claims and fee lands and 535 acres consisting of 53 unpatented mining claims. We also own or control approximately 26 square miles of mineral interests, which include patented mining and millsite claims, fee lands, and unpatented mining claims, that are adjacent to the Lucky Friday mine property. Below is a map illustrating the location and access to Lucky Friday:



The principal mineral-bearing structure at the Lucky Friday Mine through 1997 was the Lucky Friday Vein, a fissure vein typical of many in the Coeur d'Alene Mining District. The Revett Formation (quartzite) of late Precambrian age hosts the productive portion of the vein. The Lucky Friday Vein strikes northeast and dips nearly vertical with an average width of six to seven feet. Its principal ore minerals are galena and tetrahedrite with minor amounts of sphalerite and chalcopyrite. The ore occurs as a single, continuous ore zone in, and along the Lucky Friday Vein. In 1991, Hecla discovered several mineralized veins containing some high-grade silver ores in the Gold Hunter property, located about 5,000 feet northwest of the Lucky Friday Vein workings. Hecla finished a feasibility study in 1997 and achieved full production in 1998. The Gold Hunter veins are hosted in a 200-foot-thick siliceous lens within the Wallace Formation (quartzite, limestone, and argillite) that transitions to the St Regis Formation (quartzite and argillite) below the 5900-level. The veins are sub-parallel, and perhaps 'en-echelon' along strike and dip. The strike of the vein system is west-northwest with a dip of 85 degrees to the south. While the veins share many characteristics with the Lucky Friday Vein, there are some mineralogical and rock mechanics differences that currently make mining at Gold Hunter more attractive.

Access to the mining horizons from the surface is by shaft access. Once underground, trackless drifts and ramps are utilized to reach the mining areas. An internal, hoisting shaft was completed in 2017 to extend access at depth in the Gold Hunter area. The principal mining methods in use at Lucky Friday consist of underhand systems with integral paste fill and varying degrees of mechanization. In 2021, we tested and implemented the underhand closed bench ("UCB") mining method. The UCB method is a new and patented productive mining method developed by Hecla for proactive control of fault-slip seismicity in deep, high-stress, narrow-vein mining. The method uses bench drilling and blasting methods to fragment significant vertical and lateral extents of the vein beneath a top cut taken along the strike of the vein and under engineered backfill. The method is accomplished without the use of drop raises or lower mucking drives which may result in local stress concentrations and increased exposure to seismic events. Large blasts using up to 35,000 lbs. of pumped emulsion and programmable electronic detonators fragment up to 350 feet of strike length to a depth of approximately

30 feet. These large blasts proactively induce fault-slip seismicity at the time of the blast and shortly after it. This blasted corridor is then mined underhand for two cuts. As these cuts are mined, little to no blasting is done to advance them. Dilution is controlled by supporting the hanging wall and footwall as the mining progresses through the blasted ore. The entire cycle repeats and stoping advances downdip, under fill, and in a destressed zone. The method allows for greater control of fault-slip seismic events significantly improving safety. In conjunction, a notable productivity increase has been achieved by reducing seismic delays and utilizing bulk mining activities. In 2023, 2022 and 2021, 87%, 88% and 86%, respectively of the tons mined were produced through the UCB method. The underhand cut and fill method was also utilized in 2023, 2022 and 2021. Under this method, once a cut is taken along the strike of the vein, it is backfilled with cemented tailings and the next cut is accessed below from the ramp system. Both methods utilize rubber-tired equipment to access the veins through ramps developed outside of the ore body.

Ore at Lucky Friday is processed using a conventional lead/zinc flotation flowsheet, and the plant capacity currently is estimated at 1,165 tons per day. During August 2023, the mine was suspended while repairing an unused station in the #2 ventilation shaft, which is also the secondary egress. The operation remained suspended due to a fire at the unused station. By early September, the fire had been extinguished, normal ventilation was reestablished and the workforce recalled. Following evaluation of alternatives, it was determined that in order to safely bring the mine back into production in the most rapid and cost effective way, a new secondary egress would be developed to bypass the damaged portion of the #2 shaft. The new egress includes extension of an existing ramp 1,600 feet, installation of a 290-foot-long manway raise, and development of an 850 foot ventilation raise. Prior to the suspension, ore was processed at an average rate of approximately 1,056 tons per day, and total mill recovery was approximately 96% for silver, 95% for lead and 85% for zinc during 2023.

For more information, see Exhibit 96.2, the Technical Report Summary on the Lucky Friday Mine, Idaho, U.S.A., prepared for the Company by the QP, SLR, with an effective date of December 31, 2021.

At December 31, 2023, there were 386 employees at Lucky Friday. The United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial, and Service Workers International Union is the bargaining agent for Lucky Friday's 275 hourly employees as of December 31, 2023. During early January 2023, the bargaining agent ratified a six year labor agreement that expires in May 2029. Following a strike that started in March 2017 and ended in early January 2020, restaffing of the mine and ramp-up activities were completed during 2020, with a return to full production starting in the fourth quarter of 2020.

As of December 31, 2023, we have recorded a \$12.0 million asset retirement obligation for reclamation and closure costs. The net book value of the Lucky Friday property and its associated plant, equipment and mineral interests was approximately \$562.3 million as of December 31, 2023. The vintage of the facilities at Lucky Friday ranges from the 1950s to 2023.

The current mine plan at Lucky Friday utilizes estimates of reserves and resources for approximately 19 years of production, through 2042.

Information with respect to the Lucky Friday's production, total cost of sales, average Cash Cost, After By-product Credits, Per Silver Ounce, AISC, After By-product Credits, Per Silver Ounce, and proven and probable in -situ mineral reserves for the past three years is set forth in the table below.

	Years Ended December 31,					
Production		2023		2022		2021
Ore milled (tons)		231,129		356,907		321,837
Silver (ounces)		3,086,119		4,412,764		3,564,128
Lead (tons)		19,543		29,233		23,137
Zinc (tons)		7,944		12,436		9,969
	<u>^</u>		<u>^</u>		<u>^</u>	
Total cost of sales	\$	84,185	\$	116,598	\$	97,538
Cash Cost, After By-product Credits, Per Silver Ounce ⁽¹⁾	\$	5.51	\$	5.06	\$	6.60
AISC, After By-product Credits, Per Silver Ounce ⁽¹⁾	\$	12.21	\$	12.86	\$	14.34

Proven Mineral Reserves^(2.3.4)

Total tons	5,298,600	4,734,200	4,690,700
Silver (ounces per ton)	12.8	13.8	13.9
Lead (percent)	8.0	8.6	8.4
Zinc (percent)	3.8	3.7	3.4
Contained silver (ounces)	67,594,600	64,637,800	65,313,300
Contained lead (tons)	424,080	404,160	395,290
Contained zinc (tons)	201,280	174,510	159,360

Probable Mineral Reserves^(2,3,4)

Total tons	965,500	840,100	765,400
Silver (ounces per ton)	10.8	12.8	12.3
Lead (percent)	7.1	8.1	7.5
Zinc (percent)	2.9	3.2	2.8
Contained silver (ounces)	10,410,500	9,978,200	9,386,000
Contained lead (tons)	68,320	63,510	57,160
Contained zinc (tons)	28,100	25,030	21,650

Total Proven and Probable Mineral Reserves^(2,3,4)

Total tons	6,264,100	5,574,300	5,456,100
Silver (ounces per ton)	12.5	13.4	13.7
Lead (percent)	7.9	8.4	8.3
Zinc (percent)	3.7	3.6	3.3
Contained silver (ounces)	78,005,100	74,616,000	74,699,300
Contained lead (tons)	492,400	467,670	452,450
Contained zinc (tons)	229,380	199,540	181,010

(1) Includes by-product credits from lead and zinc production. Cash Cost, After By-product Credits, Per Silver Ounce, represent non-GAAP measurements that management uses to monitor and evaluate the performance of our mining operations. We believe these measurements provide indicators of economic performance and efficiency at each location and on a consolidated basis, as well as providing a meaningful basis to compare our results to those of other mining companies and other operating mining properties. *Costs of Sales and Other Direct Production Costs and Depreciation, Depletion and Amortization* is presented for the full year of 2020. However, *Cash Cost, After By-product Credits* and *AISC, After By-product Credits* only reflect results for the fourth quarter of 2020, as production was ramped-up during the first three quarters of 2020 following the end of the strike. A reconciliation of cost of sales and other direct production costs and depreciation, depletion and amortization, the most comparable GAAP measure, to these non-GAAP measures can be found in *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations*, under *Reconciliation of Total cost of sales (GAAP) to Cash Cost, Before By-product Credits and Cash Cost, After By-product Credits (non-GAAP) and All-In Sustaining Cost, After By-product Credits (non-GAAP).*

(2) Proven and probable mineral reserves are calculated and reviewed in-house and are subject to periodic audit by others, although audits are not performed on an annual basis. Cutoff grade assumptions vary by ore body and are developed based on reserve metals price assumptions, anticipated mill recoveries and smelter payables, and cash operating costs. Due to multiple ore metals, and complex combinations of ore types, metal ratios and metallurgical performances at Lucky Friday, the cutoff grade is expressed in terms of NSR, rather than metal grade. The reserve NSR cut-off values for Lucky Friday are \$241.34/ton for the 30 Vein and \$268.67/ton for the Intermediate Veins. The cut-off grade calculations include costs associated with mining, processing, surface operations, environmental, general administrative, and sustaining capital. Our estimates of proven and probable reserves are based on the following metals prices:

	December 31,				
	 2023		2022		2021
Silver (per ounce)	\$ 17.00	\$	17.00	\$	17.00
Lead (per pound)	\$ 0.90	\$	0.90	\$	0.90
Zinc (per pound)	\$ 1.15	\$	1.15	\$	1.15

(3) Reserves are in-situ materials that incorporate estimates of the amount of waste that must be mined along with the ore and expected mining recovery. The 2023 reserve model was based on the Net Smelter Return values incorporating smelter terms and metal recoveries to the various concentrates. The average total mill recoveries for 2023 were 96% for silver, 95% for lead and 85% for zinc.

(4) The change in reserves in 2023 from 2022 was due to mining depletion offset by drilling increases on the 30 Vein off the 7500 level and drilling and reinterpretation of the mineral zone across the silver along the western edge of the Gold Hunter zone. The change in reserves in 2022 from 2021 was due to inclusion of definition drilling information and additional reserve optimization and resource conversion, partially offset by depletion of the deposit through production and changes due to increases to the NSR cut-off value given increased operating costs.

Information on in-situ mineral resources excluding mineral reserves for Lucky Friday for the past three years is set forth in the following table.

	Years Ended December 31,		
	2023	2022	2021
Measured Resources ^(1,2,3)			
Total tons	5,325,500	6,237,300	8,652,500
Silver (ounces per ton)	8.6	7.8	7.6
Lead (percent)	5.6	5.4	4.9
Zinc (percent)	2.8	2.6	2.5
Silver (ounces)	45,784,900	48,550,600	65,752,300
Lead (tons)	299,360	335,850	425,100
Zinc (tons)	146,420	161,000	213,480
Indicated Resources ^(1,2,3)			
Total tons	1,011,000	1,193,800	1,840,500
Silver (ounces per ton)	8.1	8.0	7.6
Lead (percent)	6.0	5.4	5.1
Zinc (percent)	2.7	2.2	2.4
Silver (ounces)	8,135,700	9,581,300	14,010,000
Lead (tons)	60,200	64,390	93,140
Zinc (tons)	26,910	26,200	44,120
Measured and Indicated Resources ^(1,2,3)			
Total tons	6,336,500	7,431,100	10,493,000
Silver (ounces per ton)	8.5	7.8	7.6
Lead (percent)	5.7	5.4	4.9
Zinc (percent)	2.7	2.5	2.5
Silver (ounces)	53,920,600	58,131,900	79,762,300
Lead (tons)	359,560	400,240	518,240
Zinc (tons)	173,330	187,200	257,600
Inferred Resources ^(1,2,3)			
Total tons	3,600,000	3,591,600	5,376,900
Silver (ounces per ton)	7.8	8.7	7.8
Lead (percent)	5.9	6.3	5.8
Zinc (percent)	2.8	2.4	2.4
Silver (ounces)	27,933,900	31,263,800	41,871,500
Lead (tons)	211,340	224,670	311,850
Zinc (tons)	100,630	84,700	129,600

(1) Mineral resources are based on \$21.00/oz for silver, \$1.15/lb for lead, \$1.35/lb for zinc and are reported in-situ and exclusive of mineral reserves.

(2) The resource NSR cut-off values for Lucky Friday are \$200.57/ton for the 30 Vein, \$227.90/ton for the Intermediate Veins and \$198.48/ton for the Lucky Friday Vein; metallurgical recoveries (actual 2023): 96% for silver, 95% for lead and 85% for zinc. The cut-off grade calculations include costs associated with mining, processing, surface operations, environmental, general administrative, and sustaining capital.

(3) Measured and indicated resources for silver declined 7% from 2022 given conversion to mineral reserves; inferred silver resources decreased 11% from 2022 given some conversion to indicated resources and reserves.

Keno Hill

The Keno Hill unit is located in the central Yukon Territory, Canada, and covers an area of approximately 15,000 hectares in central Yukon (63° 54' 32" N, 135° 19' 18" W; NTS 105M/14 and 105M/13). The operations are located in the traditional territory of the First Nation of Na-Cho Nyäk Dun (FNNND). We report Keno as a separate segment in our consolidated financial statements. See *Note 4* of *Notes to Consolidated Financial Statements* and *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Results of Operations - Keno Hill for information on its financial performance.*

The total Hecla Keno Hill mineral claims as of December 31, 2023, covers an area of 238.12 km2 and comprises 717 quartz mining leases, 867 quartz mining claims and two Crown Grants. Below is a map illustrating the location and access to Keno Hill:



The Keno Hill property is a polymetallic silver-lead-zinc vein district with characteristics similar to other well-known mining districts in the world. Examples of this type of mineralization include the Kokanee Range (Slocan), British Columbia; Coeur d'Alene, Idaho; Freiberg and the Harz Mountains, Germany; and Príbram, Czech Republic.

The local geology is dominated by the Mississippian Keno Hill Quartzite comprising the Basal Quartzite Member and conformably overlying Sourdough Hill Member. Silver predominantly occurs in argentiferous galena and argentiferous tetrahedrite (freibergite). In some assemblages, silver is also found as native silver, in polybasite, stephanite, and pyrargyrite. Lead occurs in galena and zinc in sphalerite. Other sulfides include pyrite, pyrrhotite, arsenopyrite, and chalcopyrite. In general, common gangue minerals include siderite and, to a lesser extent, quartz, and calcite.

Keno Hill ore is mined with a mechanized cut and fill method ("MCF"). Where the ore width is wider than can be safely extracted in one cut, the ore will be mined in adjacent drifts. Lenses are predominantly mined in a bottom-up sequence and filled with cemented rock fill ("CRF") with a 3%-8% binder content. CRF is used to introduce temporary sill levels or to fill initial drifts when multiple adjacent drifts are required. Temporary sill levels form a sequence interrupting pillar which allows for multiple mining fronts to be active on one lens at a time. The remainder of the lifts will be backfilled with unconsolidated rock fill ("URF"). This mining method was chosen due to the narrow steeply dipping nature of the mineral bodies and to maximize safety and productivity. The various deposits require the use of mining methods that can adequately support the vein and that are flexible and selective while minimizing the direct mining costs. In the MCF method, an attack ramp is developed from the main ramp at a gradient of -15%. Upon reaching the orebody, an intersection is developed, and a lift is developed in both directions along strike, following the geological contact of the orebody. At the end of the lens, the void is backfilled using a Load Haul Dump ("LHD") machine. The LHD utilizes a bulldozer-like plate to push waste tight to the back of the drift. Once the level has been completely backfilled, the next lift above the previously mined lift is accessed by slashing down the back of the attack ramp and working off the muck pile/horizon. MCF drift sizes are on average 3.5 meters high x 3.5 meters wide. For areas wider than development equipment, a second parallel drift will be mined beside the backfilled drift to fully extract the material prior to accessing the lift above. In this situation, the first drift will be completely backfilled with cemented rock fill to ensure a stable wall to allow adjacent mining activity. The lifts are generally sequenced from the bottom-up within each panel.

The Keno Hill mill is based on a conventional sequential flotation process producing silver and zinc concentrates. The silver concentrates are high in lead which typically accounts for approximately 90% to 95% of the mill feed silver values since given that is strongly associated with lead minerals. Overall, silver represents 70% to 80% of the value of the ores in the District.

For more information, see Exhibit 96.4, the Technical Report Summary on the Keno Hill Operations, Yukon, Canada, prepared for the Company by Mining Plus Canada Ltd. with an effective date of December 31, 2023.

At December 31, 2023, there were 255 employees at Keno Hill.

As of December 31, 2023, we have recorded a \$3.4 million asset retirement obligation for reclamation and closure costs. The net book value of the Keno Hill property and its associated plant, equipment and mineral interests was approximately \$335.7 million as of December 31, 2023. The active infrastructure in place at Keno Hill ranges from the 1980s to 2023.

The current mine plan at Keno Hill utilizes estimates of reserves and resources for approximately 11 years of production, through 2034.

Information with respect to the Keno Hill's production and proven and probable in -situ mineral reserves for the past two years is set forth in the table below. Information with respect to Keno Hill's average Cash Cost, After By-product Credits, Per Silver Ounce, AISC, After By-product Credits, Per Silver Ounce were not reported as the mine has not reached commercial production. At the time the mine reaches commercial production, these metrics will be reported, as until this time costs are allocated to total cost of sales to the extent there are sales.

	Years Ended December 31,				
Production	2023	2022	2021		
Ore milled (tons)	56,331	—	—		
Silver (ounces)	1,502,577				
Lead (tons)	1,225		_		
Zinc (tons)	1,139	_	—		
Proven Mineral Reserves ^(2.3.4)					
Total tons	—		—		
Silver (ounces per ton)	—		_		
Gold (ounces per ton)					
Lead (percent)	—		_		
Zinc (percent)	—		—		
Contained silver (ounces)	—		_		
Contained gold (ounces)	—	—	—		
Contained lead (tons)	—	—	—		
Contained zinc (tons)					

Probable Mineral Reserves^(2,3,4)

Total tons	2,069,400	2,196,900	
Silver (ounces per ton)	26.6	22.5	—
Gold (ounces per ton)	0.01	0.01	
Lead (percent)	2.8	2.4	—
Zinc (percent)	2.5	2.2	
Contained silver (ounces)	55,068,000	49,472,600	—
Contained gold (ounces)	13,400	13,000	_
Contained lead (tons)	58,170	52,530	_
Contained zinc (tons)	52,380	49,310	_

Total Proven and Probable Mineral Reserves^(2.3.4)

Total tons	2,069,400	2,196,900	—
Silver (ounces per ton)	26.6	22.5	_
Gold (ounces per ton)	0.01	0.01	—
Lead (percent)	2.8	2.4	_
Zinc (percent)	2.5	2.2	—
Contained silver (ounces)	55,068,000	49,472,600	_
Contained gold (ounces)	13,400	13,000	—
Contained lead (tons)	58,170	52,530	_
Contained zinc (tons)	52,380	49,310	_

(1) Proven and probable mineral reserves are calculated and reviewed in-house and are subject to periodic audit by others, although audits are not performed on an annual basis. Cutoff grade assumptions vary by ore body and are developed based on reserve metals price assumptions, anticipated mill recoveries and smelter payables, and cash operating costs. Due to multiple ore metals, and complex combinations of ore types, metal ratios and metallurgical performances at Keno Hill, the cutoff grade is expressed in terms of NSR, rather than metal grade. The reserve NSR cut-off values for Keno Hill are \$244.24/ton The cut-off grade calculations include costs associated with mining, processing, surface operations, environmental, general administrative, and sustaining capital. Our estimates of proven and probable reserves are based on the following metals prices:

	December 31,	
	2023	
Silver (per ounce)	\$ 17.00	
Lead (per pound)	\$ 0.90	
Zinc (per pound)	\$ 1.15	

(2) Reserves are in-situ materials that incorporate estimates of the amount of waste that must be mined along with the ore and expected mining recovery. The 2023 reserve model assumes average total mill recoveries of 96% for silver, 93% for lead and 72% for zinc.

(3) The change in change in silver reserves in 2023 from 2022 was due to inclusion of definition drilling information and additional reserve optimization and resource conversion based on a new geological/mineral zone interpretation, partially offset by depletion of the deposit through production. Information on in-situ mineral resources excluding mineral reserves for Keno Hill for the past two years is set forth in the following table.

	Years Ended December 31,		
	2023	2022	
Measured Resources ^(1,2,3)			
Total tons			
Silver (ounces per ton)			
Gold (ounces per ton)			
Lead (percent)			
Zinc (percent)			
Silver (ounces)			
Gold (ounces)			
Lead (tons)	—	—	
Zinc (tons)			

Indicated Resources (1,2,3)

Total tons	4,504,200	4,061,200
Silver (ounces per ton)	7.5	8.0
Gold (ounces per ton)	0.01	0.01
Lead (percent)	0.9	1.0
Zinc (percent)	3.5	4.0
Silver (ounces)	33,926,400	32,287,500
Gold (ounces)	26,200	28,500
Lead (tons)	41,120	39,540
Zinc (tons)	157,350	163,130

Measured and Indicated Resources (1,2,3)

Total tons	4,504,200	4,061,200
Silver (ounces per ton)	7.5	8.0
Gold (ounces per ton)	0.01	0.01
Lead (percent)	0.9	1.0
Zinc (percent)	3.5	4.0
Silver (ounces)	33,926,400	32,287,500
Gold (ounces)	26,200	28,500
Lead (tons)	41,120	39,540
Zinc (tons)	157,350	163,130

Inferred Resources (1,2,3)

Total tons	2,835,900	2,440,600
Silver (ounces per ton)	11.2	10.4
Gold (ounces per ton)	0.003	0.003
Lead (percent)	1.1	0.9
Zinc (percent)	1.8	2.1
Silver (ounces)	31,790,500	25,477,800
Gold (ounces)	8,600	7,900
Lead (tons)	32,040	22,380
Zinc (tons)	51,870	51,000

(1) Mineral resources are based on \$21.00/oz for silver, \$1.15/lb for lead, \$1.35/lb for zinc and are reported in-situ and exclusive of mineral reserves.

- (2) The resource NSR cut-off values for Keno Hill are \$129.10/ton ; metallurgical recoveries (actual 2023): 95% for silver, 95% for lead and 88% for zinc. The cut-off grade calculations include costs associated with mining and processing.
- (3) Measured and indicated resources for silver increased 5% and inferred silver resources increased 25% from 2022 given additional definition drilling and updated geology/mineral zone interpretation.

Casa Berardi

We have wholly owned and operated Casa Berardi since June 2013. Casa Berardi is located 95 kilometers north of La Sarre in the Abitibi Region of northwestern Quebec, Canada at 49°34'0.72"N Latitude, 79°15'56.05"W Longitude (WGS84). The property borders Ontario to the west and covers parts of Casa Berardi, Dieppe, Raymond, D'Estrees, and Puiseaux townships. We report Casa Berardi as a separate segment in our consolidated financial statements. See Note 4 of Notes to Consolidated Financial Statements and Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Results of Operations - Casa Berardi for information on its financial performance.

The Casa Berardi Property is in the northern part of the Abitibi Sub province, a subdivision of the Superior Province, the Archean core of the Canadian Shield. The regional geology is characterized by a mixed assemblage of mafic volcanic rocks, flysch-type sedimentary rocks, iron formation, and graphitic mudstone that are limited by a large granodioritic to granitic batholith. Structurally, the property is enclosed in the Casa Berardi Tectonic Zone, a 15 km wide corridor that can be traced over 200 km. Mineralized zones are closely associated with the Casa Berardi Fault and are found on both sides of the fault and are currently restricted to a 500 m wide corridor. Gold mineralization is primarily located in quartz veining in the form of veins of 1 m to multi-meter widths, small-scale veins, or veinlet networks/stockworks. Veins contain only minor sulfides (1% to 3%); sulfides include arsenopyrite, pyrite, and traces of sphalerite, chalcopyrite, pyrrhotite, tetrahedrite, galena, and gold. Arsenopyrite is the main gold-bearing sulfide present in all veins of the deposit

The mine and mill complex are permitted to process 1,600,000 dry metric tonnes (approximately 1,764,000 tons) of ore per year (4,900 tons per day). The mining operations consist of underground and open pit mines. The surface infrastructures include a cyanidation processing mill (carbon-in-leach), tailings impoundment areas, and other support facilities and infrastructure. The map below illustrates the location and access to Casa Berardi:



Current reserves at the Casa Berardi mine comprise eight zones at the West Mine, spread over a moderate horizontal distance from each other and located at different mine elevations, plus open pit and underground areas at the East Mine.

The ore at Casa Berardi is extracted using a combination of underground and open pit mining methods. The mill utilizes a combination of gravity recovery for coarse gold and cyanidation for fine gold. The ore is crushed and ground to produce a slurry suitable for the subsequent recovery processes. Crushing and grinding is accomplished by a jaw crusher followed by a SAG mill and ball mill. Coarse gold reports to the gravity circuit consisting of Knelson concentrators followed by high intensity leaching and electrowinning. Fine gold reports to the cyanide leach train. Due to the presence of naturally occurring organic carbon in the ore, the Carbon-In-Leach ("CIL") approach is used in a cyanidation circuit. Gold is adsorbed onto carbon in the leach train and later desorbed for electrowinning. Sludge from the electrowinning cells is melted in a furnace to produce doré, the final product produced at Casa Berardi. In 2023, the mill processed 1,446,488 tons, for an average of 3,963 tons per day.

For more information, see Exhibit 96.3, the Technical Report Summary on the Casa Berardi Mine, Northwestern Québec, Canada, prepared for the Company by the QP, RESPEC with an effective date of December 31, 2023.

The employees at Casa Berardi are employees of Hecla Quebec Inc., our wholly-owned subsidiary, and are not represented by a bargaining agent. There were 497 *employees* at Casa Berardi at December 31, 2023. We also utilize third-party contractors, which use their employees and equipment, for some of the mining activities at Casa Berardi.

The current mine plan at Casa Berardi utilizes estimates of reserves and resources for approximately 14 years of production to 2037, and includes anticipated production from both the underground and open pit mine areas.

The net book value of the Casa Berardi property and its associated plant, equipment and mineral interests was approximately \$624.5 million as of December 31, 2023. As of December 31, 2023, we have recorded a \$11.2 million asset retirement obligation for reclamation and closure costs. We maintain a surety bond as financial guarantee for future reclamation and closure work.

Information with respect to the Casa Berardi's production, total cost of sales, average Cash Cost, After By-product Credits, Per Gold Ounce, AISC, After Byproduct Credits, Per Gold Ounce, and proven and probable in-situ mineral reserves for the past three years is set forth in the table below.

Production		2023	2022		2021
Ore milled (tons)		1,446,488	1,588,739		1,528,246
Gold (ounces)		90,363	127,590		134,511
Silver (ounces)		22,415	28,289		33,571
Total cost of sales	\$	221,341	\$ 248,898	\$	229,829
Cash Cost, After By-product Credits, Per Gold Ounce ⁽¹⁾	\$	1,652	\$ 1,478	\$	1,125
AISC, After By-product Credits, Per Gold Ounce ⁽¹⁾	\$	2,048	\$ 1,825	\$	1,399
Proven Mineral Reserves ^(2,2,4)					
Total tons		4,294,900	4,961,400		5,685,600
Gold (ounces per ton)		0.09	0.10		0.11
Contained gold (ounces)		386,100	512,300		596,300
Probable Mineral Reserves ^(23,4)					
Total tons		11,559,400	13,422,600		15,065,800
Gold (ounces per ton)		0.08	0.08		0.08
Contained gold (ounces)		884,400	1,101,600		1,187,700
Total Proven and Probable Mineral Reserves ^(2,3,4)					
Total tons		15,854,300	18,384,000		20,751,400
Gold (ounces per ton)		0.08	0.09		0.09
Contained gold (ounces)		1,270,500	1,613,900		1,784,000

(1) Includes by-product credits from silver production. Cash Cost, After By-product Credits, Per Gold Ounce and AISC, After By-product Credits, Per Gold Ounce represent non-GAAP measurements that management uses to monitor and evaluate the performance of our mining operations. We believe these measurements provide indicators of economic performance and efficiency at each location and on a consolidated basis, as well as providing a meaningful basis to compare our results to those of other mining companies and other operating mining properties. A reconciliation of cost of sales and other direct production costs and depreciation, depletion and amortization, the most comparable GAAP measure, to these non-GAAP measures can be found in *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations*, under *Reconciliation of Cost of Sales and Other Direct Production Costs and Depreciation, Depletion and Amortization (GAAP) to Cash Cost, Before*

By-product Credits and Cash Cost, After By-product Credits (non-GAAP) and All-In Sustaining Cost, Before By-product Credits and All-In Sustaining Cost, After By-product Credits (non-GAAP).

- (2) Proven and probable mineral reserves are calculated and reviewed in-house and are subject to periodic audit by others, although audits are not performed on an annual basis. Cutoff grade assumptions vary by ore body and are developed based on reserve metals price assumptions, anticipated mill recoveries and refiner payables, and cash operating costs. The average cutoff grade at Casa Berardi is 0.11 ounces per ton for underground reserves and 0.03 ounces per ton for open pit reserves. Our estimates of proven and probable reserves are based on the prices of \$1,650 per gold ounce for open pit and \$1,850 per gold ounce for underground in 2023 and \$1,600 per gold ounce for all reserves in 2022 and 2021.
- (3) Reserves are in-situ materials that incorporate estimates of the amount of waste that must be mined along with the ore and expected mining recovery. The 2023 reserve model assumes average total mill recoveries for gold of approximately 85% for reserves.
- (4) The significant change in reserves from 2023 compared to 2022 (-21%) was due to economic operational decisions to close the East Mine underground, economic re-evaluation of the underground reserves in the West Mine, and the initiation of the transition from underground to entirely open pit mine production. The change in reserves in 2022 compared to 2021 resulted from inclusion of definition drilling information, partially offset by depletion of the deposit through production and an increase of the cut-off grade given increased operating costs.

Information on in-situ mineral resources excluding minerals reserves for Casa Berardi for the past three years is set forth in the following table.

	Yea	ars Ended December 31,	
	2023	2022	2021
Measured Resources ^(1,2,3)			
Total tons	1,166,300	2,922,400	2,368,100
Gold (ounces per ton)	0.20	0.19	0.15
Gold (ounces)	235,900	549,700	355,200
Indicated Resources ^(1,2,3)			
Total tons	3,359,400	5,193,300	5,396,000
Gold (ounces per ton)	0.18	0.14	0.13
Gold (ounces)	607,400	707,800	699,200
Measured and Indicated Resources ^(1,2,3)			
Total tons	4,525,700	8,115,700	7,764,100
Gold (ounces per ton)	0.19	0.16	0.14
Gold (ounces)	843,300	1,257,500	1,054,400
Inferred Resources ^(1,2,3)			
Total tons	1,475,100	10,049,200	10,125,700
Gold (ounces per ton)	0.22	0.08	0.08
Gold (ounces)	331,600	819,800	790,500

(1) Mineral resources are based on \$1,750/oz for gold and a USD/CAD exchange rate: 1:1.3 and are reported in-situ and exclusive of mineral reserves.

(2) The average resource cut-off grades at Casa Berardi are 0.12 oz/ton gold for underground and 0.03 oz/ton for open pit; metallurgical recovery (actual 2023): 85% for gold.

(3) Measured and indicated mineral gold resources decreased 33% and inferred gold resources decreased 60% over 2022 given economic operational decisions to backfill open pits in the East Mine with overburden materials and mill tailings and the resultant sterilization of resource materials beneath the open pits.

Internal Controls on Exploration and Development Drilling Programs

Exploration and development drilling programs are performed using Industry Standard quality control methods for drilling, sampling, and analytical procedures. Standard operating procedure manuals for geology logging, sampling, and assaying are kept at the operations and updated as required. A secure sample chain-of-custody is established to promote the security of samples during transport from the projects to the analytical facilities. All primary analytical laboratories are ISO 9001 certified and sample preparation and analytical procedures are Industry Standard methods for the metals of interest.

Sample batches sent for analysis are controlled by a system of reference samples of known grade inserted into the sample stream and other control samples. Coarse and fine 'blank,' sterile, sample materials are used to monitor contamination at the sample preparation and analytical stages; Standard Reference Materials ("SRM") of known grades are used to measure accuracy of the analytical results; and pulp duplicate samples and coarse reject duplicate samples are used to monitor precision of the analytical results. Blanks and SRM are inserted according to the analytical batch size and overall number of samples but normally result in a 1:10 to 1:20 insertion rate. Duplicate samples are inserted or requested using a similar 1:10 to 1:20 inclusion rate. As a final measure of assay quality, 5% to 10% of the original samples are sent to a second analytical laboratory for check analysis. Periodically, the Company retains experts to perform audits of the commercial laboratories used in the United States, Mexico and Canada.

The main operating properties store data in SQL-based relational database utilities with built-in logic checks that are implemented as new data is imported. Accurate data entry into the database is confirmed by verification upon data entry/import and again before use in final geology interpretation and resource modeling with checks of new data collected during yearly drilling programs.

Geology and mineral control interpretations, grade estimation parameters, grade and density models, reserve estimation parameters, and modifying factors are peer reviewed within the company. Resource grade models are validated using Industry Standard methods and appropriate documentation and reporting are completed to summarize methods and results. All resource and reserve tabulations at the operations are approved by the local management, with their own sets of controls, and then are compiled by the corporate office which also performs its own set of checks on the final numbers.

All personnel responsible for the management of mineral resource and mineral reserve modeling and approval and reporting of mineral resource and mineral reserve statements are Qualified Persons with relevant experience in the type of mineralization and deposit under consideration and in the specific type of activity undertaken for the company. All are eligible members or licensees in good standing of a recognized professional organization based on their academic qualifications and experience and comply with professional standards of competence and ethics. We encourage continuing professional development and training for current Qualified Persons as well as others in the Company to develop other Qualified Persons within the various departments.

As projects advance toward development and production, data density and the geological understanding of the mineral deposit increases. The Company's internal controls limit some risk in the resource estimation process, but there is inherent risk in resource modeling due to mineral deposit heterogeneity, sample size and distribution, mining style and mining factor assumptions, and mineral processing issues. Independent audits of reserve models from an outside specialist are arranged on a periodic basis for an operating property. The senior technical staff can also determine when changes in mineral resource and reserve models or negative mine reconciliations are material and recommend internal or external auditing of the models and modifying factors.

Item 3. Legal Proceedings

For a discussion of our legal proceedings, see Note 16 of Notes to Consolidated Financial Statements.

Item 4. Mine Safety Disclosures

The information concerning mine safety violations or other regulatory matters required by Section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 104 of Regulation S-K is included in exhibit 95 to this report.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Shares of our common stock are traded on the New York Stock Exchange, Inc. under the symbol "HL." As of February 9, 2024, there were 2,859 stockholders of record of our common stock.

The following table provides information as of December 31, 2023 regarding our compensation plans under which equity securities are authorized for issuance:

	Number of Securities To Be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted-Average Exercise Price of Outstanding Options	Number of Securities Remaining Available For Future Issuance Under Equity Compensation Plans
Equity Compensation Plans Approved by Security Holders:			
2010 Stock Incentive Plan	—	N/A	12,756,250
Stock Plan for Non-Employee Directors		N/A	2,165,894
Key Employee Deferred Compensation Plan	_	N/A	1,665,037
Total		N/A	16,587,181

See Note 12 of Notes to Consolidated Financial Statements for information regarding the above plans.

For the years 2023, 2022 and 2021, we issued shares of our common stock on multiple occasions to three of our employee benefit plans in order to fund our obligations under those plans. Each issuance was made pursuant to an exemption from registration under the Securities Act pursuant to Section 4(a)(2) of that Act and, except for the October 16, 2023 and October 14, 2022 contributions, was followed by the filing of a shelf registration statement on SEC Form S-3 allowing for the public resales of those shares. We did not receive any cash proceeds from any of the above issuances of shares of common stock. The issuances were as follows:

Date	Purchaser	Number of Shares	Value of Shares at Issuance (\$)
	Hecla Mining Company Pre-2005		
	Supplemental Excess Retirement Plan		
October 16, 2023	and the Hecla Mining Company Post-		
	2004 Supplemental Excess Retirement		
	Plan ("SERP")	200,000	\$0.8 million
	Hecla Mining Company Retirement		
	Plan Trust ("Hecla Plan")	45,000	\$0.2 million
	Lucky Friday Pension Plan Trust		
	("Lucky Friday Plan")	4,500	\$0.0 million
October 14, 2022	SERP	1,000,000	\$4.2 million
May 19, 2022	Hecla Plan	900,000	\$4.2 million
	Lucky Friday Plan	290,000	\$1.3 million
September 22, 2021	Hecla Plan	900,000	\$4.9 million
	Lucky Friday Plan	100,000	\$0.5 million
January 27, 2021	SERP	3,500,000	\$16.8 million

The following performance graph compares the performance of our common stock during the period beginning December 31, 2018 and ending December 31, 2023 to the S&P 500 and the Philadelphia Gold and Silver Index. The graph assumes a \$100 investment in our common stock and in each of the indexes at the beginning of the period, and a reinvestment of dividends paid on such investments on a quarterly basis throughout the period.



Comparison of 5 Year Cumulative Total Return

Among Hecla Mining Company, the S&P 500, and the Philadelphia Gold and Silver Index

Date	Hec	la Mining	:	S&P 500		S&P 500 old Index
December 2018	\$	100.00	\$	100.00	\$	100.00
December 2019		143.96		130.99		116.68
December 2020		275.87		151.99		109.46
December 2021		223.83		192.90		149.92
December 2022		239.37		155.57		162.99
December 2023	\$	208.16	\$	191.57	\$	143.09

The stock performance information above is "furnished" and shall not be deemed to be "soliciting material" or subject to Rule 14A of the Exchange Act, shall not be deemed "filed" for purposes of Section 18 of the Exchange Act or otherwise subject to the liabilities of that section, and shall not be deemed incorporated by reference in any filing under the Securities Act or the Exchange Act, whether made before or after the date of this report and irrespective of any general incorporation by reference language in any such filing, except to the extent that it specifically incorporates the information by reference.

On May 8, 2012, we announced that our board of directors approved a stock repurchase program. Under the program, we are authorized to repurchase up to 20 million shares of our outstanding common stock from time to time in open market or privately negotiated transactions. See *Note 12* of *Notes to Consolidated Financial Statements* for more information. We made no purchases of our outstanding common stock during the year ended December 31, 2023.

Item 6. Reserved

Not applicable

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following Management's Discussion and Analysis ("MD&A") provides information that management believes is relevant to an assessment and understanding of the consolidated financial condition and results of operations of Hecla Mining Company and its subsidiaries (collectively the "Company," "our," or "we"). We use certain non-GAAP financial performance measures in our MD&A. For a detailed description of these measures, please see "Non-GAAP Financial Performance Measures" at the end of this item. This item should be read in conjunction with our Consolidated Financial Statements and the notes thereto included in this annual report.

Overview

Established in 1891, we are the oldest operating precious metals mining company in the United States. We are the largest silver producer in the United States, producing over 45% of 2022 U.S. silver production at our Greens Creek and Lucky Friday operations. We also produce gold at our Casa Berardi and Greens Creek operations. In addition, we are developing the Keno Hill mine in the Yukon Territory, Canada which we acquired in September 2022. We began ramp-up of the Keno Hill mill during the second quarter of 2023, with production commencing in June 2023. Based upon the jurisdictions in which we operate, we believe we have lower political and economic risk compared to other mining companies whose mines are located in other parts of the world. Our current exploration interests are located in the United States, Canada and Mexico. Our operating and strategic framework is based on expanding our production and locating and developing new resource potential in a safe and responsible manner.

Acquisition of ATAC Resources Ltd.

On July 7, 2023, we completed the acquisition of ATAC Resources Ltd. ("ATAC"), a Canadian publicly traded company, for total consideration of approximately \$19.4 million through the issuance of 3,676,904 shares of Hecla common stock to ATAC shareholders based on the share exchange ratio of 0.0166 Hecla share for each ATAC common share, and \$0.6 million of acquisition costs. The acquisition was deemed to be an asset acquisition under GAAP as substantially all of the fair value of the gross assets acquired was concentrated in a single asset group being mineral interests. The total consideration was assigned to the estimated fair values of the assets acquired and liabilities assumed, with \$18.1 million assigned to mineral interests. As part of the acquisition, we also acquired 5,502,956 units consisting of (i) shares of Cascadia Minerals Ltd. ("Cascadia") representing a 19.9% stake, and (ii) full warrants with a five-year term for a CAD\$2 million cash investment in Cascadia. Cascadia will be managed by the former management of ATAC, who will explore specific properties in the Yukon and British Columbia. We have the right to appoint two directors to Cascadia's board.

2023 Highlights

Operational:

- Produced 14.3 million ounces of silver and 151,259 ounces of gold. See *Consolidated Results of Operations* below for information on total cost of sales and cash costs and AISC, after by-product credits, per silver and gold ounce for 2023, 2022 and 2021.
- Keno Hill produced 1.5 million ounces of silver, with the Bermingham deposit achieving the highest mined tonnage in December; initiated a safety
 action plan to build a strong operational foundation at the mine.
- Continued our trend of strong safety performance, as our All Injury Frequency Rate ("AIFR") for 2023 was 1.45.

Financial:

- Reported sales of \$720.2 million.
- Generated \$75.5 million in net cash provided by operating activities. See the *Financial Liquidity and Capital Resources* section below for further discussion.
- Made capital expenditures (excluding lease additions and other non-cash items) of approximately \$223.9 million, including \$70.1 million at Casa Berardi, \$43.5 million at Greens Creek, \$65.3 million at Lucky Friday, and \$44.7 million at Keno Hill.
- Returned \$15.7 million to our stockholders through dividend payments.

Our average realized prices for silver, gold and lead increased in 2023 compared to 2022 while zinc decreased. Our average realized gold price increased while our realized price for silver, lead and zinc prices decreased in 2022 compared to 2021. See the *Consolidated Results of Operations* section below for information on our average realized metals prices for 2023, 2022 and 2021. Lead

and zinc represent important by-products at our Greens Creek and Lucky Friday segments, and gold is also a significant by-product at Greens Creek.

See the *Consolidated Results of Operations* section below for a discussion of the factors impacting income applicable to common stockholders for the three years ended December 31, 2023, 2022 and 2021.

Key Issues Impacting our Business

Our current business strategy is to focus our financial and human resources in the following areas:

- executing value enhancing transactions, such as with the recently completed ATAC acquisition;
- advancing the development and ramp up of the Keno Hill mine with the anticipation of commencement of commercial production before the end of 2024;
- operating our properties safely, in an environmentally responsible and cost-effective manner;
- maintaining and investing in exploration and pre-development projects in the vicinities of mining districts and projects we believe to be under-explored and under-invested: Greens Creek on Alaska's Admiralty Island located near Juneau; North Idaho's Silver Valley in the historic Coeur d'Alene Mining District; the silver-producing district near Durango, Mexico; in the vicinity of our Casa Berardi mine and the Heva-Hosco project in the Abitibi region of northwestern Quebec, Canada; our projects located in two districts in Nevada; our projects in the Keno Hill mining district in the Yukon Territory, Canada; northwestern Montana; the Creede district of southwestern Colorado; the Kinskuch project in British Columbia, Canada; and the Republic Mining District in Washington state;
- improving operations at each of our mines, which includes incurring costs for new technologies and equipment;
- expanding our proven and probable reserves, mineral resources and production capacity at our properties;
- conducting our business with financial stewardship to preserve our financial position in varying metals price and operational environments;
- advancing permitting of the Libby Exploration project in Montana; and
- seeking opportunities to acquire and invest in mining and exploration properties and companies.

We strive to achieve excellent mine safety and health performance. We seek to implement this goal by: training employees in safe work practices; establishing, following and improving safety standards; investigating accidents, incidents and losses to avoid recurrence; involving employees in the establishment of safety standards; and participating in the National Mining Association's CORESafety program. We seek to implement reasonable best practices with respect to mine safety and emergency preparedness. We respond to issues outlined in investigations and inspections by MSHA, the Commission of Labor Standards, Pay Equity and Occupational Health and Safety in Quebec, the Workers' Safety and Compensation Board in the Yukon and the Mexico Ministry of Economy and Mining and continue to evaluate our safety practices. There can be no assurance that our practices will mitigate or eliminate all safety risks. Achieving and maintaining compliance with regulations will be challenging and may increase our operating costs. See *Item 1A. Risk Factors - We face substantial governmental regulation, including the Mine Safety and Health Act, various environmental laws and regulations and the 1872 Mining Law.*

A number of key factors may impact the execution of our strategy, including regulatory issues, metals prices and inflationary pressures on input costs. Metals prices can be very volatile and are influenced by a number of factors beyond our control (except on a limited basis through the use of derivative contracts). See *Item* 7. *Critical Accounting Estimates* and *Note 10* of *Notes to Consolidated Financial Statements*. While we believe longer-term global economic and industrial trends could result in continued demand for the metals we produce, prices have been volatile and there can be no assurance that current prices will continue.

Volatility in global financial markets and other factors can pose a significant challenge to our ability to access credit and equity markets, should we need to do so. We utilize forward contracts to manage exposure to declines in the prices of (i) silver, gold, zinc and lead contained in our concentrates that have been shipped but have not yet settled, and (ii) from time to time zinc and lead that we forecast for future concentrate shipments. In addition, we have in place a \$150 million revolving credit agreement, with an option to be increased in an aggregate amount not to exceed \$75 million. As of December 31, 2023, \$6.9 million was used for letters of credit, and \$128.0 million was drawn on the facility leaving approximately \$15.1 million available for borrowing.

Another challenge for us is the risk associated with environmental litigation and ongoing reclamation activities. As described in *Item 1A. Risk Factors* and in *Note 16* of *Notes to Consolidated Financial Statements*, it is possible that our estimate of these liabilities (and our ability to estimate liabilities in general) may change in the future, affecting our strategic plans. We are involved in various environmental legal matters and the estimate of our environmental liabilities and liquidity needs, as well as our strategic plans, may be



significantly impacted as a result of these matters or new matters that may arise. We strive to ensure that our activities are conducted in compliance with applicable laws and regulations and attempt to resolve environmental litigation on terms as favorable to us as possible.

Reserve and resource estimation is a major risk inherent in mining. Our reserve and resource estimates, which underlie (i) our mining and investment plans, (ii) the valuation of a significant portion of our long-term assets and (iii) depreciation, depletion and amortization expense, may change based on economic factors and actual production experience. Until ore is mined and processed, the volumes and grades of our reserves and resources must be considered as estimates. Our reserves are depleted as we mine. Reserves and resources can also change as a result of changes in economic and operating assumptions. See *Item 1A. Risk Factors - Our mineral reserve and resource estimates may be imprecise*.

Consolidated Results of Operations

Total metal sales for the years ended December 31, 2023, 2022 and 2021, and the approximate variances attributed to differences in metals prices, sales volumes and smelter terms, were as follows:

(in thousands)	Silver	Gold	в	ase metals	Les an	ss: smelter d refining charges	То	tal sales of products
2021	\$ 293,646	\$ 362,037	\$	200,723	\$	(48,933)	\$	807,473
Variances - 2022 versus 2021:								
Price	(45,590)	676		(3,710)		(1,270)		(49,894)
Volume	17,089	(63,719)		9,428		(2,172)		(39,374)
Smelter terms	(91)	(84)		_		402		227
2022	265,054	298,910		206,441	_	(51,973)		718,432
Variances - 2023 versus 2022:								
Price	19,682	18,044		(2,897)		(624)		34,205
Volume	17,548	(42,343)		(14,586)		148		(39,233)
Smelter terms				_		1,540		1,540
2023	\$ 302,284	\$ 274,611	\$	188,958	\$	(50,909)	\$	714,944

Average market and realized metals prices for 2023, 2022 and 2021 were as follows:

		Average price for the year ended December 31,							
			2023		2022		2021		
Silver	Realized price per ounce	\$	23.33	\$	21.53	\$	25.24		
	London PM Fix (\$/ounce)		23.39		21.75		25.17		
Gold	Realized price per ounce		1,939		1,803		1,796		
	London PM Fix (\$/ounce)		1,943		1,801		1,800		
Lead	Realized price per pound		1.03		1.01		1.03		
	LME Final Cash Buyer								
	(\$/pound)		0.97		0.98		1.00		
Zinc	Realized price per pound		1.35		1.41		1.44		
	LME Final Cash Buyer								
	(\$/pound)	\$	1.20	\$	1.58	\$	1.36		

Average realized prices differ from average market prices primarily because concentrate sales are generally recorded as revenues at the time of shipment at forward prices for the estimated month of settlement, which differ from average market prices. Due to the time elapsed between shipment of concentrates and final settlement with customers, we must estimate the prices at which sales of our metals will be settled. Previously recorded sales are adjusted to estimated settlement metals prices each period through final settlement. For 2023 and 2021 we recorded positive price adjustments to provisional settlements of \$18.2 million and \$9.3 million, respectively, and \$20.8 million in net negative price adjustments to provisional settlements in 2022. The price adjustments related to silver, gold, zinc and lead contained in our concentrate sales were partially offset by gains and losses on forward contracts for those metals for each year (see *Note 10* of *Notes to Consolidated Financial Statements* for more information). The gains and losses on these contracts are included in revenues and impact the realized prices for silver, gold, lead and zinc. Realized prices are calculated by dividing gross revenues for each metal (which include the price adjustments and gains and losses on the forward contracts discussed above) by the payable quantities of each metal included in products sold during the period.

Total metals production and sales volumes for each period are shown in the following table:

		Year	Ended December 31,	
		2023	2022	2021
Silver -	Ounces produced	14,342,863	14,182,987	12,887,240
	Payable ounces sold	12,955,006	12,311,595	11,633,802
Gold -	Ounces produced	151,259	175,807	201,327
	Payable ounces sold	141,602	165,818	201,610
Lead -	Tons produced	40,347	48,713	43,010
	Payable tons sold	35,429	41,423	36,707
Zinc -	Tons produced	60,579	64,748	63,617
	Payable tons sold	43,050	43,658	43,626

The difference between what we report as "ounces/tons produced" and "payable ounces/tons sold" is attributable to the difference between the quantities of metals contained in our products versus the portion of those metals actually paid for by our customers pursuant to of our sales contract terms. Differences can also arise from inventory changes incidental to shipping schedules, or variances in ore grades which impact the amount of metals contained in concentrates produced and sold.

Sales, total cost of sales, gross profit (loss), Cash Cost, After By-product Credits, per Ounce ("Cash Cost") (non-GAAP) and AISC (non-GAAP) at our operating units for 2023, 2022 and 2021 were as follows (in thousands, except for Cash Cost and AISC):

	Silver					Gold									
		Greens Creek		Lucky Friday	ŀ	Keno Hill	C	Other	То	otal Silver	Casa Berardi	N Op &	Nevada Derations Other ⁽⁴⁾	Т	otal Gold
2023:															
Sales	\$	384,504	\$	116,284	\$	35,518		—	\$	536,306	\$ 177,678	\$	6,243	\$	183,921
Total cost of sales		(259,895)		(84,185)		(35,518)				(379,598)	 (221,341)		(6,339)		(227,680)
Gross profit (loss)	\$	124,609	\$	32,099	\$	—		—	\$	156,708	\$ (43,663)	\$	(96)	\$	(43,759)
Cash Cost, After By-product Credits, per Silver or Gold Ounce $^{(1)}$	\$	2.53	\$	5.51					\$	3.23	\$ 1,652			\$	1,652
AISC, After By-product Credits, per Silver or Gold Ounce ⁽¹⁾	\$	7.14	\$	12.21					\$	11.76	\$ 2,048			\$	2,048
2022:															
Sales	\$	335,062	\$	147,814	\$		\$	—	\$	482,876	\$ 235,136	\$	893	\$	236,029
Total cost of sales		(232,718)		(116,598)		—		—		(349,316)	(248,898)		(4,535)		(253,433)
Gross profit (loss)	\$	102,344	\$	31,216	\$	_	\$	_	\$	133,560	\$ (13,762)	\$	(3,642)	\$	(17,404)
Cash Cost, After By-product Credits, per Silver or Gold Ounce ⁽¹⁾	\$	0.70	\$	5.06					\$	2.06	\$ 1,478			\$	1,478
AISC, After By-product Credits, per Silver or Gold Ounce ⁽¹⁾	\$	5.17	\$	12.86						10.66	\$ 1,773			\$	1,773
2021:															
Sales	\$	384,843	\$	131,488	\$	_	\$	176	\$	516,507	\$ 245,152	\$	45,814	\$	290,966
Total cost of sales		(213,113)		(97,538)		_		(24 7)		(310,898)	(229,829)		(48,945)		(278,774)
Gross profit (loss)	\$	171,730	\$	33,950	\$	_	\$	(71)	\$	205,609	\$ 15,323	\$	(3,131)	\$	12,192
Cash Cost, After By-product Credits, per Silver or Gold Ounce ⁽¹⁾	\$	(0.65)	\$	6.60					\$	1.37	\$ 1,125	\$	1,137	\$	1,127
AISC, After By-product Credits, per Silver or Gold Ounce ⁽¹⁾	\$	2.70	\$	14.34					\$	8.65	\$ 1,359	\$	1,211	\$	1,341

(1) A reconciliation of these non-GAAP measures to total cost of sales, the most comparable GAAP measure, can be found below in *Reconciliation of Total Cost of Sales (GAAP) to Cash Cost, Before By-product Credits and Cash Cost, After By-product Credits (non-GAAP) and All-In Sustaining Cost, Before By-product Credits (non-GAAP).*

(2) The calculation of AISC for our consolidated silver properties includes corporate costs for general and administrative expense and sustaining capital and production and related costs and sustaining capital expenditures for Lucky Friday until the suspension of production during August 2023 following an underground fire for the remainder of 2023

- (3) Includes results for San Sebastian, which was an operating segment prior to 2021.
- (4) Other includes \$5.3 million of sales and total cost of sales for the year ended December 31, 2023 and \$0.5 million of sales and total cost of sales for the year ended December 31, 2022, related to the environmental services business acquired as part of the Alexco acquisition.

While revenue from zinc, lead and gold by-products is significant, we believe that identification of silver as the primary product of Greens Creek, Lucky Friday, and Keno Hill is appropriate because:

- silver has historically accounted for a higher proportion of revenue than any other metal and is expected to do so in the future;
- we have historically presented the Greens Creek and Lucky Friday units as primary silver producers, based on the original analysis that justified putting the project into production, and the same analysis applies to the Keno Hill unit, and further we believe that consistency in disclosure is important to our investors regardless of the relationships of metals prices and production from year to year;
- metallurgical treatment maximizes silver recovery;
- the Greens Creek, Lucky Friday and Keno Hill deposits are massive sulfide deposits containing an unusually high proportion of silver; and
- in most of their working areas, Greens Creek, Lucky Friday and Keno Hill utilize selective mining methods in which silver is the metal targeted for highest recovery.

Accordingly, we believe the identification of gold, lead and zinc as by-product credits at Greens Creek, Lucky Friday and Keno Hill is appropriate because of their lower economic value compared to silver and due to the fact that silver is the primary product we intend to produce at those locations. In addition, we have not consistently received sufficient revenue from any single by-product metal to warrant classification of such as a co-product.

We periodically review our revenues to ensure that reporting of primary products and by-products is appropriate. Because for Greens Creek, Lucky Friday and Keno Hill we consider zinc, lead and gold to be by-products of our silver production, the values of these metals offset operating costs within our calculations of Cash Cost, After By-product Credits, per Silver Ounce and AISC, After By-product Credits, per Silver Ounce.

We believe the identification of silver as a by-product credit is appropriate at Casa Berardi and the Nevada Operations because of its lower economic value compared to gold and due to the fact that gold is the primary product we intend to produce. In addition, we do not receive sufficient revenue from silver at the Casa Berardi or Nevada Operations to warrant classification of such as a co-product. Because we consider silver to be a by-product of our gold production at Casa Berardi and Nevada Operations, the value of silver offsets operating costs within our calculations of Cash Cost, After By-product Credits, per Gold Ounce and AISC, After By-product Credits, per Gold Ounce.

For the year ended December 31, 2023, we reported loss applicable to common stockholders of \$84.8 million compared to a loss of \$37.9 million and income of \$34.5 million in 2022 and 2021, respectively. The following factors contributed to those differences:

- Variances in gross profit (loss) at our operations as illustrated in the table above. See the *Greens Creek, Lucky Friday, Keno Hill, Casa Berardi*, and *Nevada Operations* sections below.
- General and administrative costs were \$42.7 million, \$43.4 million and \$34.6 million in 2023, 2022 and 2021 respectively. The decrease in 2023 of \$0.7 million reflects lower incentive compensation accruals compared to 2022 partially offset by annual compensation adjustments effective July 1. The increase in 2022 of \$8.8 million compared to 2021 reflects the acquisition of Alexco, higher incentive compensation accruals and annual incentive compensation adjustments.
- Exploration and pre-development expense was \$32.5 million, \$46.0 million and \$47.9 million in 2023, 2022 and 2021, respectively. In 2023 exploration and pre-development expense decreased by \$13.5 million as exploration activities were focused primarily at Keno Hill, Casa Berardi, Greens Creek and Nevada Operations, with pre-development activities incurred at the Hatter Graben in Nevada and the Libby Exploration project in Montana.
- Provision for closed operations and environmental matters of \$7.6 million in 2023 compared to \$8.8 million in 2022 and \$14.6 million in 2021. The
 decrease in 2023 compared to 2022 of \$1.2 million is primarily due to less reclamation activities

at Johnny M in 2023 compared to 2022. The decrease in 2022 compared to 2021 of \$5.8 million is primarily due to the settlement in 2021 of a lawsuit for \$6.5 million related to a 1989 agreement entered into by our subsidiary, CoCa Mines, Inc. and its subsidiary, Creede Resources, Inc.

• Ramp-up and suspension costs were \$76.3 million, \$24.1 million and \$23.0 million in 2023, 2022 and 2021, respectively. Ramp-up and suspension costs in 2023 include \$29.8 million (2022: \$2.3 million) related to the ramp up of Keno Hill, \$25.5 million related to the suspension of production at Lucky Friday due to the underground fire that occurred in the #2 shaft and \$2.2 million at Casa Berardi due its operations being suspended for 20 days in June, due to Quebec wildfires. During 2020, San Sebastian and Nevada were placed on care and maintenance and each of 2021, 2022 and 2023 include care and maintenance costs for these sites.

	Year Ended December 31,							
	 2023		2022	_	2021			
Keno Hill	\$ 29,793	\$	2,254	\$	_			
Lucky Friday	25,548		—		—			
Nevada	16,549		19,743		20,403			
Casa Berardi	2,228							
San Sebastian	2,134		2,117		2,609			
Total ramp-up and suspension costs	\$ 76,252	\$	24,114	\$	23,012			

- Other operating income of \$1.4 million and expense of \$6.3 million and \$14.3 million in 2023, 2022 and 2021, respectively. The income in 2023 compared to the expense in 2022 was primarily due to the receipt of \$5.9 million in insurance proceeds in May related to an insurance coverage lawsuit.
- Fair value adjustments, net resulted in gains of \$2.9 million and losses of \$4.7 million and \$35.8 million in 2023, 2022 and 2021, respectively. The components for each period are summarized in the following table (in thousands):

		Year Ended December 31,					
	2023		2022		2021		
Gain (loss) on derivative contracts	\$	3,168	\$	844	\$	(32,655)	
Unrealized (loss) gain on investments in equity securities		(243)		(5,632)		(4,295)	
Gain on disposition or exchange of investments		—		65		1,158	
Total fair value adjustments, net	\$	2,925	\$	(4,723)	\$	(35,792)	

Prior to November 1, 2021, we did not designate and account for any of our base metal derivative contracts as cash flow hedges for accounting purposes and accordingly any changes in fair value of our base metals derivative contracts were recognized in gain (loss) on derivative contracts. Subsequent to November 1, 2021, any gains or losses on base metals derivative contracts designated as cash flow hedges are deferred in other comprehensive income until the transaction occurs.

- Net foreign exchange loss of \$3.8 million in 2023, compared to a gain of \$7.2 million and \$0.4 million in 2022 and 2021, respectively, on translation of
 our monetary assets and liabilities at Casa Berardi, Keno Hill and San Sebastian.
- Interest expense of \$43.3 million, \$42.8 million and \$41.9 million in 2023, 2022 and 2021, respectively. The interest in 2023, 2022 and 2021 was primarily related to our Senior Notes with 2023 also including interest expense of \$2.8 million on amounts drawn on our revolving credit facility.
- Income and mining tax provision of \$1.2 million compared to a benefit of \$7.6 million and \$29.6 million in 2022 and 2021, respectively, with the benefit in 2021 including \$58.4 million for a reduction in the valuation allowance for U.S. deferred tax assets. See *Corporate Matters* and *Note 7* of *Notes to Consolidated Financial Statements* for more information.
Greens Creek

Dollars are in thousands (except per ounce and per ton amounts)	 Years Ended December 31,								
	2023		2022	2021					
Sales	\$ 384,504	\$	335,062	\$	384,843				
Cost of sales and other direct production costs	 (205,900)		(183,807)		(164,403)				
Depreciation, depletion and amortization	(53,995)		(48,911)		(48,710)				
Total cost of sales	(259,895)		(232,718)		(213,113)				
Gross Profit	\$ 124,609	\$	102,344	\$	171,730				
Tons of ore milled	914,796		881,445		841,967				
Production:									
Silver (ounces)	9,731,752		9,741,935		9,243,222				
Gold (ounces)	60,896		48,216		46,088				
Zinc (tons)	51,496		52,312		53,648				
Lead (tons)	19,578		19,480		19,873				
Payable metal quantities sold:									
Silver (ounces)	8,493,040		8,234,010		8,284,551				
Gold (ounces)	49,790		35,508		40,149				
Zinc (tons)	36,042		34,856		36,581				
Lead (tons)	15,247		14,762		15,489				
Ore grades:									
Silver ounces per ton	13.31		13.64		13.51				
Gold ounces per ton	0.09		0.08		0.08				
Zinc percent	6.35		6.69		7.11				
Lead percent	2.60		2.68		2.87				
Total production cost per ton	\$ 204.20	\$	196.73	\$	177.30				
Cash Cost, After By-product Credits, per Silver Ounce ⁽¹⁾	\$ 2.53	\$	0.70	\$	(0.65)				
AISC, After By-Product Credits, per Silver Ounce ⁽¹⁾	\$ 7.14	\$	5.17	\$	2.70				
Capital additions	\$ 43,542	\$	36,898	\$	23,883				

(1) A reconciliation of these non-GAAP measures to total cost of sales, the most comparable GAAP measure, can be found below in *Reconciliation of Total Cost of Sales (GAAP) to Cash Cost, Before By-product Credits and Cash Cost, After By-product Credits (non-GAAP) and All-In Sustaining Cost, Before By-product Credits and All-In Sustaining Cost, After By-product Credits (non-GAAP). At Greens Creek, gold, zinc and lead are considered to be by-products of our silver production, and the values of those metals therefore offset operating costs within our calculations of Cash Cost and AISC, After By-product Credits, per Silver Ounce.*

Gross profit increased by \$22.3 million to \$124.6 million in 2023 from \$102.3 million in 2022, as higher realized prices for all metals sold other than zinc and higher payable metal quantities for all metals sold compared to 2022, was offset by higher production costs reflecting more tons milled, and related higher labor, maintenance and consumables costs. See *Item 1A. Risk Factors - Our profitability could be affected by inflation, including the prices of other commodities* for a discussion of certain risks related to our operations profitability.

Gross profit decreased by \$69.4 million to \$102.3 million in 2022 from \$171.7 million in 2021, as lower realized prices for all metals sold other than gold, and lower payable metal quantities sold compared to 2021, was further compounded by higher production costs reflecting inflationary pressures and more tons milled, and unfavorable changes in concentrate smelter terms.

Capital additions increased by \$6.6 million in 2023 to \$43.5 million compared to 2022. Significant components of the 2023 capital additions were development of \$19.4 million, \$9.8 million in mobile equipment, and \$1.6 million in claims purchases.

The chart below illustrates the factors contributing to the variances in Cash Cost, After By-product Credits, Per Silver Ounce for 2023 compared to 2022 and 2021:



The following table summarizes the components of Cash Cost, After By-product Credits, per Silver Ounce:

	Years Ended December 31,							
	2023			2022	2021			
Cash Cost, Before By-product Credits, per Silver Ounce	\$	24.85	\$	23.20	\$	21.33		
By-product credits per silver ounce		(22.32)		(22.50)		(21.98)		
Cash Cost, After By-product Credits, per Silver Ounce	\$	2.53	\$	0.70	\$	(0.65)		

The following table summarizes the components of AISC, After By-product Credits, per Silver Ounce:

	Years Ended December 31,							
	2023			2022	2021			
AISC, Before By-product Credits, per Silver Ounce	\$	29.46	\$	27.67	\$	24.68		
By-product credits per silver ounce		(22.32)		(22.50)		(21.98)		
AISC, After By-product Credits, per Silver Ounce	\$	7.14	\$	5.17	\$	2.70		

The increase in Cash Cost and AISC, each After By-product Credits, per Silver Ounce in 2023 compared to 2022 was primarily due to higher production costs related to labor, maintenance and consumables and lower by-product credits. The increase in Cash Cost and AISC, each After By-product Credits, per Silver Ounce in 2022 compared to 2021 was primarily due to higher production costs and sustaining capital expenditures, partially offset by higher by-product credits and production.

Lucky Friday

Dollars are in thousands (except per ounce and per ton amounts)	Years Ended December 31,								
	2023		2022	2021					
Sales	\$ 116,284	\$	147,814	\$	131,488				
Cost of sales and other direct production costs	 (59,860)		(82,894)		(70,692)				
Depreciation, depletion and amortization	(24,325)		(33,704)		(26,846)				
Total cost of sales	(84,185)		(116,598)		(97,538)				
Gross profit	\$ 32,099	\$	31,216	\$	33,950				
Tons of ore milled	231,129		356,907		321,837				
Production:									
Silver (ounces)	3,086,119		4,412,764		3,564,128				
Lead (tons)	19,543		29,233		23,137				
Zinc (tons)	7,944		12,436		9,969				
Payable metal quantities sold:									
Silver (ounces)	3,020,116		4,039,435		3,288,261				
Lead (tons)	19,079		26,660		21,218				
Zinc (tons)	6,160		8,802		7,046				
Ore grades:									
Silver ounces per ton	14.00		13.00		11.64				
Lead percent	8.90		8.70		7.60				
Zinc percent	4.10		3.90		3.44				
Total production cost per ton	\$ 218.45	\$	223.55	\$	191.50				
Cash Cost, After By-product Credits, per Silver Ounce ⁽¹⁾	\$ 5.51	\$	5.06	\$	6.60				
AISC, After By-product Credits, per Silver Ounce ⁽¹⁾	\$ 12.21	\$	12.86	\$	14.34				
Capital additions	\$ 65,337	\$	50,992	\$	29,885				

(1) A reconciliation of these non-GAAP measures to total cost of sales, the most comparable GAAP measure, can be found below in *Reconciliation of Total Cost of Sales (GAAP) to Cash Cost, Before By-product Credits and Cash Cost, After By-product Credits (non-GAAP) and All-In Sustaining Cost, Before By-product Credits and All-In Sustaining Cost, After By-product Credits (non-GAAP). At Lucky Friday, lead and zinc are considered to be by-products of our silver production, and the values of those metals therefore offset operating costs within our calculations of Cash Cost and AISC, each After By-product Credits, per Silver Ounce.*

During August 2023, the production at the mine was suspended due to a fire that occured while repairing an unused station in the #2 ventilation shaft, which is also the secondary egress (required by MSHA regulations). By early September, the fire had been extinguished, normal ventilation was reestablished and the workforce recalled. Following evaluation of alternatives, it was determined that in order to safely bring the mine back into production in the most rapid and cost effective way, a new secondary egress needed to be developed to bypass the damaged portion of the #2 shaft. The new egress includes extension of an existing ramp 1,600 feet, installation of a 290-foot-long manway raise, and development of an 850 foot ventilation raise. Production was suspended for the remainder of 2023. Following an MSHA inspection on January 9, 2024, production was resumed.

The Company has property and business interruption insurance coverage with an underground sub-limit of \$50.0 million. On January 3, 2024, the Company received a coverage letter from the insurance carrier establishing coverage up to the underground sub-limit of \$50.0 million, less any applicable deductions. There can be no assurance as to the total amount or timing of when we will start receiving such proceeds.

Gross profit in 2023 of \$32.1 million, was \$0.9 million higher than 2022, due to higher grades, higher realized silver and lead prices and higher tons milled per day prior to the shutdown in August compared to 2022. For the year ended December 31, 2023, \$25.5 million of site specific suspension costs were included within Ramp-up and suspension costs on our consolidated statements of operations and comprehensive (loss) income.

Gross profit in 2022 of \$31.2 million, was \$2.7 million lower than 2021, due to lower realized prices and higher production costs in 2022 reflecting inflationary cost pressures and more tons milled. See *Item 1A. Risk Factors - Our profitability could be affected by inflation, including the prices of other commodities* for a discussion of certain risks related to our operations profitability.

Total capital additions increased by \$14.3 million in 2023 to \$65.3 million compared to 2022 as investments were made to support sustained higher throughput and costs were incurred to build the secondary egress following the August 2023 fire. Significant components related to development (\$21.7 million), the service hoist (\$8.3 million), coarse ore bunker (\$6.6 million), shaft and related infrastructure (\$4.4 million), drilling (\$4.9 million) and underground mobile equipment (\$4.6 million).

The chart below illustrates the factors contributing to the variances in Cash Cost, After By-product Credits, Per Silver Ounce for 2023, 2022 and 2021.



The following table summarizes the components of Cash Cost, After By-product Credits, per Silver Ounce:

	Year Ended December 31,			ear Ended cember 31,	Thr Dec	ee Months Ended cember 31,
		2023		2022		2021
Cash Cost, Before By-product Credits, per Silver Ounce	\$	21.45	\$	23.23		24.12
By-product credits per silver ounce		(15.94)		(18.17)		(17.52)
Cash Cost, After By-product Credits, per Silver Ounce	\$	5.51	\$	5.06	\$	6.60

The following table summarizes the components of AISC, After By-product Credits, per Silver Ounce:

	Yes Dec	ar Ended ember 31,	Ye: Dec	ar Ended ember 31,	Thro l Dec	ee Months Ended ember 31,	
		2023		2022	2021		
AISC, Before By-product Credits, per Silver Ounce	\$	28.15	\$	31.03	\$	31.86	
By-product credits per silver ounce		(15.94)		(18.17)		(17.52)	
AISC, After By-product Credits, per Silver Ounce	\$	12.21	\$	12.86	\$	14.34	

The increase in Cash Cost and AISC, each After By-product Credits, per Silver Ounce in 2023 compared to 2022 was due to lower by-product credits in 2023. The decrease in Cash Cost and AISC, each After By-product Credits, per Silver Ounce in 2022

compared to 2021 was due to increased silver production and higher by-product credits, partially offset by higher production costs and sustaining capital expenditures.

Keno Hill

We acquired our Keno Hill operations as part of the Alexco acquisition in September 2022, and have focused on development activities and began ramp-up of the mill during the second quarter. A number of safety related matters have slowed the ramp up as Hecla's injury-free standard drives the pace of production and development at Keno Hill. A safety action plan focusing on training, supervision, mining practices, and implementation of the safety processes has been initiated and should be executed during 2024. The average throughput during the ramp-up of the mill has been 230 tons per day, with silver grades milled of 27.7 ounces per ton. Tonnage mined was constrained by delays in infrastructure construction which has impacted development rates. Key underground infrastructure projects completed include the shotcrete plant and the cemented rockfill plant. Modifications to the secondary crushing circuit were also completed which are expected to increase crusher availability and efficiency.

Dollars are in thousands (except per ounce and per ton amounts)		Year Ended December 31,			
		2023			
Sales	\$	35,518			
Cost of sales and other direct production costs		(31,241)			
Depreciation, depletion and amortization		(4,277)			
Total cost of sales		(35,518)			
Gross profit	\$	_			
Tons of ore milled		56,331			
Production:					
Silver (ounces)		1,502,577			
Zinc (tons)		1,139			
Lead (tons)		1,225			
Payable metal quantities sold:					
Silver (ounces)		1,419,173			
Zinc (tons)		1,102			
Lead (tons)		848			
Ore grades:					
Silver ounces per ton		27.7			
Zinc percent		2.5%			
Lead percent		2.3 %			
Capital additions	\$	44,672			

During the year ended December 31, 2023, Keno Hill recorded sales and total cost of sales of \$35.5 million, related to the concentrate produced and sold during the ramp up. During the year ended December 31, 2023, \$29.8 million of site specific ramp up costs were included within Ramp-up and suspension costs and \$4.7 million of site specific exploration costs were included within Exploration and pre-development as reported on our consolidated statements of operations and comprehensive (loss) income. During the year ended December 31, 2023, Keno Hill recorded capital additions of \$44.7 million, of which \$29.6 million related to mine development and \$11.3 million to mobile equipment purchases, crusher modifications and camp upgrades.

Casa Berardi

Dollars are in thousands (except per ounce and per ton amounts)	Years Ended December 31,							
	 2023		2022		2021			
Sales	\$ 177,678	\$	235,136	\$	245,152			
Cost of sales and other direct production costs	(155,304)		(187,936)		(149,085)			
Depreciation, depletion and amortization	 (66,037)		(60,962)		(80,744)			
Total cost of sales	(221,341)		(248,898)		(229,829)			
Gross (loss) profit	\$ (43,663)	\$	(13,762)	\$	15,323			
Tons of ore milled	1,446,488		1,588,739		1,528,246			
Production:								
Gold (ounces)	90,363		127,590		134,511			
Silver (ounces)	22,415		28,289		33,571			
Payable metal quantities sold:								
Gold (ounces)	91,268		130,245		135,987			
Silver (ounces)	22,566		31,788		30,022			
Ore grades:								
Gold ounces per ton	0.07		0.09		0.10			
Silver ounces per ton	0.02		0.02		0.03			
Total production cost per ton	\$ 104.75	\$	117.89	\$	98.60			
Cash Cost, After By-product Credits, per Gold Ounce ⁽¹⁾	\$ 1,652	\$	1,478	\$	1,125			
AISC, After By-product Credits, per Gold Ounce ⁽¹⁾	\$ 2,048	\$	1,773	\$	1,359			
Capital additions	\$ 70,056	\$	39,667	\$	49,617			

(1) A reconciliation of these non-GAAP measures to total cost of sales, the most comparable GAAP measure, can be found below in *Reconciliation of Total Cost of Sales (GAAP) to Cash Cost, Before By-product Credits and Cash Cost, After By-product Credits (non-GAAP) and All-In Sustaining Cost, Before By-product Credits and All-In Sustaining Cost, After By-product Credits (non-GAAP). At Casa Berardi, silver is considered to be a by-product of our gold production, and the value of silver therefore offsets operating costs within our calculations of Cash Cost and AISC, each After By-product Credits, per Gold Ounce.*

As part of the Casa Berardi mine transition from an underground/open pit operation to an open pit only operation, the lower margin east mine underground operations were closed in July 2023 and only the better margin stopes of the west underground mine will be mined until mid-2024, at which time most underground activity will stop except for exploration. This strategic change resulted in production and sales decreasing significantly compared to the comparable periods in 2022 and 2021. Following the end of underground mining in mid-2024, Casa Berardi is expected to produce gold only from the 160 open pit, and at lower levels than historic production. We expect production from the 160 pit to halt in 2027, at which point we expect a gap in production from 2028 to 2030 when no ore is mined and our focus at that time will be on investing in infrastructure and equipment, stripping and permitting the expected additional open pits, Principal and West Mine Crown Pillar. From 2028 to 2030, there is not expected to be any cash flow from Casa Berardi to offset its operating and capital expenses, and instead our liquidity and capital resources are expected to come from our other operating segments. We expect to resume mining at Casa Berardi in 2030, and significant free cash flow is expected after 2030.

Gross loss increased by \$29.9 million to \$43.7 million in 2023 compared to \$13.8 million in 2022 as higher average realized gold prices did not offset the impact of lower gold production. This increase in gross loss includes \$12.7 million in product inventory net realizable value write downs due to a combination of higher direct production costs and higher depreciation, depletion and amortization expense effective July 2023, reflecting the accelerated amortization of the west underground mine. The increase in gross loss was also due to the processing of lower grade ore tonnage from both the underground and surface operations, higher costs related to mill maintenance and optimization activities, higher underground maintenance costs resulting from repairs and replacements of major components for the production fleet, and higher fuel and other consumables costs, compared to 2022. Suspension costs amounted to \$2.2 million for 2023, as Casa Berardi's operations were suspended for 20 days in June, due to wildfires in Quebec which resulted in the Quebec Ministry of Natural Resources and Forests closing certain forest lands and access roads. No production or sales took place during the suspension period. See *Item 1A. Risk Factors - Our profitability could be affected by inflation, including the prices of other commodities* for a discussion of certain risks related to our operation's profitability.

Gross profit decreased by \$29.1 million to a gross loss of \$13.8 million in 2022 compared to 2021 as higher average realized gold prices did not offset the impact of lower gold production and higher cost of sales. The higher cost of sales in 2022 resulted from increased production costs due to: (i) increase in ore tonnage by 4% compared to 2021 as more lower grade surface material was processed, (ii)

higher operating costs reflecting inflationary pressures particularly for labor and consumables, (iii) higher mill contractor costs related to maintenance and optimization activities, and (iv) higher underground maintenance costs resulting from repairs and replacements of major components for the production fleet. Depreciation, depletion and amortization expense was lower in 2022 compared to 2021 due to the impact of higher reserves in 2021 on units-of-production depreciation and lower asset additions and sales quantities. See *Item 1A. Risk Factors - Our profitability could be affected by inflation, including the prices of other commodities* for a discussion of certain risks related to our operation's profitability.

Total capital additions increased by \$30.4 million in 2023 compared to 2022 primarily due to purchases of new surface fleet equipment as the mine transitions from an underground to an open pit operation and the construction of tailings storage facilities. Significant components of 2023 capital expenditures were tailings dam construction costs of \$41.0 million, \$18.2 million on machinery and equipment, and \$11.2 million on development. Total capital additions decreased by \$10.0 million in 2022 compared to 2021 primarily due to completion of the new 160 zone open pit mine development in 2021, which commenced ore production during the fourth quarter of 2021.

Year Ended December 31, ■ 2023 ■ 2022 ■ 2021 1,400 1,207 1.200 1,106 1.000 827 800 600 395 400 338 298 200 (5) (6) (6) (200)Mining Milling Other cash costs By-product credits

The chart below illustrates the factors contributing to Cash Cost, After By-product Credits, Per Gold Ounce for 2023, 2022 and 2021:

The following table summarizes the components of Cash Cost, After By-product Credits, per Gold Ounce:

	Years Ended December 31,								
			2022	2021					
Cash Cost, Before By-product Credits, per Gold Ounce	\$	1,658	\$	1,483	\$	1,131			
By-product credits per gold ounce		(6)		(5)	(6)				
Cash Cost, After By-product Credits, per Gold Ounce	\$	1,652	\$	1,478	\$	1,125			

The following table summarizes the components of AISC, After By-product Credits, per Gold Ounce:

	Years Ended December 31,							
	2023			2022	2021			
AISC, Before By-product Credits, per Gold Ounce	\$	2,054	\$	1,778	\$	1,365		
By-product credits per gold ounce		(6)		(5)		(6)		
AISC, After By-product Credits, per Gold Ounce	\$	2,048	\$	1,773	\$	1,359		

The increase in Cash Cost and AISC, each After By-product Credits, per Gold Ounce for 2023 compared to 2022 and 2021 was primarily driven by lower gold production as Casa Berardi transitions from an underground/open pit operation to an open pit only operation, as discussed above.

Nevada Operations

Dollars are in thousands (except per ounce and per ton amounts)	Year Ended December 31,								
			2022	2021					
Sales	\$	960	\$	419	\$	45,814			
Cost of sales and other direct production costs		(896)		(3,709)		(33,604)			
Depreciation, depletion and amortization		(140)		(361)		(15,341)			
Total cost of sales		(1,036)		(4,070)		(48,945)			
Gross (loss)	\$	(76)	\$	(3,651)	\$	(3,131)			

Following the strategic decision to suspend the Nevada Operations in 2019, all development was suspended and production and related revenue was generated from previously developed areas. During 2023, revenue was generated from the sale of carbon. During 2022, mining of remnant refractory ore was undertaken during the third and fourth quarters, with the refractory ore sold to a third party. During 2021, production and revenue was generated from processing of the stockpiled non-refractory ore at the Midas mill and third-party processing of refractory ore in a roaster and autoclave facility, respectively. The gross loss in 2022 and 2021 resulted primarily from inventory write-downs. See *Item 1A. Risk Factors - Our profitability could be affected by inflation, including the prices of other commodities*" for a discussion of certain risks related to our operations profitability.

We spent \$5.9 million on exploration activities and pre-development activities during 2023. Suspension-related costs are reported in a separate line item on our consolidated statements of operations and excluded from the calculations of total cost of sales and other direct production costs and depreciation, depletion and amortization, total production costs per ton and Cash Cost and AISC, After By-product Credits, per Gold Ounce.

See Item 1A. Risk Factors - Operation, Development, Exploration and Acquisition Risks for a discussion of certain risks relating to our recent and ongoing analysis of the carrying value of the Nevada assets.

Corporate Matters

Employee Benefit Plans

Our defined benefit pension plans, while providing a significant benefit to our employees, have historically represented a significant liability to us. During 2023, the funded status of our plans assets increased slightly to \$27.5 million at December 31, 2023 from \$27.0 million at December 31, 2022. During 2023, we contributed a total of approximately \$1.0 million in shares of our common stock to the plans (see *Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities* for more information). We do not expect to be required to contribute to our defined benefit plans in 2024, but we may choose to do so. See *Note 6* of *Notes to Consolidated Financial Statements* for more information. We periodically examine the defined benefit pension plans and supplemental excess retirement plan for affordability and competitiveness.

Income and Mining Taxes

Our deferred tax assets and liabilities are measured at the currently enacted tax rates that are expected to apply in years in which they are expected to be paid for or realized. Each reporting period we assess the realizability of our tax assets. In assessing the need for a valuation allowance, we evaluate all significant available positive and negative evidence, including historical operating results, estimates of future sources of taxable income, carry-forward periods available, the existence of prudent and feasible tax planning strategies and other relevant factors.

Our organizational structure requires us to have two U.S. tax groups that do not consolidate. Hecla Mining Company and subsidiaries ("Hecla U.S. Group") has a net deferred tax asset of \$2.9 million at December 31, 2023 compared to \$21.0 million at December 31, 2022. The decrease of \$18.1 million is primarily related to utilization of tax loss carryforward and reduction of deferred tax liabilities. In 2021 a release of valuation allowance of \$58.4 million was recorded, based on a change in circumstances and weight of applicable evidence reviewed to support a more likely than not conclusion for utilization of the deferred tax assets. We are relying on all available evidence including reversal of deferred taxable temporary differences and a forecast of future taxable income along with a history of positive earnings to support the release.

Klondex Mines Ltd ("Klondex") is a separate U.S. tax group ("Nevada U.S. Group") that has a net deferred tax liability of \$30.8 million and \$30.7 million at December 31, 2023 and 2022, respectively. The increase of \$0.1 million is due to the tax liability of indefinite life mineral property.

Our net Canadian deferred tax liability at December 31, 2023 was \$74.1 million, a decrease of \$21.1 million from the \$95.2 million net deferred tax liability at December 31, 2022. The decrease was due to current period activity.

Our Mexican net deferred tax asset at December 31, 2023 remains at zero with no change from December 31, 2022. The valuation allowance increased \$13.2 million due to inability to recognize the benefit of tax losses incurred related to exploration activities at our operations in Mexico.

As a result of the Tax Cuts and Jobs Act ("TCJA") enacted in December 2017, under Internal Revenue Code Section 174, a requirement to capitalize and amortize research and experimental expenditures for tax years beginning after December 31, 2021 is now effective. This modification has not materially impacted us.

As discussed in *Note 7* of *Notes to Consolidated Financial Statements*, our effective tax rate for 2023 was negative 1%, reflecting a tax expense of \$1.2 million on pre-tax loss of \$83.0 million, compared to 17% for 2022, reflecting a tax benefit of \$7.6 million on a pre-tax loss of \$44.9 million. We are subject to income taxes in the United States and other foreign jurisdictions. The overall effective tax rate will continue to be dependent upon the geographic distribution of our earnings in different jurisdictions, the U.S. deduction for percentage depletion, fluctuation in foreign currency exchange rates and deferred tax asset valuation allowance changes. As a result, the 2023 effective tax rate could vary significantly from that of 2022. The other relevant provisions of the TCJA that became effective in 2018 consist of global intangible low-taxed income tax and base erosion and anti-abuse tax; however, these provisions have not materially impacted us.

Reconciliation of Total Cost of Sales to Cash Cost, Before By-product Credits and Cash Cost, After By-product Credits (non-GAAP) and All-In Sustaining Cost, Before By-product Credits (non-GAAP)

The tables below present reconciliations between the most comparable GAAP measure of total cost of sales to the non-GAAP measures of (i) Cash Cost, Before By-product Credits, (ii) Cash Cost, After By-product Credits, (iii) AISC, Before By-product Credits and (iv) AISC, After By-product Credits for our operations and for the Company for the years ended December 31, 2023, 2022 and 2021.

Cash Cost, After By-product Credits, per Ounce and AISC, After By-product Credits, per Ounce are measures developed by precious metals companies (including the Silver Institute and the World Gold Council) in an effort to provide a uniform standard for comparison purposes. There can be no assurance, however, that these non-GAAP measures as we report them are the same as those reported by other mining companies.

Cash Cost, After By-product Credits, per Ounce is an important operating statistic that we utilize to measure each mine's operating performance. We use AISC, After By-product Credits, per Ounce as a measure of our mines' net cash flow after costs for reclamation and sustaining capital. This is similar to the Cash Cost, After By-product Credits, per Ounce non-GAAP measure we report, but also includes reclamation and sustaining capital costs. Current GAAP measures used in the mining industry, such as cost of goods sold, do not capture all the expenditures incurred to discover, develop and sustain silver and gold production. Cash Cost, After By-product Credits, per Ounce and AISC, After By-product Credits, per Ounce and AISC, After By-product Credits, per Ounce also allow us to benchmark the performance of each of our mines versus those of our competitors. As a silver and gold mining company, we also use these statistics on an aggregate basis - aggregating the Greens Creek and Lucky Friday mines to compare our performance with that of other silver mining companies, and aggregating Casa Berardi and Nevada Operations for comparison with other gold mining companies. Similarly, these statistics are useful in identifying acquisition and investment opportunities as they provide a common tool for measuring the financial performance of other mines with varying geologic, metallurgical and operating characteristics.

Cash Cost, Before By-product Credits and AISC, Before By-product Credits include all direct and indirect operating cash costs related directly to the physical activities of producing metals, including mining, processing and other plant costs, third-party refining expense, on-site general and administrative costs, royalties and mining production taxes. AISC, Before By-product Credits for each mine also includes reclamation and sustaining capital costs. AISC, Before By-product Credits for general and administrative expense and sustaining capital costs. By-product credits include revenues earned from all metals other than the primary metal produced at each unit. As depicted in the tables below, by-product credits comprise an essential element of our silver unit cost structure, distinguishing our silver operations due to the polymetallic nature of their orebodies.

In addition to the uses described above, Cash Cost, After By-product Credits, per Ounce and AISC, After By-product Credits, per Ounce provide management and investors an indication of operating cash flow, after consideration of the average price received



from production. We also use these measurements for the comparative monitoring of performance of our mining operations period-to-period from a cash flow perspective.

In addition to the uses described above, Cash Cost, After By-product Credits, per Ounce and AISC, After By-product Credits, per Ounce provide management and investors an indication of operating cash flow, after consideration of the average price received from production. We also use these measurements for the comparative monitoring of performance of our mining operations period-to-period from a cash flow perspective.

The Casa Berardi and Nevada Operations and combined gold properties information below reports Cash Cost, After By-product Credits, per Gold Ounce and AISC, After By-product Credits, per Gold Ounce for the production of gold, their primary product, and by-product revenues earned from silver, which is a by-product at Casa Berardi and Nevada Operations. Only costs and ounces produced relating to units with the same primary product are combined to represent Cash Cost, After By-product Credits, per Ounce and AISC, After By-product Credits, per Silver Ounce for the total of Greens Creek and Lucky Friday, our combined silver properties. Similarly, the silver produced at our other two units is not included as a by-product credit when calculating the gold metrics for Casa Berardi and Nevada Operations.

In thousands (except per ounce amounts)	Year Ended December 31, 2023									
	Gr	eens Creek	Luc	Lucky Friday ⁽²⁾		Keno Hill	Corporate and Other ⁽³⁾		Total Silver	
Total cost of sales	\$	259,895	\$	84,185	\$	35,518	\$		\$	379,598
Depreciation, depletion and amortization		(53,995)		(24,325)		(4,277)				(82,597)
Treatment costs		40,987		10,981		1,070		—		53,038
Change in product inventory		(4,266)		(5,164)						(9,430)
Reclamation and other costs		(748)		(826)						(1,574)
Exclusion of Lucky Friday cash costs ⁽⁸⁾		—		(851)				—		(851)
Exclusion of Keno Hill cash costs ⁽⁶⁾		—		—		(32,311)				(32,311)
Cash Cost, Before By-product Credits ⁽¹⁾		241,873		64,000		_		_		305,873
Reclamation and other costs		2,889		671						3,560
Sustaining capital		41,935		39,019				928		81,882
Exclusion of Lucky Friday sustaining costs ⁽⁸⁾		—		(19,702)						(19,702)
General and administrative		—						42,722		42,722
AISC, Before By-product Credits ⁽¹⁾		286,697		83,988		_		43,650		414,335
By-product credits:										
Zinc		(83,454)		(14,507)						(97,961)
Gold		(104,507)						—		(104,507)
Lead		(29,284)		(34,620)				—		(63,904)
Exclusion of Lucky Friday by-product credits ⁽⁸⁾		_		1,566				_		1,566
Total By-product credits		(217,245)		(47,561)		_		_		(264,806)
Cash Cost, After By-product Credits	\$	24,628	\$	16,439	\$	_	\$	_	\$	41,067
AISC, After By-product Credits	\$	69,452	\$	36,427	\$		\$	43,650	\$	149,529
Ounces produced		9,732	-	3,086						12,818
Exclusion of Lucky Friday ounces produced (8)		_		(103)						(103)
Divided by silver ounces produced		9,732		2,983						12,715
Cash Cost, Before By-product Credits, per Silver Ounce	\$	24.85	\$	21.45					\$	24.06
By-product credits per ounce		(22.32)		(15.94)						(20.83)
Cash Cost, After By-product Credits, per Silver Ounce	\$	2.53	\$	5.51					\$	3.23
AISC, Before By-product Credits, per Silver Ounce	\$	29.46	\$	28.15					\$	32.59
By-product credits per ounce		(22.32)		(15.94)						(20.83)
AISC, After By-product Credits, per Silver Ounce	\$	7.14	\$	12.21					\$	11.76

In thousands (except per ounce amounts)	 Year Ended December 31, 2023									
	Casa Berardi	N Oper (Vevada ations and Dther ⁽⁴⁾		Total Gold					
Total cost of sales	\$ 221,341	\$	6,339	\$	227,680					
Depreciation, depletion and amortization	(66,037)		(140)		(66,177)					
Treatment costs	1,109		_		1,109					
Change in product inventory	(2,913)		_		(2,913)					
Reclamation and other costs	(871)		_		(871)					
Exclusion of Casa Berardi cash costs (3)	(2,851)		_		(2,851)					
Exclusion of Nevada Operations and Other costs	—		(6,199)		(6,199)					
Cash Cost, Before By-product Credits ⁽¹⁾	 149,778	-			149,778					
Reclamation and other costs	871		_		871					
Sustaining capital	34,971		_		34,971					
AISC, Before By-product Credits ⁽¹⁾	 185,620		_		185,620					
By-product credits:										
Silver	(522)				(522)					
Total By-product credits	(522)		_		(522)					
Cash Cost, After By-product Credits	\$ 149,256	\$		\$	149,256					
AISC, After By-product Credits	\$ 185,098	\$		\$	185,098					
Divided by gold ounces produced	90		_		90					
Cash Cost, Before By-product Credits, per Gold Ounce	\$ 1,658	\$	_	\$	1,658					
By-product credits per ounce	(6)		_		(6)					
Cash Cost, After By-product Credits, per Gold Ounce	\$ 1,652	\$	_	\$	1,652					
AISC, Before By-product Credits, per Gold Ounce	\$ 2,054	\$	_	\$	2,054					
By-product credits per ounce	(6)		_		(6)					
AISC, After By-product Credits, per Gold Ounce	\$ 2,048	\$	_	\$	2,048					

In thousands (except per ounce amounts)	Year Ended December 31, 2023									
		Total Silver		Total Gold		Total				
Total cost of sales	\$	379,598	\$	227,680	\$	607,278				
Depreciation, depletion and amortization		(82,597)		(66,177)		(148,774)				
Treatment costs		53,038		1,109		54,147				
Change in product inventory		(9,430)		(2,913)		(12,343)				
Reclamation and other costs		(1,574)		(871)		(2,445)				
Exclusion of Lucky Friday cash costs (8)		(851)				(851)				
Exclusion of Keno Hill cash costs ⁽⁶⁾		(32,311)				(32,311)				
Exclusion of Casa Berardi cash costs (3)		—		(2,851)		(2,851)				
Exclusion of Nevada Operations and Other costs		_		(6,199)		(6,199)				
Cash Cost, Before By-product Credits ⁽¹⁾		305,873	_	149,778		455,651				
Reclamation and other costs		3,560		871		4,431				
Sustaining capital		81,882		34,971		116,853				
Exclusion of Lucky Friday sustaining costs (8)		(19,702)				(19,702)				
General and administrative		42,722				42,722				
AISC, Before By-product Credits ⁽¹⁾		414,335		185,620		599,955				
By-product credits:										
Zinc		(97,961)				(97,961)				
Gold		(104,507)				(104,507)				
Lead		(63,904)				(63,904)				
Silver		_		(522)		(522)				
Exclusion of Lucky Friday by-product credits ⁽⁸⁾		1,566		_		1,566				
Total By-product credits		(264,806)		(522)		(265,328)				
Cash Cost, After By-product Credits	\$	41,067	\$	149,256	\$	190,323				
AISC, After By-product Credits	\$	149,529	\$	185,098	\$	334,627				
Ounces produced	\$	12,818	\$	90						
Exclusion of Lucky Friday ounces produced ⁽⁸⁾		(103)								
Divided by ounces produced		12,715		90						
Cash Cost, Before By-product Credits, per Ounce	\$	24.06	\$	1,658						
By-product credits per ounce		(20.83)		(6)						
Cash Cost, After By-product Credits, per Ounce	\$	3.23	\$	1,652						
AISC. Before By-product Credits, per Ounce	\$	32.59	\$	2.054						
By-product credits per ounce	Ŷ	(20.83)		(6)						
AISC. After By-product Credits. per Ounce	\$	11.76	\$	2.048						
Theo, Theo by product creats, per ounce	ψ	11.70	Ψ	2,010						

n thousands (except per ounce amounts)		Year Ended December 31, 2022												
	G	reens Creek	Lucky Friday ⁽²⁾		Corporate and other ⁽³⁾		1	fotal Silver						
Total cost of sales	\$	232,718	\$	116,598	\$	_	\$	349,316						
Depreciation, depletion and amortization		(48,911)		(33,704)		—		(82,615)						
Treatment costs		37,836		18,605				56,441						
Change in product inventory		5,885		2,049		—		7,934						
Reclamation and other costs ⁽⁵⁾		(1,489)		(1,034)				(2,523)						
Cash Cost, Before By-product Credits ⁽¹⁾		226,039		102,514	-			328,553						
Reclamation and other costs		2,821		1,128				3,949						
Sustaining capital		40,705		33,306		334		74,345						
General and administrative ⁽⁵⁾		—				43,384		43,384						
AISC, Before By-product Credits ⁽¹⁾		269,565		136,948	-	43,718		450,231						
By-product credits:														
Zinc		(113,835)		(27,607)				(141,442)						
Gold		(75,596)		—				(75,596)						
Lead		(29,800)		(52,568)				(82,368)						
Total By-product credits		(219,231)		(80,175)				(299,406)						
Cash Cost, After By-product Credits	\$	6,808	\$	22,339	\$	_	\$	29,147						
AISC, After By-product Credits	\$	50,334	\$	56,773	\$	43,718	\$	150,825						
Divided by silver ounces produced		9,742	_	4,413			_	14,155						
Cash Cost, Before By-product Credits, per Silver Ounce	\$	23.20	\$	23.23			\$	23.21						
By-product credits per ounce		(22.50)		(18.17)				(21.15)						
Cash Cost, After By-product Credits, per Silver Ounce	\$	0.70	\$	5.06			\$	2.06						
AISC, Before By-product Credits, per Silver Ounce	\$	27.67	\$	31.03			\$	31.81						
By-product credits per ounce		(22.50)		(18.17)				(21.15)						
AISC, After By-product Credits, per Silver Ounce	\$	5.17	\$	12.86			\$	10.66						

Year Ended December 31, 2022									
Casa Berardi ⁽⁶⁾			levada erations ⁽⁴⁾	Total Gold					
\$	248,898	\$	4,535	\$	253,433				
	(60,962)		(361)		(61,323)				
	1,866		_		1,866				
	186				186				
	(819)		—		(819)				
			(4,174)		(4,174)				
	189,169				189,169				
	819		—		819				
	36,883		—		36,883				
	226,871				226,871				
	(610)		—		(610)				
	(610)		_		(610)				
\$	188,559	\$	_	\$	188,559				
\$	226,261	\$	_	\$	226,261				
	128				128				
\$	1,483			\$	1,483				
	(5)		_		(5)				
\$	1,478	\$	_	\$	1,478				
\$	1,778			\$	1,778				
	(5)		_		(5)				
\$	1,773	\$	_	\$	1,773				
	Cas \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Casa Berardi ⁽⁶⁾ Xer Casa Berardi ⁽⁶⁾ \$ 248,898 (60,962) 1,866 186 186 (819) 189,169 819 36,883 226,871 (610) (610) (610) \$ 188,559 \$ 226,261 128 1,483 (5) \$ \$ 1,478 \$ 1,778 (5) \$	Casa Berardi ⁽⁶⁾ N Opc \$ 248,898 \$ (60,962) 1,866 186 186 (819) 189,169 819 36,883 226,871 (610) (610) 128 \$ 188,559 \$ \$ 1,483 (5) \$ 1,478 \$ \$ 1,773 \$	Ver Ended December 31, 20 Casa Berardi ⁽⁶⁾ Nevada Operations ⁽⁴⁾ \$ 248,898 \$ 4,535 (60,962) (361) 1,866 186 (819) (819) (819) (819) (819) (819) (819) (610) 226,871 (610) (610) \$ 188,559 \$ \$ 128 \$ 1,473 \$ 1,478 \$ 1,477 \$ 1,778 \$ 1,773 \$	Ver Ended December 31, 2022 Casa Berardi Nevada Operations ⁽⁴⁾ T \$ 248,898 \$ 4,535 \$ (60,962) (361) 1				

In thousands (except per ounce amounts)	Year Ended December 31, 2022								
		Total Silver		Total Gold	Total				
Total cost of sales	\$	349,316	\$	253,433	\$	602,749			
Depreciation, depletion and amortization		(82,615)		(61,323)		(143,938)			
Treatment costs		56,441		1,866		58,307			
Change in product inventory		7,934		186		8,120			
Exclusion of Nevada Operations and Other		—		(4,174)		(4,174)			
Reclamation and other costs		(2,523)		(819)		(3,342)			
Cash Cost, Before By-product Credits ⁽¹⁾		328,553		189,169		517,722			
Reclamation and other costs		3,949		819		4,768			
Sustaining capital		74,345		36,883		111,228			
General and administrative		43,384		—		43,384			
AISC, Before By-product Credits ⁽¹⁾		450,231		226,871		677,102			
By-product credits:									
Zinc		(141,442)		—		(141,442)			
Gold		(75,596)				(75,596)			
Lead		(82,368)		—		(82,368)			
Silver				(610)		(610)			
Total By-product credits		(299,406)		(610)		(300,016)			
Cash Cost, After By-product Credits	\$	29,147	\$	188,559	\$	217,706			
AISC, After By-product Credits	\$	150,825	\$	226,261	\$	377,086			
Divided by ounces produced		14,155		128					
Cash Cost, Before By-product Credits, per Ounce	\$	23.21	\$	1,483					
By-product credits per ounce		(21.15)		(5)					
Cash Cost, After By-product Credits, per Ounce	\$	2.06	\$	1,478					
AISC, Before By-product Credits, per Ounce	\$	31.81	\$	1,778					
By-product credits per ounce		(21.15)		(5)					
AISC, After By-product Credits, per Ounce	\$	10.66	\$	1,773					

n thousands (except per ounce amounts)		Year Ended December 31, 2021											
	G	reens Creek	Lucky Friday ⁽²⁾		Corporate and other ⁽³⁾]	Fotal Silver					
Total cost of sales	\$	213,113	\$	97,538	\$	247	\$	310,898					
Depreciation, depletion and amortization		(48,710)		(26,846)		(152)		(75,708)					
Treatment costs		36,099		16,723		0		52,822					
Change in product inventory		80		(406)		_		(326)					
Reclamation and other costs		(3,466)		(1,039)		(95)		(4,600)					
Cash Cost, Before By-product Credits ⁽¹⁾		197,116		85,970				283,086					
Reclamation and other costs		3,390		1,056				4,446					
Sustaining capital		27,582		26,517		210		54,309					
General and administrative ⁽⁵⁾		—				34,570		34,570					
AISC, Before By-product Credits ⁽¹⁾		228,088		113,543		34,780		376,411					
By-product credits:													
Zinc		(100,214)		(19,479)				(119,693)					
Gold		(72,011)						(72,011)					
Lead		(30,922)		(42,966)		—		(73,888)					
Total By-product credits		(203,147)		(62,445)		_		(265,592)					
Cash Cost, After By-product Credits	\$	(6,031)	\$	23,525	\$		\$	17,494					
AISC, After By-product Credits	\$	24,941	\$	51,098	\$	34,780	\$	110,819					
Divided by silver ounces produced		9,243		3,564				12,807					
Cash Cost, Before By-product Credits, per Silver Ounce	\$	21.33	\$	24.12			\$	22.11					
By-product credits per ounce		(21.98)	\$	(17.52)				(20.74)					
Cash Cost, After By-product Credits, per Silver Ounce	\$	(0.65)	\$	6.60			\$	1.37					
AISC, Before By-product Credits, per Silver Ounce	\$	24.68	\$	31.86			\$	29.39					
By-product credits per ounce		(21.98)	\$	(17.52)				(20.74)					
AISC, After By-product Credits, per Silver Ounce	\$	2.70	\$	14.34			\$	8.65					

In thousands (except per ounce amounts)	Year Ended December 31, 2021								
(1 .1.		Casa Banandi		Nevada		Total Cald			
Total cost of sales	\$	229 829	\$	48 945	\$	278 774			
Depreciation depletion and amortization	Ψ	(80,744)	Ψ	(15,341)	Ψ	(96,085)			
Treatment costs		1.513		1.731		3.244			
Change in product inventory		2.439		(10.907)		(8,468)			
Reclamation and other costs		(841)		300		(541)			
Cash Cost. Before By-product Credits ⁽¹⁾		152,196		24.728		176.924			
Reclamation and other costs		841		1.008		1.849			
Sustaining capital		30,643		511		31,154			
AISC. Before By-product Credits ⁽¹⁾		183.680		26.247		209.927			
By-product credits:		,		,		,			
Silver		(839)		(1,152)		(1,991)			
Total By-product credits		(839)		(1,152)		(1,991)			
Cash Cost, After By-product Credits	\$	151,357	\$	23,576	\$	174,933			
AISC. After By-product Credits	\$	182,841	\$	25.095	\$	207.936			
Divided by gold ounces produced	Ψ	135	Ψ	23,093	Ψ	155			
Cash Cost Before By produced Credits, per Gold Ounce	¢	1 131	¢.	1 103	¢	1 140			
By-product credits per ounce	φ	(6)	φ	(56)	φ	(13)			
Cash Cost After By product Credits, per Gold Ounce	\$	(0)	\$	1 137	\$	1 127			
AISC Defere Dy me duet Credits, per Gold Ounce	ф Ф	1,125	¢	1,157	φ Φ	1,127			
AISC, Belore By-product Credits, per Gold Ounce	Э	1,303	Э	1,207	Э	(12)			
ALSC. After Dr. graduat Credita gan Cald Owner	¢	(0)	¢	(30)	¢	(13)			
AISC, Alter By-product Credits, per Gold Ounce	\$	1,339	\$	1,211	\$	1,341			
In thousands (except per ounce amounts)		Vea	r Enc	led December 31, 20	21				
		Total Silver		Total Gold		Total			
Total cost of sales	\$	310,898	\$	278,774	\$	589,672			
Depreciation, depletion and amortization		(75,708)		(96,085)		(171,793)			
Treatment costs		52,822		3,244		56,066			
Change in product inventory		(326)		(8,468)		(8,794)			
Reclamation and other costs		(4,600)		(541)		(5,141)			
Cash Cost, Before By-product Credits ⁽¹⁾		283,086		176,924		460,010			
Reclamation and other costs		4,446		1,849		6,295			
Sustaining capital		54,309		31,154		85,463			
General and administrative		34,570				34,570			
AISC, Before By-product Credits ⁽¹⁾		376,411		209,927		586,338			
By-product credits:									
Zinc		(119,693)		—		(119,693)			
Gold		(72,011)		—		(72,011)			
Lead		(73,888)		—		(73,888)			
Silver				(1,991)		(1,991)			
Total By-product credits		(265,592)		(1,991)		(267,583)			
Cash Cost, After By-product Credits	\$	17,494	\$	174,933	\$	192,427			
AISC, After By-product Credits	\$	110,819	\$	207,936	\$	318,755			
Divided by ounces produced		12,807		155					
Cash Cost, Before By-product Credits, per Ounce	\$	22.11	\$	1,140					
By-product credits per ounce		(20.74)		(13)					
Cash Cost, After By-product Credits, per Ounce	\$	1.37	\$	1,127					
AISC, Before By-product Credits, per Ounce	\$	29.39	\$	1,354					
By-product credits per ounce		(20.74)		(13)					
AISC, After By-product Credits, per Ounce	\$	8.65	\$	1,341					

(1) Includes all direct and indirect operating costs related to the physical activities of producing metals, including mining, processing and other plant costs, third-party refining and marketing expense, on-site general and administrative costs and royalties, before by-product revenues earned from all metals other than the primary metal produced at each operation. AISC, Before By-product Credits also includes reclamation and sustaining capital costs.

- (2) AISC, Before By-product Credits for our consolidated silver properties includes corporate costs for general and administrative expense and sustaining capital.
- (3) During the three months ended March 31, 2023, the Company completed the necessary studies to conclude usage of the F-160 pit as a tailings storage facility after mining is complete. As a result, a portion of the mining costs have been excluded from Cash Cost, Before By-product Credits and AISC, Before By-product Credits.
- (4) Other includes \$5.3 million of sales and cost of sales for the year ended December 31, 2023 and \$0.5 million of sales and cost of sales for the year ended December 31, 2022, related to the environmental services business acquired as part of the Alexco acquisition.
- (5) Prior years presentation has been adjusted to conform with current year presentation to eliminate exploration costs from the calculation of AISC, Before By-product Credits as exploration is an activity directed at the Corporate level to find new mineral reserve and resource deposits, and therefore we believe it is inappropriate to include exploration costs in the calculation of AISC, Before By-product Credits for a specific mining operation.
- (6) Keno Hill is in the production ramp-up phase and \$29.8 million of ramp-up costs are excluded from the calculation of total cost of sales, Cash Cost, Before By-product Credits, Cash Cost, After By-product Credits, AISC, Before By-product Credits, and AISC, After By-product Credits.
- (7) Casa Berardi operations were suspended in June 2023 in response to the directive of the Quebec Ministry of Natural Resources and Forests as a result of fires in the region. Suspension costs amounted to \$2.2 million for the year ended December 31, 2023, and are excluded from the calculation of total cost of sales, Cash Cost, Before By-product Credits, Cash Cost, After By-product Credits, AISC, Before By-product Credits, and AISC, After By-product Credits.
- (8) Lucky Friday operations were suspended in August 2023 following the underground fire in the #2 shaft secondary egress. The portion of cash costs, sustaining costs, by-product credits, and silver production incurred since the suspension are excluded from the calculation of total cost of sales, Cash Cost, Before By-product Credits, Cash Cost, After By-product Credits, and AISC, Before By-product Credits, and AISC, After By-product Credits.

Financial Liquidity and Capital Resources

Liquidity overview

We have a disciplined cash management strategy of maintaining financial flexibility to execute our capital priorities and provide long-term value to our stockholders. Consistent with that strategy, we aim to maintain an acceptable level of net debt and sufficient liquidity to fund debt service costs, operations, capital expenditures, exploration and pre-development projects, while returning cash to stockholders through dividends and potential share repurchases.

At December 31, 2023, we had \$106.4 million in cash and cash equivalents, of which \$7.6 million was held in foreign subsidiaries' local currency that we anticipate utilizing for near-term operating, exploration or capital costs by those foreign subsidiaries. At December 31, 2023, we had utilized \$134.9 million drawn on our credit facility with \$6.9 million for letters of credit and the remainder as borrowings. We also have USD cash and cash equivalent balances held by our foreign subsidiaries that, if repatriated, may be subject to withholding taxes. We expect that there would be no additional tax burden upon repatriation after considering the cash cost associated with the withholding taxes. Our liquidity and capital resources are reliant on our revolving credit facility and other financing activities in addition to cash provided by our operations.

Pursuant to our common stock dividend policy described in *Note 12* of *Notes to Consolidated Financial Statements*, our Board of Directors declared and paid dividends on common stock totaling \$15.2 million in 2023, \$12.4 million in 2022 and \$20.1 million in 2021. Our dividend policy has a silver-linked component which ties the amount of declared common stock dividends to our realized silver price for the preceding quarter. Another component of our common stock dividend policy anticipates paying an annual minimum dividend. In each of May and September 2021, our Board of Directors approved an increase in our silver-linked dividend policy by \$0.01 per year, and in September 2021 also approved a reduction in the minimum realized silver price threshold to \$20 from \$25 per ounce. We realized silver prices of \$22.62, \$23.67, \$23.71 and \$23.47 in the first, second, third and fourth quarters of 2023, respectively, thus satisfying the criterion for the silver-linked dividend component of our common stock dividends of \$0.00625 per share of common stock, consisting of \$0.00375 per share for the minimum dividend component of our dividend dividend component of our dividend component of our dividend component of our dividend policy.



For illustrative purposes only, the table below summarizes potential dividend amounts under our dividend policy.

Quarterly Average Realized Silver Price (\$ per ounce)	Quart Linked pe	erly Silver- Dividend (\$ r share)	Annu Linkee P	alized Silver- d Dividend (\$ er share)	A Minin (\$	nnualized num Dividend per share)	Annualized Dividends per Share: Silver- Linked and Minimum (S per share)		
<\$20	\$	_	\$		\$	0.015	\$	0.015	
\$20	\$	0.0025	\$	0.01	\$	0.015	\$	0.025	
\$25	\$	0.0100	\$	0.04	\$	0.015	\$	0.055	
\$30	\$	0.0150	\$	0.06	\$	0.015	\$	0.075	
\$35	\$	0.0250	\$	0.10	\$	0.015	\$	0.115	
\$40	\$	0.0350	\$	0.14	\$	0.015	\$	0.155	
\$45	\$	0.0450	\$	0.18	\$	0.015	\$	0.195	
\$50	\$	0.0550	\$	0.22	\$	0.015	\$	0.235	

As discussed in *Note 12* of *Notes to Consolidated Financial Statements*, pursuant to an equity distribution agreement dated February 18, 2021, we may offer and sell up to 60 million shares of our common stock from time to time to or through sales agents in "at-the-market" (ATM) offerings. Sales of the shares, if any, will be made by means of ordinary brokers transactions or as otherwise agreed between the Company and the agents as principals. Whether or not we engage in sales from time to time may depend on a variety of factors, including share price, our cash resources, customary black-out restrictions, and whether we have any material inside information. The agreement can be terminated by us at any time. Any sales of shares under the equity distribution agreement are registered under the Securities Act of 1933, as amended, pursuant to a shelf registration statement on Form S-3. During March, April and December 2023, we sold 10,645,198 shares under the agreement for proceeds of \$56.7 million, net of commissions and fees of approximately \$0.9 million. In total since September 2022 through December 31, 2023, we have sold 14,505,397 shares under the agreement for total proceeds of \$74.0 million, net of commissions and fees of \$1.2 million.

As a result of our current cash balances, the performance of our current and expected operations, current metals prices, proceeds from potential at-the-market sales of common stock, and availability under our Credit Agreement (refer to Note 9 of Notes to Consolidated Financial Statements), we believe we will be able to meet our obligations and other potential cash requirements during the next 12 months from the date of this report. Our obligations and other uses of cash may include, but are not limited to: debt service obligations related to the Senior Notes and our Series 2020-A Senior Notes due July 9, 2025 (the "IQ Notes") issued to Investissement Québec, a financing arm of the Québec government, which have total principal of CAD\$48.2 million and bear interest at a rate of 6.515%; principal and interest payments under our Credit Agreement; deferral of revenues, ramp-up and suspension costs at certain of our operations; capital expenditures at our operations; potential acquisitions of other mining companies or properties; regulatory matters; litigation; potential repurchases of our common stock under the program described above; and payment of dividends on common stock, if declared by our board of directors. We currently estimate a range of approximately \$190 to \$210 million will be spent in 2024 on capital expenditures, primarily for equipment, infrastructure, and development at our mines, before any lease financing. We also estimate exploration and pre-development expenditures will total approximately \$32 million in 2024. Our expenditures for these items and our related plans for 2024 may change based upon our financial position, metals prices, and other considerations. Our ability to fund the activities described above will depend on our operating performance, metals prices, our ability to estimate revenues and costs, sources of liquidity available to us, including the revolving credit facility, and other factors. A sustained downturn in metals prices, significant increase in operational or capital costs or other uses of cash, our inability to access the credit facility or the sources of liquidity discussed above, or other factors beyond our control could impact our plans. See Item 1A. Risk Factors - An extended decline in metals prices, an increase in operating or capital costs, or treatment charges, mine accidents or closures, increasing regulatory obligations, or our inability to convert resources or exploration targets to reserves may cause us to record write-downs, which could negatively impact our results of operations and We have a substantial amount of debt that could impair our financial health and prevent us from fulfilling our obligations under our existing and future indebtedness.

We may defer some capital expenditures and/or exploration and pre-development activities, engage in asset sales or secure additional capital if necessary to maintain liquidity. We also may pursue additional acquisition opportunities, which could require additional equity issuances or other forms of financing. We cannot assure you that such financing will be available to us.

Our liquid assets excluding restricted cash and cash equivalents include (in millions):

	December 31, 2023			ecember 31, 2022	December 31, 2021		
Cash and cash equivalents held in U.S. dollars	\$	98.8	\$	86.8	\$	196.2	
Cash and cash equivalents held in foreign currency		7.6		17.9		13.8	
Total cash and cash equivalents		106.4		104.7		210.0	
Marketable equity securities		33.7		24.0		14.4	
Total cash, cash equivalents and investments	\$	140.1	\$	128.7	\$	224.4	

Cash and cash equivalents increased by \$1.7 million in 2023, for the reasons discussed below. Cash and cash equivalents held in foreign currencies represents balances in CAD, and decreased by \$10.3 million in 2023 due to a decrease in CAD held at our Canadian operations. The value of current and non-current marketable equity securities increased by \$9.7 million.

		1,				
	2023		2022		2021	
Cash provided by operating activities (in millions)	\$	75.5	\$	89.9	\$	220.3

Cash provided by operating activities decreased by \$14.4 million in 2023 compared to 2022. The decrease was due to lower income, adjusted for non-cash items, further compounded by the negative impact of working capital and other operating asset and liability changes. Income, adjusted for non-cash items, was lower by \$4.8 million primarily due to increased loss from operations, which was mainly a result of higher ramp-up and suspension costs associated with continued ramp-up at Keno Hill and suspension of operations at Lucky Friday. Working capital and other operating asset and liability changes resulted in a net cash decrease of \$9.6 million in 2023 compared to 2022. Significant variances in working capital changes between 2023 and 2022 resulted from lower cash flows from changes in other current and non-current assets and accrued payroll and related benefits.

Cash provided by operating activities decreased by \$130.4 million in 2022 compared to 2021. The decrease was due to lower income, adjusted for non-cash items, further compounded by the negative impact of working capital and other operating asset and liability changes. Income, adjusted for non-cash items, was lower by \$82.3 million primarily due to lower income from operations, which was mainly a result of lower realized silver, lead and zinc prices, higher treatment charges and an insignificant contribution from the Nevada Operations in 2022. Working capital and other operating asset and liability changes resulted in a net cash decrease of \$29.3 million in 2022 compared to an increase in cash of \$18.9 million in 2021. Significant variances in working capital changes between 2022 and 2021 resulted from lower cash flows from changes in inventories and accounts payable and accrued liabilities.

		Y	ear Enc	led December 3	1,			
	2023			2022	2021			
Cash used in investing activities (in millions)	\$	(231.3)	\$	(187.3)	\$	(107.0)		

Capital expenditures, excluding \$16.1 million in non-cash finance lease additions, were \$223.9 million in 2023, which was \$74.5 million higher than 2022. The major components of this increase were from an increase of \$30.4 million at Casa Berardi primarily due to purchases of new surface fleet equipment as the mine transitions from an underground to an open pit operation and the construction of tailings storage facilities, an increase of \$24.9 million at Keno Hill related to mine development, mobile equipment purchases, crusher modifications and camp upgrades, and an increase of \$14.3 million at Lucky Friday as investments were made to support sustained higher throughput and costs were incurred to build the secondary egress following the August 2023 fire. During 2023, we acquired investments in other mining companies and short term investments for a total of \$9.0 million.

Capital expenditures, excluding \$11.9 million in non-cash finance lease additions, were \$149.4 million in 2022, which was \$40.3 million higher than 2021. The increase included \$19.7 million for Keno Hill following the Alexco acquisition and higher expenditures at Greens Creek and Lucky Friday, partially offset by lower expenditures at Casa Berardi. As a result of the Alexco acquisition, we assumed a cash balance of \$9.0 million, net of transaction costs of \$5.1 million, however, we had previously advanced \$25.0 million to Alexco pre-acquisition, to enable them to fund development of the Keno Hill mining district prior to acquisition closing. During 2022, we acquired investments in other mining companies and short term investments for a total of \$32.0 million, and disposed of the short-term investments and a mining company investment, generating total proceeds of \$9.4 million.

Cash provided by (used in) financing activities (in millions)



During 2023, we drew down a cumulative \$239 million and repaid a cumulative \$111 million on our Credit Agreement. During 2022, we drew down and repaid \$25.0 million on our Credit Agreement. We had no borrowings or repayments of debt during 2021. In 2023, 2022 and 2021, we paid total cash dividends on our common and preferred stock of \$15.7 million, \$12.9 million and \$20.7 million, respectively. We made payments on our finance leases of \$10.6 million, \$7.6 million, and \$7.3 million in 2023, 2021, and 2021, respectively. We issued stock under our ATM program described above for net proceeds of \$56.7 million and \$17.3 million in 2023 and 2022, respectively. We also purchased shares of our common stock for \$2.0 million, \$3.7 million, and \$4.5 million in 2023, 2022, and 2021, respectively, as a result of our employees' election to utilize net share settlement to satisfy their tax withholding obligations related to incentive compensation paid in stock and vesting of restricted stock units. See *Note 12* of *Notes to Consolidated Financial Statements* for more information.

Exchange rate fluctuations between the U.S. dollar and the Canadian dollar and Mexican peso resulted in an increase in our cash balance of \$1.1 million, and decreases of \$0.3 million and \$0.5 million, during 2023, 2022 and 2021, respectively.

Contractual Obligations and Contingent Liabilities and Commitments

The table below presents our fixed, non-cancelable contractual obligations and commitments primarily related to our Senior Notes, IQ Notes, revolving credit facility, outstanding purchase orders and certain service contract commitments, and lease arrangements as of December 31, 2023 (in thousands):

			P	Paymer	its Due By Perio	d			
	Less than 1 year		 2-3 years		4-5 years	After 5 years		_	Total
Purchase and contractual obligations ⁽¹⁾	\$	36,488	\$ _	\$		\$	_	\$	36,488
Credit Agreement ⁽²⁾		128,114	284				_	\$	128,398
Finance lease commitments ⁽³⁾		11,172	13,501		5,119			\$	29,792
Operating lease commitments ⁽⁴⁾		1,290	2,556		2,204		5,566	\$	11,616
Senior Notes ⁽⁵⁾		34,438	68,876		513,741			\$	617,055
IQ Notes ⁽⁶⁾		2,376	37,704				—	\$	40,080
Total contractual cash obligations	\$	213,878	\$ 122,921	\$	521,064	\$	5,566	\$	863,429

(1) Consists of open purchase orders and commitments of approximately \$11.4 million, \$8.1 million, \$10.7 million, \$2.8 million and \$3.5 million for various capital and non-capital items at Greens Creek, Lucky Friday, Keno Hill, Casa Berardi and Nevada Operations, respectively.

- (2) The Credit Agreement provides for a \$150 million revolving credit facility. We had net draws of \$128 million and \$6.9 million in letters of credit outstanding as of December 31, 2023. The amounts in the table above assumes no additional amounts will be drawn in future periods, and includes only the standby fee on the current undrawn balance and accrued interest. For more information on our Credit Agreement, see *Note 9* of *Notes to Consolidated Financial Statements*.
- (3) Includes scheduled finance lease payments of \$7.6 million, \$6.3 million, \$8.2 million, and \$7.7 million for equipment at Greens Creek, Lucky Friday, Casa Berardi, and Keno Hill, respectively. For more information, see Note 9 of Notes to Consolidated Financial Statements.
- (4) We enter into operating leases in the normal course of business. Substantially all lease agreements have fixed payment terms based on the passage of time. Some lease agreements provide us with the option to renew the lease or purchase the leased property. Our future operating lease obligations would change if we exercised these renewal options and if we entered into additional operating lease arrangements. For more information, see *Note 9* of *Notes to Consolidated Financial Statements.*
- (5) On February 19, 2020, we completed an offering of \$475 million in aggregate principal amount of our Senior Notes. The Senior Notes bear interest at a rate of 7.25% per year with interest payable on February 15 and August 15 of each year, commencing August 15, 2020. For more information, see *Note 9* of *Notes to Consolidated Financial Statements*.
- (6) On July 9, 2020, we entered into a note purchase agreement pursuant to which we issued our IQ Notes for CAD\$50 million (approximately USD\$36.8 million at the time of the transaction) in aggregate principal amount. The IQ Notes bear interest on amounts outstanding at a rate of 6.515% per year, payable on January 9 and July 9 of each year, commencing January 9, 2021. For more information, see *Note 9* of *Notes to Consolidated Financial Statements*.

We record liabilities for estimated costs associated with mine closure, reclamation of land and other environmental matters. At December 31, 2023, our liabilities for these matters totaled \$120.5 million. Future expenditures related to closure, reclamation and environmental expenditures at our other sites are difficult to estimate, although we anticipate we will incur expenditures relating to these obligations over the next 30 years. For additional information relating to our environmental obligations, see *Note 5* of *Notes to Consolidated Financial Statements* and *Item 1A. Risk Factors – Our environmental obligations may exceed the provisions we have made.* As discussed in *Note 16* of *Notes to Consolidated Financial Statements*, we are involved in various other legal proceedings which may result in obligations in excess of provisions we have made.

Critical Accounting Estimates

Our significant accounting policies are described in *Note 2* of *Notes to Consolidated Financial Statements*. As described in such *Note 2*, we are required to make estimates and assumptions that affect the reported amounts and related disclosures of assets, liabilities, revenue, and expenses. Our estimates are based on our experience and our interpretation of economic, political, regulatory, and other factors that affect our business prospects. Actual results may differ significantly from our estimates.

We believe that our most critical accounting estimates are related to future metals prices; obligations for environmental, reclamation, and closure matters; mineral reserves and resources; accounting for business combinations; valuation of deferred tax assets and assumptions used in accounting for our pension plans, as they require us to make assumptions that are highly uncertain at the time the accounting estimates are made and changes in them are reasonably likely to occur from period to period. Management has discussed the development and selection of these critical accounting estimates with the Audit Committee has reviewed the disclosures presented below. In addition, there are other items within our financial statements that require estimation, but are not deemed to be critical. However, changes in estimates used in these and other items could have a material impact on our financial statements.

Future Metals Prices

Metals prices are key components in estimates that determine the valuation of some of our significant assets and liabilities, including properties, plants, equipment and mineral interests, deferred tax assets, and certain accounts receivable. Metals prices are also an important component in the estimation of reserves and resources. As shown above in *Item 1. – Business*, metals prices have historically been volatile. Silver demand arises from investment demand, particularly in exchange-traded funds, industrial demand, and consumer demand. Gold demand arises primarily from investment and consumer demand. Investment demand for silver and gold can be influenced by several factors, including: the value of the U.S. dollar and other currencies, changing U.S. budget deficits, widening availability of exchange-traded funds, interest rate levels, the health of credit markets, and inflationary expectations. Uncertainty related to (i) the political environment in the U.S., (ii) U.S. and global trading policies (including tariffs), (iii) a global economic recovery, and (iv) recent uncertainty in China, could result in continued investment demand for silver is closely linked to world Gross Domestic Product growth and industrial fabrication levels, as it is difficult to substitute for silver in industrial fabrication. Consumer demand is driven significantly by demand for jewelry and other retail products. We believe that long-term industrial and economic trends, including demand for silver and gold and industrial demand for silver. There can be no assurance whether these trends will continue or how they will impact prices of the metals we produce. In the past, we have recorded impairments to our asset carrying values because of low prices, and we can offer no assurance that prices will either remain at their current levels or increase.

Processes supporting valuation of our assets and liabilities that are most significantly affected by metals prices include analysis of asset carrying values, depreciation, reserves and resources, and deferred income taxes. On at least an annual basis - and more frequently if circumstances warrant - we examine our depreciation rates, reserve estimates, and the valuation allowances on our deferred tax assets. We examine the carrying values of our assets as changes in facts and circumstances warrant. In our evaluation of carrying values and deferred taxes, we apply several pricing views to our forecasting model, including current prices, analyst price estimates, forward-curve prices, and historical prices (see *Mineral Reserves and Resources*, below, regarding prices used for reserve and resource estimates). Using applicable accounting guidance and our view of metals markets, we use the probability-weighted average of the various methods to determine whether the values of our assets are fairly stated, and to determine the level of valuation allowances, if any, on our deferred tax assets. In addition, estimates of future metals prices are used in the valuation of certain assets in the determination of the purchase price allocations for our acquisitions (see *Business Combinations* below).

Sales of concentrates sold directly to customers are recorded as revenues upon completion of the performance obligations and transfer of control of the product to the customer (generally at the time of shipment) using estimated forward metals prices for the estimated month of settlement. Due to the time elapsed between shipment of concentrates to the customer and final settlement with the customer, we must estimate the prices at which sales of our metals will be settled. Previously recorded sales and trade accounts receivable are adjusted to estimated settlement prices until final settlement by the customer. Changes in metals prices between shipment and final

settlement result in changes to revenues and accounts receivable previously recorded upon shipment. As a result, our trade accounts receivable balances related to concentrate sales are subject to changes in metals prices until final settlement occurs. For more information, see *Note 4* of *Notes to Consolidated Financial Statements*.

We utilize financially-settled forward contracts to manage our exposure to changes in prices for silver, gold, zinc and lead. See *Item 7A. – Quantitative and Qualitative Disclosures About Market Risk - Commodity-Price Risk Management* below for more information on our contract programs. Effective November 1, 2021, we designated the contracts for lead and zinc as hedges for accounting purposes, with gains and losses deferred to accumulated other comprehensive income until the hedged product ships. Prior to November 1, 2021, these contracts were not designated as hedges for accounting purposes and were therefore marked-to-market through earnings each period. Changes in silver, gold, zinc and lead prices between the dates that the contracts are entered into and their settlements will result in changes to the fair value asset or liability associated with the contracts, with a corresponding gain or loss for silver and gold contracts recognized in earnings and gain or loss for lead and zinc contracts deferred to accumulated other comprehensive income (loss).

Obligations for Environmental, Reclamation and Closure Matters

Accrued reclamation and closure costs can represent a significant and variable liability on our balance sheet. We have estimated our liabilities under appropriate accounting guidance; however, the ranges of liability could exceed the liabilities recognized. If substantial damages were awarded, claims were settled, or remediation costs incurred in excess of our accruals, our financial results or condition could be materially adversely affected.

Mineral Reserves and Resources

Critical estimates are inherent in the process of determining our reserves and resources. Our reserves and resources are affected largely by our assessment of future metals prices, as well as by engineering and geological estimates of ore grade, accessibility, future recoveries, capital expenditures and production costs. See *Item 2. – Properties* above for the metals price assumptions used in our estimates of reserves and resources as of December 31, 2023, 2022 and 2021. Our assessment of reserves and resources occurs at least annually, and periodically utilizes external audits.

Reserves and resources are a key component in the valuation of our properties, plants and equipment. Reserve estimates are used in determining appropriate rates of units-of-production depreciation, with net book value of many assets depreciated over remaining estimated reserves. Reserves and resources are also a key component in forecasts, with which we compare future cash flows to current asset values in an effort to ensure that carrying values are reported appropriately. Our forecasts are also used in determining the level of valuation allowances on our deferred tax assets. Reserves and resources also play a key role in the valuation of certain assets in the determination of the purchase price allocations for acquisitions. Annual reserve and resource estimates are also used to determine conversions of resources and exploration targets beyond the known reserve resulting from business combinations to depreciable reserves, in periods subsequent to the business combinations (see *Business Combinations* below). Reserves and resources are a culmination of many estimates and are not guarantees that we will recover the indicated quantities of metals or that we will do so at a profitable level.

Business Combinations

When acquiring a company, we first evaluate whether the transaction should be accounted for as an asset acquisition or a business combination. If substantially all, generally interpreted as greater than 90% of the fair value is attributable to a single asset, the transaction is accounted for as an asset acquisition, and the transaction costs are capitalized. In a business combination, transaction costs are expensed. Regardless of whether we account for an acquisition as an asset acquisition or business combination, we are required to allocate the purchase price of acquired companies to the tangible and intangible assets acquired and liabilities assumed based on their estimated fair values at the acquisition date. The valuation of assets acquired and liabilities assumed requires management to make significant estimates and assumptions, especially with respect to long-lived assets (including resources and exploration targets beyond the known reserve). These estimates include future metals prices and mineral reserves and resources, as discussed above. Management may also be required to make estimates related to the valuation of deferred tax assets or liabilities as part of the purchase price allocation for business combinations. In some cases, we use third-party appraisers to determine the fair values of property and other identifiable assets.

Valuation of Deferred Tax Assets

Our deferred income tax assets include certain future tax benefits. We record a valuation allowance against any portion of those deferred income tax assets when we believe, based on the weight of available evidence, it is more likely than not that some portion or all of the deferred income tax asset will not be realized. We review the likelihood that we will realize the benefit of our deferred tax assets and therefore the need for valuation allowances on a quarterly basis, or more frequently if events indicate that a review is required. In determining the requirement for a valuation allowance, the historical and projected financial results of the legal entity or consolidated group recording the net deferred tax asset is considered, along with all other available positive and negative evidence.

Certain categories of evidence carry more weight in the analysis than others based upon the extent to which the evidence may be objectively verified. We look to the nature and severity of cumulative pretax losses (if any) in the current three-year period ending on the evaluation date or the expectation of future pretax losses and the existence and frequency of prior cumulative pretax losses.

We utilize a rolling twelve quarters of pre-tax income or loss as a measure of our cumulative results in recent years. Concluding that a valuation allowance is not required is difficult when there is significant negative evidence which is objective and verifiable, such as cumulative losses in recent years. However, a cumulative three year loss is not solely determinative of the need for a valuation allowance. We also consider all other available positive and negative evidence in our analysis.

Other factors considered in the determination of the probability of the realization of the deferred tax assets include, but are not limited to:

- Earnings history;
- Projected future financial and taxable income based upon existing reserves and long-term estimates of commodity prices;
- The duration of statutory carry forward periods;
- · Prudent and feasible tax planning strategies readily available that may alter the timing of reversal of the temporary difference;
- · Nature of temporary differences and predictability of reversal patterns of existing temporary differences; and
- The sensitivity of future forecasted results to commodity prices and other factors.

The Company assesses available positive and negative evidence to estimate if sufficient future taxable income will be generated to utilize the existing deferred tax assets. A significant piece of objective negative evidence is recent pretax losses and/or expectations of future pretax losses. Such objective evidence limits the ability to consider other subjective evidence including projections for future growth. The amount of the deferred tax asset considered realizable, however, could be adjusted if estimates of future taxable income during the carryforward period are increased or if objective negative evidence in the form of cumulative losses is no longer present and additional weight may be given to subjective evidence such as our projections for growth.

See Note 7 of Notes to Consolidated Financial Statements for additional detail on the valuation allowance.

Pension Plan Accounting Assumptions

We are required to make a number of assumptions in estimating the future benefit obligations for, and fair value of assets included in, our pension plans, which impact the amount of liability and net periodic pension cost recognized related to our plans. These include assumptions for applicable discount rates, the expected rate of return on plan assets and the rate of future employee compensation increases. See *Note 6* of *Notes to Consolidated Financial Statements* for more information on the accounting for our pension plans and the related assumptions.

New Accounting Pronouncements

Accounting Standards Updates Adopted

In March 2020, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2020-04 ("ASU 2020-04"), Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting, which provides optional guidance for a limited period of time to ease the potential burden on accounting for contract modifications caused by reference rate reform. In January 2021, ASU 2021-01, Reference Rate Reform (Topic 848): Scope was issued which broadened the scope of ASU 2020-04 to include certain derivative instruments. In December 2022, ASU 2022-06, Reference Rate Reform (Topic 848): Deferral of the Sunset Date of Topic 848, was issued which deferred the sunset date of ASU 2020-04. The guidance

is effective for all entities as of March 12, 2020 through December 31, 2024. The guidance may be adopted over time as reference rate reform activities occur and should be applied on a prospective basis. Certain of our derivative instruments previously referenced London Interbank Offered Rate ("LIBOR") based rates and have been amended to eliminate the LIBOR-based rate references prior to July 1, 2023. There have been no significant impacts to our financial results, financial position or cash flows from the transition from LIBOR to alternative reference interest rates.

Accounting Standards Updates to Become Effective in Future Periods

In August 2023, the FASB issued ASU 2023-05, Business Combinations - Joint Venture Formations (Subtopic 805-60): Recognition and Initial Measurement, which clarifies the business combination accounting for joint venture formations. The amendments in the ASU seek to reduce diversity in practice that has resulted from a lack of authoritative guidance regarding the accounting for the formation of joint ventures in separate financial statements. The amendments also seek to clarify the initial measurement of joint venture net assets, including businesses contributed to a joint venture. The guidance is applicable to all entities involved in the formation of a joint venture. The amendments are effective for all joint venture formations with a formation date on or after January 1, 2025. Early adoption and retrospective application of the amendments are permitted. We do not expect adoption of the new guidance to have a material impact on our consolidated financial statements and disclosures.

In November 2023, the FASB issued ASU 2023-07, Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures, amending reportable segment disclosure requirements to include disclosure of incremental segment information on an annual and interim basis. Among the disclosure enhancements are new disclosures regarding significant segment expenses that are regularly provided to the chief operating decision-maker and included within each reported measure of segment profit or loss, as well as other segment items bridging segment revenue to each reported measure of segment profit or loss. The amendments in ASU 2023-07 are effective for fiscal years beginning after December 15, 2023, and for interim periods within fiscal years beginning after December 15, 2024, and are applied retrospectively. Early adoption is permitted. We are currently evaluating the impact of this update on our consolidated financial statements and disclosures.

In December 2023, the FASB issued ASU 2023-09, Income Taxes (Topic 740): Improvement to Income Tax Disclosures, amending income tax disclosure requirements for the effective tax rate reconciliation and income taxes paid. The amendments in ASU 2023-09 are effective for fiscal years beginning after December 15, 2024 and are applied prospectively. Early adoption and retrospective application of the amendments are permitted. We are currently evaluating the impact of this update on our consolidated financial statements and disclosures.

Guarantor Subsidiaries

Presented below are Hecla's condensed consolidating financial statements as required by Rule 3-10 of Regulation S-X of the Securities Exchange Act of 1934, as amended, resulting from the guarantees by certain of Hecla's subsidiaries of the Senior Notes and IQ Notes (see *Note 9* of *Notes to Consolidated Financial Statements* for more information). As of December 31, 2023, the Guarantors consist of the following Hecla 100%-owned subsidiaries: Hecla Limited; Silver Hunter Mining Company; Rio Grande Silver, Inc.; Hecla MC Subsidiary, LLC; Hecla Silver Valley, Inc.; Burke Trading, Inc.; Hecla Montana, Inc.; Revett Silver Company; RC Resources, Inc.; Troy Mine Inc.; Revett Exploration, Inc.; Revett Holdings, Inc.; Mines Management, Inc.; Newhi, Inc.; Montanore Minerals Corp.; Hecla Alaska LLC; Hecla Greens Creek Mining Company; Hecla Admiralty Company; Hecla Juneau Mining Company; Klondex Holdings Inc.; Klondex Gold & Silver Mining Co.; Klondex Midas Holdings Limited; Klondex Aurora Mine Inc.; Klondex Hollister Mine Inc.; and Alexco Resource Corp. We completed the offering of the Senior Notes on February 19, 2020 under our shelf registration statement previously filed with the SEC. We issued the IQ Notes in four equal tranches between July and October 2020.

The condensed consolidating financial statements below have been prepared from our financial information on the same basis of accounting as the consolidated financial statements set forth elsewhere in this report. Investments in the subsidiaries are accounted for under the equity method. Accordingly, the entries necessary to consolidate Hecla, the Guarantors, and our non-guarantor subsidiaries are reflected in the eliminations column. In the course of preparing consolidated financial statements, we eliminate the effects of various transactions conducted between Hecla and its subsidiaries and among the subsidiaries. While valid at an individual subsidiary level, such activities are eliminated in consolidation because, when taken as a whole, they do not represent business activity with third-party customers, vendors, and other parties. Examples of such eliminations include the following:

• Investments in subsidiaries. The acquisition of a company results in an investment in debt or equity capital on the records of the parent company and a contribution to debt or equity capital on the records of the subsidiary. Such investments and capital contributions are eliminated in consolidation.



- Capital contributions. Certain of Hecla's subsidiaries do not generate cash flow, either at all or that is sufficient to meet their capital needs, and their cash requirements are routinely met with inter-company advances from their parent companies. Generally on an annual basis, when not otherwise intended as debt, the boards of directors of such parent companies declare contributions of capital to their subsidiary companies, which increase the parents' investment and the subsidiaries' additional paid-in capital. In consolidation, investments in subsidiaries and related additional paid-in capital are eliminated.
- **Debt.** At times, inter-company debt agreements have been established between certain of Hecla's subsidiaries and their parents. The related debt liability and receivable balances, accrued interest expense (if any) and income activity (if any), and payments of principal and accrued interest amounts (if any) by the subsidiary companies to their parents are eliminated in consolidation.
- **Dividends.** Certain of Hecla's subsidiaries which generate cash flow routinely provide cash to their parent companies through inter-company transfers. On at least an annual basis, the boards of directors of such subsidiary companies declare dividends to their parent companies, which reduces the subsidiaries' retained earnings and increases the parents' dividend income. In consolidation, such activity is eliminated.
- **Deferred taxes.** Our ability to realize deferred tax assets and liabilities is considered for two consolidated tax groups of subsidiaries within the United States: The Nevada U.S. Group and the Hecla U.S. Group. Within each tax group, all subsidiaries' estimated future taxable income contributes to the ability of their tax group to realize all such assets and liabilities. However, when Hecla's subsidiaries are viewed independently, we use the separate return method to assess the realizability of each subsidiary's deferred tax assets and whether a valuation allowance is required against such deferred tax assets. In some instances, a parent company or subsidiary may possess deferred tax assets whose realization depends on the future taxable income of other subsidiaries on a consolidated-return basis, but would not be considered realizable if such parent or subsidiary filed on a separate stand-alone basis. In such a situation, a valuation allowance is assessed on that subsidiary's deferred tax assets, with the resulting adjustment reported in the eliminations column of the guarantor and parent's financial statements, as is the case in the financial statements set forth below. The separate return method can result in significant eliminations of deferred tax assets and liabilities and related income tax provisions and benefits. Non-current deferred tax asset balances are included in other non-current assets on the consolidating balance sheets and make up a large portion of that item, particularly for the guarantor balances.

Separate financial statements of the Guarantors are not presented because the guarantees by the Guarantors are joint and several and full and unconditional, except for certain customary release provisions, including: (1) the sale or disposal of all or substantially all of the assets of the Guarantor; (2) the sale or other disposition of the capital stock of the Guarantor; (3) the Guarantor is designated as an unrestricted entity in accordance with the applicable provisions of the indenture; (4) Hecla ceases to be a borrower as defined in the indenture; and (5) upon legal or covenant defeasance or satisfaction and discharge of the indenture.

Condensed Consolidating Balance Sheets

				Α	s of D	ecember 31, 202	23			
	Parent		Guarantors		Non-Guarantors		Eliminations		Consolidated	
Assets					(in	thousands)				
Cash and cash equivalents	\$	89,377	\$	16,053	\$	944	\$	_	\$	106,374
Other current assets		15,929		127,531		10,428				153,888
Properties, plants, equipment and mineral interests - net		642		2,657,261		8,347				2,666,250
Intercompany receivable (payable)		(132,464)		(812,078)		589,842		354,700		
Investments in subsidiaries		2,248,533						(2,248,533)		—
Other non-current assets		432,468		21,960		29,353		(399,189)		84,592
Total assets	\$	2,654,485	\$	2,010,727	\$	638,914	\$	(2,293,022)	\$	3,011,104
Liabilities and Stockholders' Equity										
Current liabilities	\$	50,383	\$	141,439	\$	10,128	\$	(44,490)	\$	157,460
Long-term debt		636,000		17,063		0				653,063
Non-current portion of accrued reclamation				108,731		2,066				110,797
Non-current deferred tax liability				104,835		—				104,835
Other non-current liabilities		—		16,845		_				16,845
Stockholders' equity		1,968,102		1,621,814		626,720		(2,248,532)		1,968,104
Total liabilities and stockholders' equity	\$	2,654,485	\$	2,010,727	\$	638,914	\$	(2,293,022)	\$	3,011,104



Condensed Consolidating Statements of Operations and Comprehensive (Loss) Income

	Year Ended December 31, 2023									
	Parent		Guarantors		Non-Guarantors		Eliminations		Consolidated	
					(i	n thousands)				
Revenues	\$	19,677	\$	700,550	\$	_	\$	_	\$	720,227
Cost of sales		(3,608)		(454,896)						(458,504)
Depreciation, depletion, and amortization				(148,774)						(148,774)
General and administrative		(17,222)		(23,767)		(1,733)				(42,722)
Exploration and pre-development		(559)		(28,835)		(3,118)				(32,512)
Equity in earnings of subsidiaries		(84,847)						84,847		—
Other income (expense)		(3,228)		(127,326)		(3,349)		13,193		(120,710)
(Loss) income before income and mining taxes		(89,787)		(83,048)		(8,200)		98,040		(82,995)
Benefit (provision) from income and mining taxes		5,570		6,348		53		(13,193)		(1,222)
Net (loss) income		(84,217)		(76,700)		(8,147)		84,847		(84,217)
Preferred stock dividends		(552)								(552)
(Loss) income applicable to common stockholders		(84,769)		(76,700)		(8,147)		84,847		(84,769)
Net (loss) income		(84,217)		(76,700)		(8,147)		84,847		(84,217)
Changes in comprehensive income		3,389								3,389
Comprehensive (loss) income	\$	(80,828)	\$	(76,700)	\$	(8,147)	\$	84,847	\$	(80,828)

Forward-Looking Statements

The foregoing discussion and analysis, as well as certain information contained elsewhere in this report, contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Exchange Act, and are intended to be covered by the safe harbor created thereby. See the discussion in *Special Note on Forward-Looking Statements* included prior to *Item 1*.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

The following discussion about our exposure to market risks and risk-management activities includes forward-looking statements that involve risk and uncertainties, as well as summarizes the financial instruments held by us at December 31, 2023 which are sensitive to changes in commodity prices, foreign exchange rates and interest rates and are not held for trading purposes. Actual results could differ materially from those projected in the forward-looking statements. In the normal course of business, we also face risks that are either non-financial or non-quantifiable (see *Item 1A. Risk Factors* above).

Metals Prices

Changes in the market prices of silver, gold, lead and zinc can significantly affect our profitability and cash flow. As discussed in *Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Critical Accounting Estimates*, metals prices can fluctuate due to numerous factors beyond our control. As discussed below, we utilize financially-settled forward and put option contracts to manage our exposure to changes in prices for silver, gold, zinc and lead.

Provisional Sales

Sales of all metals products sold directly to customers, including by-product metals, are recorded as revenues when all performance obligations have been completed and the transaction price can be determined or reasonably estimated. For concentrate sales, revenues are generally recorded at the time of shipment at forward prices for the estimated month of settlement. Due to the time elapsed between shipment to the customer and the final settlement with the customer we must estimate the prices at which sales of our metals will be settled. Previously recorded sales are adjusted to estimated settlement metals prices until final settlement by the customer. Changes in metals prices between shipment and final settlement will result in changes to revenues previously recorded upon shipment. Metals prices can and often do fluctuate widely and are affected by numerous factors beyond our control (see *Item 1A. Risk Factors – A substantial or extended decline in metals prices would have a material adverse effect on us*). At December 31, 2023, metals contained in concentrate sales and exposed to future price changes totaled approximately 0.7 million ounces of silver, 3,490 ounces of gold, 0.4 million pounds of zinc, and 12 million pounds of lead. If the price for each metal were to change by 10%, the change in the total value of the concentrates sold would be approximately \$3.8 million. However, as discussed in *Commodity-Price Risk Management* below, at times, subject to management's discretion, we utilize a program designed and intended to mitigate the risk of price adjustments with limited mark-to-market financially-settled forward contracts for our silver, gold, zinc and lead sales. Therefore, the impact of changes in prices on the value of concentrates sold would be substantially offset by a gain or loss on forward contracts to the extent such contracts are utilized.

Commodity-Price Risk Management

We may at times use commodity forward sales commitments, commodity swap contracts and commodity put and call option contracts to manage our exposure to fluctuation in the prices of certain metals we produce. Contract positions are designed to ensure that we will receive a defined minimum price for certain quantities of our production, thereby partially offsetting our exposure to fluctuations in market prices. Our risk management policy allows for up to 75% of our planned metals price exposure for five years into the future, with certain other limitations, to be covered under such programs that would establish a ceiling for prices to be realized on future sales. These instruments do, however, expose us to (i) credit risk in the event of non-performance by counterparties for contracts in which the contract price exceeds the spot price of a commodity and (ii) price risk to the extent that the spot price exceeds the contract price for quantities of our production covered under contract positions.

We are currently using financially-settled forward contracts to manage the exposure to changes in prices of silver, gold, zinc and lead contained in our concentrate shipments between the time of shipment and final settlement. In addition, we are using financially-settled forward contracts to manage the exposure to changes in prices of zinc and lead (but not silver and gold) contained in our forecasted future concentrate shipments. The following tables summarize the quantities of metals committed under forward sales contracts at December 31, 2023 and 2022:

December 31, 2023	Ou	5)	Average price per ounce/pound									
	Silver	Gold	Zinc	Lead	S	liver		Gold		Zinc]	Lead
	(ounces)	(ounces)	(pounds)	(pounds)	(0)	unces)	(ounces)	_(P	ounds)	(P	ounds)
Contracts on provisional sales												
2023 settlements	735	3	441	15,542	\$	24.40	\$	2,045	\$	1.51	\$	1.00
Contracts on forecasted sales												
2024 settlements	—	—	—	56,713		N/A		N/A		N/A	\$	0.98
2025 settlements	—		—	49,273		N/A		N/A		N/A	\$	0.98

December 31, 2022	0	Ounces/pounds under contract (in 000's)						Average price per ounce/pound							
	Silver (ounces)	Gold (ounces)	Zinc (pounds)	Lead (pounds)	9 (0	Silver unces)	(Gold ounces)	(p	Zinc ounds)	(p	Lead ounds)			
Contracts on provisional sales															
2023 settlements	3,124	8	18,629	11,960	\$	21.55	\$	1,795	\$	1.38	\$	0.98			
Contracts on forecasted sales															
2023 settlements			37,533	75,618		N/A		N/A	\$	1.34	\$	1.00			
2024 settlements	—			45,856		N/A		N/A		N/A	\$	0.99			

Effective November 1, 2021, we designated the contracts for lead and zinc contained in our forecasted future shipments as hedges for accounting purposes, with gains and losses deferred to accumulated other comprehensive loss until the hedged product ships. Prior to November 1, 2021, these contracts were not designated as hedges for accounting purposes and were therefore marked-to-market through earnings each period. The forward contracts for silver and gold contained in our concentrate shipments have not been designated as hedges and are marked-to-market through earnings each period.

At December 31, 2023 and 2022, we recorded the following balances for the fair value of forward contracts held at that time (in millions):

			Decemb	er 31, 2023					Decer	nber 31, 2022	
Balance sheet line item:	Contra asset j	cts in an position	Contr liabilit	acts in a y position	No (li	et asset ability)	Contrasse	racts in an t position	Cor liabi	ntracts in a lity position	Net asset (liability)
Other current assets	\$	3.1	\$	_	\$	3.1	\$	1.2	\$		\$ 1.2
Other non-current assets	\$	1.5	\$		\$	1.5	\$	0.1	\$		\$ 0.1
Current derivatives liability	\$	—	\$	(0.1)	\$	(0.1)	\$	—	\$	(12.1)	\$ (12.1)
Non-current derivatives liability	\$	_	\$		\$		\$	_	\$	(2.5)	\$ (2.5)

Net realized and unrealized gains of approximately \$14.6 million related to the effective portion of the contracts designated as hedges were included in accumulated other comprehensive loss as of December 31, 2023. Realized and unrealized gains and losses will be transferred from accumulated other comprehensive loss to current earnings as the underlying forecasted sales transaction is recognized. We estimate approximately \$12.6 million in net realized and unrealized gains included in accumulated other comprehensive loss as of December 31, 2023 will be reclassified to current earnings in the next twelve months. The realized gains arose due to cash settlement of zinc and lead contracts in 2023 and zinc contracts in 2022 prior to maturity for cash proceeds of \$8.5 million and \$17.4

million, respectively. There were no early settlements in 2021. We recognized a net gain of \$19.7 million during 2023 on the contracts utilized to manage exposure to prices of metals in our concentrate shipments, which is included in sales. The net gain recognized on the contracts offsets loss related to price adjustments on our provisional concentrate sales, both of which resulted from changes to silver, gold, lead and zinc prices between the time of sale and final settlement.

We recognized a \$32.9 million net loss during 2021 on the contracts utilized to manage exposure to changes in prices for forecasted future sales prior to their hedge designation. The net loss on these contracts is included in the fair value adjustments, net line item under other income (expense), as they relate to forecasted future sales, as opposed to sales that have already taken place but are subject to final pricing (as discussed in the preceding paragraph). The net loss for 2021 is the result of increasing zinc and lead prices. These programs, when utilized and the contracts are not settled prior to their maturity, are designed to mitigate the impact of potential future declines in silver, gold, zinc and lead prices from the price levels established in the contracts (see average price information above). When those prices increase compared to the contract prices, we incur losses on the contracts.

Foreign Currency

We operate or have mining interests in Canada, which exposes us to risks associated with fluctuations in the exchange rates between the USD and CAD. We have determined the functional currency for our Canadian operations is the USD. As such, foreign exchange gains and losses associated with the re-measurement of monetary assets and liabilities from CAD to USD are recorded to earnings each period. For the year ended December 31, 2023, we recognized a net foreign exchange loss of \$3.8 million. Foreign currency exchange rates are influenced by a number of factors beyond our control. A 10% change in the exchange rate between the USD and CAD from the rate at December 31, 2023 would have resulted in a change of approximately \$8.9 million in our net foreign exchange gain or loss.

We utilize a program to manage our exposure to fluctuations in the exchange rate between the USD and CAD and the impact on our future operating costs denominated in CAD. In November 2021, we initiated a similar program related to future development costs denominated in CAD, and have used a similar program, on a limited basis, related to interest payments on our IQ Notes (see *Note 9* of *Notes to Consolidated Financial Statements*). The programs utilize forward contracts to buy CAD. Each contract related to operating costs is designated as a cash flow hedge, while contracts related to development and interest costs have not been designated as hedges as of December 31, 2023. As of December 31, 2023, we have a total of 576 forward contracts outstanding to buy a total of CAD \$422.1 million having a notional amount of USD\$332.3 million. The CAD contracts that are related to forecasted cash operating costs at Casa Berardi and Keno Hill from 2024-2026 and have CAD-to-USD exchange rates ranging between 1.27670 and 1.36920. Our risk management policy allows for up to 75% of our planned cost exposure for five years into the future to be covered under such programs, and for potential additional programs to manage other foreign currency-related exposure areas. These instruments do, however, expose us to (i) credit risk in the form of non-performance by counterparties for contracts in which the contract exchange rate exceeds the spot exchange rate of a currency and (ii) exchange rate risk to the extent that the spot exchange rate exceeds the contract exchange rate for amounts of our operating costs covered under contract positions.

As of December 31, 2023 and 2022, we recorded the following balances for the fair value of the contracts (in millions):

		Decemb	oer 3	31,		
Balance sheet line item:	1	2023		2022		
Other current assets	\$	2.7	\$	1.1		
Other non-current assets	\$	2.0	\$	0.4		
Current derivative liabilities	\$	(1.1)	\$	(4.0)		
Non-current derivative liabilities	\$	(0.4)	\$	(3.6)		

Net unrealized gains of approximately \$1.3 million related to the effective portion of the hedges were included in accumulated other comprehensive income (loss) as of December 31, 2023. Unrealized gains and losses will be transferred from accumulated other comprehensive loss to current earnings as the underlying operating expenses are recognized. We estimate approximately \$0.2 million in net unrealized gains included in accumulated other comprehensive income (loss) as of December 31, 2023 would be reclassified to current earnings in the next twelve months. Net realized losses of approximately \$3.6 million on contracts related to underlying expenses which have been recognized were transferred from accumulated other comprehensive loss and included in cost of sales and other direct production costs for the year ended December 31, 2023. Net unrealized gains of approximately \$1.2 million related to contracts not designated as hedges and no net unrealized gains or losses related to ineffectiveness of the hedges were included in fair value adjustments, net on our consolidated statements of operations and comprehensive (loss) income for the year ended December 31, 2023.

Interest Rates

We have a \$150 million credit facility, and amounts drawn on the facility are subject to variable rates of interest based on a spread over the London Interbank Offered Rate or an alternative base rate. Interest rates fluctuate due to economic factors beyond our control. We had \$128 million drawn under the facility as of December 31, 2023. Assuming all revolving loans currently available to us were fully drawn, each one percentage point change in interest rates would result in a \$2.2 million change in annual cash interest expense on our credit facility. See *Note 9* of *Notes to Consolidated Financial Statements* for more information on our credit facility.

Item 8. Financial Statements and Supplementary Data

Our Consolidated Financial Statements are included herein beginning on page F-1. Financial statement schedules are omitted as they are not applicable or the information required in the schedule is already included in the Consolidated Financial Statements.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosures

None.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

An evaluation was performed under the supervision and with the participation of management, including the CEO and CFO, of the effectiveness of the design and operation of our disclosure controls and procedures as required by Exchange Act Rules 13a-15(e) and 15(d)-15(e) as of the end of the reporting period covered by this report. Based on that evaluation, our CEO and CFO concluded that our disclosure controls and procedures, including controls and procedures designed to ensure that information required to be disclosed by us is accumulated and communicated to our management (including our CEO and CFO), were effective as of December 31, 2023 in assuring them in a timely manner that material information required to be disclosed in this report has been properly recorded, processed, summarized and reported.

Management's Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over our financial reporting, which is designed 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 in the United States of America.

Because of its inherent limitations, any system of internal control over financial reporting, no matter how well designed, may not prevent or detect misstatements due to the possibility that a control can be circumvented or overridden or that misstatements due to error or fraud may occur that are not detected. Also, because of changes in conditions, internal control effectiveness may vary over time.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2023, using criteria established in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") and concluded that we have maintained effective internal control over financial reporting as of December 31, 2023, based on these criteria.

Our internal control over financial reporting as of December 31, 2023 has been audited by BDO USA, P.C., an independent registered public accounting firm, as stated in the attestation report which is included herein.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting during the quarter ended December 31, 2023, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors Hecla Mining Company Coeur d'Alene, Idaho

Opinion on Internal Control over Financial Reporting

We have audited Hecla Mining Company's (the "Company's") internal control over financial reporting as of December 31, 2023, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (the "COSO criteria"). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2023, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets of the Company as of December 31, 2023 and 2022, the related consolidated statements of operations and comprehensive (loss) income, changes in stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2023, and the related notes and our report dated February 15, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Item 9A, Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit of internal control over financial reporting in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed 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. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ BDO USA, P.C.

Spokane, Washington February 15, 2024

Item 9B. Other Information

During the three months ended December 31, 2023, no director or officer of the Company adopted or terminated a "Rule 10b5-1 trading arrangement," or "non-Rule 10b5-1 trading arrangement," as each term is defined in Item 408(a) of Regulation S-K.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

In accordance with our restated certificate of incorporation, our board of directors is divided into three classes. The terms of office of the directors in each class expire at different times. The directors are elected for three-year terms. The Effective Dates listed below for each director indicate their current term of office. All officers are elected for a term which ordinarily expires on the date of the meeting of the board of directors immediately following the annual meeting of stockholders. The positions and ages listed below for our current directors and officers are as of the scheduled date of our next annual meeting of stockholders in May 2024. There are no arrangements or understandings between any of the directors or officers and any other person(s) pursuant to which such directors or officers were elected.

	Age at May 17, 2024	Position and Committee Assignments	Effective Dates
Phillips S. Baker, Jr.	64	President and CEO	5/23 — 5/24
		Director (1,6)	5/23 — 5/26
Russell D. Lawlar		Senior Vice President and Chief	
	44	Financial Officer	5/23 — 5/24
Carlos Aguiar	53	Vice President – Operations	8/23 — 5/24
Michael L. Clary		Senior Vice President - Chief	
	56	Administrative Officer	5/23 — 5/24
Kurt D. Allen	62	Vice President – Exploration	5/23 — 5/24
David C. Sienko	55	Vice President and General Counsel	5/23 — 5/24
Robert D. Brown		Vice President - Corporate	
	55	Development & Sustainability	5/23 — 5/24
Catherine J. Boggs	69	Director (1,2,3,4)	5/21 — 5/24
George R. Johnson	75	Director (4,5)	5/23 — 5/26
Alice Wong	64	Director (2,3,5)	5/22 - 5/25
Stephen F. Ralbovsky	70	Director (2,3,5)	5/21 - 5/24
Charles B. Stanley	65	Director (2,4,5)	5/22 — 5/25

(1) Member of Executive Committee

- (2) Member of Audit Committee
- (3) Member of Governance and Social Responsibility Committee
- (4) Member of Compensation Committee
- (5) Member of Health, Safety, Environmental and Technical Committee

Phillips S. Baker, Jr., has been our Chief Executive Officer since May 2003 and has served as our President and as a member of the Board of Directors since November 2001. He was elected the Chair of The Silver Institute in August 2023. Mr. Baker served as Chair of the Board for the National Mining Association from 2017 to 2020, and as a director for QEP Resources, Inc. from May 2010 to March 2021. He began his career in the mining industry in 1986 and has been an officer or director of many public companies since 1990.

Russell D. Lawlar was appointed Senior Vice President and Chief Financial Officer in March 2021. He was the Treasurer from February 2018 to March 2021. Mr. Lawlar has held various positions of increasing responsibility since 2010, including being the Controller at the company's Greens Creek Mine from February 2015 to February 2018.

Carlos Aguiar was appointed Vice President - Operations in August 2023. Prior to that, he served as Vice President – General Manager of the company's lucky Friday Mine from July 2021 to August 2023 and was Vice President – General Manager, Minera Hecla, at the San Sebastian Mine from April 2016 to June 2021. He was project manager for the San Sebastian milling operation from July 2015 to March 2016. Mr. Aguiar has held a number of positions at the company's operations in Mexico, Idaho, and Venezuela, including Processing Superintendent at the La Choya mine in Mexico where he first joined Hecla in 1996. He began his career in 1995 as a metallurgist and has over 20 years of experience in engineering and management in the mining industry.

Michael L. Clary was appointed Senior Vice President – Chief Administrative Officer in July 2021. Prior to that, he was Vice President – Human Resources and Senior Counsel from March 2020 to June 2021. Mr. Clary also served in various roles for the Company, including Director – Human Resources and Senior Counsel from July 2018 to March 2020 and Senior Counsel from April 2006 to July 2018. He has also held a number of positions at the Company's operations in both Idaho and Nevada, including Controller/HR Manager at the Lucky Friday mine when he first joined Hecla in February 1994.

Kurt D. Allen was appointed Vice President – Exploration in July 2021. Prior to his appointment he was Director of Exploration from October 2019 to July 2021. Prior to that, Mr. Allen held various geology positions with Hecla in both exploration and operations including Director of New Projects from June 2012 to June 2019. He also held a number of positions at the company's operations in Idaho, Mexico, and Nevada from June 1987 to June 2012.

David C. Sienko was appointed Vice President and General Counsel in January 2010. Prior to his appointment, Mr. Sienko was a partner with the law firm K&L Gates LLP from 2004 to January 2010, where he specialized in securities, mergers and acquisitions, and corporate governance.

Robert D. Brown was appointed Vice President - Corporate Development & Sustainability in August 2021, and prior to that was Vice President – Corporate Development from January 2016 to August 2021. He was also appointed as President of our Canadian subsidiary, Hecla Canada Ltd. in August 2021, and prior to that was Vice President – Corporate Development of Hecla Canada Ltd. from January 2016 to August 2021.

Catherine "Cassie" J. Boggs has served as a director since January 2017 and became Chair of the Board in May 2023. Ms. Boggs was the General Counsel at Resource Capital Funds from January 2011 until her retirement in February 2019. She has served as a board member of Capital Limited since September 2021, and as an Intermittent Expert in mining with the US Department of Commerce's Commercial Law Development Program since November 2019. Ms. Boggs was a board member of Funzeleo from January 2016 to September 2021, as well as briefly serving on the board of U.S. Energy Corp. from June 2019 to December 2019. She is also currently serving as an Adjunct Professor at the University of Denver, Sturm College of Law.

George R. Johnson has served as a director since March 2016. Mr. Johnson was Senior Vice President of Operations of B2Gold Corporation from August 2009 until his retirement in April 2015. He has served on the Board of Directors of B2Gold Corporation since March 2016.

Alice Wong has served as a director since February 2021. Ms. Wong has served as Senior Vice President and Chief Corporate Officer of Cameco Corporation since 2011. She was Cameco's Vice President of Safety, Health, Environment, Quality and Regulatory Relations from 2008 to 2011, and Vice President of Investor, Corporate and Government Relations from 2005 to 2008. She has been a board member of the Mining Association of Canada since 2016, Canadian Nuclear Association since 2013, and Saskatchewan Mining Association since 2013. She served on the board of Sask Energy Corporation from 2016 to 2023. In 2021 she was was named a Catalyst Honours Champion in recognition of her significant contributions to advancing women and championing inclusion in the workplace and being a role model for inclusive leadership in corporate Canada.

Stephen F. Ralbovsky has served as a director since March 2016. Mr. Ralbovsky has been the founder and principal of Wolf Sky Consulting LLC since June 2014. Prior to that, he was a partner with PricewaterhouseCoopers LLP from February 1987 until his retirement in June 2014, where he concentrated his practice on public companies operating in the mining industry. Mr. Ralbovsky is a part-time Professor of Practice at the University of Arizona's James E. Rogers College of Law, where he teaches Global Mining Taxation, and is a member of several organizations, including Association of International Certified Professional Accountants, Arizona Society of CPAs, National Mining Association, and Society for Mining, Metallurgy and Exploration.

Charles B. Stanley has served as a director since May 2007. Mr. Stanley has been the Managing Member of Cutthroat Energy, LLC since April 2019. Prior to that, Mr. Stanley was Chief Executive Officer, President, and Director of QEP Resources, Inc. from May 2010 until his retirement in January 2019, and Chairman of QEP's Board of Directors from May 2012 until his retirement in January 2019.



Information with respect to our directors is set forth under the caption "Proposal 1 - Election of Class I Directors" in our proxy statement to be filed pursuant to Regulation 14A for the annual meeting scheduled to be held on May 17, 2024 (the Proxy Statement), which information is incorporated herein by reference.

Reference is made to the information set forth in the first paragraph under the caption "Report of the Audit Committee," and under the caption "Corporate Governance," in the Proxy Statement to be filed pursuant to Regulation 14A, which information is incorporated herein by reference.

Reference is made to the information set forth in the paragraph under the caption "Insider Trading Policy" in the "Compensation and Discussion and Analysis" section of the Proxy Statement to be filed pursuant to Regulation 14A, which information is incorporated herein by reference.

Reference is made to the information set forth in the paragraph under the caption "Delinquent Section 16(a) Reports" in the "Other Matters" section of the Proxy Statement to be filed pursuant to Regulation 14A, which information is incorporated herein by reference.

During the three months ended December 31, 2023, no director or officer of the Company adopted or terminated a "Rule 10b5-1 trading arrangement," or "non-Rule 10b5-1 trading arrangement," as each term is defined in Item 408(a) of Regulation S-K.

Reference is made to the information set forth under the caption "Available Information" in *Item 1* for information about the Company's Code of Conduct, which information is incorporated herein by reference.

There have been no material changes to the procedures by which stockholders may recommend director nominees. **Item 11. Executive Compensation**

Reference is made to the information set forth under the caption "Compensation Discussion and Analysis;" the caption "Compensation of Named Executive Officers;" the caption "Compensation Committee Interlocks and Insider Participation;" and the caption "Compensation Committee Report" in the Proxy Statement to be filed pursuant to Regulation 14A, which information is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Reference is made to the information set forth under the caption "Security Ownership of Certain Beneficial Owners and Management" and the caption "Equity Compensation Plan Information" in the Proxy Statement to be filed pursuant to Regulation 14A, which information is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Reference is made to the information set forth under the captions "Certain Relationships and Related Transactions" and "Director Independence" of the Proxy Statement to be filed pursuant to Regulation 14A, which information is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

Reference is made to the information set forth under the caption "Audit and Non-Audit Fees" in the Proxy Statement to be filed pursuant to Regulation 14A, which information is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) (1) Financial Statements

See Index to Financial Statements on Page F-1

(a) (2) Financial Statement Schedules

Not applicable

(a) (3) Exhibits

Hecla Mining Company and Wholly-Owned Subsidiaries

Form 10-K - December 31, 2023

Index to Exhibits

1.1	Equity Distribution Agreement, dated as of February 18, 2021, by and among Hecla Mining Company and the sales agents party thereto. Filed as exhibit 1.1 to Registrant's Current Report on Form 8-K filed on February 18, 2021 (File No. 1-8491) and incorporated herein by reference.
1.2	First Amendment to Equity Distribution Agreement, dated as of February 15, 2024, by and among Hecla Mining Company and the sales agents party thereto. *
2.1(a)	Arrangement Agreement dated as of April 5, 2023, by and among Hecla Mining Company, Alexco Resources Corp. and ATAC Resources Ltd. Filed as exhibit 2.1 to Registrant's Current Report on Form 8-K filed on April 6, 2023 (File No. 1- 8491) and incorporated herein by reference.
3.1	Restated Certificate of Incorporation of the Registrant. Filed as exhibit 3.1 to Registrant's Current Report on Form 8-K. filed on May 26, 2023 (File No. 1-8491) and incorporated herein by reference.
3.2	Bylaws of the Registrant as amended to date. Filed as exhibit 3.2 to Registrant's Current Report on Form 8-K filed on May 26, 2023 (File No. 1-8491) and incorporated herein by reference.
4.1(a)	Indenture, dated as of February 19, 2020, by and among Hecla Mining Company and The Bank of New York Mellon Trust Company, N.A., as trustee. Filed as exhibit 4.1 to Registrant's Current Report on Form 8-K filed on February 19, 2020 (File No. 1-8491) and incorporated herein by reference.
4.1(b)	First Supplemental Indenture, dated as of February 19, 2020, among Hecla Mining Company, as Issuer, certain subsidiaries of Hecla Mining Company, as Guarantors hereto, and the Bank of New York Mellon Trust, N.A., as Trustee. Filed as exhibit 4.2 to Registrant's Current Report on Form 8-K filed on February 19, 2020 (File No. 1-8491) and incorporated herein by reference.
4.1(c)	Second Supplemental Indenture, dated as of February 6, 2023, among Hecla Mining Company, as Issuer, certain subsidiaries of Hecla Mining Company, as Guarantors hereto, and the Bank of New York Mellon Trust, N.A., as Trustee. Filed as exhibit 4.1(c) to Registrant's Form 10-Q for the quarter ended March 31, 2023, filed on April 10, 2023 (File No. 1-8491) and incorporated herein by reference.
4.2	Registration Rights Agreement, dated as of October 16, 2023, among Hecla Mining Company, as Issuer, and Hecla. Mining Company, Retirement Plan Trust, which is the funding vehicle for the Hecla Mining Company, Retirement Plan, a tax-qualified employee benefit pension plan sponsored by Hecla Mining Company, and the Lucky Friday Pension Plan Trust, which is the funding vehicle for the Lucky Friday Pension Plan. *

4.3	Designations, Preferences and Rights of Series B Cumulative Convertible Preferred Stock of the Registrant. Included as Annex II to Restated Certificate of Incorporation of Registrant filed as exhibit 3.1 to Registrant's Form 10-Q for the quarter ended March 31, 2018 (File No. 1-8491) and incorporated herein by reference.
4.4	Form of 7.250% Senior Note due 2028 (included in Exhibit 4.1(b).
4.5	Description of Securities. Filed as exhibit 4.4 to Registrant's Form 10-K for the year ended December 31, 2022 (File No. 1-8491) and incorporated herein by reference.
10.1	Credit Agreement dated as of July 21, 2022, by and among Hecla Mining Company, Hecla Limited, Hecla Alaska LLC, Hecla Greens Creek Mining Company, and Hecla Juneau Mining Company, as the Borrowers, Bank of America, N.A., as the Administrative Agent for the Lenders, and various Lenders. Filed as exhibit 10.1 to Registrant's Current Report on Form 8-K on July 21, 2022 (File No. 1-8491) and incorporated herein by reference.
10.2	Form of Change of Control Agreement entered into on March 5, 2015, between Registrant and each of Phillips S. Baker, Jr., and David C. Sienko, on February 19, 2016 with Robert D. Brown, on August 5, 2019, on March 1, 2020 with Michael L. Clary, on March 1, 2021 with Russell D. Lawlar, on July 1, 2021 with Kurt Allen, and on August 16, 2023 with Carlos Aguiar. Filed as exhibit 10.2 to Registrant's Form 10-K for the year ended December 31, 2015 (File No. 1- 8491) and incorporated herein by reference. (1)
10.3	Form of Indemnification Agreement dated November 8, 2006, between Registrant and Phillips S. Baker, Jr. IdenticalIndemnification Agreements were entered into between the Registrant and Charles B. Stanley on May 4, 2007, David C.Sienko on January 29, 2010, Robert D. Brown on January 4, 2016, Stephen F. Ralbovsky and George R. Johnson onMarch 1, 2016, Catherine J. Boggs on January 1, 2017, Alice Wong on February 26, 2021, Michael L. Clary on March 1,2020, Russell D. Lawlar on March 1, 2021, Kurt Allen on July 1, 2021, and Carlos Aguiar on August 16, 2023. Filed asexhibit 10.7 to Registrant's Form 10-Q for the quarter ended September 30, 2006 (File No. 1-8491) and incorporatedherein by reference. (1)
10.4	Hecla Mining Company Key Employee Deferred Compensation Plan (Amended, Restated and Effective May 19, 2021). Filed as Appendix A to Registrant's Definitive Proxy Statement on Schedule 14A filed on April 5, 2021 (File No 1-8491). and incorporated herein by reference. (1)
10.5	Hecla Mining Company 2010 Stock Incentive Plan (Amended and Restated as of August 21, 2021). Filed as exhibit 10.1 to Registrant's Form 10-Q for the quarter ended September 30, 2021 (File No. 1-8491) and incorporated herein by reference. (1)
10.6	
10.6	<u>Hecla Mining Company Short-Term Incentive Plan. Filed as exhibit 10.1 to Registrant's Form 10-Q for the quarter ended</u> <u>March 31, 2019 (File No. 1-8491) and incorporated herein by reference. (1)</u>
10.7	Hecla Mining Company Executive and Senior Management Long-Term Performance Payment Plan (as Amended and Restated Effective January 1, 2017). Filed as exhibit 10.3 to Registrant's Form 10-Q for the quarter ended March 31, 2017 (File No. 8491) and incorporated herein by reference. (1)
10.0()	
10.8(a)	Hecla Mining Company Retirement Plan for Employees and Supplemental Retirement and Death Benefit Plan. Filed as exhibit 10.17(a) to Registrant's Form 10-K for the year ended December 31, 2008 (File No. 1-8491) and incorporated herein by reference. (1)
10.071	
10.8(b)	Hecla Mining Company Post-2004 Supplemental Excess Retirement Plan Master Plan Document, effective January 1, 2019. Filed as exhibit 10.8(a) to Registrant's Form 10-K for the year ended December 31, 2021 (File No. 1-8491) and incorporated herein by reference. (1)
10.8(c)	Hecla Mining Company Pre-2005 Supplemental Excess Retirement Plan Master Plan Document, effective January 1, 2019. Filed as exhibit 10.8(b) to Registrant's Form 10-K for the year ended December 31, 2021 (File No. 1-8491) and incorporated herein by reference. (1)
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10.9	Hecla Mining Company Nonqualified Plans Master Trust Agreement. Filed as exhibit 10.5(c) to Registrant's Annual Report on Form 10-K for the year ended December 31, 1994 (File No. 1-8491) and incorporated herein by reference. (1)
10.10	Hecla Mining Company Stock Plan for Nonemployee Directors, as amended. Filed as exhibit 10.3 to Registrant's Form 10-Q for the quarter ended June 30, 2017 (File No. 1-8491) and incorporated herein by reference. (1)
19	Hecla Mining Company Policy on Insider Trading. *
21	List of subsidiaries of Registrant. *
23.1	Consent of BDO USA, P.C. *
23.2	Consent of Qualified Person for Technical Report Summary of Greens Creek Mine. *
23.3	Consent of Qualified Person for Technical Report Summary of Lucky Friday Mine. *
23.4	Consent of Qualified Person for Technical Report Summary of Casa Berardi Mine. *
23.5	Consent of Qualified Person for Technical Report Summary of Casa Berardi Mine. *
23.6	Consent of Qualified Person for Technical Report Summary of Keno Hill Mine. *
23.7	Consent of Qualified Person for Technical Report Summary of Keno Hill Mine. *
23.8	Consent of Qualified Person for Technical Report Summary of Keno Hill Mine. *
23.9	Consent of Qualified Person for Technical Report Summary of Keno Hill Mine. *
31.1	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. *
31.2	Certification pursuant to Section 302 of Sarbanes-Oxley Act of 2002. *
32.1	Certification pursuant to Section 906 of the Sarbanes-Oxlev Act of 2002. *
32.2	Certification pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 *
95	Mine safety information listed in Section 1503 of the Dodd Frank Act. *
95	
96.1	<u>Iechnical Report Summary on the Greens Creek Mine, Alaska, U.S.A. Filed as exhibit 96.1 to Registrant's Form 10-K for</u> the year ended December 31, 2021 (File No. 1-8491) and incorporated herein by reference.
96.2	Technical Report Summary on the Lucky Friday Mine, Idaho, U.S.A. Filed as exhibit 96.2 to Registrant's Form 10-K for the year ended December 31, 2021 (File No. 1-8491) and incorporated herein by reference.
96.3	Technical Report Summary on the Casa Berardi Mine, Northwestern Québec, Canada. *
96.4	Technical Report Summary of the Keno Hill Mine, Yukon Territory, Canada. *
97	Hecla Mining Company Incentive-Based Compensation Recovery Policy. *

101.INS	Inline XBRL Instance Document - The instance document does not appear in the Interactive Data File because its XBRL
	tags are embedded within the Inline XBRL document. **
101.SCH	Inline XBRL Taxonomy Extension Schema. Embedded Linkbase Documents.
104	Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).
-	

(1) Indicates a management contract or compensatory plan or arrangement.

*Filed herewith

**XBRL information is furnished and not filed or a part of a registration statement or prospectus for purposes of Section 11 or 12 of the Securities Act of 1933, as amended, is deemed not filed for purposes of Section 18 of the Securities and Exchange Act of 1934, as amended, and otherwise is not subject to liability under these sections.

Item 16. Form 10-K Summary

None.

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Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

HECLA MINING COMPANY

By: /s/ Phillips S. Baker, Jr.

Phillips S. Baker, Jr., President, Chief Executive Officer and Director

Date: February 15, 2024

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

/s/ Phillips S. Baker, Jr.	February 15, 2024	/s/ Catherine J. Boggs	February 15, 2024
Phillips S. Baker, Jr. President, Chief Executive Officer and Director (principal executive officer)	Date	Catherine J. Boggs Director	Date
/s/ Russell D. Lawlar	February 15, 2024	/s/ Charles B. Stanley	February 15, 2024
Russell D. Lawlar Senior Vice President, Chief Financial Officer (principal financial and accounting officer)	Date	Charles B. Stanley Director	Date
/s/ Stephen F. Ralbovsky	February 15, 2024	/s/ Alice Wong	February 15, 2024
Stephen F. Ralbovsky Director	Date	Alice Wong Director	Date
/s/ George R. Johnson	February 15, 2024		
George R. Johnson Director	Date	-	

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Report of Independent Registered Public Accounting Firm

Shareholders and Board of Directors Hecla Mining Company Coeur d'Alene, Idaho

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Hecla Mining Company (the "Company") as of December 31, 2023 and 2022, the related consolidated statements of operations and comprehensive (loss) income, changes in stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2023, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2023 and 2022, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2023, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2023, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") and our report dated February 15, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the 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 consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated 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 consolidated 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 consolidated 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 consolidated 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 consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing separate opinions on the critical audit matter or on the accounts or disclosures to which it relates.

Impairment of Mineral Resources and Long-Lived Assets - Nevada Operations

As disclosed by management and described in *Note 2* to the consolidated financial statements, mineral resources are a key component in the valuation of properties, plants, equipment, and mineral interests. Management reviews and evaluates the net carrying value of all facilities, including idle facilities, upon the occurrence of events or changes in circumstances that indicate that the related carrying amounts may not be recoverable. Tests for recoverability of the property is based on the estimated undiscounted future cash flows that will be generated from operations.

We identified the assessment of the recoverability of the Company's mineral resources, properties and facilities at the Nevada Operations as a critical audit matter, specifically certain assumptions used in the underlying future cash flows. These assumptions include metals prices and market values of mineral interest. Auditing these assumptions involved especially challenging and subjective auditor judgment due to the nature and extent of audit effort required to address this matter. The audit effort also involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

The primary procedures we performed to address this critical audit matter included:

- Utilizing personnel with specialized knowledge and skill to assist in assessing the reasonableness of management's assumptions underlying the market values of mineral interest.
- Assessing the reasonableness of management's assumptions for metals prices underlying estimates of future cash flows and market value of minerals in the carrying value models by comparing to historical trends and agreeing to underlying market data from third-party sources.

/s/ BDO USA, P.C.

We have served as the Company's auditor since 2001.

Spokane, Washington February 15, 2024

Hecla Mining Company and Subsidiaries Consolidated Statements of Operations and Comprehensive (Loss) Income (Dollars and shares in thousands, except per share amounts)

$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$				Year Ended December 31,			
Sales \$ 720,227 \$ 718,905 \$ 807,473 Cost of sales and other direct production costs 458,504 458,811 417,879 Depreciation, depletion and amortization 148,774 143,938 171,793 Total cost of sales 607,278 602,749 589,672 Gross profit 112,949 116,156 217,801 Other operating expenses:			2023		2022		2021
Cost of sales and other direct production costs 458,504 458,811 417,879 Depreciation, depletion and amortization 148,774 143,938 171,793 Total cost of sales 607,278 602,749 589,672 Gross profit 112,949 116,156 217,801 Other operating expenses: 42,722 43,384 34,570 Exploration and pre-development 32,512 46,041 47,901 Provision for closed operations and environmental matters 7,575 8,793 14,571 Ramp-up and suspension costs 76,252 24,114 23,012 Other operating (income) expense, net (1,438) 6,262 14,327 Total other operations (44,674) (12,438) 83,420 Other expense: 7 57,623 128,594 134,381 (Loss) income from operations (44,674) (12,438) 83,420 Other expense: 7 575 (35,792) Fair value adjustments, net 2,925 (4,723) (35,792) Foreign exchange (loss) gain, net (3,810) </th <th>Sales</th> <th>\$</th> <th>720,227</th> <th>\$</th> <th>718,905</th> <th>\$</th> <th>807,473</th>	Sales	\$	720,227	\$	718,905	\$	807,473
Depreciation, depletion and amortization 148,774 143,938 171,793 Total cost of sales 607,278 602,749 589,672 Gross profit 112,949 116,156 217,801 Other operating expenses: 42,722 43,384 34,570 Exploration and pre-development 32,512 46,041 47,901 Provision for closed operations and environmental matters 7,575 8,793 14,571 Ramp-up and suspension costs 76,252 24,114 23,012 Other operating (income) expense, net (1,438) 6,262 14,327 Total other operating expenses 157,623 128,594 134,381 (Loss) income from operations (44,674) (12,438) 83,420 Other expense: 7 721 417 Foreign exchange (loss) gain, net 2,925 (4,723) (35,792) Foreign exchange (loss) gain, net 5,883 7,829 (574)	Cost of sales and other direct production costs		458,504		458,811		417,879
Total cost of sales 607,278 602,749 589,672 Gross profit 112,949 116,156 217,801 Other operating expenses: 42,722 43,384 34,570 General and administrative 42,722 43,384 34,570 Exploration and pre-development 32,512 46,041 47,901 Provision for closed operations and environmental matters 7,575 8,793 14,571 Ramp-up and suspension costs 76,252 24,114 23,012 Other operating (income) expense, net (1,438) 6,262 14,327 Total other operating expenses 157,623 128,594 134,381 (Loss) income from operations (44,674) (12,438) 83,420 Other expense: 7 575 (4,723) (35,792) Foreign exchange (loss) gain, net 2,925 (4,723) (35,792) Foreign exchange (loss) gain, net (3,810) 7,211 417 Other net income (expense) 5,883 7,829 (574)	Depreciation, depletion and amortization		148,774		143,938		171,793
Gross profit 112,949 116,156 217,801 Other operating expenses:	Total cost of sales		607,278		602,749		589,672
Other operating expenses: 42,722 43,384 34,570 General and administrative 42,722 43,384 34,570 Exploration and pre-development 32,512 46,041 47,901 Provision for closed operations and environmental matters 7,575 8,793 14,571 Ramp-up and suspension costs 76,252 24,114 23,012 Other operating (income) expense, net (1,438) 6,262 14,327 Total other operating expenses 157,623 128,594 134,381 (Loss) income from operations (44,674) (12,438) 83,420 Other expense: 7 725 (4,723) (35,792) Foreign exchange (loss) gain, net 2,925 (4,723) (35,792) Foreign exchange (loss) gain, net (3,810) 7,211 417 Other net income (expense) 5,883 7,829 (574)	Gross profit		112,949		116,156		217,801
General and administrative42,72243,38434,570Exploration and pre-development32,51246,04147,901Provision for closed operations and environmental matters7,5758,79314,571Ramp-up and suspension costs76,25224,11423,012Other operating (income) expense, net(1,438)6,26214,327Total other operating expenses157,623128,594134,381(Loss) income from operations(44,674)(12,438)83,420Other expense:2,925(4,723)(35,792)Foreign exchange (loss) gain, net(3,810)7,211417Other net income (expense)5,8837,829(574)	Other operating expenses:						
Exploration and pre-development32,51246,04147,901Provision for closed operations and environmental matters7,5758,79314,571Ramp-up and suspension costs76,25224,11423,012Other operating (income) expense, net(1,438)6,26214,327Total other operating expenses157,623128,594134,381(Loss) income from operations(44,674)(12,438)83,420Other expense:	General and administrative		42,722		43,384		34,570
Provision for closed operations and environmental matters $7,575$ $8,793$ $14,571$ Ramp-up and suspension costs $76,252$ $24,114$ $23,012$ Other operating (income) expense, net $(1,438)$ $6,262$ $14,327$ Total other operating expenses $157,623$ $128,594$ $134,381$ (Loss) income from operations $(44,674)$ $(12,438)$ $83,420$ Other expense: $2,925$ $(4,723)$ $(35,792)$ Foreign exchange (loss) gain, net $(3,810)$ $7,211$ 417 Other net income (expense) $5,883$ $7,829$ (574)	Exploration and pre-development		32,512		46,041		47,901
Ramp-up and suspension costs 76,252 24,114 23,012 Other operating (income) expense, net (1,438) 6,262 14,327 Total other operating expenses 157,623 128,594 134,381 (Loss) income from operations (44,674) (12,438) 83,420 Other expense:	Provision for closed operations and environmental matters		7,575		8,793		14,571
Other operating (income) expense, net (1,438) 6,262 14,327 Total other operating expenses 157,623 128,594 134,381 (Loss) income from operations (44,674) (12,438) 83,420 Other expense:	Ramp-up and suspension costs		76,252		24,114		23,012
Total other operating expenses 157,623 128,594 134,381 (Loss) income from operations (44,674) (12,438) 83,420 Other expense:	Other operating (income) expense, net		(1,438)		6,262		14,327
(Loss) income from operations (44,674) (12,438) 83,420 Other expense:	Total other operating expenses		157,623		128,594		134,381
Other expense: 2,925 (4,723) (35,792) Fair value adjustments, net 2,925 (4,723) (35,792) Foreign exchange (loss) gain, net (3,810) 7,211 417 Other net income (expense) 5,883 7,829 (574)	(Loss) income from operations		(44,674)		(12,438)		83,420
Fair value adjustments, net 2,925 (4,723) (35,792) Foreign exchange (loss) gain, net (3,810) 7,211 417 Other net income (expense) 5,883 7,829 (574)	Other expense:			-			
Foreign exchange (loss) gain, net (3,810) 7,211 417 Other net income (expense) 5,883 7,829 (574)	Fair value adjustments, net		2,925		(4,723)		(35,792)
Other net income (expense) 5,883 7,829 (574)	Foreign exchange (loss) gain, net		(3,810)		7,211		417
	Other net income (expense)		5,883		7,829		(574)
Interest expense (43,319) (42,793) (41,945)	Interest expense		(43,319)		(42,793)		(41,945)
Total other expense: (38,321) (32,476) (77,894)	Total other expense:		(38,321)		(32,476)		(77,894)
(Loss) income before income and mining taxes (82,995) (44,914) 5,526	(Loss) income before income and mining taxes		(82,995)		(44,914)		5,526
Income and mining tax (provision) benefit (1,222) 7,566 29,569	Income and mining tax (provision) benefit		(1,222)		7,566		29,569
Net (loss) income (84,217) (37,348) 35,095	Net (loss) income		(84,217)		(37,348)		35,095
Preferred stock dividends (552) (552)	Preferred stock dividends		(552)		(552)		(552)
Net (loss) income applicable to common stockholders\$ $(84,769)$ \$ $(37,900)$ \$ $34,543$	Net (loss) income applicable to common stockholders	\$	(84,769)	\$	(37,900)	\$	34,543
Comprehensive (loss) income:	Comprehensive (loss) income:						
Net (loss) income \$ (84.217) \$ (37.348) \$ 35.095	Net (loss) income	\$	(84,217)	\$	(37,348)	\$	35,095
Other comprehensive (loss) income, net of tax:	Other comprehensive (loss) income, net of tax:				(
Unrealized (loss) gain and amortization of prior service on pension plans (1,157) 17,067 16,740	Unrealized (loss) gain and amortization of prior service on pension plans		(1,157)		17,067		16,740
Unrealized gain (loss) on derivative contracts designated as hedge transactions 4,546 13,837 (12,307)	Unrealized gain (loss) on derivative contracts designated as hedge transactions		4,546		13,837		(12,307)
Total change in accumulated other comprehensive income (loss), net \$ 3,389 \$ 30,904 \$ 4,433	Total change in accumulated other comprehensive income (loss), net	\$	3,389	\$	30,904	\$	4,433
Comprehensive (loss) income $\frac{1}{3}$ (80,828) $\frac{1}{3}$ (6,444) $\frac{1}{3}$ 39,528	Comprehensive (loss) income	\$	(80,828)	\$	(6,444)	\$	39,528
Basic (loss) income per common share after preferred dividends $\overline{\$ (0.14)}$ $\overline{\$ (0.07)}$ $\overline{\$ 0.06}$	Basic (loss) income per common share after preferred dividends	\$	(0.14)	\$	(0.07)	\$	0.06
Diluted (loss) income per common share after preferred dividends \$ (0.14) \$ (0.07) \$ 0.06	Diluted (loss) income per common share after preferred dividends	\$	(0.14)	\$	(0.07)	\$	0.06
Weighted average number of common shares outstanding – basic 605,668 557,344 536,192	Weighted average number of common shares outstanding – basic	-	605.668	<u> </u>	557,344	-	536,192
Weighted average number of common shares outstanding – diluted 605,668 557,344 542,176	Weighted average number of common shares outstanding – diluted		605,668		557,344		542,176

The accompanying notes are an integral part of the consolidated financial statements.

Hecla Mining Company and Subsidiaries Consolidated Statements of Cash Flows (In thousands)

			Year Er	ided December 31,		
		2023		2022		2021
Operating activities:	¢	(04.017)	¢	(27.2.40)	e	25.005
Net (loss) income	\$	(84,217)	\$	(37,348)	\$	35,095
Non-cash elements included in net (loss) income:		1(2(72		145 147		172 (51
Depreciation, depletion and amortization		163,672		145,147		1/2,651
Fair value adjustments, net		(2,925)		24,182		15,040
Inventory adjustments		20,819		2,646		6,524
Provision for reclamation and closure costs		9,658		9,572		11,514
Deferred income taxes		(6,115)		(25,546)		(48,049)
Stock-based compensation		6,598		6,012		6,082
Foreign exchange loss (gain)		3,810		(9,210)		(79)
Other non-cash items		3,094		3,/30		2,663
Changes in assets and liabilities:		25.122		0.660		(5.405)
Accounts receivable		25,133		8,669		(5,405)
Inventories		(24,035)		(18,230)		16,919
Other current and non-current assets		(32,456)		(12,388)		(1,678)
Accounts payable and accrued liabilities		598		(24,981)		(795)
Accrued payroll and related benefits		(4,982)		13,732		1,270
Accrued taxes		(571)		(7,927)		6,457
Accrued reclamation and closure costs and other non-current liabilities		(2,582)		11,824		2,128
Net cash provided by operating activities		75,499		89,890		220,337
Investing activities:						
Additions to properties, plants, equipment and mineral interests		(223,887)		(149,378)		(109,048)
Pre-acquisition advance to Alexco		—		(25,000)		—
Acquisition, net		228		8,953		_
Purchase of carbon credits		—		—		(869)
Proceeds from sale or exchange of investments		_		9,375		1,811
Proceeds from disposition of properties, plants, equipment and mineral interests		1,329		748		1,077
Purchases of investments		(8,962)		(31,971)		
Net cash used in investing activities		(231,292)		(187,273)		(107,029)
Financing activities:						
Proceeds from issuance of common stock, net of offering costs		56,684		17,278		—
Dividends paid to common and preferred stockholders		(15,713)		(12,932)		(20,672)
Acquisition of treasury shares from employee equity awards		(2,036)		(3,677)		(4,525)
Borrowings of debt		239,000		25,000		_
Repayments of debt		(111,000)		(25,000)		—
Repayments of finance leases		(10,605)		(7,633)		(7,285)
Other				(536)		(116)
Net cash provided by (used in) financing activities		156,330		(7,500)		(32,598)
Effect of exchange rates on cash		1,095		(273)		(530)
Net increase (decrease) in cash, cash equivalents and restricted cash and cash equivalents		1,632		(105,156)		80,180
Cash, cash equivalents and restricted cash and cash equivalents at beginning of year		105,907		211,063		130,883
Cash, cash equivalents and restricted cash and cash equivalents at end of year	\$	107,539	\$	105,907	\$	211,063
Supplemental disclosure of cash flow information:						
Cash paid during year for:						
Interest	\$	37 744	S	37 200	\$	37 565
Income and mining taxes, net of refunds	\$	8 907	s	14 405	¢ S	12 105
Non-cash investing and financing activities:	ψ	0,707	ψ	14,405	φ	12,105
Addition of finance lease obligations	\$	16 116	\$	11 887	\$	4 870
Recognition of operating lease liabilities and right-of-use assets	¢ S	203	ŝ	6 842	ŝ	4 874
Common stock contributed to pension plans	ş Ç	1 035	s	9 740	ŝ	22 250
Common stock issued for $401(k)$ match	¢	4 608	ŝ	4 470	ŝ	4 330
Common stock issued to ATAC Resources Ltd. stockholders	\$ S	18 780	s	4,470	ф S	т,339
Common stock issued to Alexco Resources End. stockholders	ф С	10,707	\$	68 733	s	
Common stock issued to settle acquired silver stream	\$ \$	_	s	135,000	ŝ	
Equity securities received from exchange of investments	ф \$		ф S	155,000	ф S	3 626
Equity securities received from exchange of investments	φ		φ		φ	5,020

See Notes 4 and 11 for additional non-cash investing and financing activities.

The accompanying notes are an integral part of the consolidated financial statements.

Hecla Mining Company and Subsidiaries Consolidated Balance Sheets (In thousands, except share and per share data)

		Decem	ıber 31,	
		2023		2022
ASSETS				
Current assets:				
Cash and cash equivalents	\$	106 374	\$	104 743
Accounts receivable:	Ψ	100,571	Ψ	101,715
Trade		14 740		45 146
Other net		18 376		10 695
Inventories		10,070		10,075
Product inventories		28 823		37 303
Materials and supplies		64.824		53,369
Other current assets		27,125		16 471
Total current assets		260,262		267 727
Total current assets		33 724		24 018
Provincing		1 165		1 164
Resulted asia and cash equivalents		2 666 250		2 560 700
Departies, planes, equipment and inner a interests, net		2,000,250		2,309,790
Deferred tax accel		2 892		21.105
Deteriou day assets		2,003		21,105
	¢	2 011 104	¢	2,007,172
Total assets	\$	3,011,104	\$	2,927,172
LIABILITIES				
Current liabilities:				
Accounts payable and accrued liabilities	\$	81,737	\$	84,747
Accrued payroll and related benefits		28,240		37,579
Accrued taxes		3,501		4,030
Finance leases		9,752		9,483
Accrued reclamation and closure costs		9,660		8,591
Accrued interest		14,405		14,454
Derivative liabilities		1,144		16,125
Other current liabilities		9,021		3,457
Total current liabilities		157,460		178,466
Accrued reclamation and closure costs		110,797		108,408
Long-term debt including finance leases		653,063		517,742
Deferred tax liability		104,835		125,846
Derivatives liabilities		364		6,066
Other non-current liabilities		16,481		11,677
Total liabilities		1,043,000		948,205
Commitments and contingencies (Notes 5, 6, 9, 10, 14 and 15)				
STOCKHOLDERS' EQUITY				
Preferred stock, 5,000,000 shares authorized:				
Series B preferred stock, \$0.25 par value, 2023 and 2022 - 157,776 shares issued and outstanding, liquidation preference — \$7,889		39		39
Common stock, \$0.25 par value, authorized 750,000,000 shares; issued 2023 — 624,647,379 shares and 2022 — 607,619,495 shares		156,076		151,819
Capital surplus		2,343,747		2,260,290
Accumulated deficit		(503,861)		(403,931)
Accumulated other comprehensive income (loss), net		5,837		2,448
Less treasury stock, at cost; 2023 - 8,535,161 and 2022 - 8,132,553 shares issued and held in treasury		(33,734)		(31,698)
Total stockholders' equity		1,968,104		1,978,967
Total liabilities and stockholders' equity	\$	3,011,104	\$	2,927.172

The accompanying notes are an integral part of the consolidated financial statements.

Hecla Mining Company and Subsidiaries Consolidated Statements of Changes in Stockholders' Equity For the Years Ended December 31, 2023, 2022 and 2021 (Dollars in thousands)

	Series B Preferred Stock	Common Stock	Capital Surplus	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss), net	Treasury Stock	Total
Balances, January 1, 2021	\$ 39	\$ 134,629	\$ 2,003,576	\$ (368,074)	\$ (32,889)	\$ (23,496)	\$ 1,713,785
Net income	_			35,095	_	_	35,095
Stock issued to directors (207,000 shares)	_	52	1,792	_	_	_	1,844
Stock issued for 401(k) match (685,000 shares)	_	172	4,167	_	_	_	4,339
Restricted stock units granted	_	_	4,238	—	_	_	4,238
Stock-based compensation units distributed (1,653,000 shares)	_	413	(413)	_	_	(4,525)	(4,525)
Common stock (\$0.0375 per share) and Series B Preferred stock (\$2.63 per share) dividends declared	_	_		(20,672)	_	_	(20,672)
Common stock issued to pension plans (4,500,000 shares)	_	1,125	21,125	_	_	_	22,250
Other comprehensive income	_			_	4,433	_	4,433
Balances, December 31, 2021	39	136,391	2,034,485	(353,651)	(28,456)	(28,021)	1,760,787
Net loss	_		· –	(37,348)	_	_	(37,348)
Stock issued to directors (68,816 shares)	_	25	392		_	_	417
Stock issued for 401(k) match (978,964 shares)	_	245	4,225		_	_	4,470
Restricted stock units granted	_		5,595		_	_	5,595
Stock-based compensation units distributed (2,192,795 shares)	_	447	(447)	_	_	(3,677)	(3,677)
Common stock (\$0.0375 per share) and Series B Preferred stock (\$2.63 per share) dividends declared	_			(12,932)	_	_	(12,932)
Common stock issued to pension plans (2,190,000 shares)	_	548	9,192	_	_	_	9,740
Common stock issued to Alexco Resource Corp. stockholders (17,992,875 shares)	_	4,498	64,235	_	_	_	68,733
Common stock issued to settle the acquired silver stream (34,800,990 shares)	_	8,700	126,300	_	_	_	135,000
Common stock issued upon conversion of 40 Series B Preferred stock (128 shares)	_	_		_	_	_	_
Common stock issued under ATM program (3,860,199 shares)	_	965	16,313	_	_	—	17,278
Other comprehensive income	_	_		_	30,904	_	30,904
Balances, December 31, 2022	39	151,819	2,260,290	(403,931)	2,448	(31,698)	1,978,967
Net loss	_			(84,217)	_	_	(84,217)
Stock issued to directors (125,063 shares)	_	31	645	_	_	_	676
Stock issued for 401(k) match (898,894 shares)	_	225	4,383	_	_	_	4,608
Restricted stock units granted	_	_	5,922	_	_	—	5,922
Incentive compensation distributed (1,432,323 shares)	_	359	(359)	_	_	(2,036)	(2,036)
Common stock (\$0.0375 per share) and Series B Preferred stock (\$2.63 per share) dividends declared	_	_		(15,713)	_	_	(15,713)
Common stock issued to pension plans (249,500 shares)	_	62	973	_	_	_	1,035
Common stock issued to ATAC Resources Ltd. shareholders (3,676,904 shares)	_	919	17,870	_	_	_	18,789
Common stock issued under ATM program (10,645,198 shares)	_	2,661	54,023	_	_	_	56,684
Other comprehensive income	_	_	· _	—	3,389	_	3,389
Balances, December 31, 2023	\$ 39	\$ 156,076	\$ 2,343,747	\$ (503,861)	\$ 5,837	\$ (33,734)	\$ 1,968,104

The accompanying notes are an integral part of the consolidated financial statements.

Hecla Mining Company and Subsidiaries

Notes to Consolidated Financial Statements

Note 1: The Company

Hecla Mining Company, and its affiliates and subsidiaries (collectively, "Hecla," "we," "us" or "the Company"), is the largest silver producer in the United States. In addition to operating mines in Alaska, Idaho and Quebec, Canada, the Company is developing a mine in the Yukon, Canada, and owns a number of exploration and pre-development projects in world-class silver and gold mining districts throughout North America. Our current holding company structure dates from the incorporation of Hecla Mining Company in 2006 and the renaming of our subsidiary (previously Hecla Mining Company) as Hecla Limited. Hecla Limited was incorporated on October 14, 1891 as an Idaho Corporation in northern Idaho's Silver Valley. We believe we are the oldest operating precious metals mining company in the United States and the largest silver producer in the United States. Our corporate offices are in Coeur d'Alene, Idaho and Vancouver, British Columbia. The cash flow and profitability of the Company's operations are significantly affected by the market price of silver, gold, lead and zinc, which are affected by numerous factors beyond our control.

On July 7, 2023, we completed the acquisition of ATAC Resources Ltd. ("ATAC"), a Canadian publicly traded company, for total consideration of approximately \$19.4 million through the issuance of 3,676,904 shares of Hecla common stock to ATAC shareholders based on the share exchange ratio of 0.0166 Hecla share for each ATAC common share, and \$0.6 million of acquisition costs. The acquisition was deemed to be an asset acquisition under GAAP as substantially all of the fair value of the gross assets acquired was concentrated in a single asset group being mineral interests. The total consideration was assigned to the estimated fair values of the assets acquired and liabilities assumed, with \$18.1 million assigned to mineral interests. As part of the acquisition, we also acquired 5,502,956 units consisting of (i) shares of Cascadia Minerals Ltd. ("Cascadia") representing a 19.9% stake, and (ii) full warrants with a five-year term for a CAD\$2 million cash investment in Cascadia. Cascadia will be managed by the former management of ATAC, who will explore specific properties in the Yukon and British Columbia. We have the right to appoint two directors to Cascadia's board.

References to "CAD" and "MXN" refer to the Canadian Dollar and Mexican Peso, respectively.

Note 2: Summary of Significant Accounting Policies

A. Principles of Consolidation, Basis of Presentation and Other Information — Our Consolidated Financial Statements have been prepared in accordance with GAAP, and include our accounts and our wholly-owned subsidiaries' accounts. All inter-company balances and transactions have been eliminated in consolidation. Equity method accounting is applied for our investment in Cascadia, over which the Company does not have control, but does have significant influence over the activities that most significantly impact the investments operations and financial performance.

B. Assumptions and Use of Estimates — Preparing financial statements requires management to make estimates and assumptions that affect the reported amounts and related disclosure of assets, liabilities, revenue and expenses at the date of the consolidated financial statements and reporting periods. We consider our most critical accounting estimates to be future metals prices; obligations for environmental, reclamation and closure matters and mineral reserves and resources. Other significant areas requiring the use of management assumptions and estimates relate to reserves for contingencies and litigation; asset impairments, including long-lived assets; valuation of deferred tax assets; and post-employment, post-retirement and other employee benefit assets and liabilities. We have based our estimates on historical experience and various other assumptions that we believe to be reasonable. Accordingly, actual results may differ materially from these estimates under different assumptions or conditions.

C. Cash and Cash Equivalents — Cash and cash equivalents consist of all cash balances and highly liquid investments with a remaining maturity of three months or less when purchased and are carried at fair value. Cash and cash equivalents are invested in money market funds, certificates of deposit, U.S. government and federal agency securities, municipal securities and corporate bonds. At certain times, amounts on deposit may exceed federal deposit insurance limits.

D. Investments — We determine the appropriate classification of our investments at the time of purchase and re-evaluate such determinations at each reporting date. Currently all our investments are comprised of marketable equity securities and are carried at fair value or accounted for under the equity method. Marketable securities we anticipate selling within the next twelve months are included in other current assets. Gains and losses on the sale of securities are recognized on a specific identification basis. Gains and losses are included as a component of a separate line item, "fair value adjustments, net," on our consolidated statements of operations and comprehensive (loss) income.

E. Inventories — Major types of inventories include materials and supplies and metals product inventory, which is determined by the stage at which the ore is in the production process (stockpiled ore, in-process and finished goods). Product inventories are stated

at the lower of full cost of production or estimated net realizable value based on current metals prices. Materials and supplies inventories are stated at average cost.

Stockpiled ore inventory represents ore that has been mined, hauled to the surface, and is available for further processing. Stockpiles are measured by estimating the number of tons added and removed from the stockpile, the amount of contained metal ounces or pounds (based on assay data) and the estimated metallurgical recovery rates (based on the expected processing method). Costs are allocated to a stockpile based on relative values of material stockpiled and processed using current mining costs incurred up to the point of stockpiling the ore, including applicable overhead, depreciation, depletion and amortization relating to mining operations, and removed at each stockpile's average cost per recoverable unit.

In-process inventory represents material that is currently in the process of being converted to a saleable product. Conversion processes vary depending on the nature of the ore and the specific processing facility, but include mill in-circuit, flotation, and carbon-in-leach. In-process material is measured based on assays of the material fed into the process and the projected recoveries of the respective processing plants. In-process inventory is valued at the lower of the average cost of the material fed into the process attributable to the source material coming from the mine and stockpile plus the in-process conversion costs, including applicable amortization relating to the process facilities incurred to that point in the process, or net realizable value.

Finished goods inventory includes doré and concentrates at our operations, doré in transit to refiners or at refiners waiting to be processed, and bullion in our accounts at refineries.

F. Restricted Cash and Cash Equivalents — Restricted cash and cash equivalents primarily represent investments in certificates of deposit and bonds of U.S. government agencies and are restricted primarily for reclamation funding or surety bonds. Restricted cash and cash equivalents balances are carried at fair value. Non-current restricted cash and cash equivalents is reported in a separate line on the consolidated balance sheets and totaled \$1.2 million at December 31, 2023 and 2022, respectively.

G. Properties, Plants, Equipment and Mineral Interests – Costs are capitalized when it has been determined an ore body can be economically developed. The development stage begins at new projects when our management and/or board of directors makes the decision to bring a mine into commercial production, and ends when the production stage, or exploitation of reserves, begins. Expenditures incurred during the development and production stages for new assets, new facilities, alterations to existing facilities that extend the useful lives of those facilities, and major mine development expenditures are capitalized, including primary development costs such as costs of building access ways, shaft sinking, lateral development, drift development, ramps and infrastructure developments. Costs to improve, alter, or rehabilitate primary development assets which appreciably extend the life, increase capacity, or improve the efficiency or safety of such assets are also capitalized.

The costs of removing overburden and waste materials to access the ore body at an open-pit mine prior to the production stage are referred to as "prestripping costs." Pre-stripping costs are capitalized during the development stage. Where multiple open pits exist at an operation utilizing common facilities, prestripping costs are capitalized at each pit. The production stage of a mine commences when saleable materials, beyond a de minimis amount, are produced. Stripping costs incurred during the production stage are treated as variable production costs included as a component of inventory, to be recognized in cost of sales and other direct production costs in the same period as the revenue from the sale of inventory. When stripping costs incurred during the production phase result in the construction of an asset with an alternative use, such as a tailings storage facility, a portion of those stripping costs are capitalized.

Costs for exploration, pre-development, secondary development at operating mines, including drilling costs related to those activities (discussed further below), and maintenance and repairs on capitalized properties, plants and equipment are charged to operations as incurred. Exploration costs include those relating to activities carried out in search of previously unidentified resources or exploration targets, (a) at undeveloped concessions, or (b) at operating mines already containing proven and probable reserves, where a determination remains pending as to whether new target deposits outside of the existing reserve areas can be economically developed. Pre-development activities involve costs incurred in the exploration stage that may ultimately benefit production, such as underground ramp development, which are expensed due to the lack of evidence of economic viability, which is necessary to demonstrate future recoverability of these expenses. At an underground mine, secondary development costs are incurred for preparation of an ore body for production in a specific ore block, stope or work area, providing a relatively short-lived benefit only to the mine area they relate to, and not to the ore body as a whole. Primary development costs benefit long-term production, multiple mine areas, or the ore body as a whole, and are therefore capitalized.

Drilling, development and related costs are either classified as exploration, pre-development or secondary development, as defined above, and charged to operations as incurred, or capitalized, based on the following criteria:

whether the costs are incurred to further define resources or exploration targets at and adjacent to existing reserve areas or intended to assist with mine
planning within a reserve area;



- whether the drilling or development costs relate to an ore body that has been determined to be commercially mineable, and a decision has been made to
 put the ore body into commercial production; and
- whether, at the time the cost is incurred: (a) the expenditure embodies a probable future benefit that involves a capacity, singly or in combination with other assets, to contribute directly or indirectly to future net cash inflows, (b) we can obtain the benefit and control others' access to it, and (c) the transaction or event giving rise to our right to or control of the benefit has already occurred.

If all of these criteria are met, drilling, development and related costs are capitalized. Drilling and development costs not meeting all of these criteria are expensed as incurred. The following factors are considered in determining whether or not the criteria listed above have been met, and capitalization of drilling and development costs is appropriate:

- completion of a favorable economic study and mine plan for the ore body targeted;
- authorization of development of the ore body by management and/or the board of directors; and
- there is a justifiable expectation, based on applicable laws and regulations, that issuance of permits or resolution of legal issues and/or contractual requirements necessary for us to have the right to or control of the future benefit from the targeted ore body have been met.

Drilling and related costs of approximately \$17.6 million, \$11.2 million, and \$5.2 million for the years ended December 31, 2023, 2022 and 2021, respectively, met our criteria for capitalization listed above at our production stage properties.

When assets are retired or sold, the costs and related allowances for depreciation and amortization are eliminated from the accounts and any resulting gain or loss is reflected in current period net income (loss).

Our mineral interests, which are tangible assets, include acquired undeveloped mineral interests and royalty interests. Undeveloped mineral interests include: (i) resources which are measured, indicated or inferred with insufficient drill spacing or quality to qualify as proven and probable reserves; and (ii) inferred material and exploration targets not immediately adjacent to existing proven and probable reserves but accessible within the immediate mine infrastructure. Residual values for undeveloped mineral interests at the time we plan to convert, develop, further explore or dispose of the interests and are evaluated at least annually.

H. Depreciation, Depletion and Amortization — Capitalized costs are depreciated or depleted using the straight-line method or units-of-production method at rates sufficient to depreciate such costs over the shorter of estimated productive lives of such facilities or the useful life of the individual assets. Productive lives range from 3 to 14 years, but do not exceed the useful life of the individual asset. Determination of expected useful lives for amortization calculations are made on a property-by-property or asset-by-asset basis at least annually. Our estimates for reserves and resources are a key component in determining our units-of-production depreciation rates, with net book value of many assets depreciated over remaining estimated reserves. Reserves are estimates made by our professional technical personnel of the amount of metals that they believe could be economically and legally extracted or produced at the time of the reserve determination (discussed in *J. Proven and Probable Mineral Reserves* below). Our estimates of proven and probable mineral reserves and resources may change, possibly in the near term, resulting in changes to depreciation, depletion and amortization rates in future reporting periods.

Undeveloped mineral interests and value beyond proven and probable reserves are not amortized until such time as there are proven and probable reserves or the related mineralized material is converted to proven and probable reserves. At that time, the basis of the mineral interest is amortized on a units-of-production basis. Pursuant to our policy on impairment of long-lived assets (discussed further below), if it is determined that an undeveloped mineral interest cannot be economically converted to proven and probable reserves and its carrying value exceeds its estimated undiscounted future cash flows, the basis of the mineral interest is reduced to its fair value and an impairment loss is recorded to expense in the period in which it is determined to be impaired.

I. Impairment of Long-lived Assets — Management reviews and evaluates the net carrying value of all facilities, including idle facilities, for impairment upon the occurrence of events or changes in circumstances that indicate that the related carrying amounts may not be recoverable. We perform the test for recoverability of each property based on the estimated undiscounted future cash flows that will be generated from operations at each property, the estimated salvage value of the surface plant and equipment, and the value associated with property interests.

Although management has made what it believes to be a reasonable estimate of factors based on current conditions and information, assumptions underlying future cash flows, which includes the estimated value of resources and exploration targets, are subject to significant risks and uncertainties. Estimates of undiscounted future cash flows are dependent upon, among other factors,

estimates of: (i) metals to be recovered from proven and probable mineral reserves and identified resources and exploration targets beyond proven and probable reserves, (ii) future production and capital costs, (iii) estimated metals prices (considering current and historical prices, forward pricing curves and related factors) over the estimated remaining mine life and (iv) market values of mineral interests. It is possible that changes could occur in the near term that could adversely affect our estimate of future cash flows to be generated from our operating properties. If estimated undiscounted cash flows are less than the carrying value of a property, an impairment loss is recognized for the difference between the carrying value and fair value of the property.

J. Proven and Probable Mineral Reserves — At least annually, management reviews the reserves used to estimate the quantities and grades of ore at our mines which we believe can be recovered and sold economically. Management's calculations of proven and probable mineral reserves are based on financial, engineering and geological estimates, including future metals prices and operating costs, and an assessment of our ability to obtain the permits required to mine and process the material. From time to time, management obtains external audits or reviews of reserves.

Reserve estimates will change as existing reserves are depleted through production, as additional reserves are proven and added to the estimates and as market prices of metals, production or capital costs, smelter terms, the grade or tonnage of the deposit, throughput, dilution of the ore or recovery rates change.

K. Leases — Contractual arrangements are assessed at inception to determine if they represent or contain a lease. Right-of-use ("ROU") assets related to operating leases are separately reported in the Consolidated Balance Sheets. ROU assets related to finance leases are included in Properties, plants, equipment and mineral interests, net. Separate current and non-current liabilities for operating and finance leases are reported on the Consolidated Balance Sheets.

Operating and finance lease ROU assets and lease liabilities are recognized at the lease commencement date based on the present value of the future lease payments over the lease term. When the rate implicit to the lease cannot be readily determined, we utilize our incremental borrowing rate in determining the present value of the future lease payments. The incremental borrowing rate is derived from information available at the lease commencement date and represents the rate of interest that we would have to pay to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. The ROU asset includes any lease payments made and lease incentives received prior to the commencement date. Operating lease ROU assets also include any cumulative prepaid or accrued rent when the lease payments are uneven throughout the lease term. The ROU assets and lease liabilities may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option.

L. Income and Mining Taxes — We provide for federal, state and foreign income taxes currently payable, as well as those deferred, due to timing differences between reporting income and expenses for financial statement purposes versus tax purposes. Federal, state and foreign tax benefits are recorded as a reduction of income taxes, when applicable. We record deferred tax assets and liabilities for expected future tax consequences of temporary differences between the financial statement carrying amounts and the tax bases of those assets and liabilities, as well as operating loss and tax credit carryforwards, using enacted tax rates in effect in the years in which the differences are expected to reverse.

We evaluate uncertain tax positions in a two-step process, whereby (i) it is determined whether it is more likely than not that the tax positions will be sustained based on the technical merits of the position and (ii) for those tax positions that meet the more-likely-than-not recognition threshold, the largest amount of tax benefit that is greater than 50% likely of being realized upon ultimate settlement with the related tax authority would be recognized.

We evaluate our ability to realize deferred tax assets by considering the sources and timing of taxable income, including the reversal of existing temporary differences, the ability to carryback tax attributes to prior periods, qualifying tax-planning strategies, and estimates of future taxable income exclusive of reversing temporary differences. In determining future taxable income, the Company's assumptions include the amount of pre-tax operating income according to different state, federal and international taxing jurisdictions, the origination of future temporary differences, and the implementation of feasible and prudent tax-planning strategies. Should we determine that a portion of our deferred tax assets will not be realized, a valuation allowance is recorded in the period that such determination is made. When we determine, based on the existence of sufficient evidence, that more or less of the deferred tax assets are more likely than not to be realized, an adjustment to the valuation allowance is made in the period such a determination is made.

We classify as income taxes mine license taxes incurred in the states of Alaska and Idaho, the net proceeds taxes incurred in Nevada, mining duties in Mexico, and resource taxes incurred in Quebec and Yukon, Canada.

M. Reclamation and Remediation Costs (Asset Retirement Obligations) — At our operating properties, we record a liability for the present value of our estimated environmental remediation costs, and the related asset created with it, in the period in which the liability is incurred. The liability is accreted and the asset is depreciated over the life of the related assets. Adjustments for changes

resulting from the passage of time and changes to either the timing or amount of the original present value estimate underlying the obligation are made in the period incurred.

At our non-operating properties, we accrue costs associated with environmental remediation obligations when it is probable that such costs will be incurred and they are reasonably estimable. Accruals for estimated losses from environmental remediation obligations have historically been recognized no later than completion of the remediation feasibility study for such facility and are charged to current earnings under provision for closed operations and environmental matters. Costs of future expenditures for environmental remediation are not discounted to their present value unless subject to a contractually obligated fixed payment schedule. Such costs are based on management's current estimate of amounts to be incurred when the remediation work is performed, within current laws and regulations.

Future closure, reclamation and environmental-related expenditures are difficult to estimate in many circumstances, due to the early stage nature of investigations, uncertainties associated with defining the nature and extent of environmental contamination, the application of laws and regulations by regulatory authorities, and changes in reclamation or remediation technology. We periodically review accrued liabilities for such reclamation and remediation costs as evidence becomes available indicating that our liabilities have potentially changed. Changes in estimates at our non-operating properties are reflected in current period net income (loss).

N. Revenue Recognition and Trade Accounts Receivable — Sales of all metals products sold directly to customers, including by-product metals, are recorded as revenues and accounts receivable upon completion of the performance obligations and transfer of control of the product to the customer. For sales of metals from refined doré, the performance obligation is met, the transaction price is known, and revenue is recognized at the time of transfer of control of the agreed-upon metal quantities to the customer by the refiner. For sales of unrefined doré and carbon material, the performance obligation is met, the transaction price is known, and revenue is recognized at the time of transfer of title and control of the doré or carbon containing the agreed-upon metal quantities to the customer. For concentrate sales, the performance obligation is met, the transaction price can be reasonably estimated, and revenue is recognized generally at the time of shipment at estimated forward prices for the anticipated month of settlement. Due to the time elapsed from shipment to the customer and the final settlement with the customer, we must estimate the prices at which sales of our concentrates will be settled. Previously recorded sales and accounts receivable are adjusted to estimated settlement metals prices until final settlement by the customer. As discussed in *P. Risk Management Contracts* below, we seek to mitigate this exposure by using financially-settled forward contracts for some of the metals contained in our concentrate shipments.

Refining, selling and shipping costs related to sales of doré, metals from doré, and carbon are recorded to cost of sales as incurred. Sales and accounts receivable for concentrate shipments are recorded net of charges by the customers for treatment, refining, smelting losses, and other charges negotiated by us with the customers. Charges are estimated by us upon shipment of concentrates based on contractual terms, and actual charges typically do not vary materially from our estimates. Costs charged by customers include fixed costs per ton of concentrate, and price escalators which allow the customers to participate in the increase of lead and zinc prices above a negotiated baseline.

O. Foreign Currency — The functional currency for our operations located in the U.S., Mexico and Canada is the U.S. dollar ("USD") for all periods presented. Accordingly, for Casa Berardi and Keno Hill in Canada and San Sebastian in Mexico, we have translated our monetary assets and liabilities at the periodend exchange rate, and non-monetary assets and liabilities at historical rates, with income and expenses translated at the average exchange rate for the current period. All translation gains and losses have been included in the current period net income (loss). Expenses incurred at our foreign operations and denominated in CAD and MXN expose us to exchange rate fluctuations between those currencies and the USD. As discussed in *P. Risk Management Contracts* below, we seek to mitigate this exposure by using financially-settled forward contracts to sell CAD and MXN.

P. Risk Management Contracts — We use derivative financial instruments as part of an overall risk-management strategy as a means of managing exposure to changes in metals prices and exchange rate fluctuations between the USD and CAD. We do not hold or issue derivative financial instruments for speculative trading purposes. We measure derivative contracts as assets or liabilities based on their fair value. Amounts recognized for the fair value of derivative asset and liability positions with the same counterparty and which would be settled on a net basis are offset against each other on our consolidated balance sheets. Gains or losses resulting from changes in the fair value of derivatives in each period are recorded either in current earnings or other comprehensive income ("OCI"), depending on the use of the derivative, whether it qualifies for hedge accounting and whether that hedge is effective. Amounts deferred in OCI are reclassified to sales of products (for metals price-related contracts) or cost of sales (for foreign currency-related contracts). Ineffective portions of any change in fair value of a derivative are recorded in current period other operating income (expense). For derivatives qualifying as hedges, when the hedged items are sold, extinguished or terminated, or it is determined the hedged transactions are no longer likely to occur, gains or losses on the derivatives are reclassified from OCI to current earnings. As of December 31, 2023 and 2022, our foreign currency-related forward contracts qualified for hedge accounting, with unrealized gains and loss related to the effective portion of the contracts included in OCI. Our base metals price-related forward contracts were designated as hedges effective November 1, 2021. Prior to November 1, 2021 our metals price-related forward contracts and put option contracts did not qualify for hedge accounting and all unrealized gains and losses were therefore reported in earnings.

Q. Stock Based Compensation — The fair values of equity instruments granted to employees that have vesting periods are expensed over the vesting periods on a straight-line basis. The fair values of instruments having no vesting period are expensed when granted. Stock-based compensation expense is recorded among general and administrative expenses, exploration and pre-development and cost of sales and other direct production costs.

R. Basic and Diluted Income (Loss) Per Common Share — We calculate basic income (loss) per share on the basis of the weighted average number of shares of common stock outstanding during the period. Diluted income per share is calculated using the weighted average number of shares of common stock outstanding during the period plus the effect of potential dilutive common shares during the period using the treasury stock and if-converted methods.

S. Comprehensive Income (Loss) — In addition to net income (loss), comprehensive income (loss) includes certain changes in equity during a period, such as adjustments to minimum pension liabilities, adjustments to recognize the over-funded or under-funded status of our defined benefit pension plans, and the change in fair value of derivative contracts designated as hedge transactions, net of tax, if applicable.

T. New Accounting Pronouncements —

Accounting Standards Updates Adopted

In March 2020, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2020-04 ("ASU 2020-04"), Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting, which provides optional guidance for a limited period of time to ease the potential burden on accounting for contract modifications caused by reference rate reform. In January 2021, ASU 2021-01, Reference Rate Reform (Topic 848): Scope was issued which broadened the scope of ASU 2020-04 to include certain derivative instruments. In December 2022, ASU 2022-06, Reference Rate Reform (Topic 848): Deferral of the Sunset Date of Topic 848, was issued which deferred the sunset date of ASU 2020-04. The guidance is effective for all entities as of March 12, 2020 through December 31, 2024. The guidance may be adopted over time as reference rate reform activities occur and should be applied on a prospective basis. Certain of our derivative instruments previously referenced London Interbank Offered Rate ("LIBOR") based rates and have been amended to eliminate the LIBOR-based rate references prior to July 1, 2023. There have been no significant impacts to our financial results, financial position or cash flows from the transition from LIBOR to alternative reference interest rates.

Accounting Standards Updates to Become Effective in Future Periods

In August 2023, the FASB issued ASU 2023-05, Business Combinations - Joint Venture Formations (Subtopic 805-60): Recognition and Initial Measurement, which clarifies the business combination accounting for joint venture formations. The amendments in the ASU seek to reduce diversity in practice that has resulted from a lack of authoritative guidance regarding the accounting for the formation of joint ventures in separate financial statements. The amendments also seek to clarify the initial measurement of joint venture net assets, including businesses contributed to a joint venture. The guidance is applicable to all entities involved in the formation of a joint venture. The amendments are effective for all joint venture formations with a formation date on or after January 1, 2025. Early adoption and retrospective application of the amendments are permitted. We do not expect adoption of the new guidance to have a material impact on our consolidated financial statements and disclosures.

In November 2023, the FASB issued ASU 2023-07, Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures, amending reportable segment disclosure requirements to include disclosure of incremental segment information on an annual and interim basis. Among the disclosure enhancements are new disclosures regarding significant segment expenses that are regularly provided to the chief operating decision-maker and included within each reported measure of segment profit or loss, as well as other segment items bridging segment revenue to each reported measure of segment profit or loss. The amendments in ASU 2023-07 are effective for fiscal years beginning after December 15, 2023, and for interim periods within fiscal years beginning after December 15, 2024, and are applied retrospectively. Early adoption is permitted. We are currently evaluating the impact of this update on our consolidated financial statements and disclosures.

In December 2023, the FASB issued ASU 2023-09, Income Taxes (Topic 740): Improvement to Income Tax Disclosures, amending income tax disclosure requirements for the effective tax rate reconciliation and income taxes paid. The amendments in ASU 2023-09 are effective for fiscal years beginning after December 15, 2024 and are applied prospectively. Early adoption and retrospective application of the amendments are permitted. We are currently evaluating the impact of this update on our consolidated financial statements and disclosures.

Note 3: Investments

At December 31, 2023 and 2022, the fair value of our non-current investments was \$33.7 million and \$24.0 million, respectively. Our non-current investments consist of marketable equity securities which are carried at fair value and our investment in Cascadia which was acquired as part of the acquisition of ATAC and accounted for under the equity method. We recognized \$0.3 million in equity losses of Cascadia since the acquisition which is included in the line item "Other net expenses" in our Consolidated Statement of Operations and Comprehensive (Loss) Income. We acquired marketable equity securities having a cost basis of \$9.0 million and \$32.0 million in 2023 and 2022, respectively. During 2023, 2022 and 2021, we recognized \$0.2 million, \$5.6 million and \$4.3 million in net unrealized losses, respectively, in current earnings.

Note 4: Business Segments, Sales of Products and Significant Customers

We discover, acquire and develop mines and other mineral interests and produce and market (i) concentrates containing silver, gold, lead and zinc, (ii) carbon material containing silver and gold, and (iii) doré containing silver and gold. We are currently organized and managed in five segments: Greens Creek, Lucky Friday, Keno Hill, Casa Berardi and Nevada Operations.

General corporate activities not associated with operating mines and their various exploration activities, as well as idle properties and environmental remediation services in the Yukon, Canada, are presented as "other." The nature of the items that reconcile income (loss) from operations to loss before income and mining taxes are not related to our reportable segments.

The tables below present information about our reportable segments as of and for the years ended December 31, 2023, 2022 and 2021 (in thousands).

	 2023		2022		2021
Net sales to unaffiliated customers:					
Greens Creek	\$ 384,504	\$	335,062	\$	384,843
Lucky Friday	116,284		147,814		131,488
Keno Hill	35,518		—		—
Casa Berardi	177,678		235,136		245,152
Nevada Operations	960		419		45,814
Other	5,283		474		176
Total sales to unaffiliated customers	\$ 720,227	\$	718,905	\$	807,473
Income (loss) from operations:					
Greens Creek	\$ 113,551	\$	87,297	\$	164,666
Lucky Friday	4,811		27,636		31,683
Keno Hill	(35,344)		(4,249)		
Casa Berardi	(56,683)		(21,799)		5,807
Nevada Operations	(23,724)		(38,134)		(46,115)
Other	(47,285)		(63,189)		(72,621)
Total (loss) income from operations	\$ (44,674)	\$	(12,438)	\$	83,420
Capital additions (excluding non-cash items):					
Greens Creek	\$ 43,542	\$	36,898	\$	23,883
Lucky Friday	65,337		50,992		29,885
Keno Hill	44,672		19,725		
Casa Berardi	70,056		39,667		49,617
Nevada Operations	218		333		5,470
Other	62		1,763		193
Total capital additions	\$ 223,887	\$	149,378	\$	109,048



Depreciation, depletion and amortization:			
Greens Creek	\$ 53,995	\$ 48,911	48,710
Lucky Friday	24,325	33,704	26,846
Keno Hill	4,277	—	—
Casa Berardi	66,037	60,962	80,744
Nevada Operations	140	361	15,341
Other	—	—	152
Total depreciation, depletion and amortization	\$ 148,774	\$ 143,938	\$ 171,793
Other significant non-cash items:			
Greens Creek	\$ 11,098	\$ 2,821	\$ 3,653
Lucky Friday	(916)	1,138	1,048
Keno Hill	376	1,669	—
Casa Berardi	13,378	1,520	1,284
Nevada Operations	2,086	4,384	7,740
Other	16,908	(816)	(20,030)
Total other significant non-cash items	\$ 42,930	\$ 10,716	\$ (6,305)
Identifiable assets:			
Greens Creek	\$ 569,369	\$ 582,687	\$ 589,944
Lucky Friday	578,110	571,510	516,545
Keno Hill	362,986	276,096	—
Casa Berardi	683,035	681,631	701,868
Nevada Operations	460,967	466,722	468,985
Other	 356,637	 348,526	 451,466
Total identifiable assets	\$ 3,011,104	\$ 2,927,172	\$ 2,728,808

The following are our long-lived assets by geographic area as of December 31, 2023 and 2022 (in thousands):

	 2023	 2022
United States	\$ 1,698,285	\$ 1,670,676
Canada	960,109	891,375
Mexico	7,856	7,739
Total long-lived assets	\$ 2,666,250	\$ 2,569,790

Our sales for 2023 are primarily comprised of metal sales and \$5.3 million of revenue from our Yukon environmental remediation services.

Our products consist of metal concentrates and carbon material, which we sell to custom smelters, metal traders and third-party processors, and unrefined bullion bars (doré), which may be sold as doré or further refined before sale to precious metal traders. Revenue is recognized upon the completion of the performance obligations and transfer of control of the product to the customer.

For sales of metals from refined doré, which we currently have at Casa Berardi, the performance obligation is met, the transaction price is known, and revenue is recognized at the time of transfer of control of the agreed-upon metal quantities to the customer by the refiner. Refining, selling and shipping costs related to sales of doré and metals from doré are recorded to cost of sales as incurred.

For sales of carbon materials, transfer of control takes place, the performance obligation is met, the transaction price is known, and revenue is recognized generally at the time of arrival at the customer's facility.

For concentrate sales, which we currently have at Greens Creek, Lucky Friday, and Keno Hill, the performance obligation is met, the transaction price can be reasonably estimated, and revenue is recognized generally at the time of shipment. Concentrates sold at Lucky Friday typically leave the mine and are received by the customer within the same day. However, there is a period of time between shipment of concentrates from Greens Creek and Keno Hill and their physical receipt by the customer, and judgment is required in determining when control has been transferred to the customer and the performance obligation has been met for those shipments. We have determined control is met, title is transferred and the performance obligation is met upon shipment of concentrate parcels from Greens Creek and Keno Hill because, at that time, 1) legal title is transferred to the customer, 2) the customer has accepted the parcel and obtained the ability to realize all of the benefits from the product, 3) the concentrate content specifications are known, have been communicated to the customer, and the customer has the significant risks and rewards of ownership of it, 4) it is very unlikely a concentrate parcel from Greens Creek will be rejected by a customer upon physical receipt, and 5) we have the right to payment for the parcel. Judgment is also required in identifying our concentrate sales performance obligations. Most of our concentrate sales involve "frame contracts" with smelters that can cover multiple years and specify certain terms under which individual parcels of concentrates are sold. However, some terms are not specified in the frame contracts and/or can be renegotiated as part of annual amendments to the frame contract. We have determined parcel shipments represent individual performance obligations satisfied at the point in time when control of the shipment is transferred to the customer.

The consideration we receive for our concentrate sales fluctuates due to changes in metals prices between the time of shipment and final settlement with the customer. However, we are able to reasonably estimate the transaction price for the concentrate sales at the time of shipment using forward prices for the month of settlement, and previously recorded sales and accounts receivable are adjusted to estimated settlement metals prices until final settlement with the customer. Also, it is unlikely a significant reversal of revenue for any one concentrate parcel will occur. As such, we use the expected value method to price the parcels until the final settlement date occurs, at which time the final transaction price is known. At December 31, 2023, metals contained in concentrate sales and exposed to future price changes totaled 0.7 million ounces of silver, 3,490 ounces of gold, 0.4 million pounds of zinc, and 12 million pounds of lead. However, as discussed in *Note 10*, we seek to mitigate the risk of price adjustments by using financially-settled forward contracts for some of our sales.

Sales and accounts receivable for concentrate shipments are recorded net of charges for treatment, refining, smelting losses, and other charges negotiated by us with the customers, which represent components of the transaction price. Charges are estimated by us upon shipment of concentrates based on contractual terms, and actual charges typically do not vary materially from our estimates. Costs charged by customers include fixed treatment and refining costs per ton of concentrate and may include price escalators which allow the customers to participate in the increase of lead and zinc prices above a negotiated baseline. Costs for shipping concentrates to customers are recorded to cost of sales as incurred.

Sales of metal concentrates and metal products are made principally to custom smelters, third-party processors and metal traders. The percentage of metal sales contributed by each segment is reflected in the following table:

	`	Year Ended December 31,			
	2023	2022	2021		
Greens Creek	53.7%	46.6%	47.6%		
Lucky Friday	16.3 %	20.6%	16.3 %		
Keno Hill	5.0%	—	0.0%		
Casa Berardi	24.9%	32.7%	30.4 %		
Nevada Operations	0.1 %	0.1 %	5.7 %		
Other	—	—	—		
	100 %	100%	100 %		

Total sales for the years ended December 31, 2023, 2022 and 2021 were as follows (in thousands):

	 Year Ended December 31,				
	 2023		2022		2021
Silver	\$ 302,284	\$	265,054	\$	293,646
Gold	274,613		298,910		362,037
Lead	72,726		83,384		75,431
Zinc	116,230		123,057		125,292
Less: Smelter and refining charges	(50,909)		(51,973)		(48,933)
Total metal sales	 714,944		718,432		807,473
Environmental remediation services	5,283		473		
Total sales	\$ 720,227	\$	718,905	\$	807,473



The following is metal sales information by geographic area based on the location of smelters and metal traders (for concentrate shipments) and the location of parent companies (for doré sales to metal traders) for the years ended December 31, 2023, 2022 and 2021 (in thousands):

	 2023	 2022	 2021
United States	\$ 36,307	\$ 21,938	\$ 71,278
Canada	375,092	406,600	419,090
Japan	52,744	51,375	63,588
Korea	127,590	107,828	203,115
China	103,534	136,514	50,945
Total, excluding gains/losses on forward contracts	\$ 695,267	\$ 724,255	\$ 808,016

Metal sales by significant product type for the years ended December 31, 2023, 2022 and 2021 were as follows (in thousands):

	Year Ended December 31,					
		2023		2022		2021
Doré and metals from doré	\$	211,321	\$	255,608	\$	313,337
Carbon		4,333		2,607		4,117
Silver concentrate		356,941		329,165		345,732
Zinc concentrate		80,274		109,177		112,448
Precious metals concentrate		42,398		27,698		32,382
Total, excluding gains/losses on forward contracts	\$	695,267	\$	724,255	\$	808,016

Metal sales for 2023, 2022 and 2021 included net gains of \$19.7 million and net losses of \$5.8 million, and \$0.5 million, respectively, on derivative contracts for silver, gold, lead and zinc contained in our sales. See *Note 10* for more information.

Metal sales from continuing operations to significant metals customers as a percentage of total sales were as follows for the years ended December 31, 2023, 2022 and 2021:

	Y	Year Ended December 31,				
	2023	2022	2021			
Customer A	24.2 %	35.4%	37.2%			
Customer B	11.8 %	23.9%	21.5%			
Customer C	15.5%	11.3 %	21.6%			
Customer D	15.8%	3.5 %	6.2 %			

Our trade accounts receivable balance related to contracts with customers was \$14.7 million and \$45.1 million at December 31, 2023 and 2022, respectively, and included no allowance for credit losses. Trade accounts receivable balances with significant metals customers as of December 31, 2023 and 2022 were as follows.

	2023	2022
Customer B	22.2 %	57.5%
Customer D	34.8%	—
Customer E	24.2%	3.2 %
Customer F		15.9%
Customer G	_	11.8 %

We have determined our contracts do not include a significant financing component. For doré sales and sales of metal from doré, payment is received at the time the performance obligation is satisfied. Payment for carbon sales is received within a relatively short period of time after the performance obligation is satisfied. The amount of consideration for concentrate sales is variable, and we receive payment for a significant portion of the estimated value of concentrate parcels within a relatively short period of time after the performance obligation is satisfied.

We do not incur significant costs to obtain contracts, nor costs to fulfill contracts which are not addressed by other accounting standards. Therefore, we have not recognized an asset for such costs as of December 31, 2023 and 2022.

Note 5: Environmental and Reclamation Activities

The liabilities accrued for our reclamation and closure costs at December 31, 2023 and 2022 were as follows (in thousands):

	2023	2022
Operating properties:		
Greens Creek	\$ 39,893	\$ 37,212
Lucky Friday	12,022	13,343
Keno Hill	3,360	4,514
Casa Berardi	11,157	11,352
Non-operating properties:		
Nevada Operations	30,539	28,171
San Sebastian	2,061	1,989
Troy mine	5,238	6,980
Johnny M	10,148	8,961
All other sites	6,039	4,477
Total	 120,457	116,999
Reclamation and closure costs, current	(9,660)	(8,591)
Reclamation and closure costs, long-term	\$ 110,797	\$ 108,408

The activity in our accrued reclamation and closure cost liability for the years ended December 31, 2023, 2022 and 2021 was as follows (in thousands):

Balance at January 31, 2021	\$ 116,048
Accruals for estimated costs	4,952
Accretion expense	6,454
Revision of estimated cash flows due to changes in reclamation plans	(8,781)
Payment of reclamation obligations	(5,442)
Balance at December 31, 2021	 113,231
Accruals for estimated costs	2,874
Accretion expense	5,995
Revision of estimated cash flows due to changes in reclamation plans	452
Payment of reclamation obligations	(5,553)
Balance at December 31, 2022	116,999
Accruals for estimated costs	2,952
Accretion expense	7,740
Revision of estimated cash flows due to changes in reclamation plans	(29)
Payment of reclamation obligations	(7,205)
Balance at December 31, 2023	\$ 120,457

Asset Retirement Obligations

Below is a reconciliation as of December 31, 2023 and 2022 (in thousands) of the asset retirement obligations ("ARO") which are included in our total accrued reclamation and closure costs of \$120.5 million and \$117.0 million, respectively, discussed above. The estimated reclamation and closure costs were discounted using credit adjusted, risk-free interest rates ranging from 5.75% to 14.5% from the time we incurred the obligation to the time we expect to pay the retirement obligation.

	2	.023	 2022
Balance January 1	\$	96,620	\$ 95,033
Changes in obligations due to changes in reclamation plans		(29)	452
Accretion expense		7,740	5,995
Payment of reclamation obligations		(5,264)	(4,860)
Balance at December 31	\$	99,067	\$ 96,620

Payments for reclamation obligations were incurred at Lucky Friday, Greens Creek, Keno Hill and our former Mexico operation San Sebastian.

The AROs related to the changes described above were discounted using a credit adjusted, risk-free interest rate of between 2.75% and 7.5% and inflation rates ranging from 2% to 4%.

Note 6: Employee Benefit Plans

Pensions and Other Post-retirement Plans

We sponsor defined benefit pension plans covering substantially all U.S. employees and a Supplemental Excess Retirement Plan ("SERP") covering certain eligible employees. The following tables provide a reconciliation of the changes in the plans' benefit obligations and fair value of assets over the two-year period ended December 31, 2023, and the funded status as of December 31, 2023 and 2022 (in thousands):

	Pension Benefits			
	2023		2022	
Change in benefit obligation:				
Benefit obligation at beginning of year	\$ 148,143	\$	195,862	
Service cost	3,794		6,262	
Interest cost	7,974		5,476	
Change due to mortality change	643		486	
Change due to discount rate change	(3,635)		(54,977)	
Actuarial return	401		1,841	
Benefits paid	(7,894)		(6,807)	
Benefit obligation at end of year	149,426		148,143	
Change in fair value of plan assets:				
Fair value of plan assets at beginning of year	175,159		189,874	
Actual return on plan assets	7,937		(18,238)	
Employer contributions	1,756		10,330	
Benefits paid	(7,894)		(6,807)	
Fair value of plan assets at end of year	 176,958		175,159	
Funded status at end of year	\$ 27,532	\$	27,016	

The following table provides the amounts recognized in the consolidated balance sheets as of December 31, 2023 and 2022 (in thousands):

	Pension Benefits				
	 2023		2022		
Non-current assets:					
Accrued benefit asset	\$ 28,399	\$	27,806		
Current pension liability					
Accrued benefit liability	(867)		(790)		
Accumulated other comprehensive loss	8,031		6,446		
Net amount recognized	\$ 35,563	\$	33,462		

The benefit obligation and prepaid benefit costs were calculated by applying the following weighted average assumptions:

	Pension Be	nefits		
	2023			
Discount rate: net periodic pension cost	5.77 %	5.54%		
Discount rate: projected benefit obligation	5.77%	5.54%		
Expected rate of return on plan assets	7.25%	7.25 %		
Rate of compensation increase: net periodic pension cost	5%/2%	5%/2%		
Rate of compensation increase: projected benefit obligation	4%/3%/2%	5%/2%		

⁽¹⁾ 5% for 2023 and 2% per year thereafter.

⁽²⁾ 4% for 2023, 3% for 2024 and 2% per year thereafter.

The above assumptions were calculated based on information as of December 31, 2023 and 2022, the measurement dates for the plans. The discount rate is based on the yield curve for investment-grade corporate bonds as published by the U.S. Treasury Department. The expected rate of return on plan assets is based upon consideration of the plan's current asset mix, historical long-term return rates and the plan's historical performance. Our current assumption for the rate on plan assets is 7.25%. The vested benefit obligation is determined based on the actuarial present value of benefits to which employees are currently entitled, based on employees' expected date of separation or retirement.

Net periodic pension cost for the plans consisted of the following in 2023, 2022, and 2021 (in thousands):

Pension Benefits					
	2023		2022		2021
\$	3,794	\$	6,262	\$	5,820
	7,974		5,476		4,990
	(12,428)		(13,452)		(9,252)
	500		511		394
	(188)		2,049		4,502
\$	(348)	\$	846	\$	6,454
	\$	2023 \$ 3,794 7,974 (12,428) 500 (188) \$ (348)	2023 5 \$ 3,794 \$ 7,974 \$ (12,428) \$ 500 \$ (188) \$ \$ (348) \$	Pension Benefits 2023 2022 \$ 3,794 \$ 6,262 7,974 5,476 (12,428) (13,452) 500 511 (188) 2,049 \$ (348) \$ 846	Pension Benefits 2023 2022 \$ 3,794 \$ 6,262 \$ 7,974 5,476 \$ (12,428) (13,452) \$ 500 511 \$ (188) 2,049 \$ \$ (348) \$ 846 \$

The service cost component of net periodic pension cost is included in the same line items of our consolidated financial statements as other employee compensation costs. The net (benefit)/expense of (\$4.1 million), (\$5.4 million) and \$0.6 million for 2023, 2022 and 2021, respectively, related to all other components of net periodic pension cost is included in other (expense) income on our consolidated statements of operations and comprehensive (loss) income.

Each defined benefit pension plan's statement of investment policy delineates the responsibilities of the board, the committee which administers the plan, the investment manager(s), and investment adviser/consultant, and provides guidelines on investment management. Investment objectives are established for each of the asset categories included in the pension plans with comparisons of performance against appropriate benchmarks. Each plan's policy calls for investments to be supervised by qualified investment managers. The investment managers are monitored on an ongoing basis by our outside consultant, with formal reporting to us and the consultant performed each quarter. The policy sets forth the following allocation of assets:

	Target	Maximum
Large cap U.S. equities	17%	20%
Small cap U.S. equities	8 %	10%
Non-U.S. equities	25%	30%
U.S. Fixed income	18%	23 %
Emerging markets debt	5%	8%
Real estate	15%	18%
Absolute return	5%	7 %
Company stock/Real return	7 %	13 %

Each defined benefit pension plan's statement of investment policy and objectives aspires to achieve the assumed long term rate of return on plan assets established by the plan's actuary plus one percent.

Accounting guidance has established a hierarchy of assets measured at fair value on a recurring basis. The three levels included in the hierarchy are:

Level 1: quoted prices in active markets for identical assets or liabilities

Level 2: significant other observable inputs

Level 3: significant unobservable inputs

The fair values by asset category in each pension plan, along with their hierarchy levels, are as follows as of December 31, 2023 (in thousands):

		Hecla plans						Lucky Friday								
	Level 1 Lev		evel 2	Level 3 Total		Total	Level 1		Level 2		Level 3		Total			
Investments measured at fair value																
Interest-bearing cash	\$	525	\$		\$		\$	525	\$	117	\$		\$		\$	117
Common stock		19,933						19,933		2,872						2,872
Mutual funds		83,504				_		83,504		12,792						12,792
Total investments in the fair value hierarchy		103,962	_					103,962		15,781						15,781
Investments measured at net asset value	_						_									
Real estate funds		—		—				18,029				—				4,173
Common collective funds		—		—		—		28,386		—		—				6,627
Total investments measured at net asset value						_		46,415				_		_		10,800
Total fair value	\$	103,962	\$	_	\$	_	\$	150,377	\$	15,781	\$		\$	_	\$	26,581

The fair values by asset category in each defined benefit pension plan, along with their hierarchy levels, were as follows as of December 31, 2022 (in thousands):

	Hecla plans							Lucky Friday													
	Level	1	Le	evel 2	Lev	vel 3	 Total	Level 1		Level 1		Level 1		Level 1		1 Level 2		Level 2 Level 3		Total	
Investments measured at fair value																					
Interest-bearing cash	\$	743	\$		\$	—	\$ 743	\$	133	\$		\$		\$	133						
Common stock	21	,678		—		—	21,678		3,295						3,295						
Mutual funds	75	,868		—		—	75,868		11,905		—				11,905						
Total investments in the fair value hierarchy	98	,289	_				 98,289		15,333				_		15,333						
Investments measured at net asset value			_					_													
Real estate funds		—				—	23,967						—		5,550						
Hedge funds		—		—		—	—		—		—		—		—						
Common collective funds		—		—		—	26,114		—		—				5,906						
Total investments measured at net asset value			_				50,081	_	_				_		11,456						
Total fair value	\$ 98	,289	\$		\$		\$ 148,370	\$	15,333	\$		\$		\$	26,789						

Common stock investments included investments in Hecla common stock as of December 31, 2023 of \$19.9 million (2022: \$21.7 million for the Hecla Plans and \$2.9 million (2022: \$3.3 million) for the Lucky Friday plan.

Generally, investments are valued based on information provided by fund managers to each plan's trustee as reviewed by management and its investment advisers. Mutual funds and equities are valued based on available exchange data. Commingled equity funds consist of publicly-traded investments.

Fair value for real estate funds, hedge funds and common collective equity funds is measured using the net asset value per share (or its equivalent) practical expedient ("NAV"), and has not been categorized in the fair value hierarchy. There are no unfunded commitments related to these investments. There are no restrictions on redemptions of these funds as of December 31, 2023, except as limited by the redemption terms discussed below. The following summarizes information on the asset classes measured using NAV:

	Investment strategy	Redemption terms
Real estate funds	Invest in real estate properties among the four major property types (office, industrial, retail and multi- family)	Allowed quarterly with notice of between 45 and 60 days
Hedge funds	Invest in a variety of asset classes which aim to diversify sources of returns	Allowed quarterly with notice of 90 days
Common collective funds	Invest in U.S. large cap or small/medium cap public equities in actively traded managed equity portfolios	Allowed daily or with notice of 30 days

The following are estimates of future benefit payments, which reflect expected future service as appropriate, related to our pension plans (in thousands):

Year Ending December 31,	Pension Plans	
2024	\$ 8,5	386
2025	10,0)31
2026	10,0	005
2027	9,9) 81
2028	10,3	321
Years 2029-2033	51,7	163

During 2023 and 2022 we contributed \$1.0 million and \$5.5 million in shares of our common stock to our defined benefit pension plans, respectively. During 2022 we also contributed \$4.2 million in shares of our common stock to our SERP, respectively. We do not expect to be required to contribute to our defined benefit plans in 2024, but we may choose to do so.

The following table indicates whether our pension plans had accumulated benefit obligations ("ABO") in excess of plan assets, or plan assets exceeded ABO (amounts are in thousands).

	2023					
	Plan A	Assets Exceed ABO	Plan	Plan Assets Exceed ABO		
Projected benefit obligation	\$	149,426	\$	148,143		
Accumulated benefit obligation		146,336		144,816		
air value of plan assets		176,958		175,159		

For the pension plans, the following amounts are included in "Accumulated other comprehensive income, net" on our balance sheet as of December 31, 2023, that have not yet been recognized as components of net periodic benefit cost (in thousands):

Unamortized net loss Unamortized prior service cost	Pension Benefits
Unamortized net loss	\$ 7,462
Unamortized prior service cost	579

Except for a limited number of employees who participate in the SERP, non-U.S. employees are not eligible to participate in the defined benefit pension plans that we maintain for U.S. employees. Canadian employees participate in Canada's public retirement income system, which includes the following components: (i) the Canada (or Quebec) Pension Plan, which is an employee and employer contributory, earnings-related social insurance program, and (ii) the Old Age Security program. Mexican employees participate in Mexico's public retirement income system, which is based on contributions the employee, employer and the government submit to the retirement savings system. The system is administered through savings accounts managed by private fund managers selected by the participant.

Capital Accumulation Plans

Our Capital Accumulation Plan is available to all U.S. salaried and certain hourly employees upon employment. We make a matching contribution in the form of cash or stock of 100% of an employee's contribution up to 6% of eligible earnings. Our matching contributions all in Hecla common stock were \$4.6 million, \$4.5 million and \$4.3 million in 2023, 2022 and 2021, respectively.

We also maintain a 401(k) plan that is available to all hourly employees at Lucky Friday after completion of six months of service. When an employee meets eligibility requirements we make a matching cash contribution of 55% of the employee's contribution up to, but not exceeding, 5% of the employee's eligible earnings. Our matching contributions were \$1.3 million, \$0.6 million and \$0.5 million in 2023, 2022 and 2021, respectively.

Note 7: Income and Mining Taxes

Major components of our income and mining tax benefit (provision) for the years ended December 31, 2023, 2022 and 2021 are as follows (in thousands):

	2023			2022	 2021
Current:					
Domestic	\$	(3,846)	\$	(3,915)	\$ (7,073)
Foreign		(3,322)		(5,119)	(6,316)
Total current income and mining tax provision		(7,168)		(9,034)	(13,389)
Deferred:					
Domestic		(17,058)		2,064	43,708
Foreign		23,004		14,536	 (750)
Total deferred income and mining tax benefit		5,946		16,600	 42,958
Total income and mining tax (provision) benefit	\$	(1,222)	\$	7,566	\$ 29,569

Domestic and foreign components of income (loss) before income and mining taxes for the years ended December 31, 2023, 2022 and 2021 are as follows (in thousands):

	 2023	 2022	 2021
Domestic	\$ 43,745	\$ (6,343)	\$ 38,003
Foreign	(126,740)	(38,571)	(32,477)
Total	\$ (82,995)	\$ (44,914)	\$ 5,526

The annual tax benefit (provision) is different from the amount that would be provided by applying the statutory federal income tax rate to our pretax income (loss). The reasons for the difference are (in thousands):

	2	023	202	2	202	21
Computed "statutory" benefit (provision)	\$ 17,429	21% \$	9,432	21% \$	(1,161)	21 %
Percentage depletion	4,205	5	8,542	19	8,076	(146)
Change in valuation allowance	(20,016)	(24)	(8,113)	(18)	38,058	(689)
State taxes, net of federal tax benefit	(2,731)	(3)	(158)		965	(17)
Foreign currency remeasurement of monetary assets and						
liabilities	(4,155)	(5)	4,559	10	(3,625)	66
Rate differential on foreign earnings	6,553	8	1,515	3	2,445	(44)
Compensation	(1,636)	(2)	173	0	1,094	(20)
Mining and other taxes	(1,359)	(2)	(6,609)	(15)	(13,799)	250
Other	488	1	(1,775)	(3)	(2,484)	45
Total (provision) benefit	\$ (1,222)	(1)% \$	7,566	<u>17</u> % \$	29,569	(535)%

At December 31, 2023 and 2022, the net deferred tax liability was \$102.0 million and \$104.7 million, respectively. The individual components of our net deferred tax assets and liabilities are reflected in the table below (in thousands).

		December 31,			
		2023		2022	
Deferred tax assets:					
Accrued reclamation costs	\$	33,451	\$	33,007	
Deferred exploration		22,341		22,584	
Foreign net operating losses		52,091		71,391	
Domestic net operating losses		214,137		211,381	
Foreign exchange loss		22,247		24,235	
Foreign tax credit carryforward		2,026		2,493	
Miscellaneous		35,060		39,628	
Total deferred tax assets	—	381,353		404,719	
Valuation allowance		(100,910)		(72,856)	
Total deferred tax assets	—	280,443		331,863	
Deferred tax liabilities:					
Miscellaneous		(12,950)		(9,020)	
Properties, plants and equipment		(369,445)		(427,584)	
Total deferred tax liabilities	—	(382,395)		(436,604)	
Net deferred tax liability	\$	(101,952)	\$	(104,741)	

We evaluated the positive and negative evidence available to determine the amount of valuation allowance required on our deferred tax assets. At December 31, 2023, the balance of our valuation allowances was \$100.9 million compared to \$72.9 million at December 31, 2022. We retained a balance of valuation allowance on Hecla US operations at December 31, 2023 of \$4.3 million for state loss carryforwards and foreign tax credits. In the Nevada U.S. Group, the scheduling of reversing deferred tax assets and liabilities determined that existing tax loss carryforwards subject to the limitation of eighty percent reduction of taxable income may be limited in the future. A valuation allowance is recorded for \$35.1 million. Due to cessation of operations in Mexico at the end of 2020, we are uncertain when a source of taxable income will be available in that jurisdiction. Therefore, a valuation allowance of \$13.2 million was retained on deferred tax assets in Mexico. As of December 31, 2023, a \$48.3 million valuation allowance is recorded for Canadian jurisdictions, primarily related to the Alexco acquisition in 2022. The changes in the valuation allowance for the years ended December 31, 2023, 2022 and 2021, are as follows (in thousands):

	 2023	 2022	 2021
Balance at beginning of year	\$ (72,856)	\$ (39,152)	\$ (77,210)
Valuation allowance on deferred tax assets acquired with the ATAC (2023) and			
Alexco (2022) acquisitions	(8,077)	(25,591)	
Increase related to non-recognition of deferred tax assets due to uncertainty of			
recovery and increase related to non-utilization of net operating loss carryforwards	(21,114)	(13,256)	(20,304)
Decrease related to either or a combination of (i) utilization, (ii) release due to future			
benefit, and (iii) expiration of deferred tax assets as applicable	 1,137	 5,143	 58,362
Balance at end of year	\$ (100,910)	\$ (72,856)	\$ (39,152)

As of December 31, 2023, for U.S. income tax purposes, we have federal and state net operating loss carryforwards of \$893.6 million and \$418.0 million, respectively. U.S. net operating loss carryforwards for periods arising before January 1, 2018 have a 20-year expiration period, the earliest of which could expire in 2028. U.S. net operating loss carryforwards of \$408.2 million arising in 2018 and future periods have an indefinite carryforward period. We have foreign and provincial net operating loss carryforwards of \$188.5 million each, which expire between 2031 and 2043. Our utilization of U.S. net operating loss carryforwards arising in control as defined under Internal Revenue Code Section 382. As of December 31, 2023, no change in control has occurred in the Hecla U.S. group. Net operating losses acquired with the Nevada U.S. Group are subject to limitation under Internal Revenue Code Section 382. However, the annual limitation is not expected to have a material impact on our ability to utilize the losses.

We have Internal Revenue Code Section 163(j) interest expense limitation carryforwards of \$3.4 million in Hecla US as of December 31, 2023. The carryforward results in a future tax benefit of \$0.7 million and has an indefinite carryforward period. In the

Nevada U.S. Group we have 163(j) interest expense limitation carryforwards of \$20.6 million as of December 31, 2023. The carryforward results in a future tax benefit of \$4.3 million and has an indefinite carryforward period.

As of December 31, 2023, we have foreign tax credit carryforwards of \$2.0 million. The carryforward period for foreign tax credits is 10 years. Our foreign tax credits will expire between 2024 and 2026.

We file income tax returns in the U.S. federal jurisdiction, and various state and foreign jurisdictions. We are no longer subject to income tax examinations by U.S. federal and state tax authorities for years prior to 2008, or examinations by foreign tax authorities for years prior to 2017. We are currently under examination in certain local Canadian tax jurisdictions. However, we do not anticipate any material adjustments.

We had no unrecognized tax benefits as of December 31, 2023 or 2022. Due to the net operating loss carryover provision, coupled with the lack of any unrecognized tax benefits, we have not provided for any interest or penalties associated with any unrecognized tax benefits. If interest and penalties were to be assessed, our policy is to charge interest to interest expense, and penalties to other operating expense. It is not anticipated that there will be any significant changes to unrecognized tax benefits within the next 12 months.

Note 8: (Loss) Income per Common Share

We calculate basic income (loss) per share using, as the denominator, the weighted average number of common shares outstanding during the period. Diluted income (loss) per share uses, as its denominator, the weighted average number of common shares outstanding during the period plus the effect of potential dilutive common shares during the period using the treasury stock method for options, warrants, and restricted stock units, and if-converted method for convertible preferred shares.

Potential dilutive common shares include outstanding restricted stock unit awards, stock units, warrants and convertible preferred stock for periods in which we have reported net income. For periods in which we reported net losses, potential dilutive common shares are excluded, as their conversion and exercise would not reduce earnings per share. Under the if-converted method, preferred shares would not dilute earnings per share in any of the periods presented.

The following table represents net income (loss) per common share - basic and diluted (in thousands, except income (loss) per share):

	Year ended December 31,						
	 2023		2022		2021		
Numerator							
Net (loss) income	\$ (84,217)	\$	(37,348)	\$	35,095		
Preferred stock dividends	(552)		(552)		(552)		
Net (loss) income applicable to common stockholders	\$ (84,769)	\$	(37,900)	\$	34,543		
Denominator							
Basic weighted average common shares	605,668		557,344		536,192		
Dilutive stock options, restricted stock units, and warrants	_		—		5,984		
Diluted weighted average common shares	605,668		557,344		542,176		
Basic (loss) income per common share	\$ (0.14)	\$	(0.07)	\$	0.06		
Diluted (loss) income per common share	\$ (0.14)	\$	(0.07)	\$	0.06		

For the year ended December 31, 2021, the calculation of diluted income per common share included (i) 2,317,007 unvested restricted stock units during the period, (ii) 1,557,503 warrants to purchase one share of common stock and (iii) 2,166,964 deferred shares that were dilutive. For the years ended December 31, 2023 and 2022, all outstanding restricted stock units, warrants and deferred shares were excluded from the computation of diluted loss per share, as our reported net losses for those periods would cause their conversion and exercise to have no effect on the calculation of loss per share.

Note 9: Debt, Credit Facility and Leases

Debt Summary

Our debt as of December 31, 2023 and 2022 consisted of our 7.25% Senior Notes due February 15, 2028 ("Senior Notes") and our Investissement Quebec Series 2020-A Senior Notes due July 9, 2025 (the "IQ Notes"). These debt arrangements are discussed further below. The following tables summarize our long-term debt balances as of December 31, 2023 and 2022 (in thousands):

		December 31, 2023						
	Senior Notes			Q Notes		Total		
Principal	\$	475,000	\$	36,473	\$	511,473		
Unamortized discount/premium and issuance costs		(3,730)		257		(3,473)		
Long-term debt balance	\$	471,270	\$	36,730	\$	508,000		
			Decer	nhar 31 2022				
	s	enior Notes	I	Q Notes		Total		
Principal	\$	475,000	\$	35,614	\$	510,614		
Unamortized discount/premium and issuance costs		(4,640)		392		(4,248)		
Long-term debt balance	\$	470.360	\$	36.006	\$	506.366		
•	*)))		

The following table summarizes the scheduled annual future payments, including interest, for the Senior Notes and IQ Notes as of December 31, 2023 (in thousands). The amounts for the IQ Notes are stated in USD based on the USD/CAD exchange rate as of December 31, 2023.

	Senior Notes	IQ	Notes
2024	\$ 34,438	\$	2,376
2025	34,438		37,704
2026	34,438		—
2027	34,438		—
2028	479,303		—
2029	—		_
Total	\$ 617,055	\$	40,080

Senior Notes

On February 19, 2020, we completed an offering of \$475 million in aggregate principal amount of our Senior Notes under our shelf registration statement previously filed with the Securities and Exchange Commission. The Senior Notes are governed by the Indenture, dated as of February 19, 2020, as amended, among Hecla and certain of our subsidiaries and The Bank of New York Mellon Trust Company, N.A., as trustee. On March 19, 2020, the net proceeds from the offering of the Senior Notes (\$469.5 million) were used, together with cash on hand, to redeem all of our previously-outstanding 6.875% Senior Notes that were due in 2021 (the "2021 Notes.")

The Senior Notes are recorded net of a 1.16% initial purchaser discount totaling \$5.5 million. The Senior Notes bear interest at a rate of 7.25% per year from the date of issuance or from the most recent payment date on which interest has been paid or provided for. Interest on the Senior Notes is payable on February 15 and August 15 of each year, commencing August 15, 2020. During 2023, 2022 and 2021, interest expense on the statement of operations and comprehensive (loss) income related to the Senior Notes and 2021 Notes and amortization of the initial purchaser discount and fees related to the issuance of the Senior Notes and 2021 Notes totaled \$34.4 million, \$35.4 million, respectively.

The Senior Notes are guaranteed on a senior unsecured basis by certain of our subsidiaries (the "Guarantors"). The Senior Notes and the guarantees are, respectively, Hecla's and the Guarantors' general senior unsecured obligations and are subordinated to all of Hecla's and the Guarantors' existing and future secured debt to the extent of the assets securing that secured debt. In addition, the Senior Notes are effectively subordinated to all of the liabilities of Hecla's subsidiaries that are not guaranteeing the Senior Notes, to the extent of the assets of those subsidiaries.

The Senior Notes will be redeemable in whole or in part, at any time and from time to time on or after February 15, 2023, on the redemption dates and at the redemption prices specified in the Indenture, plus accrued and unpaid interest, if any, to the date of redemption. After February 15, 2023, we may redeem some or all of the Senior Notes at the following redemption prices (expressed as a percentage of the principal amount) plus accrued interest, if any, to the redemption date: (i) 105.438% for the twelve-month period beginning after February 15, 2023, (ii) 103.625% for the twelve-month period beginning after February 15, 2024, (iii) 101.813% for the

twelve-month period beginning after February 15, 2025, and (iv) 100.000% after February 15, 2026. Since February 15, 2023, we may redeem up to 35% of the Senior Notes with the net cash proceeds of certain equity offerings.

Upon the occurrence of a change of control (as defined in the Indenture), each holder of Senior Notes will have the right to require us to purchase all or a portion of such holder's Senior Notes pursuant to a change of control offer (as defined in the Indenture), at a purchase price equal to 101% of the principal amount thereof plus accrued and unpaid interest, if any, to the date of purchase, subject to the rights of holders of the Senior Notes on the relevant record date to receive interest due on the relevant interest payment date.

IQ Notes

On July 9, 2020, we entered into a note purchase agreement pursuant to which we issued CAD\$50 million (USD\$36.8 million at the time of the transaction) in aggregate principal amount of our IQ Notes to Investissement Québec, a financing arm of the Québec government. Because the IQ notes are denominated in CAD, the reported USD-equivalent principal balance will change with movements in the exchange rate. The IQ Notes were issued at a premium of 103.65%, or CAD\$1.8 million, implying an effective annual yield of 5.74% and an aggregate principal amount to be repaid of CAD\$48.2 million. The IQ Notes were issued in four equal installments of CAD\$12.5 million on July 9, August 9, September 9 and October 9, 2020, with the first installment issued net of CAD\$0.6 million in fees. The IQ Notes bear interest on amounts outstanding at a rate of 6.515% per year, payable on January 9 and July 9 of each year, commencing January 9, 2021. The IQ Notes are senior and unsecured and are pari passu in all material respects with the Senior Notes, including open market purchases of a portion of the Senior Notes and to pay for capital expenditures at Casa Berardi. Under the note purchase agreement for the IQ Notes and subject to a force majeure event, we met the requirement to invest in the aggregate CAD\$100 million at Casa Berardi and other exploration and development projects in Quebec over the four-year period commencing on July 9, 2020. During 2023, 2022 and 2021, interest expense related to the IQ Notes, including premium and origination fees, totaled \$2.3 million, \$2.3 million and \$2.3 million, respectively.

Credit Agreement

On July 21, 2022, we entered into a Credit Agreement ("Credit Agreement") with various financial institutions (the "Lenders"), with Bank of America, N.A., as administrative agent for the Lenders and as swingline lender and Bank of Montreal as letters of credit issuers. The Credit Agreement is a \$150 million senior secured revolving facility, with an option to be increased in an aggregate amount not to exceed \$75 million. The revolving loans under the Credit Agreement will have a maturity date of July 21, 2026. Proceeds of the revolving loans under the Credit Agreement may be used for general corporate purposes. The interest rate on the outstanding loans under the Credit Agreement is based on the Company's net leverage ratio and is calculated at (i) Term Secured Overnight Financing Rate ("SOFR") plus 2% to 3.5%; or (ii) Bank of America's Base Rate plus 1% to 2.5% with Base Rate being the highest of (i) the Bank of America prime rate, (ii) the Federal Funds rate plus .50% or (iii) Term SOFR plus 1.00%. For each amount drawn, we elect whether we draw on a one, three or six month basis or annual basis for SOFR. If we elect to draw for greater than six months, we pay interest quarterly on the outstanding amount.

We are also required to pay a commitment fee of between 0.45% to 0.78750%, depending on our net leverage ratio. Letters of credit issued under the Credit Agreement bear a fee between 2.00% and 3.50% based on our net leverage ratio, as well as a fronting fee to each issuing bank at an agreed upon rate per annum on the average daily dollar amount of our letter of credit exposure. During 2023 we paid \$0.6 million as commitment fees under the Credit Agreement included as part of Interest expense, net.

Hecla Mining Company and certain of our subsidiaries are the borrowers under the Credit Agreement, while certain of our other subsidiaries are guarantors of the borrowers' obligations under the Credit Agreement. As further security, the credit facility is collateralized by a mortgage on the Greens Creek mine, the equity interests of subsidiaries that own the Greens Creek mine or are part of the Greens Creek Joint Venture and our subsidiary Hecla Admiralty Company (the "Greens Creek Group"), and by all of the Green Creek Group's rights and interests in the Greens Creek Joint Venture Agreement, and in all assets of the joint venture and of any member of the Greens Creek Group.

As of December 31, 2023, \$6.9 million (2022: \$7.8 million) was used for letters of credit, and \$128.0 million (2022: Undrawn) was drawn on the facility leaving \$15.1 million available for borrowing.

We believe we were in compliance with all covenants under the Credit Agreement as of December 31, 2023.

Finance Leases

We have entered into various lease agreements, primarily for equipment at our operations, which we have determined to be finance leases. At December 31, 2023, the total liability associated with the finance leases, including certain purchase option amounts,

was \$26.8 million (2022: \$20.9 million), with \$9.8 million (2022: \$9.5 million) of the liability classified as current and \$17.0 million (2022: \$11.4 million) classified as non-current. The assets related to these leases are recorded in properties, plants, equipment and mineral interests, net, on our consolidated balance sheets and totaled \$20.3 million as of December 31, 2023 (2022: \$23.1 million), net of accumulated depreciation. Expense during 2023, 2022 and 2021 related to finance leases included \$12.6 million, \$7.1 million and \$8.9 million, respectively, for amortization of the related assets, and \$0.9 million, \$0.9 million and \$0.6 million, respectively, for interest expense. The total obligation for future minimum finance lease payments was \$29.8 million as of December 31, 2023, with \$3.0 million attributed to interest. Our finance leases as of December 31, 2023 had a weighted average remaining term of 2.2 years (2022: 1.9 years) and a weighted average discount rate of 9.9% (2022: 6.5%).

At December 31, 2023, the annual maturities of finance lease commitments, including interest, were (in thousands):

Twelve-month period ending December 31,	
2024	\$ 11,172
2025	7,744
2026	5,757
2027	5,119
2028	_
Total	 29,792
Less: effect of interest	(2,977)
Net finance lease obligation	\$ 26,815

Operating Leases

We have entered into various lease agreements, primarily for equipment, buildings and other facilities, and land at our operations and corporate offices, which we have determined to be operating leases. Some of the operating leases allow for extension of the lease beyond the current term at our option. We have considered the likelihood and estimated duration of the extension options in determining the lease term for measurement of the liability and right-of-use asset. For our operating leases as of December 31, 2023, we have assumed a discount rate of 6.5% (2022: 6%). As of December 31, 2023, the total liability balance associated with the operating leases was \$8.6 million (2022: \$11.1 million), with \$0.8 million (2022: \$2.5 million) of the liability classified as current as part of *Other Current Liabilities* and the remaining \$7.8 million (2022: \$8.6 million) classified as non-current as part of *Other Non-Current Liabilities* on our balance sheet. The right-of-use assets for our operating leases are recorded as a non-current asset on our consolidated balance sheets and totaled \$8.3 million and \$11.1 million as of December 31, 2023 and 2022, respectively. During 2023, 2022 and 2021, operating lease expense, and cash paid for operating leases included in net cash provided by operating activities, totaled \$3.1 million, \$3.1 million and \$3.9 million, respectively. The weighted-average remaining lease term for our operating leases as of December 31, 2023 was 9.8 years (2022: 8.9 years).

At December 31, 2023, the annual maturities of undiscounted operating lease payments, including assumed extensions beyond the current lease terms, were (in thousands):

Twelve-month period ending December 31,	
2024	\$ 1,290
2025	1,278
2026	1,278
2027	1,171
2028	1,033
More than 5 years	5,566
Total	11,616
Less: effect of discounting	(2,982)
Operating lease liability	\$ 8,634

Note 10: Derivative Instruments

General

Our current risk management policy provides that up to 75% of five years of our foreign currency, lead and zinc metals price and silver and gold price exposure may be covered under a derivatives program with certain other limitations. Our program also utilizes derivatives to manage price risk exposure created from when revenue is recognized from a shipment of concentrate until final settlement.

These instruments expose us to (i) credit risk in the form of non-performance by counterparties for contracts in which the contract price exceeds the spot price of the hedged commodity or foreign currency and (ii) price risk to the extent that the spot price or currency exchange rate exceeds the contract price for quantities of our production and/or forecasted costs covered under contract positions.

Foreign Currency

Our wholly-owned subsidiaries owning the Casa Berardi operation and Keno Hill operation are USD-functional entities which routinely incur expenses denominated in CAD. Such expenses expose us to exchange rate fluctuations between the USD and CAD. We have a program to manage our exposure to fluctuations in the USD exchange rate for these subsidiaries' future operating and capital costs denominated in CAD. The program related to forecasted cash operating costs at Casa Berardi and Keno Hill utilizes forward contracts to buy CAD, some of which are designated as cash flow hedges. As of December 31, 2023, we have a total of 576 forward contracts outstanding to buy a total of CAD \$422.1 million having a notional amount of USD\$332.3 million for Casa Berardi, Keno Hill, and some corporate Canadian expenses. The CAD contracts that are related to forecasted cash operating costs at Casa Berardi and Keno Hill from 2024-2026 have a total notional value of CAD\$355.4 million and have CAD-to-USD exchange rates ranging between 1.27670 and 1.36920. The CAD contracts that are related to forecasted capital expenditures at Casa Berardi from 2024-2026 have a total notional value of CAD\$42.8 million at an average CAD-to-USD exchange rate of 1.353. The CAD contracts that are related to forecasted capital expenditures at Keno Hill from 2024-2026 have a total notional value of CAD\$22.9 million at an average CAD-to-USD exchange rate of 1.354.

As of December 31, 2023 and 2022, we recorded the following balances for the fair value of the contracts (in millions):

	December 31,							
Balance sheet line item:	20	023	2	2022				
Other current assets	\$	2.7	\$	1.1				
Other non-current assets		2.0		0.4				
Current derivative liabilities		(1.1)		(4.0)				
Non-current derivative liabilities		(0.4)		(3.6)				

Net unrealized gains of \$1.3 million related to the effective portion of the hedges were included in accumulated other comprehensive income (loss) as of December 31, 2023. Unrealized gains and losses will be transferred from accumulated other comprehensive loss to current earnings as the underlying operating expenses are recognized. We estimate \$0.2 million in net unrealized gains included in accumulated other comprehensive income (loss) as of December 31, 2023 will be reclassified to current earnings in the next twelve months. Net realized loses of \$3.6 million on contracts related to underlying expenses which have been recognized were transferred from accumulated other comprehensive loss and included in cost of sales and other direct production costs for the year ended December 31, 2023. Net unrealized gains of \$1.2 million related to contracts not designated as hedges and no net unrealized gains or losses related to ineffectiveness of the hedges were included in fair value adjustments, net on our consolidated statements of operations and comprehensive (loss) income for the year ended December 31, 2023.

Metals Prices

We are currently using financially-settled forward contracts to manage the exposure to:

- · changes in prices of silver, gold, zinc and lead contained in our concentrate shipments between the time of shipment and final settlement; and
- changes in prices of zinc and lead (but not silver and gold) contained in our forecasted future concentrate shipments.

The following tables summarize the quantities of metals committed under forward sales contracts at December 31, 2023 and 2022:

December 31, 2023	Ou	nces/pounds under	r contract (in 000's)		er ounce/pound		
	Silver (ounces)	Gold (ounces)	Zinc (pounds)	Lead (pounds)	Silver (ounces)	Gold (ounces)	Zinc (pounds)	Lead (pounds)
Contracts on provisional sales								
2023 settlements	735	3	441	15,542	24.40	2,045	1.51	1.00
Contracts on forecasted sales								
2024 settlements			—	56,713	N/A	N/A	N/A	0.98
2025 settlements	—		—	49,273	N/A	N/A	N/A	0.98

December 31, 2022	cember 31, 2022 Ounces/pounds under contract (in 000's)		Average price per ounce/pound																																									
	Silver (ounces)	Gold (ounces)	Zinc (pounds)	Lead (pounds)	Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		Silver (ounces)		(Gold ounces)	(p	Zinc ounds)] (p	Lead ounds)
Contracts on provisional sales																																												
2022 settlements	3,124	8	18,629	11,960	\$	21.55	\$	1,795	\$	1.38	\$	0.98																																
Contracts on forecasted sales																																												
2022 settlements			37,533	75,618		N/A		N/A	\$	1.34	\$	1.00																																
2023 settlements			—	45,856		N/A		N/A		N/A	\$	0.99																																

Effective November 1, 2021, we designated the contracts for lead and zinc contained in our forecasted future shipments as hedges for accounting purposes, with gains and losses deferred to accumulated other comprehensive loss until the hedged product ships. Prior to November 1, 2021, these contracts did not qualify for hedge accounting and were therefore marked-to-market through earnings each period. The forward contracts for silver and gold contained in our concentrate shipments have not been designated as hedges and are marked-to-market through earnings each period.

At December 31, 2023 and 2022, we recorded the following balances for the fair value of forward contracts held at that time (in millions):

		December 31, 2023					December 31, 2022							
Balance sheet line item:	-	Contracts in an asset position	Conti lia po	racts in a bility osition	Net a (liabi	isset ility)	Cont an po	racts in asset sition	Cont li: P	racts in a ability osition	N (li	et asset ability)		
Other current assets	:	\$ 3.1	\$	_	\$	3.1	\$	1.2	\$	_	\$	1.2		
Other non-current assets		1.5				1.5		0.1		_		0.1		
Current derivatives liability				(0.1)		(0.1)				(12.1)		(12.1)		
Non-current derivatives liability		\$ —	\$	_	\$		\$		\$	(2.5)	\$	(2.5)		

Net realized and unrealized gains of \$14.6 million related to the effective portion of the contracts designated as hedges were included in accumulated other comprehensive loss as of December 31, 2023. Realized and unrealized gains and losses will be transferred from accumulated other comprehensive loss to current earnings as the underlying forecasted sales transaction is recognized. We estimate \$12.6 million in net realized and unrealized gains included in accumulated other comprehensive loss as of December 31, 2023 will be reclassified to current earnings in the next twelve months. The realized gains arose due to cash settlement of zinc and lead contracts in 2023 and zinc contracts in 2022 prior to maturity for proceeds of \$8.5 million and \$17.4 million, respectively. There were no early settlements in 2021. We recognized a net gain of \$19.7 million, including a \$20.6 million gain transferred from accumulated other comprehensive income (loss) during 2023 on the contracts utilized to manage exposure to changes in prices of metals in our concentrate shipments, which is included in sales of products. The net loss recognized on the contracts offsets gains related to price adjustments on our provisional concentrate sales due to changes to silver, gold, lead and zinc prices between the time of sale and final settlement.

We recognized a \$32.9 million net loss during 2021 on the contracts utilized to manage exposure to changes in prices for forecasted future sales prior to their hedge designation. The net loss on these contracts is included in the fair value adjustments, net line item under other income (expense), as they relate to forecasted future sales, as opposed to sales that have already taken place but are subject to final pricing as discussed in the preceding paragraph. The net loss for 2021 is the result of increasing silver, gold, zinc and lead prices.

Credit-risk-related Contingent Features

Certain of our derivative contracts contain cross default provisions which provide that a default under our revolving credit agreement would cause a default under the derivative contract. As of December 31, 2023, we have not posted any collateral related to these contracts. The fair value of derivatives in a net liability position related to these arrangements was \$1.6 million as of December 31, 2023, and includes accrued interest but excludes any adjustment for nonperformance risk. If we were in breach of any of these provisions at December 31, 2023, we could have been required to settle our obligations under the agreements at their termination value of \$1.6 million.

Note 11: Fair Value Measurement

Fair value adjustments, net is comprised of the following (in thousands):

	Year Ended December 31,							
		2023	_	2022		2021		
Gain (loss) on derivative contracts	\$	3,168	\$	844	\$	(32,655)		
Unrealized (loss) on investments in equity securities		(243)		(5,632)		(4,295)		
Gain on disposition or exchange of investments				65		1,158		
Total fair value adjustments, net	\$	2,925	\$	(4,723)	\$	(35,792)		

Accounting guidance has established a hierarchy for inputs used to measure assets and liabilities at fair value on a recurring basis. The fair value hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets and liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels included in the hierarchy are:

Level 1: quoted prices in active markets for identical assets or liabilities;

Level 2: significant other observable inputs; and

Level 3: significant unobservable inputs.

The table below sets forth our assets and liabilities (in thousands) that were accounted for at fair value on a recurring basis and the fair value calculation input hierarchy level that we have determined applies to each asset and liability category. See *Note 6* for information on the fair values of our defined benefit pension plan assets.

	B De	alance at cember 31, 2023	l De	Balance at ecember 31, 2022	Input Hierarchy Level
Assets:					
Cash and cash equivalents:					
Money market funds and other bank deposits	\$	106,374	\$	104,743	Level 1
Current and non-current investments:					
Equity securities		32,284		24,018	Level 1
Trada accounts receivables					
Receivables from provisional concentrate sales		14,740		45,146	Level 2
Derivative contracts - other current assets and other non-current assets:					
Metal forward contracts		4,698		1,309	Level 2
Foreign exchange contracts		4,657		1,518	Level 2
Restricted cash and cash equivalents balances:					
Certificates of deposit and other deposits		1,165		1,164	Level 1
Total assets	\$	163,918	\$	177,898	
Liabilities					
Derivative contracts - current and non-current derivative liabilities:					
Metal forward contracts	\$	40	\$	14,643	Level 2
Foreign exchange contracts		1,508		7,548	Level 2
Total liabilities	\$	1,548	\$	22,191	

Cash and cash equivalents consist primarily of money market funds and are valued at cost, which approximates fair value.

Current and non-current restricted cash and cash equivalents balances consist primarily of certificates of deposit, U.S. Treasury securities, and other deposits and are valued at cost, which approximates fair value. Our non-current investments consist of marketable equity securities of companies in the mining industry which are valued using quoted market prices for each security.

Trade accounts receivable include amounts due to us for shipments of concentrates, doré, metals sold from doré, and carbon material sold to customers. Revenues and the corresponding accounts receivable for sales of metals products are recorded when title and risk of loss transfer to the customer (generally at the time of ship loading, or at the time of arrival at the customer for trucked products). Sales of concentrates are recorded using estimated forward prices for the anticipated month of settlement applied to our estimate of payable metal quantities contained in each shipment. Sales are recorded net of estimated treatment and refining charges, which are also impacted by changes in metals prices and quantities of contained metals. We estimate the prices at which sales of our concentrates will be settled due to the time elapsed between shipment and final settlement with the customer. Receivables for previously recorded concentrate sales are adjusted to reflect estimated forward metals prices at the end of each period until final settlement by the customer. We obtain the forward metals prices used each period from a pricing service. Changes in metals prices between shipment and final settlement result in changes to revenues previously recorded upon shipment.

We use financially-settled forward contracts to manage exposure to changes in the exchange rate between the USD and CAD, and the impact on CADdenominated operating and capital costs incurred at our Casa Berardi unit and Keno Hill development project (see *Note 10* for more information). The contracts related to operating costs qualify for hedge accounting, while the contracts related to capital costs have not been designated as hedges. Unrealized gains and losses related to the effective portion of the contracts designated as hedges are included in accumulated other comprehensive loss, and unrealized gains and losses related to the contracts not designated as hedges and the ineffective portion of the contracts designated as hedges are included in earnings each period. The fair value of each contract represents the present value of the difference between the forward exchange rate for the contract settlement period as of the measurement date and the contract settlement exchange rate.

We use financially-settled forward contracts to manage the exposure to changes in prices of silver, gold, zinc and lead contained in our concentrate shipments that have not reached final settlement. We also use financially-settled forward contracts to manage the exposure to changes in prices of zinc and lead (but not silver and gold) contained in our forecasted future concentrate shipments (see *Note 10* for more information). Effective November 1, 2021, we designated the contracts for lead and zinc as hedges for accounting purposes, with gains and losses deferred to accumulated other comprehensive income until the hedged product ships. The forward contracts for silver and gold contained in our concentrate shipments have not been designated as hedges and are marked-to-market through earnings each period. The fair value of each forward contract represents the present value of the difference between the forward metal price for the contract settlement period as of the measurement date and the contract settlement metal price.

At December 31, 2023, our Senior Notes and IQ Notes were recorded at their carrying values of \$478.7 million and \$36.6 million, respectively, net of unamortized initial purchaser discount/premium and issuance costs. The estimated fair values of our Senior Notes and IQ Notes were \$481.6 million and \$37.2 million, respectively, at December 31, 2023. Quoted prices, which we consider to be Level 1 inputs, are utilized to estimate the fair value of the Senior Notes. Unobservable inputs which we consider to be Level 3, including an assumed current annual yield of 6.63%, are utilized to estimate the fair value of the IQ Notes. The credit agreement, which we consider to be Level 1 in the fair value hierarchy, has a carrying and fair value of \$128 million. See *Note 11* for more information.

Note 12: Stockholders' Equity

Common Stock

Subject to the rights of the holders of any outstanding shares of preferred stock, each share of common stock is entitled to: (i) one vote on all matters presented to the stockholders, with no cumulative voting rights; (ii) receive such dividends as may be declared by the board of directors out of funds legally available therefor; and (iii) in the event of our liquidation or dissolution, share ratably in any distribution of our assets.

Dividends

In September 2011 and February 2012, our Board of Directors ("Board") adopted a common stock dividend policy that has two components: (1) a dividend that links the amount of dividends on our common stock to our average quarterly realized silver price in the preceding quarter, and (2) a minimum annual dividend of \$0.01 per share of common stock, in each case, payable quarterly, if and when declared. In September 2020, we amended the dividend policy to (1) reduce the minimum quarterly realized silver price threshold for the first component above from \$30 per ounce to \$25 per ounce, and (2) increased the minimum annual dividend from \$0.01 per share to \$0.015 per share. In each of May and September 2021, our Board approved an increase in our silver-linked dividend policy by \$0.01 per year, and in September 2021 also approved a reduction in the minimum realized silver price threshold to \$20 from \$25 per ounce. For illustrative purposes only, the table below summarizes potential per share dividend amounts at different quarterly average realized price levels according to the first component of the policy, as amended:
Quarterly Average Realized Silver Price (\$ per ounce)		Qua Div	rterly Silver-Linked vidend (\$ per share)	Anı D	nualized Silver-Linked Dividend (\$ per share)	A	Annualized Minimum Dividend (\$ per share)	Annualized Dividends per Share: Silver-Linked and Minimum (\$ per share)		
	<\$20	\$	_	\$	_	\$	0.015	\$	0.015	
	\$20	\$	0.0025	\$	0.01	\$	0.015	\$	0.025	
	\$25	\$	0.0100	\$	0.04	\$	0.015	\$	0.055	
	\$30	\$	0.0150	\$	0.06	\$	0.015	\$	0.075	
	\$35	\$	0.0250	\$	0.10	\$	0.015	\$	0.115	
	\$40	\$	0.0350	\$	0.14	\$	0.015	\$	0.155	
	\$45	\$	0.0450	\$	0.18	\$	0.015	\$	0.195	
	\$50	\$	0.0550	\$	0.22	\$	0.015	\$	0.235	

Total quarterly common stock dividends declared by our Board for the years ended December 31, 2023, 2022 and 2021 amounted to \$15.2 million, \$12.4 million and \$20.1 million respectively. The common stock dividend declared by the Board in the third quarter of 2020 and each subsequent quarter with the exception of the fourth quarter of 2022 has included the silver-linked component, as the realized silver price was above the minimum thresholds applicable to each of those quarters. Prior to 2011, no dividends had been declared on our common stock since 1990. The declaration and payment of common stock dividends is at the sole discretion of our Board.

At-The-Market Equity Distribution Agreement

Pursuant to an equity distribution agreement dated February 18, 2021, we may offer and sell up to 60 million shares of our common stock from time to time to or through sales agents. Sales of the shares, if any, will be made by means of ordinary brokers transactions or as otherwise agreed between the Company and the agents as principals. Whether or not we engage in sales from time to time may depend on a variety of factors, including share price, our cash resources, customary black-out restrictions, and whether we have any material inside information. The agreement can be terminated by us at any time. Any sales of shares under the equity distribution agreement are registered under the Securities Act of 1933, as amended, pursuant to a shelf registration statement on Form S-3. During March, April and December of 2023, we sold 10,645,198 shares under the agreement for proceeds of \$56.7 million, net of commissions and fees of \$0.9 million. In total since September 2022 through December 31, 2023, we have sold 14,505,397 shares under the agreement for total proceeds of \$74.0 million, net of commissions and fees of \$1.2 million.

Common Stock Repurchase Program

In 2012, our Board approved a stock repurchase program under which we are authorized to repurchase up to 20 million shares of our outstanding common stock from time to time in open market or privately negotiated transactions, depending on prevailing market conditions and other factors. The repurchase program may be modified, suspended or discontinued by us at any time. As of December 31, 2023, a total of 934,100 shares have been repurchased under the program, at an average price of \$3.99 per share. No shares were purchased under the program during the periods covered by these financial statements.

Preferred Stock

We have 157,776 shares (2022: 157,776 shares) of Series B Preferred Stock ("Preferred Stock") outstanding which are listed on the New York Stock Exchange. The Preferred Stock ranks senior to our common stock with respect to dividend payments, and amounts due upon liquidation, dissolution or winding up. While the Preferred Stock remains outstanding, we cannot authorize the creation or issuance of any class or series of stock that ranks senior to the Preferred Stock with respect to dividend payments, and amounts due upon liquidation, dissolution or winding up, without the consent of 66 2/3% of the Preferred Stockholders. Preferred Stockholders are entitled to receive, when, as and if declared by our Board, an annual cash dividend of \$3.50 per share of Preferred Stock, payable quarterly in arrears. Dividends are cumulative from the date of issuance, regardless of whether we have assets legally available for such payment. Total quarterly preferred stock dividends declared by our Board for the years ended December 31, 2023, 2022 and 2021 amounted to \$552,000 per year, respectively. Interest is not payable on any accumulated dividends. The Preferred Stock is redeemable at our option at \$50 per share of Preferred Stock, plus any unpaid dividends up to the date of redemption. The Preferred Stock has a liquidation preference of \$50 per share of Preferred Stock holders have no voting rights. Each share of Preferred Stock is convertible, in whole or in part, at the holder's option into our common stock at a conversion price of \$15.55 per common stock. During 2022, 40 shares of Preferred Stock were converted into 128 shares of our common stock.

Stock Award Plans

We use stock-based compensation plans to aid us in attracting, retaining and motivating our employees, as well as to provide incentives more directly linked to increases in stockholder value. These plans provide for the grant of options to purchase shares of our common stock, the issuance of restricted stock units, performance-based shares and other equity-based awards.

Stock-based compensation expense amounts recognized for the years ended December 31, 2023, 2022 and 2021 were \$6.6 million, \$6.0 million, and \$6.1 million, respectively. Over the next twelve months, we expect to recognize \$4.2 million in additional compensation expense as outstanding restricted stock units and performance-based shares vest.

Stock Incentive Plan

During 2010, our stockholders voted to approve the adoption of our 2010 Stock Incentive Plan and to reserve up to 20,000,000 shares of common stock for issuance under the plan. In the second quarter of 2019, our stockholders voted to approve an amendment to the plan to restore the number of shares of common stock available for issuance under the 2010 plan to the original 20,000,000 shares (along with other changes). The Board has broad authority under the 2010 plan to fix the terms and conditions of individual agreements with participants, including the duration of the award and any vesting requirements. As of December 31, 2023, there were 12,756,250 shares available for future grant under the 2010 plan.

Directors' Stock Plan

In 2017, we adopted the amended and restated Hecla Mining Company Stock Plan for Non-Employee Directors (the "Directors' Stock Plan"), which may be terminated by our board of directors at any time. Each non-employee director is credited each year with that number of shares determined by dividing \$120,000 by the average closing price for our common stock on the New York Stock Exchange for the prior calendar year. A minimum of 25% of the shares credited each year is held in trust for the benefit of each director until delivered to the director. Each director may elect, prior to the first day of the applicable year, to have a greater percentage contributed to the trust for that year. Delivery of the shares from the trust occurs upon the earliest of: (1) death or disability; (2) retirement; (3) a cessation of the director's service for any other reason; (4) a change in control; or (5) at the election of the director at any time, provided, however, that shares must be held in the trust for at least two years prior to delivery. During 2023, 2022, and 2021, 125,063, 98,310, and 207,375 shares, respectively, were credited to the non-employee directors. During 2023, 2022 and 2021, \$0.7 million, \$0.4 million, and \$1.8 million, respectively, was charged to general and administrative expense associated with the shares issued to the non-employee directors. During 2022, two directors retired and 388,175 shares were distributed to them. At December 31, 2023, there were 2,165,894 available for grant in the future under the plan.

Restricted Stock Units

Unvested restricted stock units ("RSU") activity granted by the Board to employees are summarized as follows:

		Weighte Averag Grant Da Fair	ed je ate
	Shares	Value per S	Share
Unvested, January 1, 2021	3,936,134	\$	2.55
Granted	629,437	\$	7.88
Canceled	(770,416)	\$	2.82
Vested	(1,772,803)	\$	2.60
Unvested, December 31, 2021	2,022,352	\$	3.97
Granted	1,256,532	\$	4.41
Canceled	(177,801)	\$	4.41
Vested	(1,304,968)	\$	3.97
Unvested, December 31, 2022	1,796,115	\$	4.23
Granted	1,316,120	\$	5.05
Canceled	(336,060)	\$	4.90
Vested	(918,927)	\$	5.05
Unvested, December 31, 2023	1,857,248	\$	4.28

Unvested RSUs will be forfeited by participants upon termination of employment in advance of vesting, with the exception of termination due to retirement if certain criteria are met. At December 31, 2023, there was unrecognized compensation expense of \$5.2 million related to unvested RSUs to be recognized over a weighted average period of 1.3 years.

Performance-Based Shares

We periodically grant performance-based share awards ("PSUs") to certain executive employees. The value of the PSUs (if any) is based on the ranking of the market performance of our common stock relative to the performance of the common stock of a group of peer companies over a three-year measurement period. The number of shares to be issued (if any) is based on the value of the PSUs divided by the share price at grant date. The compensation cost is measured using a Monte Carlo simulation to estimate their value at grant date, and the expense related to the performance-based awards (if any) will be recognized on a straight-line basis over the thirty months following that date of the PSUs.

Unvested PSUs activity granted by the Board to eligible employees are summarized as follows:

	Shares	W A Gra Value	'eighted werage ant Date Fair e per Share
Unvested, January 1, 2021	1,813,895	\$	0.41
Granted	122,462	\$	13.70
Canceled	(174,108)	\$	0.76
Vested (1)	(887,827)	\$	_
Unvested, December 31, 2021	874,422	\$	2.61
Granted	322,796	\$	3.78
Vested (1)	(597,360)	\$	0.31
Unvested, December 31, 2022	599,858	\$	5.54
Granted	336,096	\$	3.54
Canceled	(109,727)	\$	5.30
Vested (1)	(205,425)	\$	8.17
Unvested, December 31, 2023	620,802	\$	3.63
(1) Vested on December 31 and distributed in February of the following year			

Unvested PSUs will be forfeited by participants upon termination of employment in advance of vesting. At December 31, 2023, there was an unrecognized compensation expense of \$1.0 million related to unvested PSUs to be recognized over a weighted average period of 1.5 years.

In connection with the vesting of restricted stock units, PSUs and other stock grants, employees have in the past, at their election and when permitted by us, chosen to satisfy their tax withholding obligations through net share settlement, pursuant to which we withhold the number of shares necessary to satisfy such withholding obligations and pay the obligations in cash. Pursuant to such net settlements, in 2023, we withheld 404,514 shares valued at \$2.0 million, or \$5.03 per share. In 2022, we withheld 737,258 shares valued at \$3.7 million, or \$4.99 per share. In 2021, we withheld 574,251 shares valued at \$4.5 million, or \$7.88 per share. These shares become treasury shares unless we cancel them.

Warrants

We have 4,136,000 warrants outstanding since the Klondex acquisition in July 2018. Each warrant entitles the warrant holder to purchase one share of our common stock. The warrants have the following key terms:

Number of warrants	Exercise price	Expiration date
2,068,000	\$ 1.57	February 2029
2,068,000	\$ 8.02	April 2032

Note 13: Accumulated Other Comprehensive Income (Loss)

The following table lists the beginning balance, yearly activity and ending balance of each component of "Accumulated other comprehensive income (loss), net" (in thousands):

	Cha value c design tra	nges in fair of derivative ontracts ated as hedge ansactions	A For	djustments Pension Plans	A Co Inco	Total ccumulated Other mprehensive me (Loss), Net
Balance January 1, 2021	\$	7,632	\$	(40,521)	\$	(32,889)
2021 change		(12,307)		16,740		4,433
Balance December 31, 2021		(4,675)		(23,781)		(28,456)
2022 change		13,837		17,067		30,904
Balance December 31, 2022		9,162		(6,714)		2,448
2023 change		4,546		(1,157)		3,389
Balance December 31, 2023	\$	13,708	\$	(7,871)	\$	5,837

The amounts above are net of the income tax effect of such balances and activity as summarized in the following table (in thousands):

	_	Changes in fair value of derivative contracts designated as hedge A transactions For		Ad For P	Adjustments For Pension Plans		Total Accumulated Other Comprehensive Income (Loss), Net	
Balance January 1, 2021		\$	_	\$	12,575	\$	12,575	
2021 change			4,689		(6,379)		(1,690)	
Balance December 31, 2021			4,689		6,196		10,885	
2022 change			(5,233)		(6,454)		(11,687)	
Balance December 31, 2022			(544)		(258)	_	(802)	
2023 change	,		(1,683)		428		(1,255)	
Balance December 31, 2023		\$	(2,227)	\$	170	\$	(2,057)	

See Note 6 for more information on our employee benefit plans and Note 10 for more information on our derivative instruments.

Note 14: Product Inventories

Product Inventories

Our major components of product inventories are (in thousands):

	 2023	 2022
Concentrates	\$ 13,328	\$ 21,513
Stockpiled ore	7,168	6,869
In-process	8,327	8,921
Total product inventories	\$ 28,823	\$ 37,303

Note 15: Properties, Plants, Equipment and Mineral Interests, and Lease Commitments

Properties, Plants, Equipment and Mineral Interests

Our major components of properties, plants, equipment, and mineral interests are (in thousands):

	December 31,		
	 2023		2022
Mining properties, including asset retirement obligations	\$ 911,018	\$	871,027
Development costs	630,391		588,298
Plants and equipment	1,666,577		1,514,906
Land	35,112		35,644
Mineral interests	1,164,390		1,171,261
Construction in progress	121,022		134,600
	4,528,510		4,315,736
Less accumulated depreciation, depletion and amortization	1,862,260		1,745,946
Net carrying value	\$ 2,666,250	\$	2,569,790

During 2023, we incurred total capital expenditures of \$223.9 million. This excludes non-cash items for equipment acquired under finance leases and adjustments for asset retirement obligations, and includes acquisitions of mineral interests and land. The expenditures included \$65.3 million at Lucky Friday, \$43.5 million at Greens Creek, \$70.1 million at Casa Berardi and \$44.7 million at Keno Hill.

Mineral interests include amounts for value beyond proven and probable reserves ("VBPP") related to mines and exploration or pre-development interests acquired by us which are not depleted until the mineralized material they relate to is converted to proven and probable reserves. As of December 31, 2023, mineral interests included VBPP assets of \$323.6 million, \$383.6 million, \$86.3 million and \$102.1 million, respectively, at Casa Berardi, Nevada Operations, Greens Creek and Keno Hill, along with various other properties. As of December 31, 2022, mineral interests included VBPP assets of \$323.6 million, \$383.6 mil

Finance Leases

We periodically enter into lease agreements, primarily for equipment at our operations, which we have determined to be finance leases. As of December 31, 2023 and 2022, we have recorded \$106.9 million and \$90.8 million, respectively, for the gross amount of assets acquired under the finance leases and \$86.5 million and \$67.7 million, respectively, in accumulated depreciation on those assets, classified as plants and equipment in *Properties, plants, equipment and mineral interests*. See *Note 9* for information on future obligations related to our finance leases.

Note 16: Commitments, Contingencies, and Obligations

Johnny M Mine Area near San Mateo, McKinley County and San Mateo Creek Basin, New Mexico

In August 2012, Hecla Limited and the U.S. Environmental Protection Agency (the "EPA") entered into a Settlement Agreement and Administrative Order on Consent for Removal Action ("Consent Order") regarding the Johnny M Mine Area near San Mateo, McKinley County, New Mexico. Mining at the Johnny M Mine was conducted for a limited period of time by a predecessor of Hecla Limited, and the EPA had previously asserted that Hecla Limited may be responsible under the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") for environmental remediation and past costs incurred by the EPA at the site. Under the Consent Order, Hecla Limited agreed to pay (i) \$1.1 million to the EPA for its past response costs at the site and (ii) any future response costs at the site under the Consent Order, in exchange for a covenant not to sue by the EPA. In December 2014, Hecla Limited submitted to the EPA the Engineering Evaluation and Cost Analysis ("EE/CA") for the site which recommended on-site disposal of mine-related material. In January 2021, the parties began negotiating a new consent order to design and implement the on-site disposal response action recommended in the EE/CA. Based on the foregoing, we believe it is probable that Hecla Limited will incur a liability for the CERCLA removal action and we have accrued \$10.1 million, primarily representing estimated current costs to design and implement the remedy, which are subject to change as fieldwork is performed. It is possible that Hecla Limited's liability will be more than \$10.1 million, and any increase in liability could have a material adverse effect on Hecla Limited's or our results of operations or financial position.

The Johnny M Mine is in an area known as the San Mateo Creek Basin ("SMCB"), which is an approximately 321 square mile area in New Mexico that contains numerous legacy uranium mines and mills. In addition to Johnny M, Hecla Limited's predecessor was involved at other mining sites within the SMCB. The EPA appears to have deferred consideration of listing the SMCB site on CERCLA's National Priorities List ("Superfund") by removing the site from its emphasis list, and is working with various potentially responsible parties ("PRPs") at the site in order to study and potentially address perceived groundwater issues within the SMCB. The EE/CA discussed above relates primarily to contaminated rock and soil at the Johnny M site, not groundwater and not elsewhere within the SMCB site. It is possible that Hecla Limited's liability at the Johnny M Site, and for any other mine site within the SMCB at which

Hecla Limited's predecessor may have operated, will be greater than our current accrual of \$10.1 million due to the increased scope of required remediation.

In July 2018, the EPA informed Hecla Limited that it and several other PRPs may be liable for cleanup of the SMCB site or for costs incurred by the EPA in cleaning up the site. The EPA stated it has incurred approximately \$9.6 million in response costs to date. On May 2, 2022, Hecla Limited received a letter from a PRP notifying Hecla Limited that three PRPs will seek cost recovery and contribution from Hecla Limited under CERCLA for certain investigatory work performed by the PRPs at the SMCB site. Hecla Limited cannot with reasonable certainty estimate the amount or range of liability, if any, relating to this matter because of, among other reasons, the lack of information concerning the site, including the relative contributions of contamination by the various PRPs.

Carpenter Snow Creek and Barker-Hughesville Sites in Montana

In July 2010, the EPA made a formal request to Hecla for information regarding the Carpenter Snow Creek Superfund site located in Cascade County, Montana. The Carpenter Snow Creek site is located in a historical mining district, and in the early 1980s Hecla Limited leased 6 mining claims and performed limited exploration activities at the site. Hecla Limited terminated the mining lease in 1988.

In June 2011, the EPA informed Hecla Limited that it believes Hecla Limited, and several other PRPs, may be liable for cleanup of the site or for costs incurred by the EPA in cleaning up the site. The EPA stated in the letter that it has incurred approximately \$4.5 million in response costs and estimated that total remediation costs may exceed \$100 million. Hecla Limited cannot with reasonable certainty estimate the amount or range of liability, if any, relating to this matter because of, among other reasons, the lack of information concerning the site, including the relative contributions of contamination by various other PRPs.

In February 2017, the EPA made a formal request to Hecla for information regarding the Barker-Hughesville Mining District Superfund site located in Judith Basin and Cascade Counties, Montana. Hecla Limited submitted a response in April 2017. The Barker-Hughesville site is located in a historic mining district, and between approximately June and December 1983, Hecla Limited was party to an agreement with another mining company under which limited exploration activities occurred at or near the site.

In August 2018, the EPA informed Hecla Limited that it and several other PRPs may be liable for cleanup of the site or for costs incurred by the EPA in cleaning up the site. The EPA did not include an amount of its alleged response costs to date. Hecla Limited cannot with reasonable certainty estimate the amount or range of liability, if any, relating to this matter because of, among other reasons, the lack of information concerning past or anticipated future costs at the site and the relative contributions of contamination by various other PRPs.

Lucky Friday and Keno Hill Environmental Issues

On July 12, 2022, our Lucky Friday mine received a notice of violation from the EPA alleging violations of the Clean Water Act between 2018 and 2021 relating primarily to concentration levels of zinc and lead in the mine's permitted water discharges. Currently, the EPA has not initiated any formal enforcement proceeding against our Lucky Friday subsidiary. In civil judicial cases, the EPA can seek statutory penalties up to \$59,973 per day per violation and, in administrative actions, the EPA can seek administrative penalties up to \$23,989 per day per violation with a maximum administrative penalty of \$299,989 for all alleged violations. The EPA typically pursues administrative penalties. At this time, we cannot reasonably assess the amount of penalties the EPA may seek, or predict the terms of any potential settlement with the EPA.

On December 14, 2023 and January 29, 2024, our Keno Hill mine received notice from the Yukon government that it is charged with violating the Quartz Mining Act and the Waters Act, two statutes of the Yukon Territory, relating to alleged violations of Keno Hill's mining license and water license. The allegations are that the mine stored hazardous materials inconsistent with the terms of its mining license on or between April 19, 2022 and July 25, 2023 and exceeded water discharge limits in its water license on June 27 and December 6, 2023. If convicted, the maximum fine for an offense under both of these laws is \$100,000 per offense. Because we are at the initial stages of this regulatory proceeding, we cannot reasonably predict the outcome of this matter at this time.

Litigation Related to Klondex Acquisition

On May 24, 2019, a purported Hecla stockholder filed a putative class action lawsuit in the U.S. District Court for the Southern District of New York against Hecla and certain of our executive officers, one of whom is also a director. The complaint, purportedly brought on behalf of all purchasers of Hecla common stock from March 19, 2018 through and including May 8, 2019, asserts claims under Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 and Rule 10b-5 promulgated thereunder and seeks, among other things, damages and costs and expenses. Specifically, the complaint alleges that Hecla, under the authority and control of the individual defendants, made certain material false and misleading statements and omitted certain material information regarding Hecla's Nevada

Operations. The complaint alleges that these misstatements and omissions artificially inflated the market price of Hecla common stock during the class period, thus purportedly harming investors. The Court granted our Motion to Dismiss the lawsuit, without prejudice, in February 2023, and the plaintiffs filed an amended complaint in March 2023 which repeats the same claims. We have filed a Motion to Dismiss the amended complaint. We cannot predict the outcome of this lawsuit or estimate damages if plaintiffs were to prevail. We believe that these claims are without merit and intend to defend them vigorously.

Related to this class action lawsuit, Hecla has been named as a nominal defendant in a shareholder derivative lawsuit which also names as defendants certain current and past (i) members of Hecla's board of directors and (ii) officers of Hecla. The case was filed on May 4, 2022 in the Delaware Chancery Court. In general terms, the suit alleges breaches of fiduciary duties by the individual defendants, waste of corporate assets and unjust enrichment, and seeks damages, purportedly on behalf of Hecla.

Debt

See Note 9 for information on the commitments related to our debt arrangements as of December 31, 2023.

Other Commitments

Our contractual obligations as of December 31, 2023 included open purchase orders and commitments of \$11.4 million, \$8.1 million, \$10.7 million, \$2.8 million and \$3.5 million for various capital and non-capital items at Greens Creek, Lucky Friday, Keno Hill, Casa Berardi and Nevada Operations, respectively. We also have total commitments of \$29.8 million relating to scheduled payments on finance leases, including interest, primarily for equipment at our Greens Creek, Lucky Friday, Casa Berardi, and Keno Hill units, and total commitments of \$11.6 million relating to payments on operating leases (see *Note 9* for more information). As part of our ongoing business and operations, we are required to provide surety bonds, bank letters of credit, and restricted deposits for various purposes, including financial support for environmental reclamation obligations and workers compensation programs. As of December 31, 2023, we had surety bonds totaling \$195.4 million and letters of credit totaling \$6.9 million in place as financial support for future reclamation and closure costs, self-insurance, and employee benefit plans. The obligations associated with these instruments are generally related to performance requirements that we address through ongoing operations. As the requirements are met, the beneficiary of the associated instruments cancels or returns the instrument to the issuing entity. Certain of these instruments are associated with operating sites with long-lived assets and will remain outstanding until closure of the sites. We believe we are in compliance with all applicable bonding requirements and will be able to satisfy future bonding requirements as they arise.

Other Contingencies

We also have certain other contingencies resulting from litigation, claims, EPA investigations, and other commitments and are subject to a variety of environmental and safety laws and regulations incident to the ordinary course of business. We currently have no basis to conclude that any or all of such contingencies will materially affect our financial position, results of operations or cash flows. However, in the future, there may be changes to these contingencies, or additional contingencies may occur, any of which might result in an accrual or a change in current accruals recorded by us, and there can be no assurance that their ultimate disposition will not have a material adverse effect on our financial position, results of operations or cash flows.

Note 17: Subsequent events

On February 13, 2024, our Board of Directors declared a quarterly cash dividend of \$0.00625 per share of common stock, consisting of \$0.00375 per share for the minimum dividend component and \$0.0025 per share for the silver-linked dividend component of our dividend policy.

On February 13, 2024, we collected \$5.4 million of insurance coverage proceeds related to the Lucky Friday fire insurance coverage claim.

HECLA MINING COMPANY FIRST AMENDMENT TO EQUITY DISTRIBUTION AGREEMENT

February 15, 2024

BMO Capital Markets Corp. 151 W. 42nd Street, 32nd Floor New York City, New York 10036

BofA Securities, Inc. 1 Bryant Park Tower New York, New York 10036

Canaccord Genuity LLC 99 High Street, 12th Floor Boston, MA 02110

CIBC World Markets Corp. 300 Madison Avenue, 5th Floor New York, New York 10017

Goldman Sachs & Co. LLC 200 West Street New York, New York 10282

J.P. Morgan Securities LLC 383 Madison Avenue, 6th Floor New York, New York 10179

Roth Capital Partners, LLC 888 San Clemente Drive, Suite 400 Newport Beach, CA 92660 Scotia Capital (USA) Inc. 250 Vesey Street, 24th Floor New York, New York 10281

B. Riley Securities, Inc.
299 Park Avenue, 21st Floor New York, New York 10171

Cantor Fitzgerald & Co. Inc. 499 Park Avenue New York, New York 10022

Credit Suisse Securities (USA) LLC 11 Madison Avenue New York, New York 10010

H.C. Wainwright & Co., LLC 430 Park Avenue New York, New York 10022

RBC Capital Markets, LLC 200 Vesey Street, 8th Floor New York, New York 10281

UBS Securities LLC 1285 Avenue of the Americas New York, New York 10019

THIS FIRST AMENDMENT TO EQUITY DISTRIBUTION AGREEMENT (this "<u>Amendment</u>") is entered into by and among Hecla Mining Company, a Delaware corporation (the "<u>Company</u>"), and BMO Capital Markets Corp., Scotia Capital (USA) Inc., BofA Securities, Inc., B. Riley Securities, Inc., Canaccord Genuity LLC, Cantor Fitzgerald & Co. Inc., CIBC World Markets Corp., Goldman Sachs & Co. LLC, H.C. Wainwright & Co., LLC, J.P. Morgan Securities LLC, RBC Capital Markets, LLC, Roth Capital Partners, LLC and, solely for purposes of <u>Section 8(j)</u> of the Agreement (as defined below), Credit Suisse Securities (USA) LLC (collectively, the "<u>Original Agents</u>"), and UBS Securities LLC (collectively, with the Company and the Original Agents, the "<u>Parties</u>") to amend that certain Equity Distribution Agreement, dated as of February 18, 2021 (the "<u>Agreement</u>"), by and among the Company and the Original Agents, with respect to the issuance and sale from time to time of up to 60,000,000 shares of the Company's common

stock, \$0.25 par value per share. Capitalized terms used but not defined herein shall have the meanings ascribed to such terms in the Agreement.

WHEREAS, on February 15, 2024, by the giving of that certain Notice of Termination of Agent (the "<u>Notice of Termination</u>"), Credit Suisse Securities (USA) LLC exercised it right, in accordance with <u>Section 6(b)</u> of the Agreement, to terminate the Agreement as to itself, effective as of the close of business on Thursday, February 15, 2024 (the "<u>Effective Date</u>"); and

WHEREAS, in connection with the termination of the Agreement as to Credit Suisse Securities (USA) LLC, the Parties desire to amend the Agreement to (i) remove Credit Suisse Securities (USA) LLC as an Agent thereunder, (ii) join UBS Securities LLC as an Agent thereunder and (iii) modify certain provisions set forth therein, in each case, effective as of the Effective Date.

NOW, THEREFORE, in consideration of the covenants and agreements set forth herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereto, intending to be legally bound, do hereby agree as follows:

1. <u>Amendments to the Agreement</u>. Effective as of the Effective Date, the Agreement is hereby amended as follows:

(a) The name and address of Credit Suisse Securities (USA) LLC set forth on page 1 of the Agreement is hereby deleted in its entirety.

(b) Page 1 of the Agreement is hereby amended to add the name and address of UBS Securities LLC, immediately below the name and address of RBC Capital Markets, LLC, as follows:

UBS Securities LLC 1285 Avenue of the Americas New York, New York 10019

(c) The definitions of the terms "Agent" and "Agents" set forth on page 1 of the Agreement are hereby amended and restated in their entirety as follows:

BMO Capital Markets Corp., Scotia Capital (USA) Inc., BofA Securities, Inc., B. Riley Securities, Inc., Canaccord Genuity LLC, Cantor Fitzgerald & Co. Inc., CIBC World Markets Corp., Goldman Sachs & Co. LLC, H.C. Wainwright & Co., LLC, J.P. Morgan Securities LLC, RBC Capital Markets, LLC, Roth Capital Partners, LLC, and UBS Securities LLC (collectively, the "Agents" and each individually, an "Agent")

(d) <u>Section 8(a)</u> of the Agreement is hereby amended and restated in its entirety as follows:

(a) *Notices*. Notices given pursuant to any of the provisions of this Agreement shall be in writing and, unless otherwise specified, shall be mailed, delivered or sent by email transmission (i) if to the Company, at the office of the Company, 6500 North Mineral

Drive, Suite 200, Coeur d'Alene, Idaho 83815-9408, Attention: Chief Executive Officer, Email: dsienko@hecla.com, with a copy at the same address to the attention of the General Counsel, (ii) if to any Agent, at the address of such Agent set forth in Schedule 4 hereto. Any such notice shall be effective only upon receipt. Any notice under Section 1 may be made by telephone, but if so made shall be subsequently confirmed in writing (which, with respect to the Agency Transactions contemplated by Section 1 only, may include, in the case of the Agents, electronic mail to any Authorized Company Representative, and in the case of the Company, electronic mail to the Agents).

(e) The contact information of Credit Suisse Securities (USA) LLC set forth on <u>Schedule 4</u> of the Agreement hereby deleted in its entirety.

(f) <u>Schedule 4</u> of the Agreement is hereby amended to add the contact information for UBS Securities LLC, immediately below the contact information for Roth Capital Partners, LLC, as follows:

UBS Securities LLC 1285 Avenue of the Americas New York, New York 10019 Attention: Equity Syndicate Email: jesse.o-neill@ubs.com

2. <u>Full Force and Effect; No Other Amendments; References to the Agreement</u>. Except as expressly set forth in this Amendment, all of the representations, warranties, terms, covenants, conditions and other provisions of the Agreement (including the indemnification, contribution and reimbursement provisions) shall continue in full force and effect in accordance with their respective terms. The amendments set forth herein shall be limited precisely as provided for herein to the provisions expressly amended hereby and shall not be deemed to be an amendment to, waiver of, consent to or modification of any other term or provision of the Agreement. All references to the Agreement in the Agreement or in any other document executed or delivered in connection therewith shall, from and after the date hereof, be deemed a reference to the Agreement as amended by this Amendment.

3. Joinder. UBS Securities LLC hereby agrees, effective as of Effective Date, to become a party to the Agreement and for all purposes of the Agreement to be included within the defined terms "Agent" and "Agents" (as defined in the Agreement). By execution and delivery of this Amendment, UBS Securities LLC hereby agrees, effective as of the Effective Date, (i) to be bound by the terms, provisions and agreements of the Agreement as an Agent thereunder, (ii) to make and be bound by all representations, warranties, covenants and acknowledgements of, or attributable to, the Agents under the Agreement, as fully as if UBS Securities LLC had executed and delivered the Agreement as of the date thereof, and (iii) to perform all obligations and duties required of an Agent under the Agreement. The obligations of the Agents assumed by UBS Securities LLC under this Amendment shall be several, and not joint, and UBS Securities LLC shall be not be liable for the acts or omissions of any other Agent under the Agreement. For purposes of this <u>Section</u> 3, all references to the Agreement shall be deemed a reference to the Agreement as amended by this Amendment.

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4. <u>Wavier of Notice Rights</u>. With respect to the Notice of Termination, the Company and each Original Agent hereby waives its right pursuant to <u>Section 8(a)</u> of the Agreement to receive all notices by mail or hand delivery. The Parties acknowledge that such waiver shall not operate or be construed as a waiver of any other provision of the Agreement or any subsequent breach of the Agreement.

5. <u>Governing Law</u>. THIS AMENDMENT AND ANY DISPUTE, CLAIM OR CONTROVERSY ARISING UNDER OR RELATED TO THIS AMENDMENT, SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK APPLICABLE TO AGREEMENTS MADE AND TO BE PERFORMED ENTIRELY WITHIN SUCH STATE. Each Party hereto hereby irrevocably submits for purposes of any action arising from this Amendment brought by any other Party hereto to the jurisdiction of the courts of New York State located in the Borough of Manhattan and the U.S. District Court for the Southern District of New York.

6. <u>Headings</u>. The headings herein are inserted for convenience only and are not included to be part of, or to affect the meaning or interpretation of, this Amendment.

7. Counterparts. This Amendment may be executed in counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument. Counterparts may be delivered via facsimile or electronic mail (including, without limitation, "pdf", "tif" or "jpg") and any counterpart so delivered shall be deemed to have been duly and validly delivered and be valid and effective for all purposes. The words "execution," "signed," "signature," "delivery," and words of like import in or relating to this Amendment and any certificate, agreement or other document to be signed in connection with this Amendment shall be deemed to include Electronic Signatures (as defined below), deliveries or the keeping of records in electronic form, each of which shall be of the same legal effect, validity or enforceability as a manually executed signature, physical delivery thereof or the use of a paper-based recordkeeping system, as the case may be, to the extent and as provided for in any applicable law, including, without limitation, the Federal Electronic Signatures in Global and National Commerce Act, the New York State Electronic Signatures and Records Act, or any other similar state laws based on the Uniform Electronic Transactions Act. For the purpose of this <u>Section 6</u>, "<u>Electronic Signature</u>" means any electronic symbol or process (including, without limitation, DocuSign and AdobeSign) attached to, or associated with, a contract or other record and adopted by a person with the intent to sign, authenticate or accept such contract or record.

(Signature Pages Follow)

IN WITNESS WHEREOF, each of the Parties has caused this Amendment to be duly executed and delivered by its proper and duly authorized officer(s) as of the date first set forth above.

HECLA MINING COMPANY

By: <u>/s/ David C. Sienko</u> Name: David C. Sienko Title: Vice President and General Counsel

First Amendment to Equity Distribution Agreement

BMO CAPITAL MARKETS CORP.

By: <u>/s/ Brad Pavelka</u> Name: Brad Pavelka Title: Managing Director

SCOTIA CAPITAL (USA) INC.

By: <u>/s/ John Cronin</u> Name: John Cronin Title: Managing Director

BOFA SECURITIES, INC.

By: <u>/s/ Christine Roemer</u> Name: Christine Roemer Title: Managing Director

B. RILEY SECURITIES, INC.

By: <u>/s/ Patrice McNicoll</u> Name: Patrice McNicoll Title: SMD, Co-Head of Investment Banking

CANACCORD GENUITY LLC

By: <u>/s/ Jennifer Pardi</u> Name: Jennifer Pardi Title: Managing Director

CANTOR FITZGERALD & CO. INC.

By: <u>/s/ Sage Kelly</u> Name: Sage Kelly Title:

First Amendment to Equity Distribution Agreement

CIBC WORLD MARKETS CORP.

By: <u>/s/ Eric Reuther</u> Name: Eric Reuther Title: Managing Director

GOLDMAN SACHS & CO. LLC

By: <u>/s/ Charles Park</u> Name: Charles Park Title: Managing Director

H.C. WAINWRIGHT & CO., LLC

By: <u>/s/ Edward D. Silvera</u> Name: Edward D. Silvera Title: Chief Operating Officer

J.P. MORGAN SECURITIES LLC

By: <u>/s/ Sanjeet Dewal</u> Name: Sanjeet Dewal Title: Managing Director

RBC CAPITAL MARKETS, LLC

By: <u>/s/ Michael Ventura</u> Name: Michael Ventura Title: Managing Director, ECM

ROTH CAPITAL PARTNERS, LLC

By: <u>/s/ J. Barry</u> Name: J. Barry Title: Managing Director

First Amendment to Equity Distribution Agreement

UBS SECURITIES LLC

By: <u>/s/ Christopher Siska</u> Name: Christopher Siska Title: Managing Director

By: <u>/s/ Jesse O'Neill</u> Name: Jesse O'Neill Title: Executive Director

FOR PURPOSES OF SECTION 8(j) OF THE AGREEMENT ONLY:

CREDIT SUISSE SECURITIES (USA) LLC

By: <u>/s/ Robert D'Addario</u> Name: Robert D'Addario Title: Director

First Amendment to Equity Distribution Agreement

REGISTRATION RIGHTS AGREEMENT

This Registration Rights Agreement (this "<u>Agreement</u>") is entered into as of October 16th, 2023 by and among Hecla Mining Company, a Delaware corporation (the "<u>Company</u>"), as sponsor of the Hecla Mining Company Retirement Plan (the "<u>Retirement Plan</u>"), Hecla Limited, a Delaware corporation ("<u>Hecla Limited</u>"), as sponsor of the Lucky Friday Pension Plan ("<u>LF Plan</u>" and, together with the Retirement Plan, the "<u>Plans</u>"), the Hecla Mining Company Retirement Committee (the "<u>Retirement Committee</u>"), as the named fiduciary of the Retirement Plan, the Hecla Mining Company Pension Committee (the "<u>Pension Committee</u>" and, together with the Retirement Committee, the "<u>Committees</u>"), as the named fiduciary of the LF Plan, and U.S. Bank National Association, as trustee of the Trusts (as defined below).

RECITALS

WHEREAS, the Trust Agreement dated January 12, 1981, as amended, between the Company, as grantor, and the Trustee, as successor trustee, governs a trust which holds Retirement Plan assets (the "<u>Retirement Trust</u>");

WHEREAS, the Trust Agreement dated December 26, 1989, as amended, between the Company, as grantor, and the Trustee, as successor trustee, governs a trust which holds LF Plan assets (the "LF Trust" and, together with the Retirement Trust, the "Trusts");

WHEREAS, each of the Retirement Committee and the Pension Committee is the "named fiduciary" with respect to the Retirement Plan and Pension Plan, respectively, within the meaning of Section 402(a) of the Employee Retirement Income Security Act of 1974, as amended, ("<u>ERISA</u>");

WHEREAS, concurrently with the execution of this Agreement, the Company and the Retirement Committee have executed that certain contribution agreement, dated as of the date hereof (the "<u>Retirement Contribution Agreement</u>"), under which the Company has agreed to contribute 45,000 shares of common stock of the Company (the "<u>Retirement Shares</u>") to the Retirement Trust (the "<u>Retirement Contribution</u>");

WHEREAS, concurrently with the execution of this Agreement, the Company, Hecla Limited, and the Pension Committee have executed that certain contribution agreement, dated as of the date hereof (the "<u>LF Contribution Agreement</u>" and, together with the Retirement Contribution Agreement, the "<u>Contribution Agreements</u>"), under which the Company has agreed to contribute 4,500 shares of common stock of the Company (the "<u>LF Shares</u>" and, together with the Retirement Shares, the "<u>Securities</u>") to the LF Trust (the "<u>LF Contribution</u>" and, together with the Retirement Contribution, the "<u>Contributions</u>");

WHEREAS, the Company has agreed to grant certain registration rights with respect to the Securities, on the terms and subject to the conditions set forth in this Agreement; and

WHEREAS, concurrently with the execution of this Agreement, the Committees have executed direction letters, dated as of the date hereof, which directs the Trustee to sign this Agreement and honor this Agreement's terms with respect to each Trust.

AGREEMENT

NOW, THEREFORE, in consideration of the premises and mutual promises set forth herein, the parties hereto hereby agree as follows:

Section 1. Registration; Compliance With the Securities Act.

1.1 Registration Procedures and Expenses. The Company hereby agrees that it shall:

(a) prepare and file with the Securities and Exchange Commission (the "<u>SEC</u>"), as soon as reasonably practicable after the date of the Company's initial issuance of Securities to a Trust pursuant to one of the Contribution Agreements, but in no event more than 120 days after such date, a shelf registration statement on Form S-3 covering the Securities (such registration statement and any successor registration statement filed under the Securities Act of 1933, as amended (the "<u>Securities Act</u>"), shall be hereinafter referred to as the "<u>Registration Statement</u>"), to enable the appropriate Committee, with respect to each Trust, to direct the Trustee to sell the Securities from time to time in the manner contemplated by the plan of distribution set forth in any prospectus that is part of the Registration Statement, as amended by any prospectus supplement or post-effective amendment thereto, and use its reasonable commercial efforts to cause such Registration Statement to be declared effective as promptly as reasonably possible after filing and to remain continuously effective until the earliest of (i) the date on which all Securities have been sold, and (ii) the fifth anniversary of the Contribution Agreements (the "<u>Registration Period</u>"); provided, however, that it shall not be required to file such Registration Statement to be declared effective to be declared effective as file such Registration Statement to be declared effections 1.2(c) or (d) below;

(b) prepare and file with the SEC such amendments (including post-effective amendments) and supplements to the Registration Statement and the prospectus filed with the SEC pursuant to Rule 424(b) under the Securities Act, or if no such filing is required, as included in the Registration Statement (the "<u>Prospectus</u>"), as may be necessary to keep the Registration Statement effective at all times until the end of the Registration Period; provided, however, that it shall not be required to file any such amendment or prospectus supplement during the pendency of any suspension period pursuant to <u>Sections 1.2(c)</u> or (<u>d)</u> below;

(c) with respect to each Trust, furnish the Committees and the Trustee with such reasonable number of copies of the Prospectus in conformity with the requirements of the Securities Act, and such other documents as the Committees may direct the Trustee to request, in order to facilitate the public sale or other disposition of all or any of the Securities held by such Trust by the Trustee, as directed by the appropriate Committee;

(d) use its reasonable commercial efforts to file documents required of the Company for normal blue sky clearance in such states as the Committees shall reasonably designate in writing; provided, however, that the Company shall not be required to qualify to do business or consent to service of process in any jurisdiction in which it is not now so qualified or has not so consented; and

(e) bear all expenses in connection with the actions contemplated by paragraphs (a) through (d) of this <u>Section 1.1</u> and the registration of the Securities pursuant to the Registration Statement.

With respect to each Trust, the Committees shall provide such reasonable assistance to the Company and furnish, or cause to be furnished, to the Company in writing such information regarding the Securities to be sold and the intended method or methods of disposition of the Securities, as shall be

required to effect the registration of the Securities and as may be required from time to time under the Securities Act and the rules and regulations thereunder. As directed by the appropriate Committee, with respect to each Trust, the Trustee will provide the Company with specific information from the Trustee's ordinary books and records about the Securities or the Trust.

1.2 Transfer of Securities After Registration; Suspension.

(a) With respect to each Trust, the appropriate Committee agrees that it will not offer to sell or make any sale, assignment, pledge, hypothecation or other transfer with respect to the Securities that would constitute a sale within the meaning of the Securities Act except pursuant to either (i) the Registration Statement referred to in Section 1.1, (ii) Rule 144 under the Securities Act or any successor rule thereto (as such rule may be amended from time to time, "<u>Rule 144</u>"), or (iii) pursuant to an applicable exemption from registration under applicable federal and state securities laws and that it will promptly notify the Company of any changes in the information set forth in the Registration Statement regarding the Trustee or the intended plan of distribution of the Securities to the extent required by applicable securities laws.

(b) The Committees and the Company agree that the Securities held by each Trust may be sold in one or more privatelynegotiated block trades.

(c) In addition to any suspension rights under paragraph (d) below, the Company may, upon the happening of any event that, in the judgment of the Company's legal counsel, renders advisable the suspension of the disposition of Securities covered by the Registration Statement or use of the Prospectus due to pending corporate developments, public filings with the SEC or similar events, suspend the disposition of Securities covered by the Registration Statement or use of the Prospectus for a period of not more than ninety (90) days on written notice to the Committees (which notice will not disclose the content of any material non-public information) and will indicate the date of the beginning and end of the intended suspension, if known), in which case the Committees, upon receipt of such written notice, shall discontinue (or cause the Trust to discontinue) disposition of Securities covered by the Registration Statement or use of the Prospectus are distributed to the Committees or until the Committees are advised in writing by the Company that the disposition of Securities covered by the Registration Statement or use of the Prospectus shall not be exercised by the Company for more than one hundred twenty (120) days in any twelve-month period. The suspension and notice thereof described in this <u>Section 1.2(c)</u> shall be held in confidence and not disclosed by the Committees, except as required by law.

(d) Subject to paragraph (e) below, in the event of: (i) any request by the SEC or any other federal or state governmental authority during the period of effectiveness of the Registration Statement for amendments or supplements to a Registration Statement or related Prospectus or for additional information; (ii) the issuance by the SEC or any other federal or state governmental authority of any stop order suspending the effectiveness of a Registration Statement or the initiation of any proceedings for that purpose; (iii) the receipt by the Company of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Securities for sale in any jurisdiction or the initiation of any proceedings for such purpose; or (iv) any event or circumstance that necessitates the making of any changes in the Registration Statement, it will not contain any untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein not misleading, and that in the case of the Prospectus, it will not contain any untrue stated therein or necessary to make the statements therein, in the light of the

circumstances under which they were made, not misleading, then the Company shall deliver a certificate in writing to the Committees (the "<u>Suspension Notice</u>") to the effect of the foregoing (which notice will not disclose the content of any material non-public information and will indicate the date of the beginning and end of the intended suspension, if known), and upon receipt of such Suspension Notice, the Committees will refrain (or cause the Trust to refrain) from selling any Securities pursuant to the Registration Statement (a "<u>Suspension</u>") until the Committees' receipt of copies of a supplemented or amended Prospectus prepared and filed by the Company, or until they are advised in writing by the Company that the current Prospectus may be used, and have received copies of any additional or supplemental filings that are incorporated or deemed incorporated by reference in any such Prospectus. In the event of any Suspension, the Company will use its reasonable commercial efforts to cause the use of the Prospectus so suspended to be resumed as soon as possible after delivery of a Suspension Notice to the Committees. The Suspension and Suspension Notice described in this <u>Section 1.2(d)</u> shall be held in confidence and not disclosed by the Committees, except as required by law.

(e) The Committees may sell Securities under the Registration Statement provided that neither a Suspension nor a suspended disposition under <u>Section 1.2(c)</u> hereof is then in effect, the Committees sell in accordance with the plan of distribution in the Prospectus, and the Committees arrange for delivery of a current Prospectus to any transferee receiving such Securities in compliance with the Prospectus delivery requirements of the Securities Act.

1.3 <u>Indemnification</u>. For the purpose of this <u>Section 1.3</u>, the term "Registration Statement" shall include any preliminary or final Prospectus, exhibit, supplement or amendment included in or relating to the Registration Statement referred to in <u>Section 1.1</u>.

Indemnification by the Company. The Company agrees to indemnify and hold harmless the Committees and the Trustee (a) (including, for purposes of this Section 1.3, the officers, directors, employees and agents of the Trustee and individual members of the Committees), and each person, if any, who controls the Trustee or the Committees within the meaning of either Section 15 of the Securities Act or Section 20 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), from and against any and all losses, claims, damages, liabilities or expenses, joint or several, to which the Committees, the Trustee or such controlling person may become subject under the Securities Act, the Exchange Act, state securities law, federal income tax law, ERISA, or any other federal or state statutory law or regulation, or at common law or otherwise (including in settlement of any litigation, if such settlement is effected with the written consent of the Company, which consent shall not be unreasonably withheld or delayed), only to the extent such losses, claims, damages, liabilities or expenses (or actions in respect thereof as contemplated below) arise out of or are based upon (i) the Company's breach of any representation or warranty hereunder, (ii) any failure on the part of the Company to comply with the covenants and agreements contained in this Agreement, or (iii) any untrue statement or alleged untrue statement of any material fact contained in the Registration Statement, the Prospectus, or any amendment or supplement thereto, or arise out of or are based upon the omission or alleged omission to state in any of them a material fact required to be stated therein or necessary to make the statements in any of them, in light of the circumstances under which they were made, not misleading, and will reimburse the Committees and the Trustee and each such controlling person for any legal and other expenses as such expenses are reasonably incurred by the Committees, the Trustee or such controlling person in connection with investigating, defending, settling, compromising or paying any such loss, claim, damage, liability, expense or action; provided, however, that the Company will not be liable in any such case to the extent that any such loss, claim, damage, liability or expense arises out of or is based upon (A) any untrue statement about the Trustee made in the Registration Statement, the Prospectus or any amendment or supplement of the Registration Statement or Prospectus which untrue statement was transcribed from information that the Trustee furnished in writing to the Company or (B) (with respect to expenses incurred by the Committees) any untrue statement or omission of a material fact required to make such

statement not misleading in any Prospectus that is corrected in any subsequent Prospectus that was delivered to the Committees before the pertinent sale or sales by the Committees. The indemnification, hold-harmless, and release rights in favor of the Trustee set forth herein are in addition to any indemnification, hold-harmless, and release rights set forth elsewhere.

(b) Indemnification Procedure.

(i) Promptly after receipt by an indemnified party under this <u>Section 1.3</u> of written notice of the threat or commencement of any action, such indemnified party will, if a claim in respect thereof is to be made against an indemnifying party under this <u>Section 1.3</u>, promptly notify the indemnifying party in writing of the claim; <u>provided</u>, <u>however</u>, that the omission so to notify the indemnifying party will not relieve the indemnifying party from any liability which it may have to any indemnified party under the indemnity agreement contained in this <u>Section 1.3</u> or otherwise, to the extent it is not prejudiced as a result of such failure.

(ii) In case any such action is brought against any indemnified party and such indemnified party seeks or intends to seek indemnity from an indemnifying party, the indemnifying party will be entitled to participate in, and to the extent that it may wish, jointly with all other indemnifying parties similarly notified, to assume the defense thereof with counsel reasonably satisfactory to such indemnified party; provided, however, if the defendants in any such action include both the indemnified party and the indemnifying party and the indemnified party shall have reasonably concluded that there may be a conflict between the positions of the indemnified party or other indemnified party in conducting the defense of any such action or that there may be legal defenses available to the indemnified party or parties shall have the right to select separate counsel to assume such legal defenses and to otherwise participate in the defense of such action on behalf of such indemnified party or parties. Upon receipt of notice from the indemnifying party or other indemnified party of its election so to assume the defense of such action and approval by the indemnified party of counsel, the indemnifying party will not be liable to such indemnified party under this <u>Section 1.3</u> for any legal or other expenses subsequently incurred by such indemnified party in connection with the defense thereof unless:

1) The indemnified party shall have employed such counsel in connection with the assumption of legal defenses in accordance with the proviso to the preceding sentence (it being understood, however, that the indemnifying party shall not be liable for the expenses of more than one separate counsel (other than local counsel), approved by such indemnifying party representing all of the indemnified parties who are parties to such action); or

2) The indemnifying party shall not have employed counsel reasonably satisfactory to the indemnified party to represent the indemnified party within a reasonable time after notice of commencement of the action.

In each such case, the reasonable fees and expenses of counsel shall be at the expense of the indemnifying party.

(c) <u>Contribution</u>. If the indemnification provided for in this <u>Section 1.3</u> is held by a court of competent jurisdiction to be unavailable to an indemnified party with respect to any loss, claim, damage, liability or expense referred to herein, then the indemnifying party, in lieu of indemnifying such indemnified party hereunder, shall contribute to the amount paid or payable by such indemnified party as

a result of such loss, claim, damage, liability or expense in such proportion as is appropriate to reflect the relative fault of the indemnifying party on the one hand and of the indemnified party on the other hand in connection with the statements or omissions that resulted in such loss, claim, damage, liability or expense, as well as any other relevant equitable considerations. The relative fault of the indemnifying party and of the indemnified party shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the indemnifying party or by the indemnified party and the parties' relative intent, knowledge, access to information, and opportunity to correct or prevent such statement or omission. The amount paid or payable by a party as a result of the losses, claims, damages, liabilities and expenses referred to above shall be deemed to include, subject to the limitations set forth in Section 1.3(b) hereof, any legal or other fees or expenses reasonably incurred by such party in connection with any investigation or proceeding.

The parties hereto agree that it would not be just and equitable if contribution pursuant to this <u>Section 1.3(c)</u> were determined by pro rata allocation or by any other method of allocation which does not take into account the equitable considerations referred to in the immediately preceding paragraph. Notwithstanding the provisions of this <u>Section 1.3(c)</u>, in no event shall the Trustee be required to contribute any amount in excess of the aggregate fees received by the Trustee pursuant to the Trust Agreements. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person or entity who was not guilty of such fraudulent misrepresentation.

(d) <u>Surviving Obligations</u>. The obligation of the Company under this <u>Section 1.3</u> shall survive the completion of the disposition of the Securities under this <u>Section 1</u>.

1.4 <u>Rule 144 Information</u>. For such period as either Trust or Plan holds any Securities received pursuant to the Contributions, the Company shall file all reports required to be filed by it under the Securities Act, the Exchange Act and the rules and regulations thereunder and shall take such further action to the extent required to enable the Trustee, as directed by the Committee, to sell the Securities pursuant to Rule 144.

1.5 <u>Rights of the Trust</u>. All of the rights and benefits conferred on the Committees and Trustee pursuant to this Agreement (other than the right to indemnification provided in <u>Section 1.3</u>) are intended to inure to the benefit of the Trusts.

Section 2. Miscellaneous.

2.1 <u>Governing Law</u>. This Agreement shall be governed by and construed and interpreted in accordance with the laws of the State of Idaho, irrespective of the choice of laws principles of the State of Idaho, as to all matters, including matters of validity, construction, effect, enforceability, performance and remedies.

2.2 Force Majeure. No party will have any liability for damages or delay due to fire, explosion, lightning, pest damage, power failure or surges, strikes or labor disputes, water or flood, acts of God, the elements, war, civil disturbances, acts of civil or military authorities or the public enemy, acts or omissions of communication or other carriers, or any other cause beyond a party's reasonable control (other than that which arises from the gross negligence or willful misconduct of such party), whether or not similar to the foregoing, that prevent such party from materially performing its obligation hereunder.

2.3 Entire Agreement; Modification; Waivers. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and shall supersede all previous



negotiation, commitments and writings with respect to the matters discussed herein. This Agreement may not be altered, modified or amended except by a written instrument signed by all parties. The failure of any party to require the performance or satisfaction of any term or obligation of this Agreement, or the waiver by any party of any breach of this Agreement, shall not prevent subsequent enforcement of such term or obligation or be deemed a waiver of any subsequent breach.

2.4 <u>Severability</u>. The provisions of this Agreement are severable, and in the event that any one or more provisions are deemed illegal or unenforceable the remaining provisions shall remain in full force and effect unless the deletion of such provision shall cause this Agreement to become materially adverse to either party, in which event the parties shall use reasonable commercial efforts to arrive at an accommodation that best preserves for the parties the benefits and obligations of the offending provision.

2.5 <u>Notices</u>. Except as otherwise expressly provided, any notice, request, demand or other communication permitted or required to be given under this Agreement shall be in writing, shall be sent by one of the following means to the Company, the Committees or the Trustee at the addresses set forth below (or to such other address as shall be designated hereunder by notice to the other parties and persons receiving copies, effective upon actual receipt), and shall be deemed conclusively to have been given: (a) on the first business day following the day timely deposited with Federal Express (or other reputable national overnight courier) or United States Express Mail, with the cost of delivery prepaid or for the account of the sender; (b) on the fifth business day following the day duly sent by certified or registered United States mail, postage prepaid and return receipt requested; or (c) when otherwise actually received by the addressee on a business day (or on the next business day if received after the close of normal business hours or on any non-business day).

If to the Company:

Hecla Mining Company 6500 N. Mineral Drive, Suite 200 Coeur d'Alene, Idaho 83815 Attn: David Sienko

If to the Retirement Committee:

Hecla Mining Company Retirement Committee 6500 N. Mineral Drive, Suite 200 Coeur d'Alene, Idaho 83815 Attn: Michael Clary

If to the Pension Committee:

Hecla Mining Company Pension Committee 6500 N. Mineral Drive, Suite 200 Coeur d'Alene, Idaho 83815 Attn: Michael Clary

If to the Trustee:

U.S. Bank National Association c/o Ryan Maxey, Vice President and Relationship Manager

555 SW Oak St, 6th Fl PD-OR-P6TD Portland, OR 97204

2.6 <u>Title and Headings</u>. Titles and headings to sections herein are inserted for convenience of reference only and are not intended to be part of or to affect the meaning or interpretation of this Agreement.

2.7 Execution in Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

2.8 <u>Successors and Assigns</u>. This Agreement shall be binding upon and inure to the benefit of the Company, the Committees and the Trustee and their respective successors and permitted assigns. None of the rights or obligations under this Agreement shall be assigned by the Trustee without the prior written consent of the Company and the Trust in their sole discretion.

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto, being duly authorized, have executed and delivered this Agreement on the date first written above.

HECLA MINING COMPANY

By: /s/ David C. Sienko Name: David C. Sienko

Title: Vice President and General Counsel

HECLA LIMITED

By: <u>/s/ Russell Lawlar</u> Name: Russell Lawlar Title: Vice President

HECLA MINING COMPANY RETIREMENT COMMITTEE

By: /s/ Phillips S. Baker, Jr. Name: Phillips S. Baker, Jr. Chair

HECLA MINING COMPANY PENSION COMMITTEE

By: /s/ Phillips S. Baker, Jr. Name: Phillips S. Baker, Jr. Chair

ACKNOWLEDGED BY: U.S. BANK NATIONAL ASSOCIATION, as Trustee of the Trust

By: /s/ Ryan Maxey Name: Ryan Maxey Title: Vice President

ACKNOWLEDGED BY: Dale Stevens, Independent Fiduciary

By: /s/ Dale Stevens Name: Dale Stevens, Independent Fiduciary

Signature Page to Registration Rights Agreement

HECLA MINING COMPANY

Exhibit 19

CORPORATE POLICY

Policy on Insider Trading (January 20, 2023)

This Insider Trading Policy provides the standards of Hecla Mining Company (the "**Company**" or "**Hecla**") on trading and causing the trading of the Company's securities or securities of other publicly-traded companies while in possession of confidential information. This Policy is divided into two parts: the first part prohibits trading in certain circumstances and applies to all directors, officers, employees, and consultants of the Company. The second part imposes special additional trading restrictions and applies to all (i) directors of the Company, (ii) executive officers of the Company and its subsidiaries, and (iii) the employees and consultants listed on Appendix A (collectively, "Covered Persons").

One of the principal purposes of the federal securities laws is to prohibit illegal insider trading (referred to throughout this Policy as "insider trading"). Simply stated, insider trading occurs when a person uses material non-public information obtained through involvement with the Company to make decisions to purchase, sell, give away or otherwise trade the Company's securities or to provide that information to others outside the Company. The prohibitions against insider trading apply to trades, tips and recommendations by virtually any person, including all persons associated with the Company, if the information involved is "material" and "non-public." These terms are defined in this Policy under Part I, Section 3 below. The prohibitions would apply to any director, officer, employee, or consultant who buys or sells Company stock on the basis of material non-public information that he or she obtained about the Company, its customers, suppliers, or other companies with which the Company has contractual relationships or may be negotiating transactions.

PART I

1. Applicability

This Policy applies to all transactions in the Company's securities, including common stock, warrants, preferred stock, options, bonds/notes and any other securities that the Company may issue, as well as to derivative securities relating to any of the Company's securities, whether or not issued by the Company.

This Policy applies to all employees and consultants of the Company and its subsidiaries, all officers of the Company and its subsidiaries, and all members of the Company's board of directors.

This Policy continues to apply even after you have terminated employment or other services to the Company or a subsidiary in that if you are aware of material non-public information when your employment or service relationship terminates, you may not trade until that information

has become public or is no longer material. This is not just the policy of the Company, it is also the law of the United States.

2. General Policy: No Trading or Causing Trading While in Possession of Material Non-public Information

(a) No director, officer, employee, or consultant may purchase or sell any Company security, whether or not issued by the Company, while in possession of material non-public information about the Company. (The terms "material" and "non-public" are defined in Part I, Section 3(a) and (b) below.)

(b) Trading restrictions cover certain transactions under Company plans, as follows:

- *Stock Option Exercises.* This Policy's trading restrictions generally do not apply to the exercise of a stock option. The trading restrictions do apply, however, to any sale of the underlying stock or to a cashless exercise of the option, as this entails selling a portion of the underlying stock to cover the costs of exercise.
- *Company Plans*. This Policy's trading restrictions do not apply to purchases of Company stock in the 401(k) plan resulting from your periodic contribution of money to the plan pursuant to your payroll deduction election. The trading restrictions do apply, however, to elections you may make under the 401(k) or other Company plan to: (a) increase or decrease the percentage of your periodic contributions that will be allocated to the Company stock fund; (b) make an intra-plan transfer of an existing account balance into or out of the Company stock fund; (c) borrow money against your 401(k) plan account if the loan will result in a liquidation of some or all of your Company stock fund balance; and (d) pre-pay a plan loan if the pre-payment will result in allocation of loan proceeds to the Company stock fund.

(c) No director, officer, employee, or consultant who knows of any material non-public information about the Company may communicate that information to any other person, including family and friends, except to third party agents of the Company (such as investment banking advisors or outside legal counsel) whose positions require them to know such information.

(d) In addition, no director, officer, employee, or consultant may purchase or sell any security of any other company, as well as derivative securities relating to such other company whether or not issued by such company, while in possession of material non-public information about that company that was obtained in the course of his or her involvement with Hecla. No director, officer, employee, or consultant who knows of any such material non-public information may communicate that information to any other person, including family and friends, except to third party agents of the Company (such as investment banking advisors or outside legal counsel) whose positions require them to know such information.

(e) For compliance purposes, you should never trade, tip, or recommend securities (or otherwise cause the purchase or sale of securities) while in possession of information that you have reason to believe is material and non-public unless you first consult with, and obtain the

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advance approval of, the Company's General Counsel, or, in their absence, any other attorney in the Company's Legal Department.

(f) Covered Persons must "pre-clear" all trading in securities of the Company in accordance with the procedures set forth in Part II, Section 3 below.

(g) The existence of a personal financial emergency does not excuse you from compliance with this Policy.

3. Definitions

(a) <u>Materiality</u>. Insider trading restrictions come into play only if the information you possess is "material." Materiality, however, can be a relatively low threshold. Information is generally regarded as "material" if it has market significance, that is, if its public dissemination is likely to affect the market price of securities, or if it otherwise is information that a reasonable investor would want to know before making an investment decision.

Information dealing with the following subjects is reasonably likely to be found material in particular situations:

(i) significant changes in the Company's prospects;

(ii) significant write-downs in assets or increases in reserves;

(iii) developments regarding significant litigation or government agency investigations;

(iv) liquidity problems;

(v) changes in earnings estimates or unusual gains or losses in major operations;

(vi) major changes in management;

(vii) changes in dividends;

(viii) extraordinary borrowings;

(ix) award or loss of a significant contract;

(x) changes in debt ratings;

(xi) proposals, plans, or agreements, even when under consideration, but not yet finalized, involving mergers, acquisitions, divestitures, recapitalizations, strategic alliances, royalty arrangements, or purchases or sales of substantial assets;

(xii) public offerings; and

(xiii) pending operational or exploration developments or reports (drilling results, revisions to mine plan, changes in reserves, etc.).

Material information is not limited to historical facts but may also include projections and forecasts. With respect to a future event, such as a merger, acquisition or change in mine plan, the point at which negotiations or potential developments are determined to be material is determined by balancing the probability that the event will occur against the magnitude of the effect the event would have on a company's operations or stock price should it occur. Thus, information

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concerning an event that would have a large effect on stock price, such as a significant merger, may be material even if the possibility that the event will occur is relatively small.

Complicating determinations of whether information is material is the fact that the issue frequently arises in hindsight, and if the Company's stock price moves after the information is disclosed, a strong presumption may arise that the information must have been material. Thus, when in doubt about whether particular non-public information is material, presume it is material.

If you are unsure whether information is material, you should consult the Company's General Counsel, or, in their absence, any other attorney in the Company's Legal Department, before making any decision to disclose such information (other than to persons at the Company or applicable authorities who need to know it) or to trade in or recommend securities to which that information relates.

(b) <u>Non-public Information</u>. Insider trading prohibitions come into play only when you possess information that is material and "non-public." The fact that information has been disclosed to a few members of the public does not make it public for insider trading purposes. To be "public" the information must have been disseminated in a manner designed to reach investors generally, and the investors must be given the opportunity to absorb the information. Even after public disclosure of information about the Company, you must wait until the close of business on the second full trading day after the information was publicly disclosed before you can treat the information as public. For example, if the Company announces financial earnings before trading begins on a Tuesday, the first time you can buy or sell Company securities is the opening of the market on Thursday (assuming you are not aware of other material non-public information at that time). However, if the Company announces earnings after trading begins on that Tuesday, the first time you can buy or sell Company securities is the opening of the market on Friday.

Non-public information may include:

(i) information available to a select group of analysts or brokers or institutional investors;

(ii) undisclosed facts that are the subject of rumors, even if the rumors are widely circulated; and

(iii) information that has been entrusted to the Company on a confidential basis until a public announcement of the information has been made and enough time has elapsed for the market to respond to a public announcement of the information.

As with questions of materiality, if you are not sure whether information is considered public, you should either consult with the Company's General Counsel, or, in their absence, any other attorney in the Company's Legal Department, or assume that the information is "non-public" and treat it as confidential.

4. Violations of Insider Trading Laws and Policies

Penalties for trading on or communicating material non-public information can be severe, both for individuals involved in such unlawful conduct and their employers and supervisors, and may include jail terms, criminal fines, civil penalties and civil enforcement injunctions. Both the U.S. Securities and Exchange Commission and the New York Stock Exchange investigate and are

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very effective at detecting insider trading. Given the severity of the potential penalties, compliance with this Policy is absolutely mandatory.

(a) <u>Legal Penalties</u>. A person who violates insider trading laws by engaging in transactions in a company's securities when he or she has material non-public information can be sentenced to a substantial jail term and required to pay a penalty of several times the amount of profits gained or losses avoided. Potential penalties for insider trading violations include: (1) imprisonment for up to 20 years; (2) criminal fines of up to \$5 million; and (3) civil fines of up to three times the profit gained or loss avoided.

In addition, a person who tips others may also be liable for transactions by the tippees to whom he or she has disclosed material non-public information. Tippers can be subject to the same penalties and sanctions as the tippees, and the SEC has imposed large penalties even when the tipper did not profit from the transaction.

The SEC can also seek substantial penalties from any person who, at the time of an insider trading violation, "directly or indirectly controlled the person who committed such violation," which would apply to the Company and/or management and supervisory personnel. These control persons may be held liable for up to the greater of \$1 million or three times the amount of the profits gained or losses avoided. Even for violations that result in a small or no profit, the SEC can seek a minimum of \$1 million from a company and/or management and supervisory personnel as control persons.

Further, of particular note to Hecla's directors and officers, in any case of wilful or reckless fraud, a court may prohibit a person from acting as an officer or director of a public company upon a showing by the SEC of "substantial unfitness" to serve as an officer or director.

Finally, if Hecla fails to take appropriate steps to prevent illegal insider trading, the Company may have "controlling person" liability for a trading violation, with civil penalties of up to the greater of \$1 million and three times the profit gained or loss avoided, as well as a criminal penalty of up to \$25 million. The civil penalties can extend personal liability to the Company's directors, officers and other supervisory personnel if they fail to take appropriate steps to prevent insider trading.

(b) <u>Company-imposed Penalties</u>. Employees who violate this Policy may be subject to disciplinary action by the Company, including dismissal for cause, regardless of whether such violation results in a violation of law or regulatory or civil sanctions. Any exceptions to the Policy, if permitted, may only be granted by the General Counsel and must be provided before any activity contrary to the above requirements takes place.

PART II

1. Blackout Periods

All Covered Persons are prohibited from trading in the Company's securities during blackout periods.

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(a) <u>Quarterly Blackout Periods</u>. Trading in the Company's securities is prohibited during the period beginning three (3) weeks prior to public disclosure of the Company's financial results for the quarter and ending at the close of business on the second full trading day following the date the Company's financial results are publicly disclosed and a Form 10-Q or Form 10-K is filed. During these periods, Covered Persons generally possess or are presumed to possess material non-public information about the Company's financial results.

(b) <u>Other Blackout Periods</u>. From time to time, other types of material non-public information regarding the Company (such as negotiation of mergers, acquisitions or dispositions or operating or exploration developments) may be pending and not be publicly disclosed. While such material non-public information is pending, the Company may impose special blackout periods during which Covered Persons are prohibited from trading in the Company's securities. If the Company imposes a special blackout period, it may notify the Covered Persons affected or it may opt to reveal such special blackout only if and when a request is made to pre-clear a specific trade, as provided in this Policy. Any person made aware of the existence of an event-specific blackout should not disclose the existence of the blackout to any other person. The failure of the Company to designate a person as being subject to an event-specific blackout will not relieve that person of the obligation not to trade while aware of material non-public information.

(c) <u>Exception</u>. These trading restrictions do not apply to transactions under a pre-existing written plan, contract, instruction, or arrangement under Rule 10b5-1 (an "Approved 10b5-1 Plan") that:

(i) has been reviewed and approved in advance by the Company's General Counsel;

(iii) for the Company, directors and officers, provides that trading under the plan will not begin until the later of (1) 90 days after the adoption or modification of the Rule 10b5-1 plan or (2) two business days following the disclosure of the Company's financial results in a Form 10-Q or Form 10-K for the fiscal quarter in which the plan was adopted or modified (but in each case not to exceed 120 days following plan adoption or modification);

(iii) for persons not directors or employees, provides that trading under the plan will not begin until before 30 days after the adoption or modification of the Rule 10b5-1 plan (but not to exceed 120 days following plan adoption or modification);

(iv) was entered into in good faith by the Covered Person at a time when the Covered Person was not in possession of material non-public information about the Company; and

(v) gives a third party the discretionary authority to execute such purchases and sales, outside the control of the Covered Person, so long as such third party does not possess any material non-public information about the Company; or explicitly specifies the security or securities to be purchased or sold, the number of shares, the prices and/or dates of transactions, or other formula(s) describing such transactions.

2. Trading Window

Covered Persons are permitted to trade in the Company's securities when no blackout period is in effect if they pre-clear such trades as provided herein. However, even during such trading windows, a Covered Person who is in possession of any material non-public information should not trade in the Company's securities until the information has been made publicly available or is no longer material. In addition, the Company may close any trading window if a special blackout period under Part II, Section 1(b) above is imposed.

3. Pre-clearance of Securities Transactions

(a) Because Covered Persons are likely to obtain material non-public information on a regular basis, the Company requires all such persons to refrain from trading until such proposed transaction has been pre-cleared. You should manage your personal financial matters in such a way that a delay in pre-clearing a proposed trade or an inability to trade, even for an extended period, will not create economic hardship.

(b) Subject to the exemption in subsection (d) below, no Covered Person may, directly or indirectly, purchase or sell (or otherwise make any transfer, gift, pledge, or loan of) any Company security at any time without first obtaining prior approval from the Company's General Counsel, or, in their absence, any other attorney in the Company's Legal Department. These procedures also apply to transactions by such person's spouse, minor children, and other persons living in such person's household, and to transactions by entities over which you or such person exercises control.

(c) The Company's General Counsel, or, in their absence, any other attorney in the Company's Legal Department, shall record the date each request is received and the date and time each request is approved or disapproved. Unless revoked, a grant of permission will normally remain valid until the close of trading two business days following the day on which it was granted. If the transaction does not occur during the two-day period, pre-clearance of the transaction must be re-requested.

(d) Pre-clearance is not required for purchases and sales of securities under an Approved 10b5-1 Plan. With respect to any purchase or sale under an Approved 10b5-1 Plan, the third party effecting transactions on behalf of the Covered Person should be instructed to send duplicate confirmations of all such transactions to the Company's General Counsel.

4. Prohibited Transactions

(a) Directors and executive officers of the Company are prohibited from trading in the Company's equity securities during a blackout period imposed under an "individual account" retirement or pension plan of the Company during which at least 50% of the plan participants are unable to purchase, sell, or otherwise acquire or transfer an interest in equity securities of the Company due to a temporary suspension of trading by the Company or the plan fiduciary.

(b) A Covered Person, including such person's spouse, minor children, and other persons living in such person's household, and entities over which you or such person exercises control, is prohibited from engaging in the following transactions in the Company's securities unless advance

Hecla Mining Company - Policy on Insider Trading - January 2023

approval is obtained from the Company's General Counsel, or, in their absence, any other attorney in the Company's Legal Department:

(i) <u>Short-term trading</u>. Covered Persons who purchase Company securities may not sell any Company securities of the same class for at least six months after the purchase;

(ii) <u>Short sales.</u> Covered Persons may not sell the Company's securities short;

(iii) <u>Options trading</u>. Covered Persons may not buy or sell puts or calls or other derivative securities on the Company's securities;

(iv) <u>Trading on margin</u>. Covered Persons may not hold Company securities in a margin account or pledge Company securities as collateral for a loan; and

(v) <u>Hedging.</u> Covered Persons may not enter into hedging or monetization transactions or similar arrangements with respect to Company securities.

5. Additional Information for Executive Officers and Directors

The following guidelines apply to our directors and executive officers who are required to report transactions under Section 16 of the Exchange Act.

The filing deadline for executive officers and directors to file Section 16(a) transaction reports on Form 4 is two business days following the transaction date. The obligation to report is the obligation of the executive officer or director, not the Company. However, the Company must report any executive officer or director's failure to file in a timely manner in the Company's public securities filings. Tami Whitman (208.769.4199) is available to assist you in preparing and filing Section 16 reports, but information gathering and compliance is ultimately your responsibility.

- The Form 4 is due by 10:00 p.m., Eastern Time, on the second (without counting the date of the trade) business day after the day on which the trade (not the settlement) occurred.
- The Form 4 must be filed electronically via EDGAR (if filed after 10:00 p.m., Eastern Time, it will have the following business day's filing date). The Company is equipped to file electronically and has obtained filing codes for each of its executive officers and directors.

6. Acknowledgment and Certification

All Covered Persons and employees are required to sign the attached acknowledgment and certification annually.

It is your obligation to understand and comply with this policy. Should you have any questions regarding this policy, please contact a member of the Legal Department.

8

This policy may be modified or updated from time to time.



9

ACKNOWLEDGMENT AND CERTIFICATION

The undersigned does hereby acknowledge receipt of Hecla's Policy on Insider Trading. The undersigned has read and understands (or has had explained) such Policy and agrees to be governed by such Policy at all times in connection with the purchase and sale of securities and the confidentiality of non-public information.

(Signature)

(Please print name)

Date: _____

10

APPENDIX A COVERED PERSONS

11

SUBSIDIARIES

Exhibit 21

Name	State/Country of Incorporation	Ownership Percentage
Hecla Limited	Delaware	100%
Hecla Admiralty Company	Delaware	100%
Hecla Greens Creek Mining Company	Delaware	100%
Hecla Juneau Mining Company	Delaware	100%
Hecla Alaska LLC	Delaware	100%
Hecla Canada Ltd.	Federal Canadian	100%
1080980 B.C. Ltd.	British Columbia	100%
Alexco Resource Corp.	British Columbia	99.894%
Alexco Keno Hill Mining Corp.	British Columbia	100%
Elsa Reclamation & Development Company Ltd.	Yukon	100%
Alexco Exploration Canada Corp.	British Columbia	100%
Hecla Silver Valley, Inc.	Delaware	100%
Mines Management, Inc.	Idaho	100%
Newhi, Inc.	Washington	100%
Montanore Minerals Corp.	Delaware	100%
Silver Hunter Mining Company	Delaware	100%
Rio Grande Silver, Inc.	Delaware	100%
Hecla MC Subsidiary, LLC	Delaware	100%
Hecla Montana, Inc.	Delaware	100%
Revett Silver Company	Montana	100%
Troy Mine Inc.	Montana	100%
RC Resources, Inc.	Montana	100%
Revett Exploration, Inc.	Montana	100%
Revett Holdings, Inc.	Montana	100%
Burke Trading Inc.	Delaware	100%
Industrias Hecla, S.A. de C.V.	Mexico	100%
Mineral Hecla, S.A. de C.V.	Mexico	100%
Hecla Quebec Inc.	Federal Canadian	100%
Name	State/Country of Incorporation	Ownership Percentage
---	--------------------------------	----------------------
Klondex Mines Unlimited Liability Company	Federal Canadian	100%
Klondex Holdings (USA) Inc.		
Klondex Gold & Silver Mining Co.	Nevada	100%
Klondex Midas Holdings Limited	Nevada	100%
Klondex Midas Operations Inc	Nevada	100%
Klondey Aurora Mine Inc	Nevada	100%
Klondov Hollister Mine Inc.	Nevada	100%
Kiondex Homster Mine Inc.	Nevada	100%

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-267418, 333-262925, 333-236537, 333-248973, 333-260870, 333-256327 and 333-253255) and Form S-8 (No. 333-218744, 333-229840, 333-231905 and 333-256328) of Hecla Mining Company (the "Company") of our reports dated February 15, 2024, relating to the consolidated financial statements, and the effectiveness of the Company's internal control over financial reporting, which appear in this Form 10-K.

/s/ BDO USA, P.C. Spokane, Washington February 15, 2024

In connection with the Hecla Mining Company Annual Report on Form 10-K for the year ended December 31, 2023 and any amendments or supplements and/or exhibits thereto (collectively, the "Form 10-K"), the undersigned consents to:

(i) the incorporation by references and use of the technical report summary titled "Technical Report Summary on the Greens Creek Mine, Alaska, U.S.A." (the "**TRS**"), with an effective date of December 31, 2021, as an exhibit to and referenced in the Form 10-K;

(ii) the incorporation by reference of the TRS in the Registration Statements on Form S-3 (Nos. 333-267418, 333-262925, 333-260870, 333-256327 and 333-253255) and Form S-8 (Nos. 333-256328, 333-231905, 333-229840 and 333-218744) (the "**Registration Statements**");

(iii) 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 Securities and Exchange Commission), in connection with the TRS, Form 10-K and the Registration Statements; and

(iv) any extracts or summaries of the TRS included or incorporated by reference in the Form 10-K and the Registration Statements, and the use of any information derived, summarized, quoted or referenced from the TRS, 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 and the Registration Statements.

Dated: February 15, 2024

SLR International Corporation

Per:

/s/ Grant A. Malensek

Grant A. Malensek, M.Eng., P.Eng. Global Technical Director - U.S. Mining Advisory

In connection with the Hecla Mining Company Annual Report on Form 10-K for the year ended December 31, 2023 and any amendments or supplements and/or exhibits thereto (collectively, the "Form 10-K"), the undersigned consents to:

(i) the incorporation by references and use of the technical report summary titled "Technical Report Summary on the Lucky Friday Mine, Idaho, U.S.A." (the "**TRS**"), with an effective date of December 31, 2021, as an exhibit to and referenced in the Form 10-K;

(ii) the incorporation by reference of the TRS in the Registration Statements on Form S-3 (Nos. 333-267418, 333-262925, 333-260870, 333-256327 and 333-253255) and Form S-8 (Nos. 333-256328, 333-231905, 333-229840 and 333-218744) (the "**Registration Statements**");

(iii) 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 Securities and Exchange Commission), in connection with the TRS, Form 10-K and the Registration Statements; and

(iv) any extracts or summaries of the TRS included or incorporated by reference in the Form 10-K and the Registration Statements, and the use of any information derived, summarized, quoted or referenced from the TRS, 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 and the Registration Statements.

Dated: February 15, 2024

SLR International Corporation

Per:

/s/ Grant A. Malensek

Grant A. Malensek, M.Eng., P.Eng. Global Technical Director - U.S. Mining Advisory

In connection with the Hecla Mining Company Annual Report on Form 10-K for the year ended December 31, 2023 and any amendments or supplements and/or exhibits thereto (collectively, the "Form 10-K"), the undersigned consents to:

(i) the filing and use of the technical report summary titled "Technical Report Summary on the Casa Berardi Mine, Northwestern Québec, Canada" (the "**TRS**"), with an effective date of December 31, 2023, as an exhibit to and referenced in the Form 10-K;

(ii) the incorporation by reference of the TRS in the Registration Statements on Form S-3 (Nos. 333-267418, 333-262925, 333-260870, 333-256327 and 333-253255) and Form S-8 (Nos. 333-256328, 333-231905, 333-229840 and 333-218744) (the "**Registration Statements**");

(iii) 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 Securities and Exchange Commission), in connection with the TRS, Form 10-K and the Registration Statements; and

(iv) any extracts or summaries of the TRS included or incorporated by reference in the Form 10-K and the Registration Statements, and the use of any information derived, summarized, quoted or referenced from the TRS, 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 and the Registration Statements.

Dated: February 15, 2024

RESPEC Company LLC

Per:

/s/ Thomas L. Dyer

Thomas L. Dyer, PE Principal Engineer and Reno Office Manager

In connection with the Hecla Mining Company Annual Report on Form 10-K for the year ended December 31, 2023 and any amendments or supplements and/or exhibits thereto (collectively, the "Form 10-K"), the undersigned consents to:

(i) the filing and use of the technical report summary titled "Technical Report Summary on the Casa Berardi Mine, Northwestern Québec, Canada" (the "**TRS**"), with an effective date of December 31, 2023, as an exhibit to and referenced in the Form 10-K;

(ii) the incorporation by reference of the TRS in the Registration Statements on Form S-3 (Nos. 333-267418, 333-262925, 333-260870, 333-256327 and 333-253255) and Form S-8 (Nos. 333-256328, 333-231905, 333-229840 and 333-218744) (the "**Registration Statements**");

(iii) 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 Securities and Exchange Commission), in connection with the TRS, Form 10-K and the Registration Statements; and

(iv) any extracts or summaries of the TRS included or incorporated by reference in the Form 10-K and the Registration Statements, and the use of any information derived, summarized, quoted or referenced from the TRS, 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 and the Registration Statements.

Dated: February 15, 2024

SLR Consulting (Canada) Ltd.

Per:

/s/ Brenna J.Y. Scholey

Brenna J.Y. Scholey, P.Eng. Principal Metallurgist - Mining Advisory

In connection with the Hecla Mining Company Annual Report on Form 10-K for the year ended December 31, 2023 and any amendments or supplements and/or exhibits thereto (collectively, the "Form 10-K"), the undersigned consents to:

(i) the filing and use of the technical report summary titled "S-K 1300 Technical Report Summary on the Keno Hill Operations, Yukon, Canada" (the "**TRS**"), with an effective date of December 31, 2023, as an exhibit to and referenced in the Form 10-K;

(ii) the incorporation by reference of the TRS in the Registration Statements on Form S-3 (Nos. 333-267418, 333-262925, 333-260870, 333-256327 and 333-253255) and Form S-8 (Nos. 333-256328, 333-231905, 333-229840 and 333-218744) (the "**Registration Statements**");

(iii) 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 Securities and Exchange Commission), in connection with the TRS, Form 10-K and the Registration Statements; and

(iv) any extracts or summaries of the TRS included or incorporated by reference in the Form 10-K and the Registration Statements, and the use of any information derived, summarized, quoted or referenced from the TRS, 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 and the Registration Statements.

Dated: February 15, 2024

Mining Plus Canada Consulting Ltd.

Per:

/s/ George Darling

George Darling, P.Eng. Vice President - Canada

In connection with the Hecla Mining Company Annual Report on Form 10-K for the year ended December 31, 2023 and any amendments or supplements and/or exhibits thereto (collectively, the "Form 10-K"), the undersigned consents to:

(i) the filing and use of the technical report summary titled "S-K 1300 Technical Report Summary on the Keno Hill Operations, Yukon, Canada" (the "**TRS**"), with an effective date of December 31, 2023, as an exhibit to and referenced in the Form 10-K;

(ii) the incorporation by reference of the TRS in the Registration Statements on Form S-3 (Nos. 333-267418, 333-262925, 333-260870, 333-256327 and 333-253255) and Form S-8 (Nos. 333-256328, 333-231905, 333-229840 and 333-218744) (the "**Registration Statements**");

(iii) 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 Securities and Exchange Commission), in connection with the TRS, Form 10-K and the Registration Statements; and

(iv) any extracts or summaries of the TRS included or incorporated by reference in the Form 10-K and the Registration Statements, and the use of any information derived, summarized, quoted or referenced from the TRS, 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 and the Registration Statements.

Dated: February 15, 2024

Sedgman Canada Ltd.

Per:

/s/ Christina Vink

Christina Vink, P.Eng. Senior Study Manager

In connection with the Hecla Mining Company Annual Report on Form 10-K for the year ended December 31, 2023 and any amendments or supplements and/or exhibits thereto (collectively, the "Form 10-K"), the undersigned consents to:

(i) the filing and use of the technical report summary titled "S-K 1300 Technical Report Summary on the Keno Hill Operations, Yukon, Canada" (the "**TRS**"), with an effective date of December 31, 2023, as an exhibit to and referenced in the Form 10-K;

(ii) the incorporation by reference of the TRS in the Registration Statements on Form S-3 (Nos. 333-267418, 333-262925, 333-260870, 333-256327 and 333-253255) and Form S-8 (Nos. 333-256328, 333-231905, 333-229840 and 333-218744) (the "**Registration Statements**");

(iii) 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 Securities and Exchange Commission), in connection with the TRS, Form 10-K and the Registration Statements; and

(iv) any extracts or summaries of the TRS included or incorporated by reference in the Form 10-K and the Registration Statements, and the use of any information derived, summarized, quoted or referenced from the TRS, or portions thereof, 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 and the Registration Statements.

Dated: February 15, 2024

Matthew Blattman, P.E.

In connection with the Hecla Mining Company Annual Report on Form 10-K for the year ended December 31, 2023 and any amendments or supplements and/or exhibits thereto (collectively, the "Form 10-K"), the undersigned consents to:

(i) the filing and use of the technical report summary titled "S-K 1300 Technical Report Summary on the Keno Hill Operations, Yukon, Canada" (the "**TRS**"), with an effective date of December 31, 2023, as an exhibit to and referenced in the Form 10-K;

(ii) the incorporation by reference of the TRS in the Registration Statements on Form S-3 (Nos. 333-267418, 333-262925, 333-260870, 333-256327 and 333-253255) and Form S-8 (Nos. 333-256328, 333-231905, 333-229840 and 333-218744) (the "**Registration Statements**");

(iii) 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 Securities and Exchange Commission), in connection with the TRS, Form 10-K and the Registration Statements; and

(iv) any extracts or summaries of the TRS included or incorporated by reference in the Form 10-K and the Registration Statements, and the use of any information derived, summarized, quoted or referenced from the TRS, or portions thereof, 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 and the Registration Statements.

Dated: February 15, 2024

Baoyao Tang, P.Eng.

Exhibit 31.1

CERTIFICATION PURSUANT TO RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Phillips S. Baker, Jr., certify that:

- (1) I have reviewed this annual report on Form 10-K of Hecla Mining 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(s) 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 control 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 (the registrant's fourth fiscal quarter in the case of an annual report) 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 officer(s) 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 the registrant's board of directors (or persons performing the equivalent functions):
 - (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: February 15, 2024

By:

/s/ Phillips S. Baker, Jr.

President, Chief Executive Officer and Director

Exhibit 31.2

CERTIFICATION PURSUANT TO RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Russell D. Lawlar, certify that:

- (1) I have reviewed this annual report on Form 10-K of Hecla Mining 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(s) 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 control 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 (the registrant's fourth fiscal quarter in the case of an annual report) 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 officer(s) 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 the registrant's board of directors (or persons performing the equivalent functions):
 - (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: February 15, 2024

Ву:

/s/ Russell D. Lawlar

Senior Vice President, Chief Financial Officer

CERTIFICATIONS

I, Phillips S. Baker, Jr., President, Chief Executive Officer and Directors of Hecla Mining Company ("Hecla"), certify that to my knowledge:

- (1) This Annual Report of Hecla on Form 10-K ("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 result of operations of Hecla.

Date: February 15, 2024

By: /s/ Phillips S. Baker, Jr.

President, Chief Executive Officer and Director

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906 has been provided to Hecla and will be retained by Hecla and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished in accordance with Securities and Exchange Commission Release No. 34-47551 and shall not be considered filed as part of the Form 10-K.

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

I, Russell D. Lawlar, Senior Vice President and Chief Financial Officer of Hecla Mining Company ("Hecla"), certify that to my knowledge:

- This Annual Report on Form 10-K ("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 result of operations of the Company.

Date: February 15, 2024

By: /s/ Russell D. Lawlar Senior Vice President, Chief Financial Officer

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906 has been provided to Hecla and will be retained by Hecla and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished in accordance with Securities and Exchange Commission Release No. 34-47551 and shall not be considered filed as part of the Form 10-K.

Mine Safety Disclosures

Our mines are operated subject to the regulation of the Federal Mine Safety and Health Administration ("MSHA"), under the Federal Mine Safety and Health Act of 1977 (the "Mine Act"). In July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act (the "Dodd-Frank Act") was signed into law, and amended in December 2011. When MSHA believes a violation of the Mine Act has occurred, it may issue a citation for such violation, including a civil penalty or fine, and the mine operator must abate the alleged violation.

As required by the reporting requirements of the Dodd-Frank Act, as amended, the table below presents the following information for the year ended December 31, 2023.

									Received			
								Received	Notice of			
							Total	Notice of	Potential	Legal		
			Section			Total Dollar	Number	Pattern of	to have	Actions	Legal	Legal
			104(d)			Value of	Of	Violations	Patterns	Pending	Actions	Actions
	Section	Section	Citations	Section	Section	MSHA	Mining	Under	Under	as of Last	Initiated	Resolved
	104 S&S	104(b)	and	110(b)(2)	107(a)	Assessments	Related	Section	Section	Day of	During	During
Mine	Citations	Orders	Orders	Violations	Orders	Proposed	Fatalities	104(e)	104(e)	Period	Period	Period
Greens Creek	3	0	0	_	_	\$20,586		no	no	0	0	0
Lucky Friday	0	0	0	_	_	\$3,488	_	no	no	3	2	1
Troy	0	0	0	—	_	\$0	_	no	no	0	0	0
Fire Creek	1	0	0			\$143		no	no	0	0	0
Hollister	0	0	0			\$0		no	no	0	0	0
Midas	0	0	0			\$0		no	no	0	0	0
Aurora	0	0	0			\$0		no	no	0	0	0

Exhibit 96.3

TECHNICAL REPORT SUMMARY ON THE CASA BERARDI MINE, NORTHWESTERN QUÉBEC, CANADA



TECHNICAL REPORT RSI-M0206.22001

respec.com



Hecla Mining Company 6500 North Mineral Drive, Suite 200 Coeur d'Alene, Idaho, USA, 83815

FEBRUARY 2024

respec.com

TECHNICAL REPORT SUMMARY ON THE CASA BERARDI MINE, NORTHWESTERN QUÉBEC, CANADA TECHNICAL REPORT RSI-M0206.22001

PREPARED BY RESPEC 210 South Rock Boulevard Reno, Nevada 89502

PREPARED FOR

Hecla Mining Company 6500 North Mineral Drive, Suite 200 Coeur d'Alene, Idaho, USA, 83815

REPORT DATE: FEBRUARY 15, 2024 EFFECTIVE DATE: DECEMBER 31, 2023

Project Number M0206.22001 respec.com

NOTE REGARDING FORWARD-LOOKING INFORMATION

This Technical Report Summary contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (and the equivalent under Canadian securities laws), which are intended to be covered by the safe harbor created by such sections. Words such as "may", "will", "should", "expects", "intends", "projects", "believes", "estimates", "targets", "anticipates" and similar expressions are used to identify these forward-looking statements. Such forward-looking statements include, without limitation, statements regarding Hecla's expectation for its mines and any related development or expansions, including estimated cash flows, production, revenue, costs, taxes, capital, rates of return, mine plans, material mined and processed, recoveries and grade, future mineralization, future adjustments and sensitivities and other statements that are not historical facts. Other forward-looking statements in this Report may involve, without limitation, the following:

- / Probable Mineral Reserves that have been modified from Indicated Mineral Resource estimates.
- / Assumed commodity prices and exchange rates.
- / Proposed mine and process production plan.
- / Projected mining and process recovery rates.
- / Ability to market the two types of concentrate on favorable terms as shown in the life of mine plan.
- / Sustaining capital costs and proposed operating costs.
- / Assumptions as to closure costs and closure requirements.
- / Assumptions as to ability to obtain remaining outstanding permits.
- / Assumptions about environmental, permitting and social risks.

The material factors or assumptions used to develop such forward-looking statements or forward-looking information include that the Hecla's plans for development and production will proceed as expected and will not require revision as a result of risks or uncertainties, whether known, unknown or unanticipated, to which Hecla's operations are subject. Estimates or expectations of future events or results are based upon certain assumptions, which may prove to be incorrect, which could cause actual results to differ from forward-looking statements. Such assumptions, include, but are not limited to: (i) there being no significant change to current geotechnical, metallurgical, hydrological and other physical conditions; (ii) permitting, development, operations and expansion of Hecla's projects being consistent with current expectations and mine plans; (iii) political/regulatory developments in any jurisdiction in which Hecla operates being consistent with its current expectations; (iv) the exchange rate for the USD/CAD being approximately consistent with current levels; (v) certain price assumptions for gold, silver, lead and zinc ; (vi) prices for key supplies being approximately consistent with current levels; (v) certain price assumptions for gold, silver, lead and zinc ; (vii) the accuracy of our current mineral reserve and mineral resource estimates; (viii) there being no significant changes to Hecla's plans for 2024 and beyond with respect to availability of employees, vendors and equipment; (ix) Hecla's plans for development and production will proceed as expected and will not require revision as a result of risks or uncertainties, whether known, unknown or unanticipated; (x) sufficient workforce is available and trained to perform assigned tasks; (xi) weather patterns and rain/snowfall within normal seasonal ranges so as not to impact operations; (xii) relations with interested parties, including First Nations and Native Americans, remain productive; (xiii) maintaining availability of water rights; (xv) fact

In addition, material risks that could cause actual results to differ from forward-looking statements include, but are not limited to:

- / Unanticipated reclamation expenses.
- / Unexpected variations in quantity of mineralization, grade or recovery rates.
- / Exploration risks and results, including that mineral resources are not mineral reserves, they do not have demonstrated economic viability and there is no certainty that they can be upgraded to mineral reserves through continued exploration.
- / Geotechnical or hydrogeological considerations during operations being different from what was assumed.
- / Failure of mining methods to operate as anticipated.
- / Operating risks, including but not limited to failure of plant, equipment or processes to operate as anticipated.
- / Accidents and other risks of the mining industry.
- / Silver and other metals price volatility.
- / Currency fluctuations.
- / Increased production costs and variances in ore grade or recovery rates from those assumed in mining plans.
- / Community relations.
- / Conflict resolution and outcome of projects or oppositions.
- / Litigation, political, regulatory, labor, and environmental risks.
- / Inflation causes our costs to rise more than we currently expect.

For a more detailed discussion of such risks and other factors, see Hecla's 2023 Annual Report on Form 10-K. Hecla does not undertake any obligation to release publicly, revisions to any "forward-looking statement," including, without limitation, outlook, to reflect events or circumstances after the date of this presentation, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws. Investors should not assume that any lack of update to a previously issued "forward-looking statement" constitutes a reaffirmation of that statement. Continued reliance on "forward-looking statements" is at investors 'own risk.

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1.0 EXECUTIVE SUMMARY

1.1 SUMMARY

RESPEC was retained by Hecla Mining Company (Hecla) to prepare an independent Technical Report Summary (TRS) on the Casa Berardi Mine (Casa Berardi, mine, or the Property), located in Québec, Canada. The purpose of this TRS is to support the disclosure of the Casa Berardi Mineral Resource and Mineral Reserve estimates as of December 31, 2023. This TRS conforms to the United States Securities and Exchange Commission's (SEC) Modernized Property Disclosure Requirements for Mining Registrants as described in Subpart 229.1300 of Regulation S-K, Disclosure by Registrants Engaged in Mining Operations (S-K 1300) and Item 601 (b)(96) Technical Report Summary. RESPEC visited the Property on September 19 -21, 2023.

Hecla was established in 1891 and has its headquarters in Coeur d'Alene, Idaho, USA. In June 2013, Hecla acquired Aurizon Mines Ltd. (Aurizon) and renamed the company Hecla Québec Inc. (Hecla Québec). Hecla has an administrative/exploration office in Val-d'Or, Québec and an office in Vancouver, British Columbia. Hecla holds a 100% interest in Casa Berardi through its wholly owned subsidiary Hecla Québec. The Casa Berardi complex has a 35-year history of surface and underground mining operations.

The Property is located in northwestern Québec, approximately 95km north of the town of La Sarre, in the James Bay Municipality. The Property extends east-west for more than 37km and is 3.5km wide in a north-south direction. The Property is bounded to the west by the Québec/Ontario border and covers parts of Casa Berardi, Dieppe, Raymond, D'Estrées, and Puiseaux townships. The Casa Berardi gold deposits are located along a five kilometer east-west mineralized corridor associated with the Casa Berardi Fault. They comprise the West Mine, including the Principal area, and the East Mine. The Casa Berardi gold deposits can be classified as an Archean sedimentary hosted lode gold deposit. The gold mineralization is superimposed on a continuous graphitic

The Casa Berardi gold deposits can be classified as an Archean sedimentary hosted lode gold deposit. The gold mineralization is superimposed on a continuous graphitic mudrock unit corresponding to the Casa Berardi Fault plane. Gold occurs mainly south of the Casa Berardi Fault, and occasionally on both sides of the fault.

The Casa Berardi operation includes several open pits and two underground mines (Figure 1-1). The mine has produced approximately 3.06 million ounces (Moz) Au (recovered) since commencing production in 1988, including approximately 2.37Moz Au (recovered) since production recommenced in November 2006.

The Casa Berardi processing facilities consists of a 3,730tonnes per day (tpd) mill, with the ability to process 4,400tpd, and a carbon-in-leach (CIL) process to recover gold from the ore.

Production for Casa Berardi over the current life of mine (LOM), 2024 to 2037, is forecast to be comprised of 209 thousand tonnes (kt) from the underground operations in 2024 and 14.2 million tonnes (Mt) from the open pit operations from 2024 until 2037.

Figure STYLEREF1 \s 1-. Mine Plan View of Current and Planned Infrastructure with Composite Longitudinal Section



1.1.1 CONCLUSIONS

RESPEC offers the following conclusions and observations by area:

1.1.1.1 GEOLOGY AND MINERAL RESOURCES

- / The Casa Berardi Property is located in the northern part of the Abitibi Subprovince, within the Superior Province of the Archean core of the Canadian Shield. Three principal styles of mineralization have been recognized at Casa Berardi with gold occurring in: 1) quartz veins, 2) stockworks, and 3) banded iron formation. The mineralized zones are closely associated with the Casa Berardi Fault, and the Casa Berardi deposit can be classified as an Archean-age, sedimentary-hosted lode-gold deposit.
- / Compilation and subsequent verification of the Casa Berardi database has been performed by Hecla personnel since 2014. To further evaluate Hecla's database, RESPEC conducted an audit of all 2021, 2022 and 2023 assay data, with acceptable results. RESPEC is satisfied that the drill-hole database is considered to be sufficient for use in geological and mineral domain modeling, Mineral Resource and Mineral Reserve estimation, and mine planning.
- / Measured and Indicated resources, effective December 31, 2023, consist of a total of 4.11Mt with an average gold grade of 6.39g Au/t containing 0.84Moz Au. Inferred Mineral Resources total 2.09Mt at 5.89g/t Au for

2 2

0.40Moz Au. The open pit resources are constrained within the designed pit while underground material was constrained by stope optimizations, reflecting the potential for underground and open pit mining and mill processing of the present Casa Berardi deposits.

/ Hecla considered density and quality of drill-hole data, the established continuity of the auriferous zones, and production experience in classification of the Casa Berardi gold Mineral resources in the open pit and underground block models. RESPEC has evaluated Hecla's classification for the Casa Berardi Mineral Resources and concludes that their applied methodologies are reasonable and satisfy S-K 1300 requirements.

1.1.1.2 MINING AND MINERAL RESERVES

- / Mineral Reserves have been classified in accordance with the definitions for Mineral Reserves in S-K 1300. Mineral Reserves as of December 31, 2023, total 14.4Mt grading 2.75g/t Au containing 1.27Moz Au.
- / Measured and Indicated Mineral Resources were converted to Proven and Probable Mineral Reserves, respectively. Inferred Mineral Resources were not converted to Mineral Reserves.
- / The mining methods at Casa Berardi are well established with many years of operating experience, providing the necessary expertise to, safely and economically, extract the Mineral Reserves.
- / While both transverse and longitudinal longhole stoping methods are employed underground. Challenging ground conditions require the use of various types of backfill to provide the necessary support.
- / Underground mining will come from the West Mine in 2024 as the East mine was abandoned in 2023 to allow for backfilling the adjoining EMCP pit. Mining from various open pits on surface represents the bulk of the Mineral Reserves to be mined, accounting for approximately 98.5% of the Casa Berardi Mineral Reserves.
- / The current LOM period is estimated to be 14 years ending in 2037. Underground Mineral Reserves totaling 209kt are planned be mined in 2024 while open pit Mineral Reserves totaling 14.2Mt is planned be mined over the entire LOM period.
- / The LOM plan considers a 30-month delay in mining to allow for the expected permitting timeline.

1.1.1.3 MINERAL PROCESSING

- / Metallurgical and production models have been developed from extensive baseline sampling and are further adjusted annually to account for process and metallurgical improvements and changes.
- / The test work performed on open pit material was used to estimate gold recovery, while operating data was used for underground material. Extensive test work has been performed by an external laboratory on future open pit material (West Mine Crown Pillar (WMCP) and Principal). WMCP test results were used to inform the longterm mine plan.
- / Test work programs, both internal and external, continue to be performed to support current operations and potential improvements.
- / The current process facilities are appropriate for the mineralization material extracted from the mine. The flowsheet, equipment, and infrastructure are expected to support the current LOM plan.

1.1.1.4 INFRASTRUCTURE

/ Hecla is currently mining at Casa Berardi and has both open pit and underground infrastructure, as well as a mill. Hecla plans to develop three additional open pits (Principal, WMCP, and F134) and associated waste rock storage facilities, and other surface infrastructure for future mine operations.
/ With the increase of pit production, an expanded maintenance facility will be required. A capital allowance is included in cashflow model.

1.1.1.5 ENVIRONMENT

- / Hecla has sufficiently assessed the environmental impact of the operation, and subsequent closure and remediation requirements such that Mineral Resources and Mineral Reserves can be declared, and the mine plan deemed appropriate and achievable. Closure provisions are appropriately considered, and monitoring programs are in place.
- / Hecla has developed a community relations plan to identify and ensure an understanding of the needs of the surrounding communities and to determine appropriate programs for addressing those needs. Hecla appropriately monitors socio-economic trends, community perceptions, and mining impacts.
- / Current permits held by Hecla for the Property are sufficient to ensure that the planned surface and underground mining activities which will take place into 2026 are conducted in accordance with the local, provincial, and national regulatory frameworks.
- / Beyond 2026, the LOM plan includes the development of three additional open pits along with associated waste rock storage facilities and other infrastructure. This planned development may require an EIA to be performed at the Property. Hecla will submit a project notice to the Provincial MELCCFP in 2024 that describes the proposed development and proposed plan of operations. Hecla expects the EIA process that all necessary permits will be obtained so that mining of the planned open pits can take place in accordance with local, provincial, and national regulatory frameworks.
- / There are currently no known environmental, permitting, or social/community risks that could impact the Mineral Resources or Mineral Reserves.

1.1.2 RECOMMENDATIONS

RESPEC offers the following recommendations by area.

4 4

1.1.2.1 GEOLOGY AND MINERAL RESOURCES

- / Continue drilling to expand the near mine open pit Mineral Resources.
- / Convert open pit and underground Inferred Mineral Resources to Indicated, especially material in the Life of Mine Plan.
- / Continue to drill below the F134 and F160 pits.
- / Create resource open pit shells for F134 and F160.
- / Increase regional exploration activities to make new discoveries on the Property.
- / Investigate the potential high gold assay bias at the secondary umpire laboratory.
- / Implement procedures that will help reduce certified reference material (CRM or standard) mislabeling or "swaps".

1.1.2.2 MINING AND MINERAL RESERVES

- / Review marginal underground Mineral Resources for extraction due to higher spot prices in the near term.
- / Continue to convert Mineral Resources to Mineral Reserves to extend open pit mining where possible.
- / Continue to develop a ramp up plan to reach maximum mining rates after restart.
- / Since the existing cost model is based on contractor rates, an evaluation of a complete haulage model will provide a more comprehensive understanding of late-stage owner operator costs. It would be expected that mining operating costs could be lowered for future studies.

1.1.2.3 MINERAL PROCESSING

/ Continue to conduct additional metallurgical testing to better understand the processing of mineralization from the Principal and WMCP pits. This will aid in projecting metallurgical recoveries for these pits and will indicate any variability in gold recovery and grindability of the material.

1.2 ECONOMIC ANALYSIS

Please refer to the note regarding forward-looking information at the start of this Report.

The economic analysis contained in this TRS is based on the Casa Berardi Proven and Probable Mineral Reserves material only, economic assumptions, and capital and operating costs provided by Hecla's technical team in its LOM plan model and reviewed by RESPEC. All costs in this section are expressed in US dollars. Unless otherwise stated, all costs in this section of the TRS are expressed without allowance for escalation or currency fluctuation. All costs received from Hecla's site technical team in its Casa Berardi LOM 2023 Reserves only model were quoted in Canadian dollars and were converted to US dollars at an exchange rate of US\$1 = C\$1.350.

5 5 A summary of the key project criteria is provided in the subsequent subsections.

1.2.1 ECONOMIC CRITERIA

1.2.1.1 PHYSICALS

- Mine life: 14 year LOM (between years 2024 and 2037)
- / Open Pit operations
 - » Open pit mine life: 14 years (between years 2024 and 2037)
 - » Total ore tonnes mined: 14.2Mt at 2.72g/t Au
 - » Waste tonnes: 219Mt
 - » Maximum mining rate: 87ktpd (ore + waste)
- / Underground operations
 - » Underground mine life: 1 year (2024)
 - » Total ore tonnes mined: 209kt at 4.84g/t Au
 - » Maximum mining rate: 1,200tpd
- / Processing of Mineral Reserves:
 - » Total Ore Feed to Plant: 14.4Mt
 - Gold grade: 2.75g/t Au

4,400tpd

- » Maximum milling rate:
- » Contained Metal
- Gold: 1.27Moz Au
 Average LOM Plant Recovery 81.5%
- » Recovered Metal
- Gold: 1.04Moz Au

1.2.1.2 REVENUE

- / For the purposes of this economic analysis described in this section, revenue is estimated over the LOM with a flat long-term price of US\$1,950/oz Au. RESPEC considers this price to be aligned with the latest industry consensus long-term forecast prices. Transportation, insurance, and refining charges are estimated at US\$4.07/oz Au over the LOM. Payable metals in the Casa Berardi LOM 2024 plan are estimated at 99.9% for gold and 99.0% for silver. These rates are based on actual figures for refining losses. Silver credits have been estimated based on historical performance of the site.
- / LOM net revenue is US\$2,019 million (after Refining Charges).

6 6

1.2.1.3 CAPITAL COSTS

- / Total operating capital costs total US\$498 million
- / Closure costs of US\$21.6 million and a salvage value of \$19.7 million are included in the analysis at the end of the LOM.

1.2.1.4 OPERATING COSTS

- / Open Pit mining: US\$26.45/t ore mined
- / Underground mining: US\$106.23/t ore mined
- / Processing: US\$22.96/t ore milled
- / G&A US\$4.99/t ore milled
- / Total unit operating costs US\$55.45/t ore milled
- / LOM total operating costs US\$797.6 million
- / Excludes financing and corporate overhead costs

1.2.1.5 TAXATION AND ROYALTIES

- / Royalties: The current production zones as well as any in the 2024 LOM are not subject to a net smelter return (NSR) or royalty to a third party / previous landowner.
- / Income tax is payable to the Federal Government of Canada, pursuant to the Income Tax Act (Canada). The applicable Federal income tax rate is 15% of taxable income.
- / Income tax is payable to the Province of Québec at a tax rate of 11.5% of taxable income.
- / No income taxes are payable until 2031 as Hecla uses its current tax pools and net operating loss carry forwards. Beginning in 2031, the effective tax rate used is 26.5% (combined federal and provincial).
- / Québec Mining Tax base rate is 16%.

1.2.2 CASH FLOW ANALYSIS

RESPEC has reviewed and accepts Hecla's cash flow model as discussed in this section.

The Casa Berardi economics have been evaluated using the discounted cash flow method by considering annual processed tonnages and grade of ore. The associated process recovery, metal prices, operating costs, refining and transportation charges, and sustaining capital expenditures were also considered.

The full annual cash flow model is presented in Table 1-1 in US dollars with no allowance for inflation, show a pre-tax and after-tax NPV, using a 5% discount rate, of \$429 million and \$356 million, respectively. RESPEC is of the opinion that a 5% discount/hurdle rate for after-tax cash flow discounting of long-lived precious/base metal operations in a politically stable region is reasonable and appropriate and commonly used. For this cash flow analysis, the internal rate of return (IRR) and payback are not applicable as there is no negative initial cash flow (no initial investment to be recovered) since Casa Berardi has been in operation for a number of years.

7 7

	Units	Total LOM
Production		`
LOM	years	14
OP Production	000t	14,174
Au Grade	g/t	2.72
Waste	000t	233,628
UG Production	000t	209
Au Grade	g/t	4.84
Mill Feed	000t	14,383
Au Grade	g/t	2.75
Ag Grade	g/t	0.66
Ag/Au Conversion Ratio	%	23.999
Total Contained Produ	action	
Contained Au	000oz	1,270
Contained Ag	000oz	305
Average Recovery	%	81.5
Total Recovered Prod	uction	
Recovered Au	000oz	1,036
Recovered Ag	000oz	249
Metal Prices		
Gold Price	US\$/oz	1,950
Silver Price	US\$/oz	22
Cash Flow		
Gross Revenue	US\$ million	2,023
Treatment & Refining	US\$ million	-4
Operating Costs		
Mining OP Costs	US\$ million	-373
Mining UG Costs	US\$ million	-22
Processing Costs	US\$ million	-330
G&A	US\$ million	-72
Operating Cash Flow	US\$ million	1,221
Growth Capital Costs	US\$ million	-421
Sustaining Capital Costs	US\$ million	-77
Salvage Value	US\$ million	20
Reclamation & Closure	US\$ million	-22

Table STYLEKEFT is 1 Life of white indicative Economic Resu	Fable	e STYLEREF	1 \s 1	1 Life	of Mine	Indicative	Economic	Results
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	Units	Total LOM
Pre-Tax Net Cash Flow	US\$ million	721
Québec Mining Tax	US\$ million	-44
Federal & Provincial Income Taxes	US\$ million	-75
After-Tax Cashflow	US\$ million	602
Project Economic	S	
Pre-tax NPV at 5%	US\$ million	429
After-Tax NPV at 5%	US\$ million	356
Operating Metric	S	
Maximum Daily OP Mining Rate	t/d mined	87,000
Maximum Daily UG Mining Rate	t/d mined	1,200
Maximum Daily Processing Rate	t/d milled	4,400
OP Mining Cost	US\$/t ore mined	26.45
UG Mining Cost	US\$/t ore mined	106.23
Processing Cost	US\$/t ore	22.96
G&A Cost	US\$/t ore	4.99
Total Cost	US\$/t ore	55.45

1.2.3 SENSITIVITY ANALYSIS

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities on after-tax NPV at a 5% discount rate. The mine is most sensitive to changes in metal prices and US\$/C\$ exchange rate, then capital costs and operating costs.

1.3 TECHNICAL SUMMARY

1.3.1 PROPERTY DESCRIPTION

The Property is located in the Province of Québec, approximately 95km north of the town of La Sarre, in the James Bay Municipality. The mine is located at longitude 79°16'46.4" and latitude 49°33'56.7".

1.3.2 LAND TENURE

The Property consists of 391 contiguous designated claims, covering a total area of 19,151.08ha, and three mining leases, BM 768, BM 833, and BM 1054 covering areas of 397.09ha, 84.35ha, and 92.56ha, respectively. The Property area totals 19,725.08ha. Other legal titles include non-exclusive lease BNE 25938, tailings lease 70218, and two waste rock facility (WRF) leases 192410 and 819410. Legal titles are under the name of Hecla Québec. The Casa Berardi claims are in good standing.

1.3.3 HISTORY

Prior to 1974, the Casa Berardi area was explored for base metal deposits. In 1974, the first 13 claims were staked by Inco Gold Ltd. (Inco Gold). The discovery hole was drilled in 1981, and 590 additional claims were staked.

In 1982, Inco Gold (60%) and Golden Knight Resources Inc. (Golden Knight) (40%) formed a joint venture (JV) to operate the Mine, with the East Mine commencing production in 1988 and the West Mine in 1990. In 1991, TVX Gold Inc. (TVX) acquired Inco Gold's 60% interest in the Property. In 1994, TVX and Golden Knight purchased the remaining interest in the Domex claim block, a part of the Principal (Main) Zone between the West Mine and East Mine, from Teck Corporation. In January 1997, TVX announced the closure of the East Mine due to ground control issues. Two months later, the West Mine was closed. The total combined production for the period from 1988 to 1997 was 3.5Mt at an average grade of 7.1g/t Au. The total gold recovered during the operating years was 688,400toz Au, with an average mill gold recovery rate of 87%.

In September 1998, Aurizon signed an agreement and completed the acquisition of all Casa Berardi assets and mining rights. Aurizon completed exploration diamond drilling programs, feasibility studies, underground development, shaft sinking, and construction.

In early November 2006, Aurizon completed construction and development at the West Mine area and commenced underground mining and milling operations. From November 2006 to May 31, 2013, Aurizon production totaled approximately 4.31Mt at an average grade of 7.7g/t Au for a total of 0.98Moz Au recovered.

In June 2013, Hecla acquired Aurizon and the company was renamed Hecla Québec, a 100% subsidiary of Hecla. By 2012, Lake Shore Gold Inc. (Lake Shore) earned into a 50% interest in certain claims and mineral rights within the Casa Berardi Exploration Property (Casa Exploration Property), but not in areas where production was occurring, pursuant to a 2007 option agreement between the parties. In February 2016, Tahoe Resources Inc. (Tahoe) purchased Lake Shore, and at the end of 2016, they opted to sell their 50% interest in the Casa Exploration Property to Hecla in exchange for C\$6 million (US\$ 4,433,400 million) and 1% NSR on 227 claims. Hecla Purchased the NSR from Lake Shore in December 2016 and repurchased the related 1% NSR in June 2021. From June 1, 2013 to December 31, 2021, production from Casa Berardi totaled approximately 9.0Mt at an average grade of 4.88g/t Au for a total of 1.17Moz Au recovered.

Since 1988, a total of 19.8Mt at an average grade of 5.49g/t Au have been milled at Casa Berardi for a total recovered gold of 3.1Moz Au and an average gold recovery of 87.8%

1.3.4 GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT TYPES

The Casa Berardi Property is located in the northern part of the Abitibi Sub province, within the Superior Province of the Archean core of the Canadian Shield. The regional geology is characterized by generally east-west assemblages of isoclinally folded and variably foliated and metamorphosed mafic volcanic rocks, flysch-type sedimentary iron formations, graphitic mudrocks, and a large granodioritic to granitic batholith. Structurally, the Property is within the Casa Berardi Break, a 15km wide corridor of strain that can be traced over 200km. The Casa Berardi Fault, which strikes east-west and dips 80° to the south, was active during this stage along an unconformity between graphitic sedimentary and volcanic units.

10 10 Three principal styles of mineralization have been recognized at Casa Berardi with gold occurring in: 1) quartz veins, 2) stockworks, and 3) banded iron formation. The mineralized zones are closely associated with the Casa Berardi Fault and are found on both sides of the fault. They are restricted to a 500m wide corridor that is folded and plunges slightly to the west.

The grade of gold mineralization associated with veins generally increases with increasing complexity. Quartz phases include: 1) early grey quartz, with abundant sulfide and fluid inclusions; 2) mosaic micro-crystalline quartz associated with higher grades; and 3) late non-mineralized coarsely crystallized white quartz. Veins contain only 1% to 3% sulfides, predominately arsenopyrite and pyrite, as well as traces of sphalerite, chalcopyrite, pyrrhotite, tetrahedrite, galena, and gold. Arsenopyrite is the main gold-bearing sulfide present in all veins of the Casa Berardi deposit. Stockworks represent nearly the same volume as the large quartz veins. Stockwork mineralization is generally sub-economic, unless they occur in close proximity to larger quartz veins. Gold-bearing banded iron formation is restricted to the highly sheared, brecciated, and altered ferruginous sedimentary units occurring north of the Casa Berardi Fault. Mineralization contains up to 10% chert-magnetite beds, and exhibits high sulfide content which consists of pyrite, arsenopyrite, traces of pyrrhotite, and little or no visible gold.

The Casa Berardi deposit can be classified as an Archean-age, sedimentary-hosted lode-gold deposit. Gold deposits of the Archean Abitibi greenstone belt predominantly consist of epigenetic disseminated and vein-hosted deposits, and syngenetic gold-rich massive sulfides (Robert, et al., 2005; Monecke, et al., 2017). The Casa Berardi gold mining camp contains different styles of mineralization within the same deposit including gold-rich massive sulfides, auriferous pyritic and carbonaceous phyllite and chert, and pyrite-arsenopyrite-gold-quartz veins.

1.3.5 EXPLORATION

Since Hecla's acquisition of Casa Berardi in June 2013, exploration activities have largely consisted of staking and acquiring new claims, core drilling, geophysical surveys, drill-hole re-logging and drilling data compilation and integration. The majority of Hecla's exploration and delineation drilling since 2014 was core. No RC holes were drilled by Hecla, although there were 103 sonic holes drilled in 2022.

RESPEC believes that exploration potential remains on the Property along strike and at depth of known gold mineralization along the Casa Berardi Fault, both within and outside the current mine areas. Geophysical studies and drilling will be important exploration tools for making new discoveries at Casa Berardi, particularly for gold mineralization concealed by glacial till and other post-mineral overburden material outside the mine areas.

1.3.6 MINERAL RESOURCE ESTIMATES

Hecla considered density and quality of drill-hole data, the established continuity of the auriferous zones, and production experience in classification of the Casa Berardi gold Mineral Resources in the open pit and underground block models (Table 1-2). Classification was applied based on the average distance of a given block centroid to drill-hole composites used to estimate the block grade, the proximity to mine workings, and the location within modeled mineral envelopes. RESPEC considers Hecla's use of distances from composites and mine workings to be a reasonable approach to classifying resources. Average and closest distances of composites relative to blocks is commonly used in the mining industry for resource classification and satisfies S-K 1300 requirements.

Table STYLEREF 1 \s 1-. Mineral Resource Estimate Summary – December 31, 2023

11 11

Resource Category	K Tonnes	Grade (g/t Au)	Contained Metal (k oz Au)					
τ	Underground							
Measured	997	7.30	234.0					
Indicated	2,861	6.55	602.5					
Measured and Indicated	3,858	6.74	836.6					
Inferred	1,338	7.71	331.6					
Open Pit								
Measured	61	0.96	1.9					
Indicated	186	0.81	4.9					
Measured and Indicated	247	0.85	6.7					
Inferred	751	2.65	64.0					
	Total							
Measured and Indicated	4,106	6.39	843.3					
Inferred	2,089	5.89	395.6					

Notes:

1. In situ Mineral Resources are classified in accordance with the S-K 1300 classification system.

2. Mineral Resources were estimated by Hecla staff and reviewed and accepted by RESPEC.

3. Mineral Resources are exclusive of Mineral Reserves and do not have demonstrated economic viability.

4. Underground Mineral Resources are reported at cutoff grades ranging from 3.78g/t Au to 5.84g/t Au.

5. Open pit Mineral Resources are reported at cutoff grades ranging from 0.97g/t Au to 1.13g/t Au.

Underground and open pit Mineral Resources are reported using US\$1,750/oz Au, based on consensus, long-term forecasts from banks, financial institutions, and other sources, and a US\$/C\$ exchange rate of 1.300.

7. A minimum mining width of three meters was used for the modeled open pit and underground mineral envelopes used to estimate Mineral Resources.

8. Totals may not represent the sum of the parts due to rounding.

12 12

- 9. Mineral Resources potentially amenable to open pit mining methods are reported using a gold price of US\$1,750/oz, a throughput rate of 4,400 tonnes/day (combined material from underground and open pit sources), surface mining costs of US\$3.46/tonne mined, milling processing costs of US\$24.13/tonne processed, and general and administrative and other costs ranging from \$9.96-10.34/tonne processed. Metallurgical recoveries were based on metallurgical curves.
- 10. Mineral Resources potentially amenable to underground mining methods are reported using a gold price of US\$1,750/oz and a throughput rate of 4,400 tons/day (combined material from underground and open pit sources). Operating costs are US\$183.08/ton mined or US\$282.60/ton mined, depending on the underground zone or lens. Mill recoveries also vary by zone or lens and range from 80.10% to 89.90%.

All Mineral Resources reported in Table 1-2 used a gold price of US\$1,750/oz Au, which was chosen based on consensus, long-term forecasts from banks, financial institutions, and other sources, and a US\$/C\$ exchange rate of 1.300. The reported underground resources are undiluted and are exclusive of Mineral Reserves. The reported open pit resources are diluted by pit and are exclusive of Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

The underground Mineral Resources summarized in Table 1-2 are reported by tabulating all blocks within modeled mineral envelopes with estimated grades that exceed the calculated reporting cutoff grades, which vary for each zone or lens (sub-zone). The cutoff grades range from 3.78g/t Au to 5.84g/t Au, and are calculated based on a gold price of \$1,750/oz, and mill recoveries and operating costs that are specific to each zone. The resource estimates are based on a combined open pit and underground mill feed of 4,400tpd.

The reported open pit Mineral Resources in Table 1-2 are constrained by pit designs generated using cutoff grades that range from 0.97g/t Au to 1.13g/t Au. The gold cutoff grades were calculated at a gold price of \$1,750/oz, and using pit area-specific processing, general and administrative costs, recoveries, and refining costs. The mining cost is included in pit optimizations but is not included in the determination of the cutoff grade, as all material in each pit would be removed as either ore or waste.

RESPEC reviewed Hecla's Casa Berardi open pit and underground models, both visually and statistically. Gold grade and tonne smoothing during estimation is the primary issue in the models. Underground estimates are more tightly constrained by modeled mineral envelopes, so the smoothing is less pronounced compared to the open pit models. The grade smoothing increases risk associated with the Casa Berardi open pit resource models, which diminishes confidence in the local distributions of gold grades and tonnes within the broader wireframes. The homogenization of grade has resulted in models that likely overstate tonnes and understate grade, although the extent and the ultimate effects during mining cannot be fully quantified. However, the uncertainties associated with grade and tonne smoothing in the current models are offset in part by the history of productive mining at Casa Berardi.

1.3.7 MINERAL RESERVE ESTIMATES

Mineral Reserves have been classified in accordance with the definitions for Mineral Reserves in S-K 1300. Mineral Reserves as of December 31, 2023, are summarized in Table 1-3.

Measured Mineral Resources were converted to Proven Mineral Reserves, and Indicated Mineral Resources were converted to Probable Mineral Reserves. Inferred Mineral Resources were not converted to Mineral Reserves.

Table STYLEREF 1 \s 1-. Summary of Mineral Reserves - December 31,2023

Reserve Category	Tonnes	Grade	Contained Metal	Metallurgical Recovery
13				
13				

	(K t)	(g/t Au)	(K oz Au)	(%)			
	Underground						
Proven	50	4.14	6.7	-			
Probable	159	5.06	25.9	-			
Proven + Probable	209	4.84	32.6	88.7			
		Open Pit					
Proven	3,846	3.07	379.4	-			
Probable	10,327	2.59	858.5	-			
Proven + Probable	14,174	2.72	1,237.9	81.3			
		Total					
Proven + Probable	14,383	2.75	1,270.5	81.5			

Notes:

1. Classification of Mineral Reserves is in accordance with the S-K 1300 classification system. Mineral Reserves are reported as in situ with the exception of mill stockpile volumes as defined in this report.

- 2. RESPEC is responsible for the statement of Proven and Probable Mineral Reserves.
- 3. Mineral Reserves are 100% attributable to Hecla.
- 4. Underground Mineral Reserves are estimated at a cutoff grade of 3.60g/t Au for 124 Zone and a 3.88g/t Au for the 118 and 123 Zones.
- 5. Open pit Mineral Reserves are estimated at a cutoff grade of 1.02g/t Au for the F160 pit and 1.18g/t Au for the WMCP, Principal, and F134 Pits.
- Underground Mineral Reserves are estimated using short-term gold price of US\$1,850/oz Au and open pit Mineral Reserves are estimated using an average long term gold price of US\$1,650/oz Au, using a US\$/C\$ exchange rate of 1.300.
- 7. A minimum mining width of three meters was used for underground Mineral Reserves.
- 8. Totals may not represent the sum of the parts due to rounding.

Production for Casa Berardi over the current LOM, 2024 to 2037, includes 209kt from the underground operations in 2024 and 14.2Mt from the open pit operations from 2024 until 2037. Contained gold production over the LOM is forecasted to total 1.27Moz Au.

RESPEC is not aware of any risk factors associated with, or changes to, any aspects of the modifying factors such as mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

1.3.8 MINING METHODS

The mine design and planning processes reflect the previous mining experience at the West and East mines. Currently, the entirety of the production comes from the West Mine which can be accessed by a shaft or a ramp down to the 1,080m level. The East Mine was barricaded off with a bulkhead in 2023 to allow for backfilling of the EMCP pit from the surface.

14 14 A combination of longitudinal and transverse blasthole stoping is typically used at Casa Berardi, depending on mineral zone geometry (width and attitude) and development requirements. Timely delivery of backfill plays a crucial role in controlling dilution and maintaining the short stoping cycle. The zones vary in thickness, ranging from over 50m to less than three meters (e.g., minimum mining width). In general, the zones are subvertical (e.g., 55° to 85°).

Open pit mine designs and planning processes reflect previous experience with conventional truck shovel operations.

1.3.9 PROCESSING AND RECOVERY METHODS

The Casa Berardi processing facility consists of a 3,730tpd mill, with the ability to process 4,400tpd, and a CIL process to recover gold from the ore. The key unit operations to produce gold include:

- / Crushing
- / Grinding
- / Gravity Circuit
- / CIL Circuit
- / Electrowinning Circuit
- / Smelting

Residual pulp from the CIL mixing tank is pumped to the cyanide destruction tank to which sulfur dioxide and compressed air is added to destroy residual cyanide with agitation. After cyanide destruction, the treated pulp is then pumped to the paste backfill plant or the tailings pond. Ferric sulfate is also added to this material to reduce arsenic content in the solution. Approximately 5% of the Casa Berardi mine tailings are used in the mine backfill cycle. Tailings that are not used for mine backfill are disposed of at the tailings storage facility (TSF).

1.3.10 INFRASTRUCTURE

Existing surface and underground infrastructure at the East Mine include the following:

- A nominal 3,730tpd mill, with the ability to process 4,400tpd.
- / F160, EMCP, and XMCP open pits.
- / TSF with five tailings cells, a polishing pond, a sedimentation pond for settling iron arsenate precipitates, and a process water pond.
- / Two-story administrative building with offices, warehouse, dry, laboratory, two heavy equipment maintenance garage, millwright shop, and electrical shop.
- / Two core shacks.
- / Water pumping station.
- / Hoistroom, a headframe, and a 380m deep shaft (with no hoist).
- / Mine access decline and a series of ramp-connected levels.
- / Three petrol tanks with pump gas and fuel.
- / One mineral stockpile.
- 15 15

/ One waste and till-clay pile.

Existing surface and underground infrastructure at the West Mine include the following: / Backfill plant, including a compressor room and a ventilation raise intake.

- / Settling ponds.
- / Pumping station.
- / A 380 m² garage.
- / Two dry houses with offices.
- / Emergency building for mine rescue and infirmary.
- / Warehouse.
- / Core storage area.
- / Gatehouse.
- / Mine access decline providing access to the West Mine and Principal area.
- / Hoistroom, headframe, and mine shaft to the 1,080m level.
- / A 125 tonnes per hour (tph) paste backfill plant and a cement plant with tailings feed line from the mill and distribution holes to the underground.
- / Mine ventilation fans and mine air heater with ventilation raise to the mine workings.
- / One WRF and one ore rock pile.

There is currently no additional surface infrastructure related to the Principal Mine area. A five-kilometer track drift joins the East and West mines and provides access to the Principal Mine at the 280m level. After the East Mine was closed, a bulkhead was constructed on the track drift to control water flow to the West Mine.

The power supply of the site is provided by a 55km, 120kV power line, from the town of Normétal.

1.3.11 MARKET STUDIES

Hecla currently has a refining agreement with Asahi Refining Canada (Asahi) whereby the gold and silver is refined and credited to Hecla's account at Asahi. The doré bars produced at Casa Berardi are refined at Asahi's facilities in Brampton, Ontario, Canada.

Gold and silver bullion is sold through commercial banks or metal traders via a sale contract at spot prices. Settlement of funds from bullion sales occurs two business days after the contract date.

The terms and conditions of the refining and bullion sales contracts are typical and consistent with standard industry practice and would be similar to contracts for the supply of gold elsewhere in North America.

16 16

1.3.12 ENVIRONMENTAL STUDIES, PERMITTING AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

Hecla has sufficiently assessed the environmental impact of the operation, and subsequent closure and remediation requirements such that Mineral Resources and Mineral Reserves can be declared, and the mine plan deemed appropriate and achievable. Closure provisions are appropriately considered, and monitoring programs are in place.

Hecla has developed a community relations plan to identify and ensure an understanding of the needs of the surrounding communities and to determine appropriate programs for addressing those needs. Hecla appropriately monitors socio-economic trends, community perceptions, and mining impacts. Current permits held by Hecla for the Property are sufficient to ensure that planned surface and underground mining activities through 2026 are conducted within the regulatory framework required by regulations.

Beyond 2026, three additional open pits along with associated waste rock storage facilities and other infrastructure are expected to be developed at the Property. This planned development may require an Environmental Impact Assessment (EIA) at the site. Hecla expects to submit a project notice to the Provincial Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) in 2024. The notice is planned to include an overview of the proposed development and a description of the plan of operations. The EIA process typically takes several years to complete. Hecla expects that all necessary permits will be obtained, and that mining of the planned open pits can take place in accordance with local, provincial, and national regulatory frameworks.

There are currently no known environmental, permitting, or social/community risks that could impact the Mineral Resources or Mineral Reserves.

1.3.13 CAPITAL AND OPERATING COST ESTIMATES

The estimated capital costs for Casa Berardi are presented in Table 1-4. The majority of the growth capital is to be spent over the period 2028-2033.

Table STYLEREF 1 \s	1 LOM Capital	Cost Summary
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Description	Units	Total	2024-2027	2028-2033	2034-2037
Growth Capital Costs USD\$	US\$(000)	421,455	83,368	338,087	-
Sustaining Capital USD\$	US\$(000)	76,972	38,937	27,490	10,545
Salvage Value	US\$(000)	(19,736)	-	-	(19,736)
Reclamation & Closure	US\$(000)	21,561	-	-	21,561
Total Capital Costs USD\$	US\$(000)	500,253	122,305	365,577	12,371

The capital costs are based on updates from equipment suppliers and verified with engineering companies providing services to Casa Berardi. The capital costs accuracy would be considered +-15% with zero contingency. Major Projects include permitting costs for the LOM which include environmental, hydrogeological, and geotechnical studies, and condemnation drilling. Mine Stripping includes the overburden removal from WMCP and Principal pits. Open pit costs include mobilization of the open pit contractor and capitalized stripping costs. In year 2037 there is a salvage value of approximately US\$19.7 million for mine and other equipment that can be sold.

The estimated operating costs over the LOM (2024 to 2035) are presented in Table 1-5.

	ing cost summary	
Itom	Total LOM	Total LOM
nem	(US\$000)	(US\$000) (US\$/t milled)
Tonnes Milled (000 t)	14,383	
Mining	395,611	27.51
Processing	330,271	22.96
Administration	71,704	4.99
Total	797,586	55.45

Table STYLEREF 1 \s 1-. LOM Operating Cost Summary

Hecla-forecasted operating costs estimates are derived from annual budgets and historical actuals over the long life of the current operation. The operating costs accuracy would be considered +-15% with zero contingency.

2.0 INTRODUCTION

RESPEC Company LLC (RESPEC) was retained by Hecla Mining Company (Hecla) of Coeur d'Alene, Idaho, USA, to prepare an independent Technical Report Summary (TRS) on the Casa Berardi Mine (Casa Berardi or the "Property"), located in Québec, Canada. The purpose of this TRS is to support the disclosure of the Casa Berardi Mineral Resource and Mineral Reserve estimates as of December 31, 2023. This TRS conforms to the United States Securities and Exchange Commission's (SEC) Modernized Property Disclosure Requirements for Mining Registrants as described in Subpart 229.1300 of Regulation S-K, Disclosure by Registrants Engaged in Mining Operations (S-K 1300) and Item 601 (b)(96) Technical Report Summary. There has been one previous TRS for Casa Berardi prepared by SLR Consulting (Canada) Ltd. (SLR) and dated February 21, 2022 (SLR, 2022). The current TRS herein draws extensively from SLR 2022 and supersedes the SLR 2022 TRS.

In this TRS, the term "RESPEC" refers to Qualified Persons (QPs) employed by RESPEC, as well as RESPEC employees working under the direct supervision of RESPEC QPs.

The Casa Berardi operation includes several open pits and two underground mines. Collectively, these workings produced approximately 3.06 million ounces (Moz) Au (recovered) since commencing production in 1988, including approximately 2.37Moz Au (recovered) since production recommenced in November 2006.

The Casa Berardi processing facilities consist of a mill, with the ability to process 4,100tpd, and a carbon-in-leach (CIL) process to recover gold from the ore.

Production for Casa Berardi over the current life of mine (LOM), 2024 to 2037, is planned to comprise 209 thousand tonnes (kt) from the underground operations in 2024 and 14.2 million tonnes (Mt) from the open pit operations from 2024 until 2037. Gold production over the LOM is forecasted to total 1.04Moz Au (average of 86,000oz Au per annum) while recovered silver is forecasted to total 249,000oz Ag (average of 20,700oz Ag per annum).

2.1 SITE VISIT

RESPEC visited Casa Berardi September 18-22, 2023. The initial F160 Pit Phase was nearing completion while RESPEC was at site, and underground mining operations were expected to cease within a year. RESPEC held meetings with site personnel and followed up with several teleconference meetings after the site visit.

RESPEC engineering QPs visited the F160, East Mine Crown Pilar (EMCP), western extension (XMCP) Pit, the West Mine underground, tailings storage facilities (TSF), core logging facilities, and surface infrastructure.

The geology of the gold mineralization was observed underground in the Principal and West deposits, in the F160 and EMCP open pits, and in core from various areas by RESPEC's geology QP. An underground diamond drill in the process of drilling core hole CBW-1223 was also visited. Core processing and sample handling procedures were reviewed in the core shack, and Hecla provided a tour of the mine laboratory. Resource modeling and estimation procedures were discussed in detail with Hecla Québec's Principal Geologist, Real Parent.

2.2 SOURCES OF INFORMATION

Most of the information in this TRS has been drawn from Hecla company files and other sources as cited. Section 10.0 Mineral Processing and Metallurgical Testing, and Section 14.0 Processing and Recovery Methods were contributed by SLR.

During the preparation of this TRS, discussions were held with Hecla personnel to obtain information and data contained in the technical report summary or used in its preparation.

The documentation reviewed, and other sources of information as cited, are listed in Section 24.0 References.

2.3 UNITS AND ABBREVIATIONS

Units of measurement used in this TRS conform to the metric system. Currency, units of measure, and conversion factors used in this report include:

Linear Measure 1 centimeter 1 meter 1 kilometer	= 0.3937 inch = 3.2808 feet = 0.6214 mile	= 1.0936 yard
Area Measure		
1 hectare	= 2.471 acres	= 0.0039 square mile
Capacity Measure (liquid 1 liter	d) = 0.2642 US gal	llons
Weight		
1 tonne	= 1.1023 short t	ons $= 2,205$ pounds
1 gram	= 0.03215 troy of	ounces
1 kilogram	= 2.205 pounds	
Grade	-	
1 gram/tonne	= 0.0292 troy ou	inces/short ton

Currency in this TRS is in United States dollars (US\$) unless otherwise noted. Canadian dollars (C\$) have been converted to US\$ dollars at an exchange rate of US\$1 = C\$1.300 unless otherwise noted.

Abbreviation	Unit	Abbreviation	Unit
m	Micron	kVA	kilovolt-amperes
mg	Microgram	kW	kilowatt
а	Annum	kWh	kilowatt-hour
А	Ampere	т	1:4
Ac	Acre	L	inter
20			

Abbreviation	Unit	Abbreviation	Unit
AMSL	Above Mean Sea Level		
bbl	Barrels	lb	pound
Btu	British thermal units	L/s	liter per second
°C	degree Celsius	m	meter
C\$	Canadian dollars	М	mega (million); molar
cal	Calorie	m ²	square meter
cfm	cubic feet per minute	m ³	cubic meter
cm	Centimeter	m ³ /h	cubic meters per hour
cm ²	square centimeter	mi	mile
d	Day	min	minute
dia	Diameter	mm	micrometer
dmt	dry metric tonne	mm	millimeter
dwt	dead-weight ton	mph	miles per hour
°F	degree Fahrenheit	MVA	megavolt-amperes
ft	Foot	MW	megawatt
ft ²	square foot	MWh	megawatt-hour
ft ³	cubic foot	OZ	Troy ounce (31.1035g)
ft/s	foot per second	oz/st, opt	ounce per short ton
g	Gram	ppb	part per billion
G	giga (billion)	ppm	part per million
Gal	Imperial gallon	psia	pound per square inch absolute
g/L	gram per liter	psig	pound per square inch gauge
Gpm	Imperial gallons per minute	RL	relative elevation
g/t	gram per tonne	S	second
gr/ft ³	grain per cubic foot	st	short ton
gr/m ³	grain per cubic meter	stpa	short ton per year
ha	Hectare	stpd	short ton per day
hp	Horsepower	t	metric tonne
hr	Hour	tpa	metric tonne per year
Hz	Hertz	tpd	metric tonne per day
in	Inch	US\$	United States dollar
in ²	square inch	USg	United States gallon
J	Joule	USgpm	US gallon per minute

Abbreviation	Unit	Abbreviation	Unit
k	kilo (thousand)	V	volt
kcal	Kilocalorie	W	watt
kg	Kilogram	wmt	wet metric tonne
km	Kilometer	wt%	weight percent
km ²	square kilometer	yd ³	cubic yard
km/h	kilometer per hour	yr	year
kPa	Kilopascal		

3.0 PROPERTY DESCRIPTION

3.1 LOCATION

The Property is located in the Province of Québec, approximately 95km north of the town of La Sarre, in the James Bay Municipality (Figure 3-1). The mine is located at longitude 79° 16' 46.4" and latitude 49°33'56.7". The Property is bounded in the west by the Québec/Ontario border and covers parts of Casa Berardi, Dieppe, Raymond, D'Estrées, and Puiseaux townships.

The Property extends east to west for more than 37km and is up to 3.5km wide in a north to south direction (Figure 3-2.). The immediate mine area comprises three mining leases covering an area of 574 hectares. The gold deposits are located along an east-west trending mineralized corridor and are included within the East and West mine areas (Figure 3-2.; Figure 3-3).



Figure STYLEREF 1 \s 3-. Project Regional Location Map



Figure STYLEREF 1 \s 3-. Property Location Map (from Hecla, 2023)

Figure STYLEREF 1 \s 3-. Plan View of Current and Planned Infrastructure



3.2 LAND TENURE

RESPEC is not an expert on land and mineral tenure, legal matters pertaining to land and mineral tenure or rights to such tenure. RESPEC has therefore fully relied on Mr. Keith Blair, Chief Geologist, Hecla, and Mr. Patrice Simard, Geology Superintendent, Hecla Québec, for the information disclosed in this section of the TRS.

The Property consists of 391 contiguous designated claims, covering a total area of 19,150 hectares, and three mining leases, BM 768, BM 833, and BM 1054 covering areas of 397 hectares, 84 hectares, and 93 hectares, respectively (Figure 3-4). The Property area totals 19,725 hectares. Other legal titles include non-exclusive leases BNE 25938, tailings lease 70218, and two waste rock facility (WRF) leases 192410 and 819410. Legal titles are under the name of Hecla Québec.

In September 1998, Aurizon completed the acquisition of all Casa Berardi assets and mining rights for the Property. Hecla acquired Aurizon in June 2013 and the company was renamed Hecla Québec, a wholly owned subsidiary of Hecla. By 2012, Lake Shore Gold Inc. (Lake Shore) earned into a 50% interest in certain claims and mineral rights within the Casa Berardi Exploration Property (Casa Exploration Property), but not in areas where production was occurring, pursuant to a 2007 option agreement between the parties. In February 2016, Tahoe Resources Inc. (Tahoe) purchased Lake Shore, and at the end of 2016, they opted to sell their 50% interest in the Casa Exploration Property to Hecla in exchange for C\$6 million (US\$ 4,433,400 million) and 1% NSR on 227 claims. Hecla repurchased the related 1% NSR in June 2021. From June 1, 2013 to December 31, 2021, production from Casa Berardi totaled approximately 9.0Mt at an average grade of 4.88g/t Au for a total of 1.17Moz Au recovered.

According to the Québec Mining Act, renewal of claims takes place every two years, with costs dependent on area. Mining leases are renewed annually. The Casa Berardi claims and mining leases will be renewed for amounts of 25

US\$41,633.25 (C\$55,861.06), in accordance with the 2024 rates set by the government. The Casa Berardi claims are in good standing. The renewal costs are adjusted to the annual inflation rate.

The Québec Mining Act stipulates that a titleholder is required to conduct statutory work during the validity period of the claim. Each claim or lease shows excess spending amounts for required works. These amounts are put to the credit of the claims and are expected to cover several years in most cases. The Property has excess work credits of approximately US\$15,480,559.52 (C\$20,770,910.40).

The school taxes to the James Bay School Board and the Lac-Abitibi School Board have been paid for 2023.

The municipal taxes to the James Bay, Villebois, Dupuy, and La Sarre municipalities have been paid for 2023.

26 26

Figure STYLEREF 1 \s 3-. Property Claim Map



(from Hecla, 2023, central un-patterned area shows mining leases covering the East, Central and West mining areas)

27 27

3.3 ENCUMBRANCES

Hecla has all the required permits to conduct the current mining operations on the Property. The Property will be undergoing an Environmental Impact Assessment (EIA) for planned development and mining beyond 2026. There are no significant encumbrances to the Property nor any violations or fines.

3.4 ROYALTIES

The Casa Berardi landholdings within the three mining leases are not subject to any royalty and Hecla, through its wholly owned subsidiary, Hecla Québec, holds a 100% interest in the Casa Berardi property. Most of the Casa Berardi Mineral Reserves and Resources and the processing plant are located inside the mining leases Figure 3-4. The Casa Berardi property outside the mining leases is completely owned by Hecla Québec. There is a sliding net smelter return (NSR) royalty (currently 3.0%) held by Newmont Canada Corp. on 52 claims within the land tenure (Figure 3-4).

3.5 OTHER SIGNIFICANT FACTORS AND RISKS

The authors are not aware of any significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the Property, other than those discussed in this report.

- / The appropriate environmental permits have been granted for the current operation.
- / Hecla does not have permits for facilities labeled as "Preliminary". The locations, size, and timing of facilities labeled as "Preliminary" have not been finalized and are subject to future long-term mine plans.
- / As of the effective date of this TRS, environmental liabilities are limited to those that would be expected to be associated with an operating gold mine where production occurs from underground and open pit sources, including roads, site infrastructure, and WRFs.
- / Hecla is not aware of any significant environmental, social, or permitting issues that would prevent continued exploitation of the Casa Berardi deposits.
- / Information provided by Hecla land tenure experts supports that the mining tenure held is valid and is sufficient to support the declaration of Mineral Resources and Mineral Reserves, subject to those issues discussed in Section 25.0.
- / Hecla holds sufficient surface rights in the Project area to support the mining operations, including access and power line easements.

28 28

4.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

4.1 TOPOGRAPHY, ELEVATION AND VEGETATION

The topography at the Casa Berardi property is gentle with elevations ranging from 270m and 360m above mean sea level (AMSL). The terrain is characterized by swamps and alluvial coverage which is locally up to 60m deep. The region falls within the boreal zone and the spruce and moss domain. Forested areas of the Property are predominately characterized by jack pine and spruce but have generally been logged out. The active mine area is characterized by swamps and is classified as a bare to semibare wetland. The Turgeon River extends across the western portion of the Property and Lac Jérome is in the north central portion of the Property.

4.2 CLIMATE

The data used in this section is from Hecla (2014) and is based on a weather station located near the Property. The mean annual temperature for the Property area is -5°C, with an average high in July of 17°C, and an average low in January of -18°C.

The average annual precipitation in the Property area is about 91cm. Rain precipitation is greatest in July and August, averaging 10.5cm per month. While snow precipitation can occur from October to April, most falls in February and March when the monthly average can reach more than one meter (10.7cm expressed in centimeters of water content). Exploration and mine operations can take place year-round.

4.3 ACCESS

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The Property is located 95km north of the town of La Sarre in the Abitibi region of northwestern Québec. The nearest commercial airport is located at Rouyn-Noranda which is approximately 175km south of the Property. La Sarre can be reached from Rouyn-Noranda via provincial roads 101 and 111. A 39-kilometer all season gravel road to the Property diverges from the paved road linking La Sarre and the Selbaie Mine through the village of Villebois. The exit is approximately 21km north of Villebois.

4.4 LOCAL RESOURCES

The Abitibi region has a long history of mining activity, and mining suppliers and contractors are locally available. Both experienced and general labor is readily available from the La Sarre area, a municipality of about 7,400 inhabitants (2021 census). Hecla has had success in hiring experienced staff and personnel with good mining expertise. Casa Berardi generally has the support of local communities.

4.5 INFRASTRUCTURE

The active mining portion of the Casa Berardi Property is in the central part of the overall land package (Figure 3-2). This portion of the property is divided into the East and West mine areas which include most of the surface infrastructure, open pits, and underground mines (Figure 4-1). A gravel road connects the East and West mine areas and production and staff roads. Roads will be adjusted as required during the life of the mine. Exploration roads provide access to the rest of the Property. A detailed discussion of onsite infrastructure and planned infrastructure is presented in Section 15.0 of this TRS.

Power supply for the entire Property is provided by a 55km-long, 120kV power line, from the town of Normétal.

There is sufficient suitable land available within the mineral tenure held by Hecla for tailings disposal, mine waste disposal, and installations such as the process plant and related mine infrastructure.

A review of the existing power and water sources, personnel availability, and transport options by Hecla indicates that there are reasonable expectations that sufficient labor and infrastructure will continue to be available to support the extraction of the estimated Mineral Resources, Mineral Reserves, and to execute the proposed LOM plan.

30 30



Figure STYLEREF 1 \s 4-. Surface Infrastructure

5.0 HISTORY

5.1 EXPLORATION AND DEVELOPMENT HISTORY

5.1.1 1974 TO 1996

Prior to 1974, the Casa Berardi area was explored for base metal deposits. In 1974, the first 13 claims were staked by Inco Gold Ltd. (Inco Gold). The discovery hole was drilled in 1981, and 590 additional claims were staked. In 1983, a joint venture (JV) agreement was reached between Inco Gold (60%) and Golden Knight Resources Inc. (Golden Knight) (40%). The subsequent years were marked by exploration drilling and, eventually, project engineering and construction. Under the Inco Gold-Golden Knight JV, commercial gold production from the East and West mines began in 1988 and 1990, respectively.

In 1991, TVX Gold (TVX) acquired Inco Gold's 60% interest in the Property. In 1994, TVX and Golden Knight purchased the remaining interest in the Domex claim block, a part of the Principal (Main) Zone between the West and the East Mine, from Teck Corporation.

By 1996, 4,777 holes had been drilled on the Property for a total of 649,737.45 meters. Approximately 92% of these holes were located in the area between the West and East mines.

The first mineral reserve estimate for Casa Berardi was published in 1987. Production began at the East Mine in September 1988 and at the West Mine in April 1990. In January 1997, TVX announced the closure of the East Mine due to ground control issues. Two months later, the West Mine was also closed.

5.1.2 AURIZON (1997 TO 2013)

Casa Berardi was offered for sale in the fall of 1996, and in January of 1997 Aurizon signed an agreement and completed the acquisition of all Casa Berardi assets and mining rights. Following the acquisition of Casa Berardi, Aurizon conducted exploration core drilling of more than 170,189m (141,541m from surface and 28,648m from underground). The primary objective of the campaign was to increase the gold mineral inventory of the Property by drilling prospective sectors below the 400m level in the West Mine area. The program resulted in the discovery of the 113 Zone and other smaller mineralized bodies.

Using the results of this drilling as a basis for Mineral Resource estimation, Aurizon issued an internal study in March 2000, which provided positive indications of the economic potential of the West Mine area below the 400m level. Following two years of limited exploration drilling activities due to depressed gold prices, Aurizon re-embarked on a surface exploration program that led to the discovery of additional zones east of the 113 Zone.

To increase the confidence level of the Mineral Resources and prove the potential of a mining operation, an underground exploration program was initiated in April 2003 to test the continuity of the 113 Zone mineralization. In 2003, the West Mine ramp was also extended 1,074m from the 450m level to the 550m level, to provide access to the 113 Zone for metallurgical test work and to provide drill bases for infill definition drilling. Approximately 40m of the exploration drift was completed by the year-end, allowing for the completion of 1,402m of definition core drilling. A further 21,000m of surface drilling was completed in the 118 through 120 zones during 2003.

In 2004, US\$ 21.6 million (C\$27.6 M) was invested for the construction of the surface foundations and shaft collar, a shaft pilot raise from the 550m level to surface, 878m of exploration drifts, 64,724m of exploration and definition drilling, 102m of ventilation raising, and 1,591m of ramping down to the 550m level. Met-Chem Canada Inc. (Met-Chem) was commissioned to prepare a feasibility study. Aurizon proceeded with the implementation and construction of the West Mine infrastructure.

In 2005, US\$ 34.4 million (C\$43.8 million) was invested in Casa Berardi for:

- / Completion of two feasibility studies (the Feasibility Study by Met-Chem in January 2005, based upon Mineral Reserves above the 700m level, and the Updated Feasibility Study in October 2005, incorporating Mineral Reserves to the 900m level.
- / Construction of a new headframe, hoistroom, and ore and waste bins.
- / Shaft sinking 289.6m from surface.
- / 113 Zone ramp extension 1,063.8m down to the 680m level.
- / Access to the Lower Inter Zone down to the 570m level with the completion of 429.8m of ramping and drifting.
- / 685.8m of drifting and 365.8m of ventilation raising.
- / Initiation of mill rehabilitation with the refurbishing of the crushing circuits, conveyors, and assay laboratory.
- / 32,947m of underground definition drilling from 135 holes, 26,068m of surface core drilling from 68 holes, and detailed engineering for the shaft and surface infrastructure.

In 2006, an additional US\$59.2 million (C\$75.5 million) was invested to fund construction and development. In early November 2006, Aurizon completed construction and development at the West Mine area and commenced underground mining and milling operations.

In 2007, US\$13.3 million (C\$16.9 million) was invested to fund pre-production up to May 1, 2007, the date of achieving commercial production. From 2008 to 2013, a total of US\$232.9 million (C\$297 million) was invested in fund development, infrastructure improvements, new equipment, and exploration expenses.

In September 1998, Aurizon completed the acquisition of all Casa Berardi assets and mining rights for the Property. Hecla acquired Aurizon in June 2013 and the company was renamed Hecla Québec, a wholly-owned subsidiary of Hecla. By 2012, Lake Shore Gold Inc. (Lake Shore) earned into a 50% interest in certain claims and mineral rights within the Casa Berardi Exploration Property (Casa Exploration Property), but not in areas where production was occurring, pursuant to a 2007 option agreement between the parties. In February 2016, Tahoe Resources Inc. (Tahoe) purchased Lake Shore, and at the end of 2016, they opted to sell their 50% interest in the Casa Exploration Property to Hecla in exchange for C\$6 million (US\$ 4,433,400 million) and 1% NSR on 227 claims. Hecla repurchased the related 1% NSR in June 2021.

5.2 HISTORICAL DRILLING - 1957 TO 2013

Table 5-1 summarizes all known drilling carried out by Aurizon and Lake Shore from 1997 through 2013, and previous operators from 1957 through 1996. All holes are core, or presumed to be core, unless otherwise specified in the table. No information is available for drilling done prior to Aurizon, and for Aurizon prior to 2006. Aurizon conducted exploration and development drilling in and around the Casa Berardi Mine areas. Lake Shore drilled from 33

2008 to 2012 under an agreement with Aurizon and focused on the Casa Berardi Property outside the Casa Berardi Mine.

Company	Year	Sur	face	Underg	ground	Total	
		Holes	Meters	Holes	Meters	Holes	Meters
Inco Cold Coldon	1957-1996 Core	252	354,985.25	2,135	221,716.74	2,387	576,701.99
Knight, TVX	1957-1996 RC	2390	73,035.46			2,390	73,035.46
	1997 to 2003	295	141,541.22	202	28,647.65	497	170,188.87
	2004	50	26,676.75	243	38,046.80	293	64,723.55
	2005	68	26,068.45	135	32,947.05	203	59,015.50
	2006	118	51,763.56	428	51,203.70	546	102,967.26
	2007	31	19,331.70	273	20,520.80	304	39,852.50
Aurizon	2008	46	16,691.82	293	26,075.60	339	42,767.42
	2009	68	28,428.91	484	57,806.40	552	86,235.31
	2010	102	47,368.74	425	71,143.40	527	118,512.14
	2011	133	44,294.61	418	70,674.50	551	114,969.11
-	2012	73	34,046.31	560	71,186.30	633	105,232.61
	2013	68	20,744.90	566	48,537.00	634	69,281.90
Total Aurizon		1,052	456,956.97	4,027	516,789.20	5,079	973,746.17
Lake Shore	2008 Core	12	4,470.12			12	4,470.12
(External to Mine Area)	2008 RC	79	1,907.90			79	1,907.90
	2009	16	7,219.14			16	7,219.14
	2010	11	4,111.00			11	4,111.00
	2012	1	699.00			1	699.00
Total Lake Shore		119	18,407.16			119	18,407.16
Unknown	Unknown	1200	41,176.17	1	30.00	1,201	41,206.17
Total Historical Drilling		4,761	589,575.76	4,028	516,819.20	8,789	1,106,394.96

Table STYLEREF 1 \s 5-. Historical Drilling 1957 through 2013

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5.2.1 HISTORICAL DRILLING – AURIZON, 2006 TO 2013

Aurizon conducted various exploration and delineation drilling programs in and around the Casa Berardi Mine from 2006 to 2013. Nothing is known regarding the drilling and sampling procedures followed during this period, other than that the drilling was conducted using wireline core and reverse-circulation (RC) methods. Apparently, Hecla has not determined and compiled the core diameters used based on review of historical drill logs and inspection and re-sampling of historical drill samples. RESPEC recommends that Hecla compile such information if it is available. Unless stated otherwise, all historical drilling summarized in this section of the TRS was conducted with wireline core methods.

In 2006, definition drilling was done in the 113 and the Lower Inter zones. Exploration drilling was carried out to follow up on Inferred Mineral Resources in the 118 to 120 zones that were identified by wide-spaced drilling from surface. The extension of mineralization contained in the EMCP was also tested. Exploration of the 122 Deep Zone continued where underground exploration intersected high grade mineralization along the Casa Berardi Fault, 1,000m below surface and 800m from the existing infrastructure.

In 2007, definition drilling continued in the 113 Zone. The first phase of definition drilling in the Lower Inter Zone was completed. Underground exploration drilling was focused in the118 to 120 zones.

Surface exploration drilling targeted the 123 Zone, the most significant discovery of mineralization to date outside the Casa Berardi Fault. The 123 Zone is located 350m south and 900m east of the existing West Mine infrastructure.

In 2008, surface drilling was conducted at the East Mine to convert Inferred Mineral Resources to Indicated Mineral Resources. Definition and infill drilling programs were conducted in the 113 and Principal area zones.

In 2009, surface drilling was mainly concentrated in the Principal area to increase Mineral Resources and to evaluate open pit and underground potential. Underground drilling was carried out in the 118 and 123 zones from the 810m level exploration drift. Definition and infill drilling were primarily carried out in the 113, 118, 123, and Lower Inter zones.

In 2010, surface drilling was predominately concentrated in the Principal area of the West Mine to convert Mineral Resources into Mineral Reserves. Underground drilling was carried out in the 118 and 123 zones from the 810m level exploration drift. Definition and infill drilling were primarily carried out in the Lower Inter, 109, 113, 115, 118, 123, and 124 zones.

In 2011, the surface drilling tested down-plunge of the Lower Inter Zone, the northeast extension of the 118, 123 and 124 zones, deep down-plunge of the 123 Zone, the potential at depth of the East Mine, and the open pit potential of the 160 Zone. Underground drilling was carried out to verify continuity and extensions of the Principal Mine, primarily in the 118 Zone. Definition and infill drilling were conducted in the 109, 118, 119, 123, and 146 zones.

In 2012, the surface drilling program was carried out to test the western extension of the 160 Zone, the eastern extension of the Principal area in the West Mine, and the potential at depth of the Lower Inter, 123 zones, and the East Mine. Underground exploration drilling was conducted to verify continuity and extensions of the Lower Inter, Principal Mine, 118, 140, and 160 zones.

Hecla commenced acquisition of the Casa Berardi project in 2013. Drilling by Aurizon was ongoing at the time. The combined discussion of drilling target areas for both companies during the entire year are discussed here, and not repeated in Section 7.0

Surface drilling tested the extensions of the 123 and 134 zones. Underground drilling was primarily carried out in the 140 and 159 zones, while definition and infill drilling were mainly carried out in the 113, 115, 118, 119, 123 zones.

5.2.2 HISTORICAL DRILLING LAKE SHORE, 2007 TO 2012

Lake Shore focused their exploration drilling on the Casa Berardi Property outside the Casa Berardi Mine, primarily in the Lac Germain prospect and in the West Block area.

5.2.3 2008

In the winter of 2008, an initial drilling program comprising 12 holes, totaling 4,470m, was carried out. Ten holes were drilled approximately 7.5km east of the East Mine and Mill Complex, in an area now known as the Lac Germain prospect. Two holes, CE-08-06 and CE-08-09, were drilled near Inco Gold's hole 84716-0, two kilometers to the west of this area. In addition, 79 RC holes were completed in the East Block.

The winter 2008 diamond drilling program succeeded in the discovery of the G Zone at the Lac Germain prospect. The best intersection in hole CE-08-03 yielded 13.03g/t Au over 6.45m within a broader interval of 8.58g/t Au over 10.4m. This mineralization was located approximately 90m below a historical value of 11.11g/t Au over 2.24m in Inco Gold's hole 84724-0. The G Zone was then subdivided into three sub-zones referred to as the G-S Zone, G-Mid Zone, and G-N Zone. Gold mineralization was associated with quartz-carbonate-sulfide veins within sedimentary rocks, north of a mafic volcanic package. Higher-grade mineralization displayed stronger wall rock alteration and a higher sulfide content, with some quartz and sulfide stringers at a shallow angle to the core axis.

The 79-hole RC drill program was designed to test new areas and to follow up on areas of interest identified during the compilation of previous data, including two dispersal trains in glacial till east of the Theo River area. A total of 173 bedrock samples were collected during the RC program and assayed for gold. The sources of the two gold dispersal trains were interpreted to be near the northern contact between mafic volcanic and sedimentary rocks. The first dispersal train was located south of Lake Shore's drill holes CE-08-06 and CE-08-09. The second gold dispersal train occurred approximately 4.1km east of Lac Germain and 5.1km east of the Lac Germain prospect.

5.2.4 2009

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In 2009, Lake Shore drilled 16 holes totaling 7,219m in the Property. Ten of the 16 holes, totaling 3,979m, were drilled on the Lac Germain prospect while the remaining six, totaling 3,240m, were drilled in the West Block between the West Mine and the former Agnico Eagle claim block. The drilling at the Lac Germain prospect extended the G Zone. Hole CE-09-12, to the east, returned 2.33g/t Au over 7.3m, and hole CE-09-18, to the west, returned 3.04g/t Au over 6.3m. Drilling in the West Block led to the discovery of a new gold zone in hole CW-09-23 that returned 3.44g/t Au over 3.9m in a broader 23.2m gold anomalous interval. Mineralization consisted of ribboned, quartz-ankerite veins with 5% to 70% pyrite and pyrrhotite and minor arsenopyrite, within a large package of chert-sulfide iron formation in strongly deformed and altered graphitic wacke. 36

5.2.5 2010

In 2010, Lake Shore drilled 11 holes totaling 4,111m. Eight holes totaling 2,814m, were drilled in the Lac Germain prospect, while the remaining three targeted aeromagnetic anomalies similar to the one at the Lac Germain prospect. New drilling results on the G Zone included 11.54g/t Au over 3.9m in CE-10-30 and 4.75g/t Au over one meter in hole CE-10-32, both located in the west-central portion of the G Zone. On the eastern end of the G Zone, holes CE-10-29 and CE-10-31 returned several anomalous and high-grade gold intervals, notably 40.2g/t Au over 0.4m and 8.4g/t Au over 1.4m in hole CE-10-29, and 14.7g/t Au over 0.5m in hole CE-10-31.

Hole CE-10-35, which tested a magnetic anomaly to the east of Lac Germain approximately five kilometers east of the Lac Germain prospect, did not intersect gold mineralization. Holes CE-10-36 and CE-10-37 were drilled to test magnetic anomalies at the west end of the East Block. Only one interval in hole CE-10-36 yielded 1.63g/t Au over one meter. Hole CE-10-37 intersected a narrow quartz vein with one speck of visible gold that yielded no significant assay, and another quartz vein which returned 2.57g/t Au over 0.8m.

5.2.6 2012

During the summer of 2012, Lake Shore drilled hole CW-12-38 to test the down-dip extension of the gold mineralization intersected in hole CW-09-23. Hole CW-12-38 intersected some gold bearing mineralization including intervals of 3.24g/t Au over 1.5m, and 1.38g/t Au over 12.4m within which was a 3.1m interval grading 2.53g/t Au.

5.3 HISTORICAL PRODUCTION

Inco Gold's and TVX's total combined production for the period from 1988 to 1997 was 3.5Mt at an average grade of 6.1g/t Au totaling over 688,400oz of gold recovered, with an average mill gold recovery rate of 87%. Annual production during this period is summarized in Table 5-2.

Year	Tonnes Milled (t)	Grade (g/t Au)	Mill Recovery (%)	Gold Recovered (oz Au)
1988	124,057	5.9	88.0	19,025
1989	337,130	5.5	86.4	51,096
1990	361,935	8.9	87.4	88,999
1991	487,769	8.7	86.9	119,015
1992	315,938	9.3	87.1	80,319
1993	306,597	10.0	89.3	86,964
1994	550,638	6.5	86.8	97,518
1995	469,542	4.7	85.7	61,179
1996	498,405	5.4	87.2	76,039
1997	51,356	5.8	87.2	8,270
Total	3,503,367	6.1	87.0	688,424

Table STYI	LEREF 1 \s 5	Historical Mine	Production	1988 -	1997
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From 2006 through May of 2013, a total of 4.31Mt at an average grade of 7.08g/t Au were milled by Aurizon at Casa Berardi for a total of 0.98Moz recovered gold and an average gold recovery of 91.6% Table 5-3.

Company	Year	Tonnes Milled (t)	Grade (g/t Au)	Contained Metal (oz Au)	Gold Recovered (oz Au)	Gold Mill Recovery (%)
Aurizon	2006	68,481	8.58	18,891	17,731	93.9
	2007	545,259	9.78	171,416	159,469	93.0
	2008	654,398	8.16	171,628	158,830	92.5
	2009	688,677	7.77	172,013	159,261	92.6
	2010	722,746	6.76	157,134	141,116	89.8
	2011	698,123	8.00	179,462	163,845	91.3
	2012	693,859	6.77	151,059	136,848	90.6
	May-13	238,931	6.17	47,394	43,447	91.7
Total 2006 - mid-2013		4,310,474	7.08	1,068,997	980,547	91.6

Table	STYLEREF	1 \s 5	Casa	Berardi	Production	2006 to	mid-2013
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6.0 GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

This section of the TRS has been extracted and modified from SLR 2022, which was drawn from Clow et al. (2005). The text of Clow et al. (2005) was re-used in the technical reports by "Scott Wilson Roscoe Postle Associates Inc.", and "Roscoe Postle Associates (RPA) Inc.", between 2005 and 2011 as listed in Section 24.0. RESPEC has reviewed this information and believes it can be used for the purposes of this TRS. The reader is referred to Monecke, et al. (2017) and Azevedo, et al. (2022) for more recent and more comprehensive descriptions of the geologic setting, structural evolution and mineralization of the region where Casa Berardi is located.

6.1 REGIONAL GEOLOGY

The Property is located in the northern part of the Abitibi Sub province, within the Superior Province of the Archean core of the Canadian Shield. The Casa Berardi area is situated in the Harricana-Turgeon Belt, which is a part of the North Volcanic Zone. The regional geology is characterized by generally east-west assemblages of isoclinally folded and variably foliated and metamorphosed mafic volcanic rocks, flysch-type sedimentary iron formations, graphitic mudrocks, and a large granodioritic to granitic batholith (Figure 6-1). In this TRS, greenschist and higher-grade metamorphic rocks are referred to as the protolith rock types, which follows Hecla's longstanding usage of terminology for rock units within the region and the Casa Berardi Property.

Regional north-south compression events resulted in tight, kilometer-scale isoclinal folds and rotated the geological units into a vertical position. Structurally, the Property is within the Casa Berardi Break, a 15km wide corridor of strain that can be traced over 200km. Within the corridor, a network of east-west striking ductile, high strain deformation zones mainly follow the lithological contacts. The Casa Berardi Fault was generated during this stage by a movement at the contact of a graphitic unit. Large volcanic units, such as the Dieppe and the Joutel-Raymond domains, have formed competent cores within antiforms. These competent cores forced oblique movement and generated a polyphase elongated dome and basin fold pattern. This tectonic stage corresponds regionally to a 50% shortening and occurs under ductile conditions at a depth of six to ten kilometers.

Many significant deposits of different types have been exploited by past producers in the region. Base metals have been produced from the Joutel (Selbaie Mine, Estrades Mine) and Matagami camps. Farther east, and south of the Casa Berardi structural trend, is the former Telbel Mine of Agnico Eagle Mines Limited (Agnico Eagle). Other deposits have also been described on the Douay, Vezza, and Desjardins properties.

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Figure STYLEREF 1 \s 6-. Regional Geology of Northwestern Québec, Canada (from Hecla, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature)

6.2 **PROPERTY GEOLOGY**

6.2.1 STRATIGRAPHIC DIVISIONS

The Property is in the Taïbi volcano-sedimentary domain, which is bounded to the north by the Recher Batholith and to the south by various volcanic domains of tholeiitic to transitional affinity (Figure 6-2.). The Dieppe Domain covers half of the southwestern portion of the Property, and the Turgeon Domain lies immediately south of the eastern half of the Property.

Intermediate volcanic rocks of the Joutel-Raymond Group are located within the Turgeon Domain. The Dieppe volcanic unit is defined by thick (up to 100m), massive flows and associated intrusives with sub-ophitic textures. Discontinuous interbedded volcanic and sedimentary units are characterized by breccias, flows, tuffs, and cherty horizons that can be correlated with the Harricana Group. These units are in contact with graphitic sedimentary units and conglomerate in the gold deposit area and the eastern volcanic domain that covers the eastern half of the Property.

Figure STYLEREF 1 \s 6-. Casa Berardi Property Geology



A stratigraphic column for the Property is shown in Figure 6-3. The stratigraphic sequence starts with basal mafic volcanic rock (2,720 Ma to 2,730 Ma?). Pyrite-rich graphitic mudrock and the associated chert appear to be synchronous with the volcanism as evidenced by fragmentary hyaloclastite units of different compositions. The main sedimentary events involved deposition of a flysch sequence. Uranium-lead (U/Pb) dating of the iron formation and conglomerate indicates ages between 2,695 Ma and 2,692 Ma for this sequence.

Overburden, which consists of glacial till and alluvium, covers nearly the entire property. Thickness of the overburden ranges from 10m and 70m, with thicker coverage in the vicinity of the Casa Berardi Fault and thinner away from the fault.

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(from Hecla, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature)

Figure STYLEREF 1 \s 6-. Property Stratigraphic Divisions



(from Hecla, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature)

Well-defined flysch-type sedimentary units, like magnetite-rich wacke and conglomerate, can be traced over tens of kilometers without significant facies variations. Volcanic units extend for five kilometers to 15km and appear to form lens shaped bodies. Smaller lenses are a few hundred meters wide and are included in the Casa Berardi Deformation Zone.

Basaltic to andesitic flows, with thickness generally less than 50m, exhibit normal progression facies from coarse crystalline to massive, amygdaloidal, and vesicular in lapilli tuffs and tuffs. Flow contacts are identified by graphitic mudrock horizons. Gabbroic sills, which are related to the Dieppe Domain, are visible near the flow contacts. The Turgeon volcanism is considered a distal, near surface, more evolved volcanic environment. Graphitic rocks (in the form of pyritic and graphitic mudrock), black chert, wacke, and conglomerate form a 500m wide structural corridor that coincides with the Casa Berardi Fault.

6.2.2 STRUCTURES

The mafic volcanic units along the Taïbi Domain represent in plan view a lenticular shape corresponding to structural doming. Polarity inversions are recognized in sediments on both sides of their contacts with these units. Tight isoclinal folding forms an asymmetric dome and basin pattern which is well preserved around volcanic units in the iron formations. The main north-south compression event, which is responsible for an 8:1 elongation ratio, is indicated by a strong penetrative east-west foliation. 42

Two fabrics are observed:

/ A constant main penetrative east-west foliation, dipping 60° south.

/ A crenulation cleavage with an undefined oblique orientation related to northeast or northwest fold components. A higher strain rate along main sediment-volcanic contacts has resulted in a small-scale complex dome and basin folding and strong stretching mineral lineation with steep opposite plunges.

The Casa Berardi Fault is defined by a stratigraphic contact between a graphite-rich sedimentary rock sequence at the base of the Taïbi Domain, a northern continuous highly deformed and brecciated mafic fragmentary volcanic unit, and a southern highly deformed polymictic conglomerate unit (Figure 6-4). On the north side of the Casa Berardi Fault, a thick sequence of very homogeneous wacke belonging to the Taïbi Group is affected by amphibolite grade metamorphism. One kilometer north is the easterly elongated Recher Batholith, which is part of the northwestern boundary of the Abitibi greenstone belt.

The Casa Berardi Fault strikes east-west and dips 80° to the south. The Casa Berardi Deformation Zone corresponds to a braided network of laminated high-strain zones following drag-folded contacts of less deformed competent rocks such as mafic volcanic and polymictic conglomerate. The thickness of the affected rock package is used to define a 100m to 500m wide corridor that hosts all the mineralized zones explored and developed at Casa Berardi.



Figure STYLEREF 1 \s 6-. Mine Area Surface Geology

(from Hecla, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature)

The main brittle deformation and fault zones that have been developed correspond to the Casa Berardi Fault, bounding the strongly metamorphosed Taïbi flysch sediments with interlayered, tuffaceous intermediate units to the north and a package of strongly deformed graphitic sediments, conglomerate, and mafic volcanic flows to the south.

Inside the Casa Berardi Fault zone, ductile deformation intensity is heterogeneous. Foliation is uniform in larger competent rock units, such as mafic volcanic rocks and conglomerates. Kinematic indicators observed inside the main foliation, combined with the foliation dip pattern, indicate a south verging thrust movement.

6.2.3 ALTERATION AND METAMORPHISM

The regional metamorphism, which is generally of lower greenschist facies, is locally influenced by a series of syntectonic batholiths with associated thermal aureoles of higher metamorphic grades. The Recher thermal aureole limit follows the northern boundary of the Property, approximately two kilometers from the batholith and the Casa Berardi Fault.

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Inside the contact metamorphism halo, the rocks are characterized by a quartz-plagioclase-biotite assemblage. In the case of iron rich sediments, the rocks are metamorphosed to a chlorite-chloritoid assemblage. Garnet is locally visible. Mafic rocks are characterized by a plagioclase-tremolite assemblage. Chloritoid, plagioclase, and garnet are porphyroblastic, with chlorite-biotite pressure shadows indicating the synchronicity of crystallization and regional foliation.

6.3 MINERALIZATION

6.3.1 STYLES OF MINERALIZATION

Intense folding and metamorphism, and faulting centered on the Casa Berardi Fault, created favorable ground conditions for the deposition of gold mineralization at Casa Berardi. Hydrothermal fluids accessed the fault zone, which was developed along a 30 Ma to 40 Ma unconformity between the mafic volcanics and the flysch-type sedimentary sequence, deposited the gold mineralization and altered the material in the fault zone to silica and clay.

Three principal styles of mineralization have been recognized at Casa Berardi with gold occurring in: 1) quartz veins, 2) stockworks, and 3) banded iron formation. The mineralized zones are closely associated with the Casa Berardi Fault and are found on both sides of the fault. They are restricted to a 500m wide corridor that is folded and plunges lightly to the west.

6.3.2 VEINS

Alteration by carbonate-rich fluids tends to be strongest in high deformation zones, generally developed where graphitic mudrock horizons are localized at major rock contacts. This combination of factors acted as a ground preparation for the positioning of vein networks and long veins. The orientation of the veins and internal structures are generally concordant with the ambient fabric. The veins are localized within the foliation and contain two types: foliated host rocks and graphitic planes exhibiting a stylolithic pattern. Vein contacts are usually sharp, and the lack of fabric development indicates relatively late emplacement.

Gold mineralization is largely located in quartz veins, either in the form of multi-meter veins, small-scale veins, or veinlet networks. Veins are heterogeneous and contain a variable percentage of foliated enclaves exhibiting a laminated appearance. Veins are of different color, texture, and structure. Gold grades are generally correlated with increasing complexity. Different quartz phases have been recognized in mineralized veins to exhibit the following sequence:

/ Phase 1: grey quartz, with abundant sulfide and fluid inclusions, comprising more than 50% of mineralized veins;

- / Phase 2: mosaic micro-crystalline quartz occurring in higher grade portions of veins; and
- / Phase 3: non-mineralized coarsely crystallized white quartz which cuts the two other types.

The gold bearing vein filling is rarely massive, but often brecciated, micro-brecciated, or laminated. The fracture planes are rich in graphite and muscovite. Veins contain only 1% to 3% sulfides, predominately arsenopyrite and pyrite, as well as traces of sphalerite, chalcopyrite, pyrrhotite, tetrahedrite, galena, and gold. Arsenopyrite is the main gold-bearing sulfide present in all veins of the Casa Berardi deposit.

The granulometric distribution of gold is similar for all locations. According to petrographic compilations, 50% of the gold particles have an average diameter less than 30µm, and approximately 3% are greater than 100µm. The gold distribution inside 45

the mineral assemblage varies slightly according to the location of the mineralized zones. In the 113 Zone of the West Mine area, the vein mineralization, which is spatially close to the Casa Berardi Fault, is mostly free gold in contact with arsenopyrite grains ($< 10\mu m$ to 0.5mm). Arsenopyrite is associated with sphalerite and tetrahedrite in clusters, joints, and in micro-brecciated areas.

In the Southwest Zone, parts of the Principal area, and some areas of the East Mine mineralization, the gold distribution is variable and depends on the amount of sulfides in quartz veins and host rocks. Fifty percent of gold grains that have been observed are inclusions in pyrite and arsenopyrite crystals. Alteration halos with gold values greater than 100ppb Au and anomalous values of arsenic and antimony surround most of the mineralized zones along the Casa Berardi Fault. Those halos can be observed up to five kilometers away, on both sides of the Casa Berardi deposit.

6.3.3 STOCKWORKS

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Stockworks represent nearly the same volume as the large quartz veins. Stockwork mineralization is generally sub-economic, unless they occur in close proximity to larger quartz veins. Across the deposit, hanging wall stockworks are present in contact with important mineralized quartz veins. From 10% to 20% of the rock volume is composed of centimeter to decimeter-wide quartz veins with grades ranging from 1g/t Au to 10g/t Au. Veins of all textures and composition are concordant with host rocks. Foliated and finely bedded rocks are cut by concordant veins. Less deformed basalts or iron rich rocks subjected to alteration by carbonate-rich fluids, are cut by fracture-controlled vein sets.

At the deposit scale, the primary mineralized areas of the West and East mine have stockworks surrounding quartz cores. The stockworks are not limited to the main Casa Berardi Fault and can affect the total width as meter to decameter-wide mineralized subzones.

In the primary mineralized areas of the West Mine, the stockwork extends laterally for 400m at a 50° western plunge. In the East Mine, the overall mineralized system, including stockworks, extends laterally along the strike of the Casa Berardi Fault for 400m, reaching a depth of 800m down dip (Figure 6-5). The system crosses the Casa Berardi Fault at a low angle over 100m of strike length. Mineralization continues to the west on the south side of the Casa Berardi Fault and to the east on the north side of the fault.

6.3.4 GOLD-BEARING BANDED IRON FORMATION

Gold-bearing banded iron formation (BIF) is found in the 124-8, 124-1, and 116 zones of the Principal area, at the western extension of the East Mine pit in the 148-09 Zone, and at the extension of the East Mine area in the 160 Zone. These zones are restricted to the highly sheared, brecciated, and altered ferruginous sedimentary units occurring north of the Casa Berardi Fault. Mineralization occurs within meter to sub-meter quartz veins and stockworks with up to 10% chert-magnetite beds, and exhibits high sulfide content which consists of pyrite, arsenopyrite, traces of pyrrhotite, and little or no visible gold. These sulfides have replaced the oxide rich layers which surround the quartz veins and the veinlet stockworks. Strong carbonate and chlorite alteration halos surround the quartz rich areas.

6.3.5 MINERALIZATION NEAR THE WEST MINE INFRASTRUCTURE

The mineralized zones in the vicinity of the underground infrastructure of the West Mine are all located between sections 10, 350E and 11,250E, which correspond to the western limit of the Lower Inter Zone and the eastern limit of the 111 Zone, respectively (Figure 6-5). Mineralization occurs at the Casa Berardi Fault (in the 109, 111, 113, NW, NE zones), between the Casa Berardi Fault and the South Fault (in the 104, Inter, Lower Inter and 115 zones), and at the South Fault (in the South West zone). Mineralization at the West Mine is represented by two main types:

- / Low-sulfide quartz veins: networks of centimeter to multi-meter quartz veins located south of the Casa Berardi Fault in highly deformed volcanic and sedimentary rocks that are predominantly basalt, wacke, conglomerate, chert, and mudrock; and
- / Sulfide-rich stockworks: these represent the same volume as large quartz veins but have lower grades and are largely unexploited. Hanging wall stockworks are present in contact with important mineralized quartz veins across the Casa Berardi deposit.

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Figure STYLEREF 1 \s 6-. Section 11,385E, West Mine Including the 113 Zone and Casa Berardi Fault (from Hecla, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature)

The modeled mineralization for pit resource evaluation at the West Mine Crown Pillar (WMCP) is designated the 105 to 114 zones and occurs west of the West Shaft and from the surface to the 450m level. They include stacked quartz veins occurring at the Casa Berardi Fault above the 330m level in the Northwest, Northeast, 111 and 113 zones. Between the Casa Berardi

48 48

Fault and the conglomerate to the south, the Southwest (107), Southeast, and Inter (108) zones contain mineralized quartz veins with graphitic and sericitic schists with sulfides inside the South Fault corridor. The orientation of mineralization is mainly east-west with a south dip of 50° to 60° . Visible gold is associated with the veins. There is a low content of sulfides, primarily pyrite with traces of arsenopyrite. The mineralization plunges west at 15° and is open to the west along the South Fault. Further east, mineralization has a plunge of 20° east and is open to the south from the 100m level to the 450m level.

The Southwest (107-02 and 107-03 lenses) area occurs as meter to multi-meter quartz veins stacked along the South Fault and folded near the surface. The strike of the lenses is variable from east-southeast and dipping to the south at 50° to 60°. The Inter Zone (108-01, 02 and 04 lenses) occurs between the Casa Berardi Fault and the South Fault. The mineralized structure is located at the contact between the graphitic sedimentary units and a mafic volcanoclastic unit. The orientation of the mineralized structures is generally east-southeast striking with a shallow dip to the south of 5° to 45°. The zones typically extend 150m along strike and 75m along dip. The upper portion of the Inter Zone is connected to the Northeast Zone and its lower portion connects with the Southwest Zone. The type of quartz vein and mineralization is quite similar to the veins observed in the Lower Inter Zone.

6.3.6 MINERALIZATION ALONG THE CASA BERARDI FAULT

Mineralized zones such as the Northeast, Northwest, and 109 occur at the Casa Berardi Fault in the form of meter to multi-meter quartz veins. Veins occur over a distance of 330m along strike and from 250m to 550m elevation and have a direction which varies from northeast to nearly east-west with a sub-vertical dip. The 109 Zone has a sub-horizontal dip at its western limit and a steeper dip to the east where it connects to the 113 Zone.

The 113 Zone is a mineralized corridor with a width ranging from 20m to 70m. The strike length ranges from 150m at the 250m level to over 400m at the 550m level. This mineralization strikes east-southeast and dips to the south at 75°. From the 450m level to 800m level, the strike varies from east-west to east-southeast, with a sub-vertical dip (Figure 6-6). From the 810m level to the 1,000m level, mineralization occurs as meter quartz veins with visible gold and traces of fine disseminated pyrite and arsenopyrite. The zones strike north-northeast and dip to the southeast at 70°. The zones have a steep plunge to the east and the 113 Zone is open along the plunge and at depth.

6.3.7 MINERALIZATION BETWEEN THE CASA BERARDI AND SOUTH FAULTS

The Lower Inter, Inter, and 115 zones are relatively flat dipping and plunge at approximately 15° to the west on the flat portions. The zones become steeper and are disrupted by minor thrust faults near the Casa Berardi Fault and near the South and Lower Inter Faults.

The Lower Inter Zone (the 100 Zone) is located between the 375m level and 600m level, and from sections 10,525E to 10,360E. The Lower Inter Zone dips from 25° to 45° south and plunges to the west at 15°. The zone is controlled by the Casa Berardi and the Lower Inter faults and lies on top of the folded wacke-basalt contact (Figure 6-6). The thickness of the quartz vein varies from four meters to 50m, with the maximum thickness observed just beneath the contact of the two faults. The thinner quartz veins are observed down-dip, along the Lower Inter Fault, and extend for approximately 200m. Stacking of quartz veins is observed in a deformation zone that is located at the lithological contact between the footwall mafic volcanic rock and the hanging wall graphitic mudrock.

The Inter Zone is located from sections 10,600E to 10,950E, and from the 150m level to the 310m level. The mineralized structure is located at the contact between the graphitic sediments and a mafic volcanoclastic unit. The mineralized structure strikes southeast with a shallow dip to the south (5° to 45°) and extends 150m laterally and 75m along dip. Its upper portion is connected to the Northeast Zone where the quartz vein and mineralization are similar to the Lower Inter Zone.

The 104 Zone corresponds to the Lower Inter Zone that is steeply plunging to the west. The 104 Zone strikes east-northeast, dips to the southeast at 70°, and it is composed of quartz veins with visible gold and low sulfide content.

S N-Surface 5000 -100m 4900m Proposed Pit Outline Legend In. Zone & Qtz \ -200m icke ska Minde 200 Cher 🔲 Graphitic Sedi Fout Mineralized Zone Lev. 300m Existing Infras Past Productio -300m 50m Casa Berardi Mine WMCP A WMCP Area natic Section 10800E

Figure STYLEREF 1 \s 6-. Section 10,800E, West Mine Geology and Mining Infrastructure

(from Hecla - Casa Berardi, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature; heavy blue line shows limits of open pit as of 2023)

6.3.8 MINERALIZATION AT THE SOUTH FAULT

In plan view, the Southwest (107) and Southeast zones can be interpreted as a dome that is cut by the South Fault and by the subsidiary Auxiliary Fault. The mineralized system extends 200m laterally and 300m along dip, extending from surface to the 300m level.

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The main quartz vein structures are developed at the contact between a conglomerate and a graphitic mudrock and are associated with a large stockwork of disseminated sulfides. The internal vein structure shows variable orientations and is, in many places, brecciated. The mined and potentially mineable mineralization extends down dip and is represented by a system of parallel veins which dip at 60° southwest.

6.3.9 MINERALIZATION AT THE 118 ZONE

The 118 Zone occurs from section 11,600E to 12,400E, between the 400m and 1,200m levels (Figure 6-7 and Figure 6-8). The mineralization occurs within a 20m to 70m wide mineralized corridor south of the Casa Berardi Fault. The 118-10, 20, 21, 22, 27, 64, 81, 82, and 118-83 zones are stacked meter to sub-meter quartz veins with a sericite-carbonate envelope and high sulfide content, mainly arsenopyrite and pyrite with local visible gold. The zones contain up to 20% of meter to sub-meter quartz veins and veinlets sub-parallel to the schistosity. The zones strike east-southeast and dip to the southwest at 60° to 80°. The high-grade zones show a steep plunge to the southwest at 70°. The 118-06 Zone is similar to the 118-27 lens, with the same orientation and dip. The structure is also well mineralized within the conglomerate unit and represents a strongly mineralized quartz stockwork with fine- to coarse-grained arsenopyrite and pyrite with visible gold. The upper part of the zone from the 330 to 610 level is folded and stacked. The general strike is east-southeast and dips to the southwest at 60° to 80° and follows the west plunge of the conglomerate. At the 330 level, the mineralization connects with the 124-81 and 82 zones. The 118-14, 15, 41, 42, 43, 44, 45, 46, and 47 zones are meter to multi-meter quartz veins along the upper contact of the conglomerate unit and along its plunge. The quartz veins and quartz stockwork along the Casa Berardi Fault with an east-west strike and south dig at 60° to 80°. Mineralization consists of fine to medium grained disseminated arsenopyrite, sphalerite, and visible gold associated with quartz veins. The 118-16 and 17 zones are quartz veins oriented east-southeast and dips southwest at 70°. The mineralization follows the plunge of the 113 Zone along the conglomerate. Thickness of the veins ranges from three to five meters with east-southeast strike and dip southwest at 70°. Mineralization remains open at depth and along the plunge of the conglomerate.

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Figure STYLEREF 1 \s 6-. Plan View of the 1,010m Level, Principal Area

(from Hecla - Casa Berardi, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature)

6.3.10 MINERALIZATION AT THE 123 AND 128 ZONES

The 123 Zone occurs in the South Domain of the Casa Berardi Deformation Zone and consists of stacked quartz veins and stockwork, varying in width from approximately five meters to 30m, within a sequence of highly deformed and altered volcanic rocks and chert, at the sheared contact of volcanic and sedimentary rocks, and close to the faulted southern contact of the conglomerate that hosts the 118 Zone (Figure 6-7 and Figure 6-8). Mineralization in quartz veins occurs as disseminations and stringers of pyrite, pyrrhotite, and arsenopyrite, with fine visible gold and minor disseminations of sphalerite. The veins near the chert bands strike east-northeast while dipping to the south at 60° to 70° and plunging to the east at 80°. The veins near the volcanic and sedimentary rocks strike west-northwest with subvertical to 70° south dips. Mineralization occurs at the surface in lenses 123-21, 23, and 24 and the mineralization is open at surface and at depth to the west.

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The 128 Zone is located on section 12,800E at the 400m level and is located at the same stratigraphic horizon as the 123 Zone within fragmental volcanic rocks. The 128 Zone is composed of quartz veins with visible gold. The mineralization has an east-west strike and a vertical to sub-vertical dip to the south. The 128 Zone is open at depth and along strike.

S N-5000 Surface WMCP Principal Area Gold Zone 124 Pit Area 200r Lev. 230n 118-123-124 Area Section 12330E Gold Zone 124 Area -400m Gold Zone 118 Area Lev. 550r -800a 44000 Legend Wacke Wacke-Mudrock Conglomerate Massive Pyrite Lev. 770m Massive Pyrile Ferruginous Sedimer Cheri Graphitic Sediment Volcanic Quartz Vein Gold Zone 123 Area ev. 970m Outline Resources Stopes Mined Heela Casa Berardi Mine Geology - 118-123 & 124 Zones Schematic Section 12330E

Figure STYLEREF 1 \s 6-. Section 12,330E, Principal Area Geology 118, 123, and 124 Zones

(from Hecla - Casa Berardi, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature; heavy blue line shows limits of open pit as of 2023)

6.3.11 MINERALIZATION AT THE PRINCIPAL MINE AREA

Mineralization within the Principal Zone occurs near the surface to the north and south of the Casa Berardi Fault and extends to depth to the 118 Zone along the Casa Berardi Fault and to the 123 Zone in the South Domain of the Casa Berardi Deformation Zone (Figure 6-9). The zones are located between section 11,900E and section 13,000E.

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Figure STYLEREF 1 \s 6-. Plan View of the 290m Level, Principal Area Including the 124 Zone Lenses

(from Hecla – Casa Berardi, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature)

South of the Casa Berardi Fault, Zone 124-3 occurs as stacked, meter-wide, quartz veins near the Casa Berardi Fault, and is the up-dip extension of the 118 Zone occurring on top of the conglomerate. The overall orientation is east-southeast with dips to the southwest at 50° to 80° with a plunge to the southeast of 50°. Mineralization consists of arsenopyrite, pyrite, and visible gold with quartz veins. Zones 124-11 and 124-22 occur along secondary structures south of the Casa Berardi Fault and connect at depth with Zone 123-05. The zones occur in a corridor of meter-wide quartz veins and veinlets with visible gold, fine disseminations of arsenopyrite, and traces of sphalerite. These zones are oriented east-southeast and dip to the southwest at 60°.

Zones north of the Casa Berardi Fault (124-6, 124-8, 124-12, 124-13, 124-14, 124-16, 124-17) appear within highly sheared, brecciated, and altered ferruginous sediments between or near chert bands with minor magnetite. Gold mineralization occurs within meter to sub-meter quartz veins and stockworks containing fine grained to massive pyrite and arsenopyrite, traces of pyrrhotite, and very minor visible gold. Alteration is primarily chloritization and carbonatization (calcite and ankerite), with sericitization along the quartz veins. The strike varies from east-west (124-6) to east-northeast (124-8, 124-12, 124-13, 55

124-14, 124-16, 124-17) with dips to the south at 70° to near-vertical, and the zones plunge to the east at 50°. Mineralization remains open to depth and to the east of the 124-16 Zone.

The mineralized lenses in the 134 Zone are located between sections 13,100E and 13,500E and between the surface and level 300. Mineralization consists of arsenopyrite, pyrite, and visible gold with meter to multi-meter quartz veins and ankerite, sericite schist occurring within a sequence of highly deformed and altered volcanic rocks and sediments at the Casa Berardi Fault and north of the Casa Berardi Fault along secondary graphitic faults. The overall orientation is east-northeast with dips to the southeast at 75° and a plunge to the southeast of 60°.

6.3.12 MINERALIZATION AT THE EAST MINE AREA

The mineralized zones in the East Mine area are located between sections 14,000E and 16,300E and from surface to the 1050m level (Figure 6-10). The East Mine area has remaining underground Mineral Resources in the 146, 148, 152 157, 159 and 160 zones and pit resources and reserves in the 159 and 160 zones.

The 146 zone occurs between sections 14,400E to 14,725E. Mineralization appears 30m south of the Casa fault. It is composed of massive veins and fine disseminations of pyrite and pyrrhotite with 5-10% quartz veins in stockwork within a highly altered wacke and iron formation north of the conglomerate unit. Little mineralization appears at the Casa Berardi Fault. The mineralization corridor has an east-northeast direction and dips south at 75°. Mineralization is still open at depth.

The 148 Zone appears mainly at the Casa Berardi Fault, the strike of the lenses varies from east-southeast to west-northwest with a steep dip to the north, showing an anastomosing pattern. Between surface and the 200 level, the mineralized envelopes are composed of quartz veins and quartz stockwork several meters thick and mineralized with fine disseminated pyrite, arsenopyrite and visible gold. Mineralization appears mainly at the Casa Berardi Fault, the strike of the lenses varies from east-southeast to west-northwest with a steep dip to the north, showing an anastomosing pattern. Between the 200 and 550 levels, the mineralization is restricted to a continuous 10-meter-wide vertical quartz vein which is parallel to the Casa Berardi Fault. Between the 550 and 1050 levels, the quartz veins are meter to multi-meter thick and strike east-northeast with south dips varying from 60° to 85°. Mineralization is still open at depth and along strike.

The 152 Zone lies to the north of the Casa Berardi Fault, with a vertical extent of 200m, from section 15,050E to section 15,250E, and from the 100m level to 300m level, and is laterally continuous over 100m (Figure 6-10 and Figure 6-11). Stacked quartz veins are concentrated at the sheared mafic volcanic-wacke contact. The dip and thickness of the mineralization are highly variable.

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Figure STYLEREF 1 \s 6-. East Mine Composite Longitudinal Section (from Hecla – Casa Berardi, 2023)

The 157 Zone appears from section 15,400E to 15,500E, 130m south of the Casa Berardi Fault. It shows one-meter-wide high-grade quartz veins within the mafic volcanics. The orientation of the veins is east-north-east and dipping to the south-east at 70°. The mineralization is open laterally and at depth below the 400m level.

The 160 and 159 (Cherty) Zones are located between sections 15,400E and 16,300E and are 200m and 30m north of the Casa Berardi Fault, respectively. Lenses that are parts of the zones have an average lateral extent of 200m and a vertical extent of 100m, down to the 350m level (Figure 6-11).

The 159 Zone occurs north of the Casa Berardi Fault and east of the 152 Zone. Mineralization is composed of stacked meter to sub-meter quartz veins and veinlets occurring near a band of chert north of the Casa Berardi Fault and near the contact between the volcanic rocks and the sediments north of the Casa Berardi Fault. General orientation of the quartz veins is east-northeast with dips to the south at 70° to 75°. Mineralization remains open at depth and to the east.

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Mineralization in the 160 Zone occurs at or near the sheared contact of pyroclastic rocks and fine-grained sedimentary units, mainly wacke, graphitic mudrock, and meter to multi-meter thick ferruginous sediments and along a secondary graphitic fault. Two sets of veins appear in the resource: the main vein system associated to the east north-east graphitic fault and the vein system associated to the north-north-west graphitic faults. The main vein system is generally east-northeast with dips to the south at 65° to 75°. Mineralization is composed of meter to sub-meter quartz veins and stockworks containing fine pyrite and arsenopyrite, traces of pyrrhotite, and visible gold. Alteration is predominately chloritization and carbonatization (calcite and ankerite), with sericitization along the quartz veins. The vein system associated to the north-north-west graphitic faults are oriented west-northwest direction, dipping to the south-west at 40°. The 160 Zone mineralization exhibits a shallow plunge to the west-southwest at 40°.

Figure STYLEREF 1 \s 6-. Section 15, 840E, East Mine Geology and Infrastructure – 160 Zone

(from Hecla - Casa Berardi, 2023; Note that metamorphosed rocks are referred to by protolith nomenclature; heavy blue line shows limits of open pit as of 2023)



6.4 DEPOSIT TYPES

The Casa Berardi deposit can be classified as an Archean-age, sedimentary-hosted lode-gold deposit. Gold deposits of the Archean Abitibi greenstone belt predominantly consist of epigenetic disseminated and vein-hosted deposits, and syngenetic gold-rich massive sulfides (Robert et al., 2005; Monecke et al., 2017). Both types of mineralization could potentially occur within the same deposit in areas where deformation and metamorphism overprint volcanic successions. Deformation and metamorphism can significantly modify the mineralogy and geometry of previously formed mineralization. Nevertheless, superposition of hydrothermal events, metamorphism, and deformation, represent important processes for gold concentration and the formation of world class lode gold deposits in greenstone belts and sedimentary rocks in general (e.g., Dubé et al. 2007; Large et al., 2007).

The Casa Berardi gold mining camp in the northern Abitibi greenstone belt contains different styles of mineralization within the same deposit including gold-rich massive sulfides, auriferous pyritic and carbonaceous phyllite and chert, and pyrite-arsenopyrite-gold-quartz veins. It is therefore considered an ideal setting to study the effects of superimposed hydrothermal systems and to contribute to a better understanding of Casa Berardi and prospective areas along the extensive Casa Berardi Deformation Zone.

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7.0 EXPLORATION

This section of the TRS summarizes exploration work carried out by Hecla since acquiring the Casa Berardi Property in 2013. The information summarized herein has been provided by Hecla. RESPEC has reviewed this information and believes it is materially correct.

7.1 HECLA EXPLORATION 2014 TO 2023

Since Hecla's acquisition of Casa Berardi in June 2013, exploration activities have largely consisted of staking and acquiring new claims, core drilling, geophysical surveys, drill-hole re-logging and drilling data compilation and integration. Details of Hecla's drilling is summarized in Section 7.2 and Section 7.3. The majority of Hecla's exploration and delineation drilling since 2014 was core. 103 sonic holes have been drilled, for exploration till and bedrock sampling, mostly outside of the mining lease. No RC holes or other holes were drilled.

7.1.1 2016

From 2012 to the end of 2016, Casa Berardi was still under a JV between Lake Shore and Hecla. No exploration work was carried out in the field. After Hecla purchased Tahoe's 50% interest in the Property at the end of 2016, Hecla resumed data compilation and integration to generate drill targets.

7.1.2 2017

In the winter of 2017, Hecla conducted a 19-hole (6,620m) drilling program in the West Block between the West Shaft and the former Agnico Eagle claim block. Hecla's geologists also re-logged and sampled 47 Lakeshore drill holes totaling 20,910m from Lac Germain and the West Block for lithogeochemistry. During autumn 2017, a helicopter-borne versatile time domain electromagnetic (VTEM) and horizontal magnetic gradiometer geophysical survey, totaling 1,587 line-km, was flown over the entire Property.

The 2017 exploration program was successful in defining new mineralization to the west of the Casa Berardi Mining Lease. Drilling on the West Block succeeded in discovering new gold mineralization. In hole CBS-17-783, the best assay result was 1.57g/t Au over 3.5m and mineralization is related to the 30% pyrite and trace arsenopyrite in a sericitized and silicified wacke. In hole CBS-17-788, two intervals of quartz veins stockwork with up to 10% pyrite and trace arsenopyrite yielded 4.49g/t Au over one meter and 4.76g/t Au over 1.7m at borehole depths of 135m and 235m, respectively. Drilling and relogging succeeded in improving the geological model and furthering Hecla's understanding of the West Block and Lac Germain, by confirming exploration potential and delineating exploration targets for 2018.

7.1.3 2018

During the winter of 2018, Hecla drilled 13 follow-up drill holes (4,610m) on near surface targets on the West Block and 27 holes (6,656m) on the Lac Germain prospect. A bridge was built over the Theo River to improve access to the Lac Germain area. Relogging of 46 holes from previous drilling on the East and West Blocks was also completed.

At the West Block, the most significant mineralization was in hole CBS-18-959 that intersected 73.1m of chloritized felsic quartz porphyry volcanic rock with up to 30% pyrite in semi-massive to massive beds and stringers (from 182.1m to 253.4m). Assays returned 1.23g/t Au over 19.1m including a massive sulfide section that yielded 3.76g/t Au over 1.8m.

At the Lac Germain prospect, drilling succeeded in intersecting wide, high-grade gold-bearing mineralized zones. Mineralization was interpreted in six gold-bearing subparallel lenses, LG 1 to LG 6, forming a 100m-wide corridor in a sequence of wacke and BIFs. These lenses strike at approximately 070° and dip between 65° to 75° to the south. In the LG 1 Zone, hole CBS-18-955 returned 11.31g/t Au over 3.6m including 25.30g/t Au over 1.2m. In the LG 2 Zone, hole CBS-18-940 returned 5.5g/t Au gold over four meters and hole CBS-18-942 returned a value of 461.0g/t Au over 0.6m. In the LG 3 Zone, holes CBS-18-947 returned 5.61g/t Au over 3.3m and 4.08g/t Au over 2.6m, respectively. In the LG 4 Zone wide intersections of 5.22g/t Au over 6.5m in CBS-18-955, 3.66g/t Au over 8.4m in CBS-18-960, and 5.97g/t Au over 4.5m in CBS-18-968, were reported. Gold-bearing mineralization was interpreted to be related to quartz and quartz-carbonate veinlets and veins up to 1.5m thick. The veins contained minor amounts of pyrite, pyrrhotite, and arsenopyrite, and gold grades correlated with the amount of arsenopyrite. Visible gold was related to traces of sphalerite and galena.

7.1.4 2019 AND 2020

No drilling was completed for regional exploration in 2019 and 2020.

7.1.5 2021

In 2021, relogging of eight drill holes totaling 3,055m on the Dieppe East Block confirmed that the geology of the Dieppe East Block is similar to the geology intersected in drill holes from 2017 and 2018 consisting of graphitic mudstone with nodular pyrite, felsic and mafic volcanic rocks, and major graphitic faults (Casa Berardi Deformation Zone). In addition, eight drill holes totaling 3,675m from the Dieppe 1 mineral occurrence were relogged.

This drill-hole relogging confirmed that gold mineralization is related to quartz veins in a brecciated chert horizon at the contact within mafic volcanic rocks. Importantly, the area around the Dieppe 1 mineral occurrence is characterized by a strong volcanogenic massive sulfide mineralizing system, with massive sulfide zones up to 150m thick. Minor gold mineralization is hosted by these massive sulfide zones, but there is potential for discovery of volcanogenic massive sulfide deposits with more significant gold grades elsewhere in the Casa Berardi area.

In 2021, Hecla drilled 5,879m in 12 drill holes on the West Block area and intersected anomalous values that extended previously identified mineralization at depth within both quartz veins and bedded massive sulfides, although these intercepts were low grade. Drill hole CBS-21-023 intercepted massive sulfides over 15m in thickness and returned anomalous gold values over 20m down hole. Further west, drill hole CBS-21-017 confirmed mineralization at depth and extended the mineral zone over hundreds of meters down plunge intercepting 6.90g/t over 3.6m. The geology and mineralization have strong similarities to the 123 and 124 mining zones within the Central Block at Casa Berardi.

7.1.6 2022

In 2022, an orientation drilling program was conducted with one Sonic rig focused on a gold overburden anomaly and favorable geology to generate future core drilling targets. The programs covered the East, Central and West block of the property with 103 drillholes for 3,386m. One strong gold dispersal train was defined on the East Block south of the north

splay of the Casa Berardi Fault. The West Block results showed a gold dispersal train that still open to the west and suggest a gold source east of the anomaly.

7.1.7 2023

In 2023, exploration focused on core drilling to define the gold sources of the overburden till anomalies highlighted in 2022. Ten holes totaling 3,266m were drilled over the property. Six of the holes, totaling 1,700m, were drilled on the West Block and four holes, totalling1,565m, were drilled on the East Block. The 2023 drilling intersected gold and arsenopyrite mineralization, strong quartz veins, and favorable geology and structural setting along the East Block that can be related to the gold till anomaly partially identified in 2022. The West Block drilling highlighted new lithologies, a strong alteration halo and quartz veins on both sides of the north splay of the Casa Berardi Fault. Casa Berardi geologists were able to refine knowledge of the sector and geological settings that can host gold mineralization to generate the till anomaly of the East Block. The results and observations collected in 2023 continue to demonstrate the potential of the Casa Berardi break.

7.2 DRILLING SUMMARY

From 1988 to 2023, surface and underground diamond drilling totaled more than 2.5 million meters at Casa Berardi. Of that total, 858,047 meters have been drilled in 5,310 holes by Hecla since acquisition of the Property in 2013. Most of this drilling has successfully expanded known mineralization along a five-kilometer segment of the Casa Berardi Fault in the immediate mine area. Some regional exploration work including geophysical surveys and diamond drilling has been carried out on the Property, which is extensive and covers a favorable geological environment for gold mineralization including a 37km strike length along the Casa Berardi Fault. Geophysics and drilling are the key exploration tools needed to make new discoveries under the thick layer of overburden that covers most of the Property. Drilling locations within the property are shown in Figure 7-1. The main exploration and definition drilling programs are summarized in the following sections.

Figure STYLEREF 1 \s 7-. Map of all Historical and Hecla Diamond Core, RC, and Sonic Drilling

(from Hecla – Casa Berardi, 2023)



63 63

Company	Year	Surface		Unde	rground	Total		
		Holes	Meters	Holes	Meters	Holes	Meters	
	2014	47	14,835.50	604	54,878.80	651	69,714.30	
	2015	66	28,524.67	646	69,373.00	712	97,897.67	
	2016	101	22,865.60	580	62,043.80	681	84,909.40	
Hecla	2017	298	71,505.30	419	61,381.50	717	132,886.80	
	2018	188	62,158.93	331	54,098.30	519	116,257.23	
	2019	83	27,486.80	338	57,113.80	421	84,600.60	
	2020	69	18,011.60	313	45,442.60	382	63,454.20	
	2021	78	29,314.70	462	56,210.20	540	85,524.90	
	2022 Core	74	22,625.53	326	61,041.50	400	83,667.03	
	2022 Sonic	103	3,401.42			103	3,401.42	
	2023	14	6,256.90	170	29,476.60	184	35,733.50	
Total Hecla		1,121	306,986.95	4,189	551,060.10	5,310	858,047.05	

Table STYLEREF 1 \s 7-. Hecla Surface and Underground Drilling 2014 – 2023

7.3 HECLA DRILLING, 2014 TO 2023

In 2014, underground drilling targeted the West Mine with the down plunge extension of the 113 Zone, in the 118, 123 and 124 zones in the Principal area, and a small campaign was conducted on the east extension of the Principal area for the 140 Zone. Surface drilling targeted the Principal area east extension with the 134 and 140 zones. Definition and infill drilling was entirely from underground to drill the extension of known Mineral Reserves and Mineral Resources near the West Mine in the 113, 118, 123, and 124 zones.

In 2015, drilling targeted the 118, 123, 124 and Lower Inter zones in the West Mine from underground and surface. Drilling continued to target the East Mine potential for the 144 and 157 zones and to test the down plunge of the 148 and 160 zones. Infill and definition drilling were conducted mostly in the Principal area on the 118, 123 and 124 zones.

In 2016, the surface drilling program continued to target the West Mine with the 109 and 113 zones below the current infrastructure. From underground the extension of the Lower Principal was targeted to the 117 Zone. Infill and definition drilling were primarily carried out in the Principal area including the 118, 123, and 124 zones.

The 2017 program was the largest drilling campaign since 2006. Drilling targeted the 123 and 124 zones from underground and surface. A surface drilling campaign was completed at the 134 Zone to test the open pit potential 64
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east of the Principal area. The potential for open pit resources near the West Mine was tested by drilling the Northwest and Southwest zones in the crown pillar. Infill and definition drilling from surface targeted the EMCP Pit, 134 Zone, and 160 Zone preliminary pit. Underground infill and definition drilling were completed at the Principal area to extend the Mineral Resources and Mineral Reserves for the 118, 123, and 124 zones.

In 2018, drilling covered the West Mine and the East Mine to evaluate both surface and underground targets. Surface drilling targeted the down plunge of the 134 Zone under the preliminary pit. Surface drilling also targeted the east extension for underground potential of the 124 Zone. Drilling from surface tested the west extension of the 146 and 148 zones for underground potential. A combination of definition and exploration drilling targeted the WMCP to better define the pit potential. Underground drilling continued in the Lower Principal area from the 990m level to test the down plunge mineralization of the 118 and 123 zones. Infill and definition drilling from surface were primarily designed to define an open pit in the EMCP Pit, F134 Pit, F160 Pit, and WMCP Pit areas. Underground infill and definition drilling were carried out in the Principal area to evaluate the 118, 123, and 124 zones. In 2018 underground definition drilling commenced in the East Mine from the 300m level under the 160 Zone preliminary pit to test the down plunge mineralization for underground mining potential.

In 2019, surface drilling targeted the eastern portion of the Principal Mine within the 128 Zone, specifically the high-grade plunge of known lenses, and aimed to further define the 160 Zone lenses within the pit shell. Furthermore, surface drilling targeted the continuation of those lenses under the pit shell. In the North Domain, the surface campaign aimed to investigate the eastern potential of the 160 Zone in the East Mine, and the extension of the 157 Zone to the south of Casa Berardi Fault.

Underground drilling pursued five targets: 1) the eastern extensions of the 128 Zone from the 290m level, 2) the western extension of the 118 Zone from the 990m level exploration drift, 3) the 113 Zone from the 1,010m level, 4) the 152 Zone from the 455m level ramp in the East Mine and 5) the 148 Zone below current infrastructures from the 485m level in the East Mine.

In 2020, surface drilling was conducted to help determine the near surface eastern extent of the F160 Pit (159-05 lens), thus enabling the engineers to determine a new location for the creek to flow around the potential pit.

Underground drilling actively pursued the 123 Zone below current infrastructure from the 1,070m level, the 128 Zone from the 490m level in the Principal Mine area, and the 148 Zone below current infrastructures from the 485m level in the East Mine.

In 2021, surface drilling targeted the different lenses located outside of the WMCP pit shell, the down trend extension of the 105 Zone in the West Mine, the east and west extension of the 128 Zone, the downward plunge of the 139 lens, and the extension of the 159 and 160 lenses within the F160 pit shell.

Underground drilling aimed to investigate many zones of the Casa Berardi Mine from west to east, targeting: 1) the upper portion of the 113 Zone from the 990m level, 2) the downward plunge of the lower 123 Zone from the 1,070m level, 3) the upward plunge of the 123-01 lens, and 4) the downward extension of the 148-01 lens.

In 2022, surface holes were drilled to test for continuity of the 152 Zone and the extension of the known lens of the 134 Zone outside the pit shell above 518m vertical depth. Drilling also targeted the 124 Zone, and the 104, 105 and Lower Inter Zone package to test the continuity near infrastructure between 607m and 1,067m vertical depth.

The underground drilling focused on three main zones. The 123 Zone in the Principal Mine was drilled to test the downward and eastern extensions of the 123-02 lens. Drilling also targeted the 148 Zone to test for extensions at depth and laterally, both east and west, and the 118 Zone to test the continuity at depth.

In 2023, surface drilling targeted the 134 and 139 Zones at depth to test the continuity of mineralization. One hole was drilled to determine the nature and extent of stratigraphic units in the area. The 154 Zone was also targeted to confirm the orientation and dip of the zone. Lastly, the 123 Zone was drilled to generate new resources in possible extensions laterally and at depth near current infrastructure.

Underground drilling targeted the east extension of the 123 Zone, the 118 Zone to test for continuity at depth, and north of the 118 Zone to test anomalous gold mineralization in the iron formation. The Lower Inter Zone was also drilled to expand resources near current infrastructure.

7.3.1 HECLA DRILLING PROTOCOLS

Hecla has stated that when the Casa Berardi project was acquired from Aurizon in 2013, most of the Aurizon mine staff were retained, and general procedures and protocols at the mine site were maintained. Because significant changes during transfer of the operating mine were minimal, Hecla's statement to RESPEC that drilling protocols followed by Aurizon were the same or similar to those currently employed by Hecla is reasonable, although documentation of drilling procedures prior to 2014 were not available. The following discussion therefore applies to both Aurizon and Hecla drilling programs completed since 2006. It should be noted that during the 2023 site visit, RESPEC was able to observe and confirm some parts of the procedures and protocols but can only infer that the various practices as described below have been followed by Aurizon and Hecla since 2006.

Casa Berardi exploration drilling has had a wide range of purposes within the extensive property and is classified into four categories:

- / Surface and underground exploration drilling, which is performed inside the mining leases along the strike of known gold occurrences, was conducted to build future Inferred Mineral Resources;
- / Regional exploration outside the mining leases was conducted to target favorable structural and alteration features along the Casa Berardi Deformation Zone;
- / Additionally, conversion drilling, which includes definition and infill drilling, is conducted mainly at the mine site (surface and underground) within the mine areas and was designed to upgrade the classification of Inferred Mineral Resources to Indicated and Measured for future reserve potential; and
- / Condemnation drill holes have also been completed to test and condemn the locations of planned infrastructure of the Casa Berardi Property.

Drill holes are planned (azimuth, dip, length) by Hecla geologists on vertical cross-sections and on longitudinal sections. Drill lines are marked underground (front site and back site) by the mine surveyors. Prior to drilling, a technician verifies the drill rig alignment on hole set up. On the surface, drill collars are spotted with the use of ⁶⁶
⁶⁶

surveying equipment. Typically, two front sites, identified with wood pickets, are used to align the drill rig. Down-hole deviations (azimuth and dip) are measured with Reflex instruments approximately every 50m along the hole. Complementary with the Reflex survey, a North Seeking Gyro is used when drilling is located near magnetic rock. This type of survey is not impacted by magnetism and can provide accuracy in measuring the down-hole drill traces. Once a hole is completed, collars coordinates are surveyed by Hecla mine surveyors and geology technicians. All drill holes on site are abandoned by filling the entire hole with cement, or as completely as down-hole conditions allow.

Surface diamond drilling is generally performed during winter to take advantage of the frozen ground (January to April), and to minimize the environmental impacts of the drilling. The drill rigs are moved on ice roads using heavy equipment and snowmobiles and are set up on winterized drill pads. Surface drilling is limited during the summer season to minimize the footprint of gravel roads constructed to access the drilling pads. Underground drilling from the West Mine and East Mine are conducted from drill bays, haulage drifts, or other accessible drilling platforms. The underground drills are moved with heavy underground equipment and access to the drill is via service truck or tractor. Orbit Garant Drilling based in Val-d'Or, Québec provided drilling services for both underground and surface campaigns, Typically, NQ diameter drill core is obtained from exploration, infill, and definition drill holes. The drill core diameter is reduced to BQ if difficult ground conditions are intersected.

Once retrieved from the core barrel, the core is placed in sequential order in core boxes labelled with the hole number. The boundaries of each run, usually three meters, are identified by wood blocks on which the interval depths are marked. Missing (none recovered) core is identified by a wood stake indicating the location and length of the missing section. At the end of each shift, core boxes are transported by the drillers' foreman to the secure core processing facility (core shack) on the surface within the Casa Berardi site. The Casa Berardi site is not completely fenced, but the only road access is through security at the gated front entrance. A Hecla technician sorts and opens the core boxes to evaluate the core quality and measure the accumulated core length. Each core box is photographed and linked with the log database. An aluminum tag etched with the hole number, box, and the contained ''from-to" interval is fixed to each core box. After labeling, the Hecla geologist enters a detailed log description of the holes into the Log Chief database.

The geology and assay data obtained from drill samples and recorded in the drill logs, core photographs, and in the various databases are described in Section 11.0. Their usage in Mineral Resource estimation is described as well.

7.4 HYDROGEOLOGY DRILL HOLES

Between 2022 and 2023, six hydrogeological drill holes were completed in the 160 Zone (Table 7-2). Piezometers were installed to measure underground water pressure. An analysis and brief discussion of the hydrogeology characterization related to open pit designs is presented in Section 13.4.

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Drill Hole Name	Zone	Core Size	Length (m)	
F160-PZ-22-01	160	NQ	25.4	

F160-PZ-22-02	160	NQ	25.6
F160-PZ-22-03	160	NQ	30.6
F160-PZ-22-04	160	NQ	3.8
F160-PZ-22-05	160	NQ	33.76
F160-PZ-22-06	160	NQ	21.3

7.5 GEOTECHNICAL DRILL HOLES

In 2022 and 2023, eight geotechnical holes were drilled to assess ground conditions in the 148 Zone and the 160 open pit Table 7-3. Core recoveries and rock quality designation (RQD) were measured, and the mean RQD was approximately 82.5%. The objective of the 2022 drilling was to investigate a small collapse in the East Mine and to determine if the stopes were stable enough for mining to continue. In 2023, the objective was to test the slope stability of the highwall in the open pit.

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	Drill Hole No.	Zone	RQD (%)	Core Diameter	Length (m)
	CBE-0415-001	148	78.89	NQ	78
	CBE-0415-002	148	82.99	NQ	57.9
	CBE-0415-003	148	81.44	NQ	65
TT 1 1	CBE-0415-004	148	81.44	NQ	62.8
Underground	CBE-0415-005	148	74.03	NQ	68.5
	CBE-0415-006	148	87.33	NQ	68.5
	CBE-0415-007	148	75.97	NQ	73
	ING-001	160 open pit	97.59	NQ	38.5

Table STYLEREF 1 \s 7-. Geotechnical Drill Holes from 2022-2023

7.6 COMMENTS ON DRILLING

RESPEC notes that the quantity and quality of the logging, geotechnical, collar, and down-hole survey data collected in the exploration and infill drill programs are sufficient to support Mineral Resource and Mineral Reserve estimation and makes the following comments:

- / Core logging performed by Hecla staff follows generally accepted industry standards for exploration and delineation of gold deposits;
- / Collar coordinate and down-hole surveys for Hecla core holes have been performed using standard methodologies and instrumentation;
- / Geotechnical logging of drill core meets industry standards, and can be used to support geotechnical studies planned for open pit and underground mining operations;
- / Because mine staff and mining procedures and protocols were essentially unchanged following Hecla's acquisition of the Casa Berardi project, it can be reasonably expected as Hecla has stated that drilling and sample collection protocols followed prior to the acquisition were similar to those currently employed by Hecla; and
- / No significant factors were identified regarding drilling and data collection protocols from the Aurizon or Hecla programs that could adversely affect Mineral Resource or Mineral Reserve estimates.

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8.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

Hecla has stated that when the Casa Berardi project was acquired from Aurizon in 2013, most of the Aurizon mine staff were retained, and general procedures and protocols at the mine site were maintained. Because significant changes during transfer of the operating mine were minimal, Hecla's statement to RESPEC that sample preparation, laboratory analyses, security, and QA/QC protocols followed by Aurizon were the same or similar to those employed by Hecla is reasonable, although documentation of procedures prior to 2014 were not available. The following discussion therefore applies to both Aurizon and Hecla drilling programs completed since 2006. It should be noted that during the 2023 site visit, RESPEC was able to observe and confirm some parts of the procedures and protocols, but can only infer that the various practices that are summarized in Sections 5.2.1 and 7.3 have been followed by Aurizon and Hecla since 2006.

8.1 DRILL SAMPLE HANDLING PROCEDURES AND SAMPLE SECURITY

Drill core from Hecla exploration, definition, and infill programs is handled and sampled by contractor technicians under the supervision of Hecla staff. Core is logged by Hecla geologists at the secure core shack located within the Casa Berardi mine site. Access to the core shack is restricted to geology personnel who use magnetic key cards. The mine site is not completely fenced, but the only road access is through security at the gated front entrance. The core is logged and sampled, then stored in the core shack until sufficient samples have been accumulated for shipment from the mine site to the external laboratory for analysis. The transport vehicle is provided by the external laboratory.

Upon receipt of the core boxes from the contractor technicians, core boxes are placed on tables and sorted. Core is washed and verified for length accuracy, then RQD's and core recoveries are measured in all surface and underground holes prior to logging. In general, RQD measurements are carried out over three-meter lengths, with shorter lengths used in areas of bad ground. This allows for better interpretations regarding in-situ ground conditions. For a certain period between 2008 and 2010, RQD measurements were carried out over much longer lengths with some measurements over 20m. Such measurements over long lengths are not very useful for rock mechanics purposes to identify zones of bad ground conditions and this practice was discontinued. The entire core from underground drilling is photographed and systematic photography of core from surface drilling commenced in 2008.

The core recovery averages nearly 100%, with the exception of short intervals within fault zones or highly deformed mudrock. Such intervals are generally marked during drilling and later checked by Hecla geology personnel for depth accuracy and missing sections.

Following geotechnical logging, geological and structural data are described by geologists and entered into a digital logging package. Drill-hole logs summarize hole parameters, core descriptions, and sampling intervals. Core logging is carried out in French. Before sampling, the drill core is stored within the secure core shack. After sampling, the remaining core is taken to other storage facilities on the mine site and stored primarily on core racks. **70 70**

8.1.1 CORE SAMPLING

Sample selection for assaying is determined visually by Hecla's geologists based on rock type, alteration, quartz veins, and mineralization. Sample intervals are identified, and commercially printed bar-coded sample tags are placed under the core in the core boxes at the end of each sample. The beginning and end of each sample are also marked on the core with individual sample lengths varying from 0.4m to 1.5m. Most of the samples are about one meter in length. The geologist marks a reference line along the length of the core length, then the core is sent to a technician to be cut along the reference line for sampling.

In the case of exploration and definition holes, the selected samples are sawn into two halves along the reference line by the core shack technician using an electrical core saw equipped with a diamond-impregnated blade. One half is placed in a plastic bag with the corresponding tag number. The other half core is returned to the core box, with the corresponding sample tag stapled to the core box at the beginning of the sampled interval. The technician consistently samples from the same side of reference line and replaces the other side. The core saw and metallic pans are cleaned between samples. In the case of infill drill holes, the core is not split, and the entire sample is submitted for assaying. Bags are folded and sealed to prevent spillage during transportation to the laboratories. Each batch of three to five samples is placed in a plastic container for transportation to the mine laboratory or in a burlap bag for transportation to an external laboratory.

All samples remain within the mine site until they are processed by the mine lab or picked up by the external lab. For samples shipped to an external lab, bagged samples are transported by pick-up truck from the core processing facilities to the sample receiving facilities of the mine laboratory for temporary storage. Samples are sent via pick-up truck to external laboratories. Chain-of-custody procedures consist of sample submittal forms that are sent with sample shipments, which allows for shipment tracking to ensure that all samples are received by the laboratory.

Lithogeochemical data is collected with exploration drilling for rock discrimination. The sampling consists of selecting a representative 40cm core sample systematically every 30m to 50m or at lithological changes, until a representative compilation of a given unit is collected.

8.1.2 UNDERGROUND DEVELOPMENT HEADING SAMPLES

At the mine, chip samples are taken to determine the gold value over a given interval of rock to align development and exploration activities, estimate the value of mineralized lenses, and to reconcile mining with mill production. Along the walls of draw-points, chip samples are taken perpendicular to the stratigraphic and structural trend of the mineralized body. Prior to chip sampling, the intervals to be sampled are geologically mapped in order to delineate changes in lithology, mineralization, alteration, and structure.

Chip samples are localized by hip-chain from surveyed anchor points in the mine. The intervals are typically one meter in length, though they may range from a minimum of 50cm to a maximum of 1.5m to respect geological constraints. The beginning and end of the interval are marked at chest-height using yellow spray paint and are then plotted on the geological map.

Plastic sample bags used to collect the chip samples are prepared with a sample tag and placed at each interval. The bags are sealed for transport to prevent contamination. The sample tag is a scannable, water-resistant tag that is taken from a booklet containing the sample number, the date and location of the sample, the sampler's name, and other notes and sketches.

8.2 SAMPLE PREPARATION AND ANALYSIS

Since 2013, Hecla has primarily used Swastika Laboratories Ltd. (Swastika) in the town of Swastika, Ontario and the Casa Berardi mine laboratory (Labomine) for preparation and analysis of all exploration and delineation drilling samples. Check assay samples are sent to ALS Geochemistry (ALS) laboratories in Val d'Or, Québec. MSALABS was used for a brief period in 2022. Prior to 2013, Aurizon used a variety of external laboratories in addition to the mine laboratory, including SGS Canada Inc. (SGS) in Rouyn-Noranda, Québec, Techni-Lab S G B Abitibi Inc. (Techni-Lab) in Ste Germaine, Québec, and Laboratory Expert Inc. (Lab-Expert) laboratory in Rouyn-Noranda, Québec. Swastika, ALS, MSALABS, SGS, Techni-Lab, and Lab-Expert are or were commercial analytical laboratories independent of Hecla. Over time, core samples from exploration and delineation drilling have been assayed by the various labs as follows:

Aurizon, 2004 to 2013:
2004, 2005 and part of 2006: SGS.
2006: Mine laboratory, SGS, Techni-Lab, and Swastika.
2007: Mine laboratory and Techni-Lab.
2008: Mine laboratory and Lab-Expert.
2009 to 2013: Mine laboratory and Swastika.
Hecla, 2013 to 2023:
2013 to 2022: Mine laboratory and Swastika.
2022: Mine laboratory, Swastika and MSALABS.
2023: Mine laboratory and Swastika.

All samples for lithogeochemical analysis are sent to ALS. Swastika and ALS have been accredited by the Canadian Association for Laboratory Accreditation Inc. for meeting the requirements of ISO/IEC 17025:2005 for various gold assay protocols. The accreditation status of SGS, Techni-Lab, Lab-Expert and MSALABS at the time of their respective assay work for Hecla is not known. No information is available for the laboratories used prior to 2004.

8.2.1 MINE LABORATORY

The laboratory at the mine is used to assay most of the drilling samples generated for underground production headings, and infill and definition drilling. Run-of-mine samples for the open pits have also been sent to the mine laboratory for assay. Sample preparation and gold analysis is completed on site by Hecla staff. The mine laboratory is not independent of Hecla and is not ISO certified.

Upon arrival at the mine laboratory, samples are sorted and checked against the sample shipment list. All samples are dried in the oven for several hours until dry. All whole core samples, which weigh approximately 10kg each, are entirely crushed to 80% passing (P_{80}) 6.3mm in a jaw crusher. The jaws are cleaned with compressed air and flushed with barren core after each sample. The material exiting the jaw crusher is transported by a conveyor belt onto a rotary splitter. Approximately 200g to 250g of split material is crushed to a 95% minus 150-mesh or 85% minus 200-mesh sample pulp using a ring-and-puck pulverizer. The remaining coarse reject material is collected into the original plastic sample bag, placed with their respective pulps in a container, and stored in a warehouse facility at the mill.

The pulp is laid down on a rubber mat and homogenized. A 15g sub-sample is then collected, weighed, and analyzed by fire assay with an atomic absorption spectrometer (AAS) finish. All results, reported in grams per tonne, are sent

electronically to Hecla. Final assay results are stored digitally, and paper copies are generated or stored by the mine laboratory.

8.2.2 SWASTIKA

Exploration drilling samples from underground and surface are sent to Swastika, which is an external, independent laboratory. Samples are transported from the mine lab via truck by Swastika.

Sample submissions are divided into work orders that contain the batch number, sample numbers, date, weight, elements, and analyses requested. Each batch is made up of 63 samples, which comprise 52 Hecla samples and 11 laboratory quality control samples. Each batch starts with a blank and a standard, which is followed by 19 Hecla samples. The pattern is repeated until a total of 63 samples are in the batch. Pulp rechecks are taken by the lab every ten samples and recorded in a separate column on the assay certificate. A bar coding system is used to track samples and sample receipt reconciliation notices are transmitted by email.

Samples are dried in an oven at 80°C and then are entirely crushed to P_{80} 1.7mm with a jaw crusher and split with a rotary splitter. Jaws are cleaned with compressed air and flushed with barren limestone after each sample. Approximately one kilogram of the jaw-crushed sample is entirely pulverized to 90% minus 107µm in a ring-and-puck pulverizer. All pulverized material is placed on a rubber mat, homogenized, and transferred into disposable brown paper bags for weighing. Pulverizer bowls and rings are cleaned with compressed air and flushed with barren silica sand after each sample. A 30g aliquot of pulverized material is split out and analyzed by fire assay with an AAS finish. A second fire assay analysis is completed with a gravimetric finish for samples with gold results above 10g/t Au.

All of the remaining pulverized pulp material is returned to Casa Berardi for storage and quality control. Approximately 5% of each sample of coarse reject material is returned to the mine site and stored for future use. The remaining reject material is discarded by Swastika.

8.3 HISTORICAL QA/QC PROGRAMS

RESPEC is not aware of the methods and procedures used by historical operators prior to Aurizon at Casa Berardi for quality assurance/ quality control (QA/QC). RESPEC has obtained and reviewed the results of the historical QA/QC samples that were analyzed commencing in about 2006.

8.4 AURIZON/HECLA QA/QC PROGRAMS

As previously noted, Hecla has stated that when the Casa Berardi project was acquired from Aurizon in 2013, most of the Aurizon mine staff were retained, and general procedures and protocols at the mine site were maintained. Because significant changes during transfer of the operating mine were minimal, RESPEC considers that the QA/QC protocols followed by Aurizon were the same or similar to those employed by Hecla. Much of the following discussion combines the analysis and evaluation of results from both Aurizon and Hecla QA/QC programs.

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8.4.1 QA/QC DATABASE

Hecla's QA/QC database contains certificate numbers, dates, sample numbers, original assays, duplicate assays, standard assays, standard types, and laboratories used for assaying. No QA/QC data from drilling and assaying programs conducted by operators prior to Aurizon at Casa Berardi was available for review by RESPEC.

8.4.2 QA/QC PROTOCOLS

Hecla's QA/QC protocols included the insertion of standards (4%) and blanks (5%) into the sample stream for all samples sent to the primary laboratories (Labomine and Swastika). Pulp (5%) and coarse reject (5%) splits from both Labomine and Swastika laboratories have also been sent to ALS for referee check assays. Aurizon's QA/QC protocols and insertion rates are presumed to have been similar.

A CRM was inserted systematically at every 25th sample. Several standards with a range of target values were obtained from OREAS and Rocklabs. Coarse blanks are inserted at approximately every 20th sample by the geologist. Local blanks consisting of exploration core from barren material that has been previously assayed was used prior to 2021. Certified blanks consisting of dolomite were obtained from a commercial source and have been used since 2021.

Approximately 4% of pulps are split and analyzed at the mine laboratory and at Swastika as part of their internal QA/QC programs. In addition to the regular pulp duplicates, if an assay exceeds 10.0g/t Au, an automatic recheck is performed.

8.4.3 PULP DUPLICATES

Between 2009 and 2023, a total of 39,967 pulp duplicate samples were split and analyzed as part of the primary laboratories internal QA/QC programs (Table 8-1). The relative differences in sample pairs range from 0% to 20%, which indicates a reasonable variability expected in pulp rechecks for gold deposits. The average relative difference over the 15-year period is <1%, which suggests no significant bias over time. However, assay variability, which is a measure of the heterogeneity of gold in the deposit, and the bias that occurs for any given drilling campaign, cannot be determined from the averaged data in Table 8-1.

Table 8-1 presents the results of the duplicate versus original assay comparisons carried out over the period from 2009 to 2023. The differences between the mean grade of original assays and the mean grade of duplicate assays is generally less than 3.1% for any given year, with the exception of the Swastika lab comparisons in 2017 (mean of duplicates is greater than mean of original pulp assays by 20%) and 2020 (mean of original pulp assays is greater than mean of duplicates by 9.07%). The cause of the relatively extreme bias at the Swastika lab during those years is not known.

In 2023, 1,450 duplicate pulps were analyzed. 1,074 samples, or 74% of the original samples submitted were mineralized at or greater than 0.1g/t Au. Average bias was within 3.1% for the two labs.

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Year	Original Laboratory	Number of Duplicates	Mean Grade of Original Assays (g/t Au)	Mean Grade of Duplicates Assays (g/t Au)	Difference (%)
	Mine	309	6.29	6.26	(0.5)
2009	Swastika	958	5.88	5.79	(1.5)
	ALS	32	6.21	6.17	(0.6)
2010	Mine	965	5.22	5.14	(1.5)
2010	Swastika	631	2.09	2.11	1
2011	Mine	1,162	5.26	5.29	0.6
2011	Swastika	1,114	2.48	2.46	(0.8)
2012	Mine	1,707	7.47	7.5	0.4
2012	Swastika	847	0.561	0.563	0.4
2012	Mine	1,588	6.64	6.6	(0.6)
2013	Swastika	578	0.341	0.349	2.3
2014	Mine	1,382	6.37	6.38	0.2
	Swastika	1,244	0.994	0.993	(0.1)
2015	Mine	2,045	11.25	11.34	0.8
	Swastika	1,816	0.68	0.69	1.5
2016	Mine	1,827	8.18	8.05	(1.6)
	Swastika	462	0.45	0.45	0
2017	Mine	1,994	5.15	5.14	(0.2)
	Swastika	2,731	1.024	1.228	20
2018	Mine	1,744	4.83	4.75	(1.7)
2018	Swastika	3,023	0.208	0.208	0
2010	Mine	1,425	5.45	5.48	0.55
2019	Swastika	2,305	0.305	0.299	(1.97)
2020	Mine	823	2.56	2.56	0.05
2020	Swastika	1250	0.683	0.621	(9.07)
2021	Mine	525	3.05	3.10	1.63
2021	Swastika	1,638	0.297	0.299	0.67
2022	Mine	1,089	4.19	4.12	(1.69)
2022	Swastika	1,303	0.11	0.11	(0.10)
2023	Mine	675	5.66	5.49	(3.08)

Table STYLEREF 1 \s 8-. Pulp Duplicate Summary from 2009 to 2023
Swastika	775	0.49	0.50	2.18

An example of the pulp duplicate comparison is provided in Figure 8-1. The graph depicts the duplicate versus original assays for mine laboratory pulps during the period of 2021 to 2023 and indicates there is no significant bias between the two data sets.



(Assays below 120g/t Au)



8.4.4 PULP EXTERNAL CHECK ASSAYS

Since early 2009, approximately 5% of original pulps were sent for re-assay at ALS. Since October 2018, the pulps for reanalysis were selectively taken from mineralized zones, generally with grades above 1.0g/t Au, in development drilling. All the laboratories used fire assay with an AAS or gravimetric finish.

A summary of the comparisons between original assays and check assays of the 2009 to 2023 programs is provided in Table 8-2. In nearly all cases, the means of the ALS check assays are higher than the means of the original assays, with three exceptions (Swastika in 2009, 2012 and 2021). The bias is generally less than 5%, but there are a number of years where the bias is between 5% and 16%. The bias indicates that the assays provided by one lab are high or low in the other lab, however, it is not possible to determine which lab or labs are in error based on the check assay data alone. Regardless, the consistent bias with ALS check assays higher than both Swastika and the mine lab should be investigated.

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Year	Laboratories	Number of Assays	Mean Grade Original (g/t Au)	Mean Grade Check (g/t Au)	Difference (%)
2000	Mine vs. ALS	534	11.98	12.32	2.8
2009	Swastika vs. ALS	187	5.3	5.23	(1.4)
2010	Mine vs. ALS	744	9.77	9.97	2.1
2010	Swastika vs. ALS	87	4.89	5.05	3.2
2011	Mine vs. ALS	918	7.05	7.18	1.8
2011	Swastika vs. ALS	87	4.89	5.05	3.2
2012	Mine vs. ALS	1,234	6.31	6.57	4.0
2012	Swastika vs. ALS	61	2.89	2.76	(4.7)
2012	Mine vs. ALS	1,170	6.54	6.6	0.9
2013	Swastika vs. ALS	50	3.34	3.72	11.4
2014	Mine vs. ALS	1,179	7.63	7.65	0.2
2014	Swastika vs. ALS	169	2.73	2.86	4.7
2015	Mine vs. ALS	1,471	8.49	8.54	0.6
2015	Swastika vs. ALS	180	3.49	3.49	0.1
2016	Mine vs. ALS	1,427	7.23	7.33	1.4
2016	Swastika vs. ALS	68	1.73	1.85	6.9
2017	Mine vs. ALS	1,023	5.31	5.37	1.1
2017	Swastika vs. ALS	85	1.74	2.02	16.1
2010	Mine vs. ALS	788	5.7	5.8	1.8
2018	Swastika vs. ALS	653	2.93	3.18	8.5
2010	Mine vs. ALS	943	4.568	4.61	0.9
2019	Swastika vs. ALS	343	1.73	1.86	7.5
2020	Mine vs. ALS	517	3.79	3.56	6.7
2020	Swastika vs. ALS	349	3.7	3.76	1.6
2021	Mine vs. ALS	671	7.05	7.18	1.8
2021	Swastika vs. ALS	40	7.81	7.30	(6.5)
2022	Mine vs. ALS	923	6.02	6.43	6.83
2022	Swastika vs. ALS	1,384	3.34	3.50	4.89
2022	Mine vs. ALS	601	8.50	9.08	6.81
2023	Swastika vs. ALS	462	1.22	1.27	3.84

Table STYLEREF 1 \s 8-. External Check Assays from 2009 to 2023

Figure 8-2. presents a scatter plot of the mine laboratory versus ALS check assays on pulps from 2021 to 2023 and Figure 8-3 presents a scatter plot of Swastika original assays versus ALS pulp check assays from the same time period. Both plots confirm the high bias in ALS check assays relative to original Swastika assays indicated by the comparison of mean assays in Table 8-2. Of significance are the large number of check assays with grades of \sim 0.02g/t Au for samples with a wide range of original assay values. The opposite is also true for Swastika versus ALS assays (many <0.01g/t Au original values with wide range of check assay values) in Figure 8-3. The cause for this is unknown, but it should be investigated.



Figure STYLEREF 1 \s 8-. Mine Laboratory Pulp External Check Assays at ALS (2021-2023)

Figure STYLEREF 1 \s 8-. Swastika Pulp External Check Assays at ALS (2021-2023)

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8.4.5 COARSE REJECT EXTERNAL CHECK ASSAYS

Approximately 5% of original coarse rejects were sent for re-assay at ALS. Sample numbers for re-assays are the same as for original assays. Samples with a grade above 1.0g/t Au were generally selected. New pulps are prepared at the secondary laboratory from original rejects. The ALS annual means are generally higher than the mine and Swastika annual means (Table 8-3) which indicates that ALS gold assays are biased high. As with the pulp check assays, the averaged bias indicates that the assays provided by one lab are high or low in the other lab for any given time period. It is not possible to determine which lab or labs are in error based on the check assay data alone. However, unlike for pulp check assays, the results from coarse reject check assays are inconclusive, because the source of the bias, whether due to sample preparation or analytical differences between the labs, cannot be determined. RESPEC recommends that no further check assays from coarse reject material be conducted.

Table	STYLEREF 1	\s 8 Reject External	Check Assays
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Year	Laboratories	Number of Assays	Mean Grade Original (g/t Au)	Mean Grade Check (g/t Au)	Difference (%)
	Mine vs. ALS	473	6.39	6.35	(0.7)
2009	Swastika vs. ALS	232	4.79	4.84	1
2010	Mine vs. ALS	708	5.24	5.23	(0.3)
	Swastika vs. ALS	76	2.5	2.78	11.3

Year	Laboratories	Number of Assays	Mean Grade Original (g/t Au)	Mean Grade Check (g/t Au)	Difference (%)
2011	Mine vs. ALS	788	5.02	5.26	4.5
2011	Swastika vs. ALS	72	2.18	2.51	13.2
2012	Mine vs. ALS	1,135	4.95	5.14	3.7
2012	Swastika vs. ALS	82	2.46	2.5	1.6
2012	Mine vs. ALS	1,103	6.05	6.17	2
2013	Swastika vs. ALS	45	3.78	4.07	7.7
2014	Mine vs. ALS	1,178	7.49	7.37	(1.6)
2014	Swastika vs. ALS	163	2.29	2.43	6
2015	Mine vs. ALS	1,473	7.48	7.65	2.3
2015	Swastika vs. ALS	204	3.82	3.65	(4.5)
2017	Mine vs. ALS	1,347	6.54	6.73	3
2016	Swastika vs. ALS	293	2.33	2.49	7
2017	Mine vs. ALS	1,055	4.93	5.01	1.6
2017	Swastika vs. ALS	45	1.92	1.67	(13)
2010	Mine vs. ALS	801	6.04	5.79	(4.0)
2018	Swastika vs. ALS	430	3.35	3.31	(1.2)
2010	Mine vs. ALS	1,033	6.48	6.35	(2.0)
2019	Swastika vs. ALS	513	1.08	1.18	9.3
2020	Mine vs. ALS	378	6.89	6.47	(6.1)
2020	Swastika vs. ALS	339	2.82	2.98	5.7
2021	Mine vs. ALS	601	6.83	6.79	(0.6)
2021	Swastika vs. ALS	281	4.33	4.6	6.2
2022	Mine vs. ALS	1,054	7.57	8.02	5.96
2022	Swastika vs. ALS	1,360	2.63	2.66	1.40
	Mine vs. ALS	726	8.49	8.91	4.99
2023	Swastika vs. ALS	4	1.41	4.76	238.52
	MSA Labs vs. ALS	70	0.49	0.41	(17.25)

8.4.6 CERTIFIED REFERENCE MATERIALS

Example charts for the CRM "OREAS 235" is shown in Figure 8-4 and Figure 8-5. All assays for each CRM are individually plotted, separately by laboratory, and evaluated monthly for bias relative to the certified expected values (Exp line on the chart, also called target or expected value), and CRM failures defined as assays above and below the 81

3-standard deviation threshold lines (+3STD and -3STD). For the year 2023 at Labomine, there were a total of four CRM assays that were below the 3-standard deviation limit, which yields a failure rate of 3.4%. However, the primary issue appears to be a low bias demonstrated by the calculated mean of the CRM assay data, which suggests that the mine lab is assaying low on a consistent basis. With no bias, it is probable that none of the CRM assays would have been categorized as failures. The laboratory should be notified immediately when failures occur, and consistent bias as demonstrated.



Figure STYLEREF 1 \s 8-. Plot of 2023 CRM Assays from the Mine Lab for OREAS 235

There is no bias, and no CRM assay values that exceed the 3-standard deviation threshold shown on the chart for 2023 Swastika CRM assays of OREAS 235. In fact, no values are outside the 2-standard deviation lines. Less variability in CRM assays is indicated for Swastika compared to the mine lab.

83 83



Figure STYLEREF 1 \s 8-. Plot of 2023 CRM Assays from Swastika for OREAS 235

When failures occurred, the respective assay batch was investigated and re-assayed if associated with mineralized intervals. Some CRM failures were suspected to be due to mis-labeling of CRMs, although this cannot be definitively determined. The original or re-assays were incorporated into the database, depending on the results of the investigations. RESPEC recommends continued investigation and re-assaying whenever CRM assays exceed the 3-standard deviation threshold, and the implementation of procedures that will help reduce CRM mislabeling or swaps.

Standards assayed at both labs from 2006 to 2023 at the mine and Swastika labs were plotted together in Figure 8-6 to show any variation in distribution over time for all CRMs. The certified target values and 3-standard deviation limits are not included on the chart, so bias relative to the target value and values that exceed the 3-standard deviation thresholds cannot be ascertained. There are a number of errant values between the data sets that would obviously qualify as failures. Hecla has indicated that assays associated with these and any other failures would have been investigated and re-assayed as warranted. Some could be due to mis-labeled CRMs, although this cannot be definitively determined in any given case. There is some CRM assay drift over time noted in a few data sets (e.g. the light blue and green data sets in the upper right corner of the chart).

84 84



Figure STYLEREF 1 \s 8-. Plots of All CRM Assay Results from 2006 to 2023

Table 8-4 summarizes the results of the assays of CRMs sent to the various laboratories used from 2004 to 2023. Overall, the CRMs represent approximately 5.6% of the 2005 to 2023 sample database. The average differences between the measured value and the true or expected value of the CRMs are shown. Most of the differences between the expected values and the mean of the CRM assays are within plus or minus a few percent, and the larger differences are generally related to small populations.

85 85

Standard #	Nominal Value ± 1 Standard Deviation	Laboratory	Year	Number of CRM Assays	Average	Difference (%)
6Pa	1.65 ±0.04	SGS	2004	6	1.37	-17.1
	1 422 + 0.026	000	2004	72	1.39	-2.2
6Pb	1.422 ± 0.026	202	2005	43	1.53	7.8
70	2.00 + 0.00	000	2004	95	2.95	-1.5
/Pa	3.00 ±0.06	202	2005	32	2.97	-0.9
			2008	74	6.97	-2.5
		NC	2009	217	7.08	-1
		Mine	2010	367	7.08	-1
10Pb	7.15 ±0.11		2011	55	7.06	-1.3
		Swastika	2009	117	7.21	0.8
			2010	173	7.13	-0.3
			2011	25	7.13	-0.3
	1.019 ±0.007		2011	226	0.99	-2.9
		0±0.007 Swastika	2012	459	1.01	-1
1511			2013	104	1.02	0.1
15H			2011	51	1	-2
			2012	115	1.01	-1
			2013	18	1	-1.9
		Lab-Expert	2008	16	1.22	19.5
			2007	61	1.05	3.2
			2008	130	1.01	-1.2
		Mine	2009	181	1.01	-0.7
15Pa	$1.02\pm\!\!0.02$		2010	275	1	-2
			2011	95	1.01	-0.9
			2009	86	1.01	-1.2
		Swastika	2010	163	0.99	-2.9
			2011	24	1.01	-0.9
1504	1.06 + 0.02	Mirr -	2007	4	0.95	-10.4
1320	1.00 ± 0.02	wine	2010	81	1.05	-0.9

Table STYLEREF 1 \s 8-. CRM Assay Results

86 86

Standard #	Nominal Value ± 1 Standard Deviation	Laboratory	Year	Number of CRM Assays	Average	Difference (%)
		Swastika	2010	48	1.07	1.9
			2011	269	3.44	-2.3
		Mine	2012	619	3.48	-1.1
			2013	502	3.48	-1.1
190	2.52 +0.05	Mine	2014	249	3.48	1.21
180	5.52 ±0.05		2011	74	3.51	-0.1
		с	2012	142	3.46	-1.7
		Swastika	2013	87	3.51	-0.3
			2014	79	3.48	1.21
		NC.	2006	116	3.33	-0.8
		Mine	2007	33	3.33	-0.8
18Pa	3.36 ±0.05		2004	62	3.27	-2.7
		SGS	2005	61	3.11	-7.5
			2006	39	3.12	-7.2
	3.63 ±0.3	Swastika	2006	27	3.63	7.9
		Techni-Lab	2006	78	3.3	-1.8
18Pb		Lab-Expert	2008	3	3.79	4.5
		Mine	2007	99	3.56	-2
			2008	28	3.45	-4.8
			2004	110	0.73	0.5
		SGS	2005	72	0.77	6.5
50P	0.727 ± 0.021		2006	49	0.79	8.4
		Swastika	2006	7	0.72	-0.6
		Techni-Lab	2006	49	0.77	6.5
		Mina	2006	138	0.48	10.6
51P	0.430 ± 0.013	Mine	2007	89	0.45	3.9
		Techni-Lab	2006	16	0.52	21.8
		Mine	2007	1	0.44	140.4
520	0.102 - 0.07	900	2005			
52P	0.183 ±0.07	202	2006	3	0.22	18.4
		Swastika	2006	1	0.21	12.9

Standard #	Nominal Value ± 1 Standard Deviation	Laboratory	Year	Number of CRM Assays	Average	Difference (%)
		Techni-Lab	2006	3	0.2	9.3
60B	2.570±0.11	Mine	2023	1	2.58	0.39
		Mine	2008	67	4.64	-2.4
(1)	476 10 07		2009	180	4.74	-0.4
61D	4.76±0.07	Swastika	2010	394	4.73	-0.6
			2011	207	4.67	-1.9
61Da	4 46 + 0.08	80.8	2004	12	3.72	-16.6
orra	4.40 ±0.08	303	2005	23	4.25	-4.8
			2011	407	8.63	-1.8
			2012	482	8.72	-0.8
		Mine	2013	63	8.78	-0.1
	8.79 ±0.10		2015	216	8.73	0.68
62C			2017	1	3.02	191.06
		Swastika	2011	125	8.93	1.6
			2012	128	8.79	0.1
			2015	39	8.67	1.35
			2016	66	8.68	1.32
			2013	341	10.56	0.6
		Mine	2014	379	10.54	-0.41
	10 50 10 22		2015	297	10.55	-0.52
62D	10.30 ±0.33		2013	86	10.91	3.9
		Swastika	2014	151	10.83	-3.01
			2015	225	10.83	-3.08
			2017	204	9.04	0.96
62E	9.13 ±0.41	Swastika	2018	344	9.25	-1.27
			2019	35	8.95	-1.9
		Lab-expert	2008	1	9.38	-2.7
			2006	113	9.25	-4
62Pa	9.64 ± 0.14	Mine	2007	106	9.41	-2.4
			2008	12	9.42	-2.3
		SGS	2004	31	9.31	-3.5

Standard #	Nominal Value ± 1 Standard Deviation	Laboratory	Year	Number of CRM Assays	Average	Difference (%)		
			2005	71	9.45	-2		
			2006	44	9.26	-3.9		
		Swastika	2006	23	9.46	-16.5		
		Techni-Lab	2006	93	9.14	-5.2		
62Dh	11 22 +0.17	Mine	2007	10	9.46	-16.5		
02P0	11.55 ±0.17	SGS	2004	86	10.47	-7.6		
			2019	3	9.53	-1.85		
			2020	15	9.87	1.65		
		Mine	2021	32	9.87	1.65		
			2022	59	9.55	-1.61		
			2023	13	9.73	0.17		
62F	9.71±0.239	Swastika	2019	302	9.62	-0.93		
			2020	144	9.65	-0.62		
			2021	56	9.59	-1.24		
			2022	132	9.67	-0.40		
			2023	15	9.68	-0.27		
		MSA Labs	2022	11	9.89	1.81		
			2013	401	1.05	0.7		
			2014	361	1.05	-0.26		
		Mina	2015	535	1.04	0.54		
		Willie	2016	482	1.05	-0.19		
			2017	85	1.15	-9.09		
204	1.042 + 0.020		2018	129	1.04	0.16		
204	1.043 ± 0.039		2013	77	1.02	-2.2		
			2014	140	1.02	2.1		
		Sweetike	2015	270	1.02	2.13		
		Swastika	2016	69	1.03	1.63		
			2017	55	1	4.45		
			2018	43	1.04	-0.07		
207	3 472 ±0 13	Mine	2014	121	3.49	-0.58		
207	3.4/2±0.13	5.4/2 ±0.13	5.4/2 ±0.15	IVIIIIC	2015	460	3.5	-0.73

Standard #	Nominal Value ± 1 Standard Deviation	Laboratory	Year	Number of CRM Assays	Average	Difference (%)
			2017	2	1.6	117
			2018	1	1.61	116.65
			2022	1	3.28	-5.53
			2014	48	3.49	-0.63
			2015	266	3.48	-0.13
		G (1	2016	65	3.46	0.33
		Swastika	2017	196	3.43	1.22
			2018	2	3.47	0.06
			2022	3	3.44	-1.02
			2016	465	9.4	-1.59
		Mine	2017	282	9.33	-0.84
	9.248 ± 0.438		2018	171	9.33	-0.88
208			2019	140	9.4	1.64
		Swastika	2017	30	8.95	3.28
			2018	38	9.24	0.04
			2019	4	9.59	3.7
			2016	14	1.58	-0.05
			2018	439	1.59	-0.83
			2019	375	1.57	-0.63
		Mine	2020	116	1.55	-1.9
			2021	17	1.55	-1.9
			2022	5	1.57	-0.51
200	1 590 + 0 044		2023	4	1.56	-1.42
209	1.580 ± 0.044		2017	185	1.62	-2.49
			2018	132	1.57	0.37
			2019	6	1.585	0.31
		Swastika	2020	18	1.57	-0.63
			2021	2	1.545	-2.21
			2022	11	1.57	-0.46
			2023	2	1.53	-3.16
214	$3.030\pm\!\!0.082$	Mine	2016	67	3.04	-0.43

Standard #	Nominal Value ± 1 Standard Deviation	Laboratory	Year	Number of CRM Assays	Average	Difference (%)
			2017	521	3.01	0.53
			2018	537	3.03	0.14
			2019	315	3.03	0.14
			2020	16	2.975	-1.82
			2017	168	2.93	3.44
		Swastika	2018	176	2.99	1.36
			2019	5	2.97	-1.98
			2016	414	3.54	0.13
		NC.	2017	1	2.95	-20
215	2.54 +0.007	Mine	2018	4	3.51	1
215	3.54 ±0.097		2019	2	3.625	2.4
		Swastika	2018	352	3.5	1.11
			2019	271	3.52	-0.56
	1.06 ±0.04	Swastika	2017	152	1.11	-4.81
			2018	356	1.07	-1.25
			2019	327	1.06	-0.19
221			2020	135	1.06	-0.19
221			2021	59	1.09	2.83
			2018	1	1.16	-8.62
		Mine	2019	1	1.07	0.75
			2020	13	1.07	0.75
221	1.06 ± 0.04	Mine	2021	26	1.06	-0.19
			2017	334	8.89	-1.8
			2018	340	8.81	-0.93
		Mino	2019	198	8.78	0.57
		WITTE	2020	107	8.75	0.23
228	8.73 ± 0.28		2021	31	8.74	0.11
			2022	2	8.85	1.37
			2017	157	8.4	3.98
		Swastika	2018	128	8.69	0.48
			2019	3	8.76	0.34

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Standard #	Nominal Value ± 1 Standard Deviation	Laboratory	Year	Number of CRM Assays	Average	Difference (%)
			2020	15	8.75	0.23
			2021	18	8.85	1.37
		Mina	2022	71	1.06	0.64
		Willie	2023	31	1.04	-1.23
233	1.050 ± 0.03	C	2022	75	1.24	17.93
		Swastika	2023	27	1.06	1.27
		MSA Labs	2022	13	1.73	64.84
			2021	23	1.55	-2.52
		Mine	2022	71	1.57	-1.02
			2023	109	1.56	-1.74
235	1.59 ± 0.04	Swastika	2021	29	1.56	-1.89
			2022	38	1.56	-2.12
			2023	70	1.59	-0.25
		MSA Labs	2022	2	1.59	0.28
		Mine	2019	32	3.03	-0.11
			2020	97	3.02	-0.33
			2021	27	2.99	-1.32
			2022	52	2.99	-1.39
228	2.02+0.08		2023	84	3	-0.83
238	5.05±0.08		2020	15	2.978	-1.72
		Sweetilee	2021	22	3.08	1.65
		Swastika	2022	54	3.02	-0.42
			2023	66	3.03	-0.15
		MSA Labs	2022	1	3.02	-0.43
			2019	74	3.54	-0.28
			2020	138	3.55	0.16
		Swastika	2021	53	3.45	-2.82
239	3.55±0.09		2022	96	3.50	-1.51
			2023	75	3.52	-0.78
		Mina	2020	14	3.49	-1.69
		Mine	2021	28	3.51	-1.13

RSI-M0206.22001

Standard #	Nominal Value ± 1 Standard Deviation	Laboratory	Year	Number of CRM Assays	Average	Difference (%)
			2022	64	3.54	-0.32
			2023	102	3.47	-2.33
		MSA Labs	2022	13	3.59	1.10
		Mine	2023	15	8.51	-1.71
242	8.670±0.22	Sweetilee	2022	2	8.65	-0.29
		Swastika	2023	4	8.67	0.00
242	12 200+0 21	Mine	2023	37	12.35	-0.34
243	12.390±0.31	Swastika	2023	7	12.47	0.61
245	25 720+0 55	Mine	2023	34	24.27	-5.66
245	25.730±0.55	Swastika	2023	4	25.31	-1.65
		NC.	2020	15	1.03	-0.96
		Mine	2021	30	1.03	-1.15
SG99	1.041±0.02	Swastika	2020	70	1.05	0.96
			2021	56	1.07	2.65
			2022	2	1.06	1.83
		NC.	2022	34	1.03	0.73
		Mine	2023	40	1.02	-0.44
SG113	1.024±0.02	C	2022	42	1.04	1.82
		Swastika	2023	36	1.04	2.02
		MSA Labs	2022	9	1.09	6.72
			2020	36	1.31	-1.5
		Mine	2021	25	1.43	7.52
01100	1.22+0.007		2022	4	1.41	5.40
5H82	1.33±0.007		2020	8	1.3	-2.25
		Swastika	2021	19	1.3	-2.25
			2022	31	1.31	-1.92
		Mine	2020	15	4	-2.44
		wine	2021	29	3.94	-3.9
SK109	4.10±0.03		2020	54	3.98	-2.93
		Swastika	2021	53	4.06	-0.98
			2022	1	3.51	-14.43

Standard #	Nominal Value ± 1 Standard Deviation	Laboratory	Year	Number of CRM Assays	Average	Difference (%)
		Mina	2022	38	4.08	0.22
		wille	2023	21	3.97	-2.48
SK120	4,075±0.09	Sweetilee	2022	65	4.08	0.19
		Swastika	2023	26	4.09	0.39
		MSA Labs	2022	8	4.18	2.49
SN104	0 192 0 19	Mine	2022	2	6.34	-31.01
511104	9.182±0.18	Swastika	2022	1	8.75	-4.70
		Mine	2020	35	8.54	0.95
	8.46±0.05		2021	35	8.45	-0.12
			2022	27	8.08	-4.54
CN10C			2023	45	8.35	-1.37
SIN106			2020	9	8.64	2.13
			2021	23	8.7	2.84
		Swastika	2022	48	8.54	0.88
			2023	20	8.46	-0.07
		Mina	2022	61	8.41	-0.37
		Mine	2023	82	8.40	-0.51
SN117	8.443±0.11	C	2022	25	8.39	-0.93
		Swastika	2023	54	8.47	0.32
		MSA Labs	2022	4	8.73	3.35

8.4.7 BLANKS

The coarse blank material used for Casa Berardi QA/QC in 2023 was commercially available material obtained from a local home improvement store. Multiple samples were assayed to confirm the viability of the material for use as blanks. Of the 1,439 total coarse blank samples assayed at Labomine and Swastika, 861 returned values below the detection limit and 559 returned detectible values but within acceptable limits. A total of 19 samples (1.32%), shown in Figure 8-7, were above the warning limit of 0.1g/t Au, which is10-times the detection limit of the labs. Only two of the 19 assays exceeding the warning limit were at or above the potential open-pit cutoff grade of 0.85g/t Au. Both of the highest assays, as well as the majority of the assays exceeding the warning limit, were from Labomine.





The overall low number of detectable assays above the warning limit, and the very low number at meaningful grades, indicate that there is no systematic contamination during sample preparation. Regardless, Hecla investigates each case where blank assays exceed the warning limit, and re-assays batches if in mineralized intervals. RESPEC has not evaluated any blank assay data generated prior to 2023. The laboratories should be notified immediately of any problematic blank assays that may be due to contamination during sample preparation.

The assay values for the samples preceding the blank sample are not known to RESPEC, but the information could be useful to evaluate the problematic assays. For example, high blank assays following mineralized intervals likely indicate contamination during sample preparation of the blank from the previous sample.

8.5 MINE LABORATORY INTERNAL QA/QC PROGRAM

Labomine conducts an internal QA/QC program, which includes the analysis of one blank sample, one CRM, and one duplicate for every 24 samples. Results of the Labomine laboratory QA/QC program are provided to the Casa Berardi geology department, which compiles them into graphs and evaluates the results. The mean grades and average percent differences from target values for each CRM assayed in 2023 are given in Table 8-5 The lab used 11 CRMs for the internal QA/QC program. No information regarding results of the CRM analyses by the mine lab was reviewed, although Hecla reports that few failures generally occur.

Туре	Nominal Value (g/t Au)	Mean Grade (g/t Au)	Difference (%)	Number of Assays
OxE182	0.663	0.663	(0.04)	704
SH82	1.333	1.299	(2.55)	78
SH98	1.400	1.392	(0.57)	480
OxK160	3.674	3.643	(0.84)	154
OxK175	3.843	3.810	(0.85)	375
OxL63	5.867	5.792	(1.28)	263
SL123	5.899	5.825	(1.25)	287
OxN155	7.762	7.712	(0.64)	24
OxK173	7.668	7.639	(0.38)	242
OxN155	7.776	7.659	(1.50)	73
SP73	18.17	17.726	(2.44)	144

Table STYLEREF 1 \s 8-. Casa Berardi Laboratory Program CRMs

8.6 REVERSE-CIRCULATION AND SONIC DRILLING SAMPLES

Neither RESPEC nor Hecla have any information regarding the sample preparation, analysis and security of RC drilling, which was primarily performed by Lakeshore outside the mine permit area. RESPEC also does not have any information for sonic drilling performed by Hecla in 2022 and 2023.

8.7 CONCLUSIONS AND RECOMMENDATIONS

In RESPEC's opinion, the sample preparation, analyses, QA/QC protocols and results, and security are acceptable, meet generalized industry standard practice, and provide support that the assays produced by Swastika and Labomine are generally sufficient for use in Mineral Resource and Reserve estimation. RESPEC concludes the following: / Sample collection and core-handling practices are adequate, such that potential sample losses and sampling biases are limited;

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- / The Labomine has followed similar sample preparation and analyses procedures since 2006 when operated by Aurizon through acquisition by Hecla in 2013 to the present. Laboratory staff was generally maintained during the 2013 acquisition. Swastika is an independent, accredited lab. Labomine generally follows sample preparation and analytical procedures that are consistent with commercial labs;
- / In recent years, core from surface exploration and infill diamond drilling programs are and have been analyzed by Swastika, which is an independent and accredited laboratory, for gold and silver analyses;
- / Sample analyses for underground production headings, and infill and definition drilling are performed by Labomine. Run-of-mine samples for the open pits have also been sent to Labomine for assay;
- / The available QA/QC program results indicate that the sample preparation and analytical procedures at Labomine and Swastika laboratories are adequate, and that reliable and accurate assays are being generated; and QA/QC results are summarized as follows:
 - » Blank sample results in 2023 imply minimal systematic contamination during sample preparation. The majority of blank assays exceeding the warning limit were associated with the mine lab.
 - » Aurizon and Hecla investigated and re-assayed each batch containing mineralized samples associated with the CRM failures, and took steps accordingly, which reduces the risk to the model and estimate.
 - » For the 2023 CRM data, there was low bias in CRM assays observed on charts for OREAS 285 for the mine lab, but no bias was observed for Swastika. Variability in CRM assays was higher associated with the mine lab.
 - » Regularized pulp rechecks for the primary laboratory's internal QA/QC programs resulted in a relatively low proportion of duplicate checks for mineralized samples. Check assays sent to ALS targeted mineralized intervals, and a majority of samples sent had gold grades equal to or greater than 0.1g/t Au.
 - » Results of pulp duplicate assays indicate minimal bias between the means of original and means of duplicate sample assays, with the exception of two years. Assay variability, which is a measure of the heterogeneity of gold in the deposit, cannot be determined from the averaged data.
 - External pulp and reject check assays indicate that the ALS gold assays are biased high relative to the Swastika and the mine laboratories.
- / Sample security is regarded as good. All samples remain within the mine site, which has no road access except through security at the front gate, until they are processed by the mine lab or picked up by the external lab. Samples are always attended or locked in the on-site logging, sampling or storage facilities. Chain of custody procedures consist of sample submittal forms that are sent with sample shipments, which allows for shipment tracking to ensure that all samples are received by the laboratory.

RESPEC makes the following recommendations:

- / Investigate the high bias in ALS pulp duplicate assays relative to the Labomine and Swastika lab original assays;
- Discontinue external check assays for coarse reject material;
- / Implement procedures that will reduce CRM mislabeling or "swaps";
- / Evaluate duplicate, CRM, blank and check assays independently for each lab;

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- / Track CRM assay failures by lab for each standard, and document steps taken to follow up on the failures;
- / Evaluate duplicate data on plots that show individual sample pairs. Averages of data provides an overall measure of assay bias, but does not characterize assay variability, which is usually a function of natural heterogeneity of gold in the deposits. Individual plots also better characterizes bias; and
- / Investigate blank assay values that exceed a 5x detection limit, and particularly those that are at or above potential mining cutoff grades. Evaluate relative to preceding assay values to determine if contamination could be occurring from previously processed mineralized samples. Document follow-up process and results.

9.0 DATA VERIFICATION

9.1 SITE VISIT

RESPEC visited Casa Berardi on September 18-22, 2023. The initial F160 Pit Phase was nearing completion while RESPEC QPs were at site, and underground mining operations were expected to cease within a year. RESPEC held meetings with site personnel and followed up with a number of teleconference meetings after the site visit.

RESPEC engineering QPs visited the F160, East Mine Crown Pilar (EMCP), western extension (XMCP) Pit, the West Mine underground, tailings storage facilities (TSF), core logging facilities, and surface infrastructure.

The geology of the gold mineralization was observed underground in the Principal and West deposits, in the F160 and EMCP open pits, and in core from various areas by RESPEC's geology QP. An underground diamond drill in the process of drilling core hole CBW-1223 was also visited. Core processing and sample handling procedures were reviewed in the core shack, and Hecla provided a tour of the mine laboratory. Resource modeling and estimation procedures were discussed in detail with Hecla Québec's Principal Geologist, Real Parent.

9.2 DRILL-HOLE DATABASE COMPILATION AND VERIFICATION BY HECLA

Geovia Surpac 2023 Refresh 3 (x64) was used to perform Mineral Resources estimations, manage drill-hole data, and generate 3D wireframe models. The drill-hole data is stored in SQL Server, and versions are frequently backed up in a separate MS Access database.

The lithological log data is validated during the process of geologic modeling on section and plan. The logged data are further checked in context with historical drill data and geochemical samples. Similarly, collar and down-hole survey data are checked to ensure that the hole and sample locations are in reasonable context with topography, underground development, and other data. Down-hole surveys are also evaluated for unlikely and radical bends in drill-hole traces.

Prior to importing sample assay results, the Hecla geologists evaluate the QA/QC data for possible blank or CRM failures. All assays within a given part of the sample batches associated with the failures are rerun if the intervals are mineralized, and the re-assays used in the database if warranted. Assay sample results are then imported to the SQL database, and the QA/QC sample failures and the steps taken to remediate the associated assay data are documented. Once imported, Hecla geologists reconcile the assay results with their data entered into Log Chief during logging and adjust if necessary. Assays are also imported to Leapfrog, where logic of assay locations are evaluated relative to geology and surrounding assays, and sample numbers are checked in core photos. Finally, the majority of assays in mineralized zones are compared to original assay certificates. Any issues found in the data during these checks are corrected in the database.

All down-hole deviation measurements obtained using Sprint-IQ, Tn14, or EZTrack instruments are evaluated for radical bends in drill-hole traces and other logic issues by the geologist, modified as needed, and uploaded to the

Reflex cloud-based platform (ImdexHub). The data is checked to ensure that the adjustment for magnetic declination of -12.5° has been applied to all azimuth measurements. A correction of $+0.41^{\circ}$ on the azimuth is also applied to account for the local mine grid offset. All accepted data is flagged as validated, and the flagged down-hole surveys are automatically imported into the database. The Hecla geologist then verifies that the down-hole deviation data have been properly imported.

When possible, surface drill-collar locations, as well azimuth and inclination data, are surveyed. Coordinate data is manually entered and compared with the planned parameters. Surface and underground drill-hole collars are visually reviewed against topography and underground development wireframes, respectively, as well as other drill holes during modeling. For underground drilling the azimuth is measured on the drill rig before the drilling begins.

9.3 DRILL-HOLE DATABASE VERIFICATION BY RESPEC

RESPEC verified Hecla's 2021, 2022 and 2023 drill-hole data to confirm that the data have been generated with proper procedures, have been accurately transcribed from the original sources and are suitable to be used. Additional confirmation of the drill data's reliability is based on the evaluations of the Casa Berardi drill project QA/QC procedures and results, as described previously, and in working with the data during the model review process.

Hecla's Casa Berardi full project drill-hole data was provided to RESPEC as a SQL database that contained drill-collar coordinates, down-hole surveys, and assays. In January 2024, RESPEC conducted verification of Hecla's database in two phases: Phase 1 involved running a series of logical tests against the current modeling database to test for data integrity issues, and correction/explanation of and documentation of any issues. For Phase 2, collar coordinates, down-hole surveys and assays were compared to original certificates or proxy data files.

A single digital file for each of the collar coordinate and down-hole survey compilations was received from Hecla. The assay certificate data was downloaded from a Heclacontrolled distribution site. A separate database was compiled from these files in GeoSequel, which was then compared against the Casa Berardi Project SQL database.

9.3.1 PHASE 1 – LOGIC TESTS

The initial phase logical tests of the database included a series of queries to validate the modeling database (Hecla's project SQL database). The following validation tests were conducted to identify:

- / Collars: identify collars with missing depths, collars with missing coordinates, switched or duplicated coordinates, drill holes without assay intervals or intervals without assays, drill holes without collar survey information, drill holes without geology, and drill holes with illogical geotechnical information (core holes only);
- / Surveys: identify survey depths greater than total depth, survey points missing azimuth or dip values, surveys with azimuth readings above 360° or below 0°, surveys with positive or flat dip angles (<~ -45°), or outside -90° to +90°; and
- / Assays: identify illogical or incorrect 'from' and 'to' intervals; excessively large or small assay or geologic intervals, assay, geologic or geotechnical intervals that are greater than collar total depth, gaps and overlaps in assay, geologic or geotechnical intervals.

Several minor data integrity issues were found, mostly involving sample overlaps and mistyped assay intervals. Hecla personnel were notified of these issues, and they were corrected in Hecla's database.

9.3.2 PHASE 2 – ASSAY DATA VERIFICATION

The second phase of the data validation process was the most comprehensive, comparing Hecla's Casa Berardi Project database to the database created from original certificates imported by RESPEC into the GeoSequel system. Hecla provided RESPEC with the Swastika, MSALabs and mine laboratory certificates in .csv and .pdf files, so RESPEC could not verify the sources to be actual downloads from the original laboratory. However, the .pdf certificates from MSALabs and Swastika appeared to be in standard formats from those laboratories. In all, 2,527 certificates with 113,677 individual sample assays were imported. Of the total, 22,997 were Hecla or internal laboratory QA/QC samples, which gives an overall QA/QC rate of 20.23%. A digital audit was performed on 100% of the remaining 85,903 gold assay records. Only 20 gold assays (0.023% error rate) in Hecla's database did not match the certificate assays. Hecla was notified of all significant differences found, which were corrected in Hecla's database.

9.4 COMMENTS ON DATA VERIFICATION

Compilation and subsequent verification of the Casa Berardi database has been performed by Hecla personnel since 2014. All data has been compiled by Hecla staff as it is generated and imported into the Gem Logger or Log Chief databases. Once compiled and loaded for modeling, collar coordinate, down-hole survey and geology data are reviewed in context with topography and surrounding data. Assay results are also evaluated relative to geology and surrounding assays, sample numbers are checked in core photos, and mineralized zones are compared to original assay certificates. Any issues found in the data during these checks are corrected in the database.

During the site visit, RESPEC observed the geology of the Casa Berardi deposit and confirmed the presence of alteration and quartz-veining that is conducive to gold mineralization. Mined versus modeled reconciliations, which were generally reasonable, were reviewed. RESPEC reviewed Hecla's process for compiling collar, down-hole survey, and assay drill-hole data, and the verification of that data once it is entered. RESPEC considers that a reasonable level of verification is completed on a regular basis to ensure that all data has been compiled accurately.

External reviews of the database have been undertaken in support of acquisitions, support of feasibility level studies, and in support of Mineral Resource and Mineral Reserve estimates in the past, producing independent assessments of the database quality. However, RESPEC has not reviewed any of these external reviews, and does not rely on their results and conclusions for data verification.

RESPEC conducted an audit to verify all 2021, 2022 and 2023 assay data, and discovered only 20 discrepancies in 85,903 assay records. RESPEC did not review data prior to 2021 for several reasons:

- / The quantity of data audited from 2021, 2022 and 2023 was substantial;
- 100% of the 2021, 2022 and 2023 data was verified, which yielded an acceptable 0.023% failure rate. Hecla has stated that similar compilation and verification procedures have been implemented prior to 2021, so it is not unreasonable to expect that the database assays compiled prior to 2021 are equally reliable;

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- / Hecla's productive mining history using models that relied on pre-2021 data compilations and positive mined vs modeled reconciliations provide a level of confidence in past assay databases; and
- / Much of the underground mineralized material drilled prior to 2021, and some of the open pit material, has been mined out.

RESPEC is satisfied that the data compilation and verification programs performed by Hecla on the Casa Berardi project drill-hole data adequately ensures that the data contained in the resulting database is sufficiently accurate. Given Hecla's database validation process, RESPEC's verification of all 2021, 2022 and 2023 assay data, and the fact that Hecla has been modeling and mining at Casa Berardi using data compiled and verified in a similar manner for ten years, the drill-hole database is considered to be sufficient for use in geological and mineral domain modeling, Mineral Resource and Mineral Reserve estimation, and mine planning.

10.0 MINERAL PROCESSING AND METALLURGICAL TESTING

This section was contributed by SLR. The SLR QP has reviewed the information disclosed in this section and takes full responsibility for this information.

10.1 INTRODUCTION

The Casa Berardi processing plant originally commenced production in September 1988 and production was suspended in September 1997. During this initial production period, the plant processed 3.5 Mt of ore with an average grade of 7.1 g/t Au and average mill gold recovery of 87%. A total of 688,400 oz Au were recovered.

Production restarted in early November 2006, and commercial production was achieved as of May 1, 2007. Since 2006, a total of 16.1 Mt at an average grade of 5.20 g/t Au have been milled at Casa Berardi for a gold output of 2.37 Moz Au as of the effective date of this report.

The mill received ore from the EMCP and XMCP pits from August 2016 and subsequent years. Ongoing processing plant operations demonstrate the levels of gold recovery to be expected from the underground ores. LOM projected mill recoveries range from 81.3% to 91.5% for the underground Mineral Reserves and from 85% to 90.2% for the open pit Mineral Reserves. Milling of ore from the F160 Pit began in Q4 of 2022.

Historical metallurgical test work programs and results were previously reported by Hecla (2019) and SLR (2022). Relatively recent test work programs, both internal and external, have been performed to support current operations and potential improvements, including:

- / Blue Coast Research Ltd. (Blue Coast) (Parksville, B.C.), Project No. PJ5308 (Blue Coast, 2020b) metallurgical investigations were undertaken on the WMCP material;
- / Blue Coast (Parksville, B.C.), Project No. PJ 5333 (Blue Coast, 2021a) metallurgical investigations were undertaken on the Principal Pit material;
- / Blue Coast (Parksville, B.C.), Project No. PJ 5339 (Blue Coast, 2021b) metallurgical investigations on flotation were undertaken on the WMCP material;
- / Blue Coast (Parksville, B.C.), Project No. PJ 5348 (Blue Coast, 2022) Phase 2 metallurgical investigations were undertaken on the WMCP material; and
- / Blue Coast (Parksville, B.C.), Project No. PJ 5399 (Blue Coast, 2023) metallurgical investigations were undertaken on the WMCP Extension.

Blue Coast is a commercial metallurgical testing laboratory independent of Hecla.

Since the mine has been operating steadily since 2006, the metallurgical recoveries are based primarily on operating data.

The SLR QP reviewed the following data provided by Casa Berardi:

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- / Recent metallurgical test work programs;
- / Historical mill production and recovery data; and
- Production reports.

10.2 METALLURGICAL TESTING

The following sections describe the metallurgical testing undertaken during the period of 2020 to 2023 that was not previously reported. Information was largely summarized from the reports prepared by Blue Coast covering the following test programs:

- / 2020 WMCP Test Program (Blue Coast, 2020b);
- / 2021 Principal Pit Test Program (Blue Coast, 2021a);
- / 2021 WMCP Flotation Test Program (Blue Coast, 2021b);
- / 2022 WMCP Phase 2 Test Program ((Blue Coast, 2022); and
- / 2023 WMCP Extension Program ((Blue Coast, 2023).

10.2.1 2020 WMCP TEST PROGRAM

In 2020, a test work program was completed by Blue Coast on mineralized material from the WMCP Pit. The objective of this test program was to evaluate the potential for WMCP Pit material to become a valuable ore source for mining in the near future. For this assessment, chemical and mineralogical characterization, comminution, and cyanidation tests were completed on 17 different composite samples and blends.

10.2.1.1 SAMPLE PREPARATION AND ANALYSES

Hecla selected drill core intervals from the WMCP area and submitted the material for composite preparation and metallurgical testing to Blue Coast. A total of 640kg of material contained in five barrels was received at Blue Coast's facilities in Parksville, B.C., Canada in July 2020. Hecla created 17 composites from the drill core totaling approximately 396 kg. Table 10-1 shows the weights and chemical assays of the 17 WMCP composite samples.

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Composite	Weight (kg)	Au (g/t)	S _{tot} (%)	S ²⁻ (%)	C _{tot} (%)	C _{org} (%)
105-001LG	61.4	0.74	2.21	1.99	3.81	0.37
105-032LG	65.5	1.11	1.23	1.16	2.44	0.10
105-039LG	51.6	0.86	2.53	2.38	3.19	0.53
105-007LG	54.7	0.95	2.77	2.69	2.96	0.40
105-020LG	53.0	0.77	2.48	2.42	2.22	0.16
105-032MG	2.37	7.57	5.06	4.85	2.86	0.95
105-039MG	19.2	1.66	2.06	1.98	2.96	0.50
105-007MG	10.4	1.75	1.84	1.79	2.78	0.22
105-001MG	8.31	2.71	2.36	2.35	2.69	0.18
105-002MG	8.21	3.99	1.50	1.42	0.82	0.40
105-020MG	32.2	1.89	1.64	1.48	2.02	0.10
105-032HG	6.15	3.69	2.91	2.77	1.78	0.19
105-039HG	9.03	5.46	3.04	2.87	1.94	0.97
105-007HG	9.67	14.21	2.37	2.13	1.77	0.54
105-020HG	5.25	4.61	3.44	3.39	3.39	0.38
Low Grade MC	236.2	0.79	2.28	2.22	2.91	0.32
Mid Grade MC	53.3	1.84	1.76	1.69	2.31	0.21

Table STYLEREF 1 \s 10-. Chemical Assays of Composite Samples

A mineralogical assessment was conducted on a 50:50 weight percent blend of mid-grade composites 105-020MG and 105-039MG. The sample was dominated by quartz, micas, and feldspars (73% combined) and appreciable calcite was present (11%). Pyrite (3.76%) was the dominant sulfide followed by arsenopyrite (1.19%). The modal mineralogy is shown in Table 10-2.



Figure STYLEREF 1 \s 10-. Mineralogical Analyses on Composites

A trace mineral search was conducted on the mineralogy composite polished sections. A total of nine grains were found, all identified as electrum. The electrum grains ranged in size from one micron to $13 \,\mu$ m and the vast majority of the grains were associated with sulfides (pyrite followed by arsenopyrite). The close association of gold with the sulfides could make this material a candidate for flotation ahead of cyanidation.

10.2.1.2 COMMINUTION TESTING BY SGS

Three comminution composite samples were submitted to SGS Mineral Services in Burnaby, B.C., Canada for Semi-Autogenesous Grinding (SAG) Mill Comminution (SMC) testing and Bond Abrasion Index (Ai) testing. Bond Ball Mill Work Index (BWI) testing was performed at Blue Coast. SGS is independent of Hecla.

Results from the SMC tests showed that the three samples had Axb values ranging from 67.3 to 78.1, which indicates that the material is moderately soft. Ai test results ranged from 0.196 to 0.303, indicating that the material is moderately abrasive. BWI test results were consistent between each composite sample and ranged from 13.6kWh/t to 13.8kWh/t, which suggested the material was of medium hardness. Table 10-2 summarizes the results of the comminution test work.

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Commonito	SMC Test					BWI	Bond Abra	asion Index
Composite	Α	b	Axb	ta	DWI	(kWh/t)	Ai	POA [*]
LG 1-2	78.1	0.54	42.2	0.39	6.55	13.6	0.303	60
LG 3-5	67.3	0.74	49.8	0.46	5.64	13.6	0.196	40
MG	68.0	0.77	52.4	0.47	5.48	13.8	0.284	57
Average	71.1	0.68	48.1	0.44	5.89	13.7	0.300	52

Table STYLEREF 1 \s 10-. Comminution Test Results on Composites

Notes: * Percentile of abrasivity

10.2.1.3 GRAVITY TESTING BY SGS

Gravity Recoverable Gold (GRG) test work is typically performed using a laboratory scale centrifugal gravity concentrator and a Knelson MD-3 unit was employed for this study. A single Extended Gravity Recoverable Gold (E-GRG) test was conducted on the Mid-Grade Master Composite. During an E-GRG test a 20-kg sample was passed through the Knelson MD-3, with the tails of each subsequent gravity pass being ground successively finer. Target grind sizes for each pass were 80% passing (K80) 850µm, 250µm and 75µm. Grind calibrations were performed using a 10-kg sample of the material to determine approximate grind times required to achieve the target particle size for each stage of gravity recovery.

Results from the E-GRG test indicated that the Gravity Recoverable Gold (GRG) content of the sample was 42.6%. However, the majority of the GRG was noted as being fine and harder to liberate. This agrees with the general observations from the gold mineralogy study, which noted that electrum grains ranged between one micron to 13µm.

10.2.1.4 CYANIDATION TESTING BY SGS

A total of 48 benchtop cyanidation tests were completed during this test program. Bottle Roll Leach Tests.

Tests CN-1 through CN-4 were conducted as 4.4lb (2.0kg) coarse bottle roll leach tests to examine the response of the Low-Grade Master Composite across a series of crush sizes (100% passing 1.5in., 0.75in., 0.5in., and 10mesh (1.7mm)). Four coarse bottle roll leach tests were conducted at 40.0% solids with a sodium cyanide concentration of 1.0 g/L of solution, leached for a total of 96 hours, and sampled at two, six, 24, 72, and 96 hour intervals. Residues from each test were sized and size by size assays were conducted.

The 10 mesh sample had the highest gold recovery at 16.9%. Recovery was low in tests with coarser crush sizes. Overall recovery was poor across each leach test and therefore, no column leach test work was undertaken.

Stirred Leach Tests

Prior to leach test work, two-point grind calibration tests were performed on each composite to determine appropriate grind times. Tests CN-4 through CN-48 were conducted as 1.0kg stirred leaches with carbon to test the response of the 15 variability composites across three target primary grind sizes (106μ m, 75μ m, and 53μ m) at 50% solids. Due to the limited mass for sample 105-032MG, only two grind sensitivity tests were performed. All stirred leaches were conducted as carbon-in-leach (CIL) tests at an addition rate of 15.0g/L pulp with a 24-hour retention

time. Sodium cyanide concentration was maintained at 1.0g/L. Kinetic sub-sampling of both liquor and solids was performed at two, six, 10, 20, and 24 hour intervals.

Cyanidation test work on the WMCP material showed that:

- / Coarse bottle roll tests resulted in low gold recovery ranging between 7% to 17%, suggesting this material would not be amenable to heap leaching;
- / Gold recovery from CIL tests ranged from 51.2% to 93.0%. The variability in recovery between samples was much higher than that observed in earlier phases of work on samples from the F160 Pit;
- / A composite sample with higher head grades had higher overall recovery, however, significant variability was noted and the correlation was weak; and
- / Finer primary grinds returned slightly higher overall gold recoveries. Grind sizes that were evaluated ranged from 80% passing 106µm to 80% passing 53µm.

During discussions between Blue Coast and Casa Berardi, it was noted that some of these composites were taken from the edge of the mineralized zone, which may have explained some of the variability in recovery. Therefore, additional test work was recommended using samples collected from within the main mineralized envelope.

The following recommendations were made for future test work:

- / Conduct follow-up test work on new samples collected from within the main mineralized envelope of the WMCP area;
- / Evaluate the potential for flotation to recover gold;
- / Conduct cyanidation test work on flotation concentrates, both with and without regrinding; and
- / Evaluate the benefits of lead nitrate addition and higher cyanide concentrations to improve gold extraction.

10.2.2 2021 PRINCIPAL PIT TEST PROGRAM BY BLUE COAST

Blue Coast was contracted by Hecla to execute a metallurgical test work program on material from the Principal Pit area of the Casa Berardi Mine. The purpose of the test work program was to evaluate the potential of the Principal Pit material to become a valuable ore source for mining in the near future. Test work included chemical characterization and cyanidation. A total of nine composites were evaluated during this test work program.

10.2.2.1 SAMPLE PREPARATION AND ANALYSES

Hecla selected drill core intervals from the Principal Pit area and submitted the material for composite preparation and metallurgical testing to Blue Coast. Approximately 380kg of material contained in three barrels was received at Blue Coast's test facility in Parksville, B.C., Canada in November 2020. Hecla created nine composites from the drill core material totaling approximately 82kg.

Weights and head grades of the nine composites are summarized in Table 10-3.

Table STYLEREF 1 \s 10-. Head Grade Summary

Composite	Weight (kg)	Au (g/t)	S _{tot} (%)	S ²⁻ (%)	C _{tot} (%)	C _{org} (%)
CBS-09-302	9.440	0.66	0.57	0.54	2.50	0.03

Composite	Weight (kg)	Au (g/t)	S _{tot} (%)	S ²⁻ (%)	C _{tot} (%)	C _{org} (%)
CBS-09-303	6.953	2.11	0.77	0.76	2.54	0.04
CBS-09-311	7.323	2.07	0.54	0.53	2.85	0.03
CBS-09-314	6.998	4.72	1.80	1.77	1.87	0.06
CBS-09-320	9.716	1.78	1.73	1.69	3.21	0.07
CBS-09-337	11.001	7.13	3.13	3.18	2.17	0.06
CBS-10-333	9.342	5.51	2.50	2.47	2.14	0.14
CBS-10-360	9.881	1.55	0.82	0.67	1.17	0.03
CBS-17-758	11.020	7.57	2.30	2.08	2.61	0.02

10.2.2.2 CYANIDATION TESTING BY BLUE COAST

A total of 27 benchtop cyanidation tests were completed. All 27 tests were conducted as 1.0kg stirred leaches with carbon, testing the metallurgical response of the nine variability composites across three target primary grind sizes.

Stirred Leach Tests

Prior to leach test work, two-point grind calibration tests were performed on each composite to determine appropriate grind times. A total of 27 1.0-kg stirred leaches were done on nine composites. Each composite was subjected to three grind sensitivity tests. The primary grind size targets used for the test work were 80% passing 106 μ m, 75 μ m, and 53 μ m, at a solids content of 50%. All stirred leaches were conducted as CIL tests at an addition rate of 15.0g/L pulp with a 24 hour retention time. Sodium cyanide was maintained throughout the stirred leaches at a concentration of 1.0g/L of solution. Each stirred leach included kinetic sub-sampling of both liquor and solids at two, six, 10, 20, and 24 hours.

Cyanidation test work on the Principal Pit material showed that:

Gold recovery from CIL tests ranged from 81.6% to 94.8%;

/ No significant relationship between head grade and recovery was observed; and

/ Finer primary grinds returned slightly higher overall gold recoveries. Grind sizes that were evaluated ranged from 80% passing 106 µm to 80% passing 53µm.

The following recommendations were made on future test work:

- 1. Evaluate the potential for flotation to recover gold;
- 2. Conduct cyanidation test work on flotation concentrates, both with and without regrinding;
- 3. Evaluate the benefits of lead nitrate addition, and higher cyanide concentrations to improve gold extraction; and
- 4. Conduct grindability studies on Principal Pit material.

The grindability studies should include:

- / SMC test work
- BWI tests
- Ai Tests
- 109 109

It was also recommended to:

- / complete a mineralogy study on Principal Pit material including modal mineralogy and gold associations; and
- / Extend the use of spatial analysis and metallurgical dashboard development to other deposits associated with the Casa Berardi Operation, specifically the WMCP area. This will enable a more detailed analysis of relationships between metallurgical performance, geography, and mineralogy.

10.2.3 2021 WMCP FLOTATION TEST PROGRAM

Blue Coast was contracted by Hecla to execute a metallurgical test work program on material from the WMCP area of the Casa Berardi mine. The purpose of the test work program was to evaluate the potential of gold recovery by flotation on the WMCP material. Test work included chemical characterization, flotation, and cyanidation. Two composites were evaluated during this test work program.

10.2.3.1 2021 SAMPLE PREPARATION AND ANALYSES BY BLUE COAST

A previously prepared Low Grade Master Composite (LG MC) was used in testing and a new High Grade Master Composite (HG MC) was also prepared. Sample weights and head grades of the two composites are summarized in Table 10-4.

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Composite	Sample	Weight (%)	Au (g/t)	S _{tot} (%)	S ²⁻ (%)	C _{tot} (%)	C _{org} (%)
	105-001 LG	22					
	105-007 LG	19					
	105-020LG	18					
	105-032LG	23					
	105-039LG	18					
Low Grade Master Composite	Total	100	0.79	2.3	2.2	2.9	0.3
	105-007HG	41					
	105-039HG	35					
	105-020HG	8					
	105-032HG	16					
High Grade Master Composite	Total	100	9.01	2.7	2.6	1.9	0.7

Table STYLEREF 1 \s 10-. Head Grade Summary, 2021 Blue Coast Work

10.2.3.2 2021 FLOTATION TESTING BY BLUE COAST

A total of three rougher flotation tests were conducted on the LG MC sample and two rougher flotation tests were conducted on the HG MC sample. These tests were conducted as kinetic bulk sulfide flotation tests; the baseline reagent scheme was as follows:

- / Potassium Amyl Xanthate (PAX) a strong xanthate collector used for gold and sulfide mineral flotation.
- / F-140 medium-weak mixed-alcohol based frother.
- / The conditions tested were primary grind size, copper sulfate dosage, and PAX dosage.

Table 10-5 summarizes the flotation test conditions.

Table	STYLEREF	1 \s 10	2021 WMCP	Flotation T	est Conditions
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Test ID	Feed	Primary Grind, p80 (μm)	PAX Dosage (g/t)	Copper Sulfate Dosage (g/t)
F-1	LG MC	100	75	
F-2	LG MC	100	75	50
F-3	LG MC	75	75	
F-4	LG MC	100	75	150
F-5	LG MC	100	125	150
F-6	HG MC	100	125	300
Test ID	Feed	Primary Grind, p80 (μm)	PAX Dosage (g/t)	Copper Sulfate Dosage (g/t)
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F-7	HG MC	100	125	300

The initial three tests (F-1 to F-3) on the LG MC explored the effect of grind size and the effect of copper sulfate dosage.

Flotation test work on the WMCP material showed that:

- No benefit was observed from using a finer primary grind size (75μm vs. 100μm);
- The addition of copper sulfate resulted in an increase in flotation kinetics and in arsenic recovery;
- Increased PAX dosages did not result in an increase in recovery;
- / The maximum gold recovery achieved on the Low Grade Master Composite was 88.8%, at a combined rougher concentrate grade of 4g/t Au.
- / The High Grade Master Composite flotation test resulted in a gold recovery of 92.9%, at a combined rougher concentrate grade of 37.6g/t Au.

10.2.3.3 2021 CYANIDATION TESTING BY BLUE COAST

Stirred Leach Tests

A total of two 1.0kg stirred leaches were done on flotation tails (CN-1 and CN-2). Four 0.66 lb (300 g) stirred leaches were conducted on flotation concentrates. The flotation tails were transferred to cyanidation without further grinding. The concentrates were reground to approximately 20 μ m in a ceramic jar mill before cyanidation. All leaches were conducted as CIL tests at an addition rate of 15.0 g/L pulp and at a solids content of 50%. Each stirred tails leach included kinetic sub-sampling of both liquor and solids at two, six, 10, 20, and 24 hours. No kinetic sub-samples were collected from the flotation concentrate leaches, except for a single 24 hour residue sub-sample from CN-5. Table 10-6 summarizes the test conditions.

Table STYLEREF 1 \s 10-. 2021 WMCP Flotation Product CIL Stirred Leach Conditions

Test ID	Feed	Retention Time (h)	Sodium Cyanide Concentration (g/L)	Additional Conditions
CN-1	F-4 Rougher Tail	24	1	
CN-2	F-6 Rougher Tail	24	1	
CN-3	F-4 Ro Con 1-3	24	2.5	
CN-4	F-6 Ro Con 1-3	24	2.5	
CN-5	F-7 Ro Con 1-3	48	2.5	200 g/t Lead Nitrate
CN-6	F-7 Ro Con 1-3	24	4	

		Primary Gri	nd, p80 (µm)	24 horan Arr	Desiders Creads	Reagent Consumption		
Test ID	Feed	Target	Actual	Recovery (%)	Au (g/t)	NaCN (kg/t)	CaO (kg/t)	
CN-1	F-4 Rougher Tail	100	99	81.5	0.02	1.25	0.58	
CN-2	F-6 Rougher Tail	100	101	72.6	0.22	1.28	0.43	
CN-3	F-4 Ro Con 1-3	20	16	70.6	1.31	2.93	0.60	
CN-4	F-6 Ro Con 1-3	20	20	91.3	3.06	3.98	0.86	
CN-5	F-7 Ro Con 1-3	20	19	91.2*	3.95	7.94	1.03	
CN-6	F-7 Ro Con 1-3	20	21	90.4	4.13	6.5	0.83	

Table STYLEREF 1 \s 10-. Summary of 2021 WMCP Flotation Product CIL Stirred Leach Results

Note: * 48 hour Au recovery for CN-5

Cyanidation test work on the WMCP flotation products showed that:

/ Gold recovery from the LG MC concentrate and tails were 70.6% and 81.5%, respectively;

- / Combined flotation and cyanidation recoveries resulted in an overall LG MC gold recovery of 71.8%;
- / Gold recovery from the HG MC concentrate and tails were 91.3% and 72.6%, respectively;
- / Combined flotation and cyanidation recoveries resulted in an overall HG MC gold recovery of 90.0%; and
- / Additional retention time, lead nitrate addition, and increased cyanide concentration did not improve gold recovery.

The following recommendations were made for future test work:

- / Conduct an expanded flotation and cyanidation test work program on material from the WMCP area to further explore the potential recovery benefits of combined flotation and cyanidation; and
- / Conduct further whole ore cyanidation test work on new samples collected from within the main mineralized envelope of the WMCP area.

10.2.4 2022 WMCP PHASE 2 TEST PROGRAM

Blue Coast was contracted by Hecla to execute a Phase 2 metallurgical test work program on material from the WMCP area of the Casa Berardi mine. The purpose of the test work program was to characterize the spatial variability in the WMCP samples and to evaluate the amenability of the WMCP master composites to gold recovery by gravity, flotation, and cyanidation. A total of 39 spatial variability composites and three master composites were evaluated in a two part test work program summarized in this section: / Part 1 – Variability Test Work

- / Part 2 Master Composite Test Work
- 113 113

10.2.4.1 PART 1 – VARIABILITY TEST WORK 2022

Sample Preparation and Analyses

Hecla selected drill core intervals and associated coarse rejects from the WMCP area and submitted the material for composite preparation and metallurgical testing to Blue Coast. Approximately 1,200kg of material was received at Blue Coast's test facility in Parksville, B.C., Canada in April 2021.

The coarse reject portions were grouped into 39 spatially discrete variability composites (grouped by drill hole depth data) and the proposed composites were presented to Hecla for approval. Each variability composite was stage crushed to 100% -10 mesh, homogenized, and split into replicate 1.0kg test work charges and head assay sub-samples.

Cyanidation Testing

Variability Stirred Leach Tests

A 1.0 kg stirred leach was conducted on each of the 39 variability composites. The primary grind size target used for the test work was 80% passing 75 µm at a solids content of 50%. All stirred leaches were conducted as CIL tests at an addition rate of 15.0 g/L pulp with a 24 hour retention time. Sodium cyanide was maintained throughout the stirred leaches at a concentration of 1.0 g/L of solution. Each stirred leach included kinetic sub-sampling of both liquor and solids at two, six, 10, 20, and 24 hour intervals. Table 10-8 summarizes the results from the variability stirred leach tests.

			TT. JA	ud Au ann an Resid		Reagent Co	onsumption
Test ID	Feed	Primary Grind, p80 (μm)	flead Au (g/t)	24 hour Au Recovery (%)	Residue Grade Au (g/t)	NaCN (kg/t)	CaO (kg/t)
CN-1	CBF-105-045 A	68	0.45	76.1	0.13	1.10	0.53
CN-2	CBF-105-045 B	68	1.30	61.4	0.51	0.96	0.40
CN-3R	CBF-105-045 C	66	1.58	83.9	0.23	1.42	0.53
CN-4R	CBF-105-045 D	72	0.50	11.2	0.41	1.25	0.55
CN-5	CBF-105-043 A	77	1.01	10.8	0.95	1.11	0.43
CN-6	CBF-105-043 B	78	0.99	28.8	0.77	1.04	0.48
CN-7	CBF-105-043 C	86	0.87	61.4	0.39	1.30	0.42
CN-8	CBF-105-043 D	74	1.35	93.1	0.10	1.26	0.37
CN-9	CBF-105-043 E	67	1.34	90.8	0.10	1.23	0.49
CN-10	CBF-105-048 A	72	1.41	83.8	0.25	1.31	0.55
CN-11	CBF-105-048 B	73	0.84	3.8	0.85	1.64	0.84
CN-12	CBF-105-028 A	69	0.79	54.9	0.36	1.12	0.42
CN-13	CBF-105-036 A	73	0.40	67.8	0.14	0.98	0.56
CN-14	CBF-105-036 B	71	4.90	79.8	1.05	1.10	0.29
CN-15	CBF-105-057 A	76	1.16	91.6	0.11	1.23	0.65
CN-16	CBF-105-057 B	69	0.94	80.2	0.18	1.02	0.60
CN-17	CBF-105-057 C	82	0.60	29.3	0.43	1.55	0.73
CN-18	CBF-105-057 D	85	4.96	84.0	0.72	1.02	0.50
CN-19	CBF-105-057 E	72	1.07	68.5	0.34	0.96	0.49

Table STYLEREF 1 \s 10-. 2022 WMCP Variability Cyanidation Results

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			Hand Arr			Reagent Consumption		
Test ID	Feed	Primary Grind, p80 (μm)	(g/t)	24 hour Au Recovery (%)	Residue Grade Au (g/t)	NaCN (kg/t)	CaO (kg/t)	
CN-20R	CBF-105-059 A	75	1.08	70.7	0.34	1.68	0.40	
CN-21	CBF-105-050 A	74	0.46	85.6	0.07	1.10	0.51	
CN-22	CBF-105-050 B	68	0.50	16.0	0.40	1.47	0.71	
CN-23	CBF-105-049 A	79	1.89	83.1	0.32	1.15	0.55	
CN-24	CBF-105-049 B	73	2.08	89.2	0.18	1.12	0.52	
CN-25	CBF-105-049 C	75	1.00	91.4	0.12	1.05	0.45	
CN-26	CBF-105-049 D	62	0.91	20.8	0.83	1.63	0.61	
CN-27	CBF-105-049 E	74	0.79	57.5	0.36	1.28	0.57	
CN-28	CBF-105-055 A	81	0.32	49.2	0.19	1.26	0.61	
CN-29	CBF-105-055 B	80	2.64	72.2	0.77	1.05	0.43	
CN-30R	CBF-105-055 C	61	0.54	69.0	0.18	1.59	0.65	
CN-31	CBF-105-055 D	82	1.17	53.8	0.54	1.20	0.44	
CN-32	CBF-105-058 A	71	0.74	76.3	0.17	1.55	0.60	
CN-33	CBF-105-058 B	73	1.94	44.2	1.08	1.42	0.52	
CN-34	CBF-105-058 C	73	2.49	68.5	0.84	1.19	0.53	
CN-35	CBF-105-060 A	75	0.89	89.1	0.10	1.32	0.46	
CN-36	CBF-105-061 A	77	2.55	63.1	0.88	1.53	0.59	
CN-37	CBF-105-061 B	75	0.85	49.0	0.43	1.28	0.66	
CN-38	CBF-105-067 A	73	2.59	59.8	1.09	1.27	0.32	

			Hood Au			Reagent Co	onsumption
Test ID	Feed	Primary Grind, p80 (μm)	(g/t)	24 hour Au Recovery (%)	Kesidue Grade Au (g/t)	NaCN (kg/t)	CaO (kg/t)
CN-39	CBF-105-067 B	70	1.67	71.9	0.56	1.35	0.34

These 2022 WMCP variability composites showed significantly more variability in gold recovery than the past WMCP test work programs. Gold recoveries ranged from 3.8% to 93%. On average, composites with higher head grades had higher gold recovery. Additionally, the organic carbon head grade and arsenic head grade were both negatively associated with gold recovery. A multivariate regression analysis was conducted on these results using JMP statistical analysis software. The composite head assays (including Au, S_{total}/S^2 , $C_{total}/C_{organic}$ and ICP multi-element scans) and cyanidation data were imported and the JMP software was used to conduct a statistical analysis to determine the factors which have the strongest correlations to gold recovery. This analysis found that gold head grade, sulfur, organic carbon, copper, and arsenic head grade were good predictors of gold recovery.

Further data analyses performed by Blue Coast resulted in:

- / Generation of scatter plots for S vs. C_{tot} head grade
- / Generation of scatter plots for gold leach recovery vs. NaCN consumption
- / Design and grouping of the composites into three Master Composites as follows:
 - » MC-1 high gold recovery, low S^{2-} and low C_{org}
 - » MC-2 low gold recovery, high cyanide consumption
 - » MC-3 low gold recovery, low cyanide consumption.

10.2.4.2 PART 2 –2022 MASTER COMPOSITE TEST WORK BY BLUE COAST

Sample Preparation and Analyses

Following the Part 1 - Variability Test Work program, three groupings of the variability composites were proposed to Hecla for approval to form the master composites. The drill core intervals associated with each variability composite was grouped into the destination master composite, comminution sub-samples were collected, and the remaining material was stage crushed to 100% -1.5 in., 0.75 in., 0.5 in. and -10 mesh, and test work charges were produced from each size fraction. Head grades of the three master composites are summarized in Table 25.

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Composite		Au (g/t)		Stot (%)	S ²⁻ (%)	Corg (%)	
Rep.	Average	Cut 1	Cut 2	Cut 3	Cut 1	Cut 1	Cut 1	Cut 1
MC-1	1.84	1.7	1.77	2.05	1.15	1.13	2.35	0.12
MC-2	1.23	1.2	1.29	1.22	3.48	3.6	2.62	1.06
MC-3	1.18	1.2	1.14	1.19	2.84	2.94	2.82	1.03

Table . 2022 Casa Berardi WMCP Master Composite Head Assays

Blue Coast submitted sized samples of the three master composites to Activation Laboratories Ltd. (Actlabs) in Ancaster, Ontario, Canada for modal mineralogy and liberation analysis. Actlabs is a commercial laboratory independent of Hecla. All samples were ground to a primary grind size of 80% passing 100µm and analyzed using Quantitative Evaluation of Materials by Scanning Electron Microscopy (QEMSCAN).

Mineralogical analysis showed that:

/ Primary sulfide minerals in the master composite samples were pyrite and arsenopyrite, both of which were well liberated; and

/ The primary non-sulfide minerals were quartz, muscovite, chlorite, calcite, and feldspar.

Comminution Testing

One SMC test, one BWI test, and one Ai was conducted on each master composite. The SMC test results indicated that the WMCP material was moderately hard. The BWI was conducted with a closing size of 150μ m, and the ball charge was checked prior to the test to ensure that standard BWI test parameters were adhered to. The BWI results indicated the WMCP material would be considered moderately hard. The Ai test was subcontracted to SGS Vancouver in Vancouver, B.C., Canada to perform and the results indicated the WMCP material was moderately abrasive.

Gravity Testing

A single E-GRG test was conducted on an equally weighted blend of samples MC-1, MC-2 and MC-3. During the E-GRG test, a 20kg sample was passed through a laboratory Knelson MD-3 unit, with the tails of each subsequent gravity pass being ground successively finer. Target grind sizes for each pass were p80 of 850µm, 250µm, and 75µm. Grind calibrations were performed using a 10kg sample of the material to determine approximate grind times required to achieve the target particle size for each stage of gravity recovery.

Gravity test work on the WMCP samples showed moderate gravity recovery, with 41% GRG content. The gold was relatively fine grained, with only 9.5% of the gold existing in particles greater than 106µm in size.

Flotation Testing

A total of 19 flotation tests were conducted throughout the test program. These tests were conducted as bulk sulfide flotation tests; the baseline reagent scheme was as follows:

- / Copper Sulfate an activator for sulfide minerals;
- / PAX (as described previously in Section 10.2.3.2.
- / Methyl Isobutyl Carbinol (MIBC) low persistence, alcohol-based frother; and

/ The initial conditions selected were based on the previous program flotation work (Blue Coast, 2021b); the conditions tested were primary grind size, solids density, cleaner circuit, carbon pre-flotation, and a selective arsenopyrite/pyrite flowsheet. Two tests were conducted on Knelson/Super-Panner tails, and both the concentrate and tails were transferred to cyanidation.

The 2022 WMCP flotation test conditions are summarized in Table 10-10.

Test ID	Feed	Primary Grind, p80 (μm)	Solids Density (%)	CuSO ₄ (g/L)	PAX (Ro/Cln, g/t)	Notes
F-1	MC-1	100	35	150	50/-	Baseline Rougher (Ro)
F-2	MC-2	100	35	150	100/-	Baseline Rougher
F-3	MC-3	100	35	150	85/-	Baseline Rougher
F-4	MC-1	125	35	150	50/-	Effect of Grind Size Rougher
F-5	MC-2	125	35	150	100/-	Effect of Grind Size Rougher
F-6	MC-3	125	35	150	85/-	Effect of Grind Size Rougher
F-7	MC-1	100	20	150	50/-	Effect of Pulp Density Rougher
F-8	MC-2	100	20	150	100/-	Effect of Pulp Density Rougher
F-9	MC-3	100	20	150	85/-	Effect of Pulp Density Rougher
F-10	MC-1	100	20	150	50/20	Cleaner (Cln)Test
F-11	MC-2	100	20	150	100/25	Cleaner Test
F-12	MC-3	100	20	150	85/25	Cleaner Test
F-13	MC-2	100	20	150	50/-	Carbon Pre-Flotation
F-14	MC-3	100	20	150	85/-	Carbon Pre-Flotation
F-15	MC-1	100	20	150	50/20	Cleaner Test
F-16	MC-1	100	20	150	50/20	Full Circuit Test (Gravity Tails)
F-17	MC-2/3	100	20	150	85/-	Arsenopyrite/Pyrite Selective Flotation
F-18	MC-2/3	100	20	150	85/25	Full Circuit Test (Gravity Tails)
F-19	MC-1/2/3 Blend	100	20	150	50/20	Cleaner Test

Table STYLEREF 1 \s 10-. 2022 Flotation Conditions

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Flotation test work on the 2022 WMCP samples showed:

- Good gold recovery and upgrading was achievable on the MC-1 composite (79% recovery at 63 g/t Au to cleaner 1 concentrate); and
- MC-2 and MC-3 both showed moderate recovery; however, a high-grade concentrate was not produced (70% recovery at 14g/t to15g/t Au to cleaner 2 concentrate).

Cyanidation Testing

Master Composite Bottle Roll Leach Tests

A series of coarse bottle roll leach tests were conducted to determine gold extraction rates at various crush sizes, and to assess potential for column leaching. Samples MC-1, MC-2, and MC-3 were all tested at the following crush sizes: 100% -1.5 in., -0.75 in., and -0.5 in. The coarse bottle roll leach tests were conducted at 40% solids, sodium cyanide concentration was maintained at 1.0g/L, and samples were leached for 96 hours, and kinetic solution checks were conducted at two-, six-, 24-, 48-, 72- and 96-hour intervals. Residues for each test were sized and assayed.

Recovery from MC-1 was moderate, with a maximum gold recovery of 33% at the crush size of 100% -0.75". The gold recovery on MC-2 and MC-3 was very poor at all sizes, with an average recovery of 1.1%. Both MC-2 and MC-3 contained a large quantity of preg-robbing organic carbon, and the recovery potential without CIL was severely limited. Due to the poor gold recovery from MC-2 and MC-3, column leach test work was not undertaken.

Master Composite Stirred Leach Tests

Two 1.0-kg whole ore stirred leaches were conducted on each master composite. Two primary grind size targets were used: 80% passing 106µm and 75µm, at a solids content of 50%. All stirred leaches were conducted as CIL tests at an addition rate of 15.0g/L pulp with a 24-hour retention time. Sodium cyanide was maintained throughout the stirred leaches at a concentration of 1.0 g/L of solution. Each stirred leach included kinetic sub-sampling of both liquor and solids at two-, six-, 10-, 20-, and 24-hour intervals.

Significant improvement in Au recovery was observed on MC-2 and MC-3, compared to the coarse bottle roll leach tests. The CIL process is required on these composites to compete with the naturally occurring carbon.

Flotation Product Leach Tests

Four stirred leaches were conducted on concentrates from MC-2 and MC-3 flotation tests with and without carbon pre-flotation stages, to determine if any differences were observed in gold recovery in the concentrate leaching circuit. One stirred leach was conducted on a cleaner concentrate from MC-1 (CN-59).

No significant effect was observed from the carbon pre-flotation stage. The MC-1 cleaner concentrate leach produced good recovery.

In summary, 2022 cyanidation test work on the WMCP samples showed:

- Gold recovery on master composite coarse ore bottle rolls ranged from 0.9% to 33%;
- Gold recovery on master composite stirred CIL tests ranged from 55% to 85%; and
- Gold recovery on variability CIL tests ranged from 3.8% to 93%.

Generally, composites with higher head grades had higher gold recovery. 120 120

Full Circuit Flowsheet Testing

Two "full-circuit" flowsheets were tested on the MC-1 and MC-2/3 composites: gravity-cyanidation and gravity-flotation-cyanidation. Under the gravity-cyanidation flowsheet, the sample was ground to a p80 of 100µm, passed through a Knelson concentrator, and the Knelson concentrate was upgraded on a Super-Panner. The Knelson tails and Super-Panner tails were combined and transferred to a CIL bottle roll leach. For the gravity-flotation- cyanidation flowsheet the sample was ground to a p80 of 100µm, passed through a Knelson concentrate was upgraded on a Super-Panner. The Knelson to a p80 of 100µm, passed through a Knelson concentrate was upgraded on a Super-Panner. The Knelson tails and Super-Panner tails were combined and transferred to a CIL bottle roll leach. For the gravity-flotation- cyanidation flowsheet the sample was ground to a p80 of 100µm, passed through a Knelson concentrator, and the Knelson concentrate was upgraded on a Super-Panner. The Knelson tails and Super-Panner tails were combined and transferred to a CIL stirred leach, and the flotation tails were forwarded to a CIL stirred leach without regrind.

Full circuit flowsheet test work indicated that combined gravity-cyanidation and gravity-flotation-cyanidation flowsheets both produced similar final recoveries. MC-1 gold recovery was 89% to 91% and MC-2/3 gold recovery was 74% to 76%.

The following recommendations were made for future test work:

- / Conduct further mineralogical analysis on the WMCP samples;
- / Determine gold deportment, particularly on samples with low recovery, with the purpose of diagnosing low gold recoveries and determining potential processing routes going forward; and
- / Conduct further variability test work to better delineate projected gold recovery on a spatial basis and provide inputs into the mine plan.

10.2.5 2023 WMCP EXTENSION PROGRAM BY BLUE COAST

Blue Coast was contracted by Hecla to execute a metallurgical test work program on material from the WMCP area of the Casa Berardi mine. The purpose of the 2023 test work program was to conduct mineralogical analysis and a flotation study on material from a previous WMCP metallurgical test work program. Past test work on WMCP samples had shown both a reduction in recovery and significant variability in recovery to the current Casa Berardi CIL process, ranging from 4% to 93% gold recovery. The average WMCP gold recovery of 67% is significantly lower than the average gold recovery from the Principal Pit (87%) and F160 Pit areas (92%). This reduced recovery was the driving factor to investigate alternative processing methods for the WMCP samples and to develop a fully integrated process flowsheet. Additionally, this program was intended to assess the response of four monthly Mill Feed composite samples in comparison to the standard Casa Berardi cyanidation conditions and to the flotation flowsheet.

10.2.5.1 2023 SAMPLE PREPARATION AND ANALYSES

The fully integrated flowsheet would be developed on a new global WMCP master composite (WMCP Blend sample) formed from samples remaining from the 2022 WMCP Phase 2 Test Program. The final flowsheet would also be tested on a new Principal Pit blend composite, using material remaining from the 2021 Principal Pit Test Program and four monthly "Mill Feed" composites, representing material fed to the mill in January, February, March, and April 2022. Approximately 60kg of material from Casa Berardi was received in May 2022 by Blue Coast for sample preparation and analyses.

The WMCP blend composite was prepared by combining portions of MC-1, MC-2, and MC-3 at a ratio of 40% MC-1, 30% MC-2, and 0% MC-3 by weight. The material was homogenized and split into replicate test work charges.

Six additional spatial variability composites were prepared, to assess variability across the deposit. Each variability composite was homogenized and split into replicate test work charges.

Each mill feed composite was screened at 10 mesh and any oversize material was stage crushed. Each composite was homogenized and split into replicate test work charges and head assay sub samples.

The Principal Pit blend composite was prepared by combining equal portions of MC1-LG, MC2-HG, and MC3-HS. The material was homogenized and split into replicate test work charges.

Head grades of the monthly Mill Feed composites are shown in Table 10-11.

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Composite	Au (g/t)	As (%)	Fe (%)	Stot (%)	S ²⁻ (%)	C _{tot} (%)	C _{org} (%)				
Rep.	Average			Cut 1	Cut 1	Cut 1	Cut 1				
Mill Feed – Jan 2022	1.86	0.49	7.07	2.12	1.79	1.88	0.12				
Mill Feed – Feb 2022	1.78	0.64	6.79	1.80	1.57	2.05	0.15				
Mill Feed – Mar 2022	1.75	0.61	7.84	2.44	2.20	2.37	0.18				
Mill Feed – Apr 2022	1.88	0.69	7.89	3.03	2.83	2.41	0.23				

 Table STYLEREF 1 \s 10-. 2023 Casa Berardi WMCP Master Composite Head Assays

In support of the flowsheet development, Blue Coast submitted unsized samples of MC-1 and MC-2/MC-3 (50:50 blend by weight) to The University of Western Ontario – Surface Science Western (SSW) in London, Ontario, Canada for analysis of solid solution gold in pyrite and arsenopyrite using Dynamic Secondary Ion Mass Spectrometry (D-SIMS) analysis and Ramen carbon analysis.

D-SIMS mineralogical analysis on WMCP samples showed that:

- / MC-1 contains approximately 23.9% sub-microscopic gold; 3.7% located in pyrite, and 20.2% located in arsenopyrite;
- MC-2/3 blend contains approximately 69.3% sub-microscopic gold; 15.7% located in pyrite and 53.7% located in arsenopyrite; and
- / When broken down by morphology (coarse/porous/microcrystalline/disseminated):
 - » Pyrite in both MC-1 and MC-2/3, the gold is primarily in the coarse (48% to 51%) and porous (31% to 36%) pyrite morphologies, with low gold in microcrystalline (13% to 14%) and disseminated (3% to4%) particles; and
 - » Arsenopyrite in both MC-1 and MC-2/3, the gold is primarily in the coarse (47% to 53%) and porous (29% to 30%) arsenopyrite morphologies, with low gold in microcrystalline (17% to 21%) and disseminated (1% to 2%) particles.

In both MC-1 and MC-2/3, the grade of gold contained in arsenopyrite is 48g/t to 49g/t, whereas the grade of gold in pyrite is 3.2g/t to 3.7g/t.

Based on the results of the D-SIMS analysis it was determined that the arsenopyrite minerals should be targeted for flotation, with the purpose of generating a concentrate that would not require leaching. This concentrate was anticipated to be blended with the gold concentrate produced in the previous flotation stage.

10.2.5.2 FLOTATION TESTING

Based on the work conducted in prior test programs, combined with the mineralogy findings, the integrated flowsheet (shown in Figure 10-2) was developed to feature the following steps:

- / Carbon Pre-Float a requirement on many samples in order to produce a saleable gold concentrate;
 - » Gold Reclaim from Carbon Concentrate used to recapture gold and ensure minimal losses to carbon concentrate waste stream.
- / Gold Rougher this gold rougher stage produces a high grade gold concentrate, prospectively for direct sale;
- / Arsenopyrite (AsPy) flotation based on the D-SIMS analyses, it was anticipated that a gold-rich arsenopyrite concentrate could be produced with the optionality to add to the prospective gold concentrate or to add to the pyrite concentrate and leach;
- / Pyrite flotation recover the remaining sulfide associated gold and subject to fine regrinding to liberate any small visible gold inclusions;
 - » Cyanide leaching of pyrite concentrate (via intensive leach), producing leached sulfide tailings; and
- / Cyanide leaching of flotation tailings, thus producing mainstream low sulfur tailings.



Figure STYLEREF 1 \s 10-. Flowsheet Originally Developed

A total of 27 flotation tests were conducted throughout the program to explore and to optimize the various facets of the flotation stages. The key chemistry approach to flotation was as follows:

- / Carbon flotation performed with addition of Methyl Isobutyl Carbinol (MIBC) as a frother;.
- / Gold flotation performed using 3418A (Aerophine) as a collector;
- / Arsenopyrite flotation conducted at pH 11.8 using copper sulfate as an activator and SIPX as a collector; and
- / Pyrite flotation conducted at pH 8 using H₂SO₄, using copper sulfate as an activator and PAX as a collector.

The initial conditions selected were based on the previous flotation test program work; the steps tested were cleaner circuit, carbon pre-flotation and a selective gold/arsenopyrite/pyrite flowsheet. Flotation conditions are shown in Table 10-12.

				Au Ro/C	In	As	Py Ro/Cl	n	Pyrite Ro/Cln		
Test ID	Composite	Grind Size, p80	Carbon Pre- float MIBC (g/t)	3418A	рН	CuSO ₄	SIPX	рН	CuSO ₄	PAX	рН
		(µm)	(g/t)	(g/t)		(g/t)	(g/t)		(g/t)	(g/t)	
F-1	WMCP Blend	128							150	50/15/ 10/5	natural
F-2	WMCP Blend	126	73	10	10	400	20	11.8	150	80	8
F-3	WMCP Blend	100	73	7	10				150	80/25/ 20/15	8
F-4	WMCP Blend	109	73	7	10				150	80	8
F-5	WMCP Blend	98	73	7	10	400	20	11.8	150	80	8
F-6	WMCP Blend	101	36	7	10				150	80	8
F-7	WMCP Blend	65	73	7	10				150	80	8
F-8	WMCP Blend	59	36	7	10	400	20/10	11.8	150	80	8
F-9	Mill Feed – Jan 2022	76	73	7	10	400	20/10	11.8	150	80	8
F-10	Mill Feed – Feb 2022	84	73	7	10	400	20/10	11.8	150	80	8
F-11	Mill Feed – Mar 2022	83	73	7	10	400	20/10	11.8	150	80	8
F-12	Mill Feed – Apr 2022	82	73	7	10	400	20/10	11.8	150	80	8
F-13	WMCP Blend	~65	73	7	10	400	20/10	11.8	150	80	8
F-14	WMCP Blend	64	73	7	10	400	20/10	11.8	150	80	8
F-15	Mill Feed – Jan 2022	74	73	7	10	400	20	11.8	150	80	8
F-16	Mill Feed – Feb 2022	74	73	7	10	400	20	11.8	150	80	8
F-17	Mill Feed – Mar 2022	77	73	7	10	400	20	11.8	150	80	8

Table STYLEREF 1 \s 10-. Summary of 2023 Flotation Test Conditions

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				Au Ro/Cl	n	Asl	Py Ro/Cli	n	1	Pyrite Ro/C	In
Test ID	Composite	Grind Size, p80	Carbon Pre- float MIBC	3418A	рН	CuSO ₄	SIPX	рН	CuSO ₄	PAX	рН
		(µm)	(g/t)	(g/t)		(g/t)	(g/t)		(g/t)	(g/t)	
F-18	Mill Feed – Apr 2022	79	73	7	10	400	20	11.8	150	80	8
F-19	Central Upper	64		7	10	400	20	11.8	150	80	8
F-20	Central Lower	59	73	7	10	400	20	11.8	150	80	8
F-21	West	74	73	7	10	400	20	11.8	150	80	8
F-22	East	82	73	7	10	400	20	11.8	150	80	8
F-23	Far West	74	73	7	10	400	20	11.8	150	80	8
F-24	Deep South	77	73	7	10	400	20	11.8	150	80	8
F-25R	Mill Feed Blend	84		7	10				150	80	8
F-26	WMCP Blend	70	32	7	10				150	80	8
F-27	Principal Pit Blend			7	10				150	80	8

WMCP Blend - Flowsheet Development

The 2023 WMCP blend composite was used for the development of the flotation flowsheet. Initial tests were based on previously conducted flowsheet development for the 2022 WMCP Phase 2 Test Program.

The initial two tests compared a three stage cleaner (F-1) with the sequential carbon/gold/arsenopyrite/pyrite flotation flowsheet (F-2). The three stage cleaning flowsheet did not produce a concentrate meeting the minimum grade target (35g/t Au) and had very high sulfur content. The sequential flowsheet showed some success at removing organic carbon in the pre-flotation stage, and at producing a high grade gold concentrate (75g/t Au). The arsenopyrite stage showed the potential for refinement, and final pyrite stage recovered the remaining floatable gold.

The next test (F-3) refined the gold flotation circuit to a single stage and eliminated the arsenopyrite circuit in favor of producing a sulfide concentrate and cleaning in three stages. The cleaner 3 sulfide concentrate did not achieve a high gold grade and had very high sulfur grade. Tests F-4 and F-6 repeated this flowsheet, only to pyrite roughers, with the purpose of producing concentrate for cyanidation. An additional test (F-5) was conducted, which included the arsenopyrite circuit, with the purpose of concentrate cyanidation. A finer primary grind size was explored on F-7; the gold grade and recovery of the gold concentrate on this test increased, and losses to the rougher tail decreased. F-8 repeated this finer grind, with the inclusion of the arsenopyrite circuit. F-13 and F-14 were conducted as replicate tests of the F-8 flowsheet, with the purpose of producing concentrate and tailings material for further work.

Key findings from this flotation optimization program were:

- / Primary grind size is a key factor for increasing recovery to the gold rougher concentrate;
- / The sulfide concentrate does not clean readily and will require fine grinding and cyanidation to recover gold;
- / The carbon pre-flotation stage is effective at removing organic carbon, with limited gold losses; and.
 - » Removal of the organic carbon was key to making concentrate grade in the gold flotation circuit.

The inclusion of the arsenopyrite circuit was considered optional because:

- Low arsenic recovery to this concentrate indicated little arsenopyrite was recovered, and any gold recovered were remnants of the gold flotation stage;
- » A decision was made to continue with the arsenopyrite flotation stage as that concentrate was directed to the prospective gold concentrate, instead of the cyanidation circuit; and
- » When the arsenopyrite circuit is not employed, the sulfide/pyrite circuit will collect any gold that would be typically recovered in the circuit. Elimination of the arsenopyrite circuit does not increase gold losses in the flotation circuits.

Application of WMCP Blend Flowsheet to Other Composites

The flowsheet developed on the WMCP blend was applied to each of the monthly Mill Feed composites, and a second test was conducted under refined targets for confirmation of best performance. Additionally, this flowsheet was applied to six composites prepared to represent spatial variability throughout the WMCP deposit.

Key findings from the application of the WMCP Blend flowsheet to other composites were:

- Significant variability in response to the flowsheet was observed in the WMCP variability samples.
 - » Overall gold recovery to flotation concentrates with this flowsheet was highly variable, ranging from 24% (very high losses to carbon pre-flotation) to 90% (no carbon pre-flotation).
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- / The monthly Mill Feed composite samples responded consistently to the flowsheet.
 - » Gold losses to the carbon pre-flotation concentrate were fairly high. This pre-flotation stage was eliminated in the final flowsheet based on the testing of these samples.
 - » Gold recovery to the flotation concentrates (Au cleaner 1, arsenopyrite cleaner 1, pyrite rougher) ranged from 39% to 48%.

Final Flowsheet

The flotation optimization test work conducted on the WMCP blend resulted in the following final flowsheet (Figure 10-3):

- Carbon pre-flotation (if organic carbon is greater than 0.3% in head grade)
- / Gold flotation
- / Sulfide (pyrite/arsenopyrite) flotation
 - » Forwarded to cyanidation
- / Rougher tails forwarded to cyanidation

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Figure STYLEREF 1 \s 10-. WMCP Blend Simplified Integrated Flowsheet

Flotation tests were conducted on blended samples to confirm the flowsheet performance on samples available from three separate areas of Casa Berardi (Mill Feed, WMCP, and Principal Pit).

10.2.5.3 2023 GRAVITY TESTING BY BLUE COAST

A total of four gravity recovery tests were conducted on whole ore, on each of the monthly Mill Feed composites. A 2kg sample of as-received material was passed through a laboratory Knelson MD-3 concentrator, the Knelson concentrate was collected and upgraded on a Super-panner. A tip, middling, and tail were collected from the Super-panner and a sub-sample of the Knelson tails and were assayed for gold. Gold recovery to the Knelson concentrate ranged from 40% recovery to 55% recovery.

The Super-panner was used successively three times on carbon pre-flotation material from WMCP Blend flotation tests to reclaim some of the gold that was lost to this product. From each test, a tip, middling and a Super-panner tail was collected and assayed for gold. These tests were highly successful at reclaiming gold from the carbon pre-flotation concentrate and rejecting carbon. The results showed that it was possible to reclaim a significant portion of the gold lost to a carbon pre-flotation concentrate, into a relatively low mass pull concentrate fraction.

10.2.5.4 2023 CYANIDATION TESTING BY BLUE COAST

A total of 29 cyanidation tests were conducted on whole ore, flotation concentrate, and flotation tails. Whole Ore Cyanidation

A stirred leach was conducted on each of the monthly Mill Feed samples, under the standard Casa Berardi CIL conditions. A 1.0kg test charge was ground to 80% passing 75 μ m and leached at a solids content of 50%. All stirred leaches were conducted as CIL tests at an addition rate of 15.0g/L pulp with a 24-hour retention time. Sodium cyanide was maintained throughout the stirred leaches at a concentration of 1.0g/L of solution. Each stirred leach included kinetic subsampling of both liquor and solids at two-, six-, 10-, 20-, and 24-hour intervals.

Leach recoveries of the four composites were consistent with each other, ranging from 78.2% to 83.1% gold recovery.

Flotation Concentrate Cyanidation

A total of 15 cyanidation tests were conducted on flotation pyrite/sulfide concentrates, primarily from tests on the WMCP blend. Cyanidation conditions evaluated were cyanide concentration, pre-aeration with oxygen and lead nitrate addition. Samples were reground in a ceramic jar mill prior to leaching and leached at a solids content of30%. All stirred leaches were conducted as carbon in leach (CIL) tests at an addition rate of 15.0g/L pulp with either 24 hour or 48 hour retention time. Conditions developed on the WMCP Blend concentrate samples were then applied to WMCP variability concentrates and Mill Feed Blend and Principal Pit concentrate samples.

Recoveries on the WMCP Blend pyrite concentrates were relatively consistent, averaging 60% Au recovery. Lead nitrate and oxygen pre-aeration were not found to increase recovery; however, increased cyanide dosage to 5g/L showed a 2% increase in recovery. This cyanide dosage was carried forward on future leaches. Residence time on future concentrate leaches was increased to 48 hours to ensure residence time was not limiting recovery. Cyanidation recovery on the WMCP Spatial Variability pyrite concentrate leaches (CN-18 to CN-23) showed significant variability in recovery, ranging from 34% to 71% gold recovery. The Mill Feed Blend pyrite concentrate leach (CN-27) was consistent with the WMCP Blend samples, and the Principal Pit Blend pyrite concentrate leach (CN-29) showed significantly higher recovery and was consistent with the Principal Pit Whole Ore leaches.

Flotation Tails Cyanidation

A total of ten cyanidation tests were conducted on flotation rougher tails. Conditions were consistent with the whole ore leach conditions and leached at a solids content of 50%. All rougher tails leaches were conducted as CIL tests at an addition rate of 15.0 g/L pulp with a 24-hour retention time. Sodium cyanide was maintained throughout the stirred leaches at a concentration of 1.0g/L of solution.

The WMCP spatial variability samples show variability in recovery, ranging from 42% to 86% gold recovery.

10.2.5.5 COMBINED FLOWSHEET RECOVERY

The combined recovery of the flotation, pyrite concentrate cyanidation, rougher tails cyanidation, and carbon Super-panner gold reclaim (where applicable) is shown in Table 10-13 for the WMCP blend and WMCP spatial variability. Note for these samples the final flowsheet had not been used in the flotation test.

Composite	WMCP	Central	Central Lower	West	East	Far West	Deep South
	F-8	F-19	F-20	F-21	F-22	F-23	F-24
	CN-6	CN-18	CN-19	CN-20	CN-21	CN-22	CN-23
Test ID	CN-7	CN-12	CN-13	CN-14	CN-15	CN-16	CN-17
	GRG-SP-6	*	*	*	*	*	*
Overall Recovery (%)							
Prospective Gold Conc.	64.3	71.0	67.6	50.9	52.1	52.7	58.2
Leached Concentrate	14.2	14.1	6.0	15.1	16.5	10.0	14.8
Leached Tails	4.6	7.1	9.7	14.6	3.7	10.1	8.3
Total Gold Recovery (%)	83.1	92.1	83.3	80.6	72.3	72.9	81.3
Whole Ore CN Gold Recovery (%)	68.2	85.9	76.3	68.4	56.1	57.0	73.8
Gold Recovery Gain (%)	14.9	6.2	7.0	12.2	16.2	15.9	7.5

Table STYLEREF 1 \s 10-. Combined Flowsheet Recovery – Non Final Flowsheet

Note: * Estimated based on WMCP Blend Test Work

Table 10-14 shows the overall recoveries from the tests conducted under the final flowsheet. The whole ore cyanidation recovery (at $75\mu m$) for the same samples is listed for comparison, and the difference in recovery by the two processes is also shown. All samples tested showed a gain in gold recovery using the combined flotation, cyanidation, and gravity flowsheet compared to the whole ore cyanidation results. The recovery gain ranged from 5.5% to 10.3% increase.

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Composite	Mill Feed Blend	WMC Blend	Principal Pit Blend
	F-25R	F-26	F-27
Test ID	CN-24	CN-25	CN-26
	CN-27	CN-28	CN-29
	N/A	GRG-SP-7	N/A
Overall Recovery (%)			
Prospective Gold Conc.	64.9 62.7		68.5
Leached Concentrate	16.4	13.3	21.8
Leached Tails	5.9	8.2	6.6
Total Gold Recovery (%)	87.1	84.1	97.0
Whole Ore CN Gold Recovery (%)	80.3	73.8	91.5
Gold Recovery Gain (%)	6.8	10.3	5.5

Table STYLEREF 1 \s 10-. Combined Flowsheet Recovery – Final Flowsheet

Application of the final flowsheet to blended WMCP, Principal Pit, and Mill feed samples resulted in total gold recoveries of:

/ Mill Feed Blend: 87.1% gold recovery;

/ WMCP Blend: 84.1% gold recovery; and

/ Principal Pit Blend: 97% gold recovery.

10.3 SULFIDE OPERATION DATA

Annual production from 2006 to 2023 is presented in Table 10-15.

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N	k Tonnes	Grade	Recovery	Metal Recovered
iear	(kt)	(g/t Au)	(%)	(koz Au)
2006	68	8.58	93.9	18
2007	545	9.78	93.0	159
2008	654	8.16	92.5	159
2009	689	7.77	92.6	159
2010	723	6.76	89.8	141
2011	698	8.00	91.3	164
2012	694	6.77	90.6	137
2013	591	6.16	90.5	106
2014	751	5.90	90.0	128
2015	766	5.96	87.2	128
2016	905	5.72	87.7	146
2017	1,176	4.77	86.8	157
2018	1,248	4.66	87.1	163
2019	1,250	4.10	81.5	134
2020	1,165	4.00	81.0	121
2021	1,386	3.56	84.8	135
2022	1,441	3.16	87.3	128
2023	1,312	2.51	85.2	90
Total	16,063	5.20	87.3	2,373

Table STYLEREF 1 \s 10-. Casa Berardi Annual Mill Production

10.3.1 YEARLY REVIEW

Historic key operation parameters are presented in Table 10-16. The throughput has increased regularly since 2015 following improvements in the process. 133 133

Date	Dry k Tonnes Milled (kt)	Dry Tons/ Operating Hour (tph)	% Passing 200 mesh	Head Grade (g/t Au)	k Ounces Produced (koz Au)	Gravimetric Recovery (%)	Total Mill Recovery (%)	Cyanide Consumption (kg/t)	Mill Availability (%)
2015	()				120	25.2	07.0	0.00	05.0
2015	/66	96	86	5.960	128	35.3	87.2	0.82	95.2
2016	905	112	84	5.720	146	37.3	87.7	0.77	92.8
2017	1,176	153	75	4.770	157	37.1	86.8	0.67	88.9
2018	1,248	161	75	4.660	163	36.5	87.1	0.57	89.1
2019	1,250	162	72	4.100	134	26.4	81.5	0.54	88.6
2020	1,165	168	71	4.000	121	34.3	81.0	0.48	86.1
2021	1,386	178	74	3.560	135	36.7	84.8	0.54	89.7
2022	1,441	193	78	3.160	128	42.5	87.2	0.51	91.3
2023	1,200	184	77	2.550	84	32.0	85.2	0.52	93.0

Table STYLEREF 1 \s 10-. Detailed Yearly Mill Production

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10.4 RECOVERY MODELS

10.4.1 UNDERGROUND (ZONES 115/118/121/123/148)

The historical recovery model provides a good indication of the expected performance in the mill. It should be noted that all recovery calculations are performed with data presented in metric units. With the measurement of arsenic content, it is possible to have a more accurate estimation of gold recovery. Two recovery models were obtained and are defined by the following equations:

/ Low Arsenic

Gold recovery %=0.9753 \times Au head grade-0.4287Au head grade

/ High Arsenic

Gold recovery %=0.9918 × Au head grade-0.7723Au head grade

The decision to fit the appropriate model to each zone is approved and verified by a Hecla geologist. The data used to compute the model is derived from the actual mill performance. As such uncertainty regarding mill feed variability is reduced because the data covers many months of operation. Therefore, the results from previous metallurgical testing are not used to predict the recovery for the underground ore.

10.4.2 OPEN PIT

For the open pit gold recovery used in the LOM, the data is based on available metallurgical test work results reported by Blue Coast in 2023.

10.4.2.1 F134/PRINCIPAL PIT

The same equation for recovery as presented for the EMCP/XCMP Pit material is used for the F134/Principal Pit material, as no results from the work conducted by Blue Coast 2021 were available at the time of writing. The SLR QP is confident that the information below will provide a good estimation of the expected recovery in the LOM plan.

Gold recovery %=0.942 × Au head grade-0.35Au head grade

10.4.2.2 F160 PIT

The metallurgical test work was completed at Blue Coast in 2020 using representative samples with different grind sizes, head grades, and with dilution to simulate near a real situation in the pit. The SLR QP considers that the information below provides a good estimate of the expected recovery in the LOM plan and the confidence is appropriate for the precision required.

old recovery %=0.9311 \times Au head grade-0.07994Au head grade

10.4.2.3 WMCP PIT

The metallurgical test work was completed using representative samples with different grind sizes, head grades, and with dilution to simulate a real situation in the WMCP Pit. The SLR QP considers that the equation below provides a good estimate on the expected recovery in the LOM plan and the confidence is appropriate for the precision required.

Gold recovery %=0.8365 × Au head grade-0. 2293Au head grade

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10.5 EXPECTED RECOVERIES

The expected recoveries from the different open pits are summarized in Table 10-17.

Zono	Expected Recovery	LOM Grade
Zone	(%)	(g/t Au)
F134 Pit	84.5	3.61
F160 Pit	88.7	1.80
WMCP Pit	75.9	2.96
Principal Pit	83.0	3.12

Table STYLEREF 1 \s 10-. Expected Recovery LOM for all Mining Zones

10.6 DELETERIOUS ELEMENTS

There are two deleterious elements that could potentially affect the process:

/ Arsenic: Ferric sulfate is added to precipitate arsenic in the tailings pond; and

/ Carbon: The carbon in the ore could cause preg-robbing and affect the gold recovery.

10.7 CONCLUSIONS AND RECOMMENDATIONS

The test work performed on open pit material was used to estimate the gold recovery, while operating data was used for the underground material.

The SLR QP recommends that the following metallurgical test work continue, as appropriate to understand ore variability and process risk:

/ Additional metallurgical testing to better understand the processing of mineralization from the Principal and WMCP pits. This will aid in projecting metallurgical recoveries for these pits and will indicate any variability in gold recovery and grindability of the material.

Test work programs, both internal and external, continue to be performed to support current operations and potential improvements.

The SLR QP has reviewed the information provided by Hecla, as summarized in Section 10.0, and has performed a review of the reconciliation data available to verify the information used in the LOM plan. Based on these checks, in the opinion of the SLR QP, the metallurgical test work, reconciliation, and production data support LOM planning:

Industry standard and appropriate metallurgical testing procedures consistent for the deposit's mineralogy have been consistently used by Hecla staff for optimizing and improving mill process capabilities and performance;

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- / Numerous external and internal studies have been conducted to the date of this TRS, which have been used to develop and optimize the existing flowsheet;
- / The samples used in the test work are considered representative of mill feed types across the Casa Berardi deposits;
- / LOM projections are based on production results and informed by metallurgical test data that is updated in the model forecasts annually;
- / Mill metallurgical results and forecasts are consistent with the deposit mineralogy and the process circuit used; and
- / Metallurgical and production models were developed from metallurgical sampling and testing. The methodologies, process, and data used in making recovery projections are unbiased and provide reliable projections.

11.0 MINERAL RESOURCE ESTIMATES

11.1 SUMMARY

Mineral Resource estimates for the Casa Berardi Mine as of December 31, 2023, are presented in Table 11-1 and Table 11-9. Total Measured and Indicated Mineral Resources, exclusive of Mineral Reserves, are estimated to be 4.11Mt at 6.39g/t Au containing 0.84Moz Au. Inferred Mineral Resources total 2.09Mt at 5.89g/t Au for 0.40Moz Au. The underground portion of the Measured and Indicated Mineral Resources represents 94% of the total.

Casa Berardi Mineral Resources were estimated using block model grade interpolation techniques, effectuated by the mine staff. The classification of Casa Berardi Mineral Resources considers the quality of drill hole data, the continuity of auriferous zones, drill-hole spacing (which ranges from 15m to 50m), and production experience. The Casa Berardi Mineral classification is applied using polygons that are modeled based on the proximity of block centroids relative to drill-hole composites and mine workings. Mineral Resources are classified in accordance with the definitions and requirements set by the SEC in S-K 1300 (SEC, 2018). The Mineral Resources were classified as follows:

- / Measured Mineral Resources: Blocks in modeled mineral envelopes within a mean distance of ~25m and ~35m for underground and open pit material, respectively, and underground or surface development within close proximity that supports the continuity of mineralization.
- / Indicated Mineral Resources: Blocks in modeled mineral envelopes within a mean distance of ~25m and ~35m for underground and open pit material, respectively, that are not Measured Mineral Resources.
- / Inferred Mineral Resources: Blocks in modeled mineral envelopes outside a mean distance of ~25m and ~35m for underground and open pit material, respectively. The mean distance of underground Inferred Mineral Resources is generally between 25m and 35m, and rarely up to 50m. The mean distance of open pit Inferred Mineral Resources is generally 60m or less.

The locations of the Casa Berardi Mineral Resource areas are shown in Figure 11-1, and Mineral Resources as of December 31, 2023, are summarized in Table 11-9.



Figure STYLEREF 1 \s 11-. Mine Plan View and Composite Longitudinal Section of Deposit Areas and Infrastructure (from Hecla, 2023)

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Table STYLEREF 1 \s 11-. Casa Berardi Mineral Resource Estimate Summary – December 31, 2023

Resource Category	K Tonnes	Grade (g/t Au)	Contained Metal (k oz Au)				
Underground							
Measured	997	7.30	234.0				
Indicated	2,861	6.55	602.5				
Measured and Indicated	3,858	6.74	836.6				
Inferred	1,338	7.71	331.6				
Open Pit							
Measured	61	0.96	1.9				
Indicated	186	0.81	4.9				
Measured and Indicated	247	0.85	6.7				
Inferred	751	2.65	64.0				
Total							
Measured and Indicated	4,106	6.39	843.3				
Inferred	2,089	5.89	395.6				

Notes:

1. In situ Mineral Resources are classified in accordance with the S-K 1300 classification system.

2. Mineral Resources were estimated by Hecla staff and reviewed and accepted by RESPEC.

3. Mineral Resources are exclusive of Mineral Reserves and do not have demonstrated economic viability.

4. Underground Mineral Resources are reported at cutoff grades ranging from 3.78g/t Au to 5.84g/t Au.

5. Open pit Mineral Resources are reported at cutoff grades ranging from 0.97g/t Au to 1.13g/t Au.

Underground and open pit Mineral Resources are reported using US\$1,750/oz Au, based on consensus, long term forecasts from banks, financial institutions, and other sources, and a US\$/C\$ exchange rate of 1.300.

7. A minimum mining width of three meters was used for the modeled open pit and underground mineral envelopes used to estimate Mineral Resources.

8. Totals may not represent the sum of the parts due to rounding.

9. Mineral Resources potentially amenable to open pit mining methods are reported using a gold price of US\$1,750/oz, a throughput rate of 4,400 tonnes/day (combined material from underground and open pit sources), surface mining costs of US\$3.46/tonne mined, milling processing costs of US\$24.13/tonne processed, and general and administrative and other costs ranging from \$9.96-10.34/tonne processed. Metallurgical recoveries were based on metallurgical curves.

10. Mineral Resources potentially amenable to underground mining methods are reported using a gold price of US\$1,750/oz and a throughput rate of 4,400 tons/day (combined material from underground and open pit sources). Operating costs are US\$183.08/ton mined or US\$282.60/ton mined, depending on the underground zone or lens. Mill recoveries also vary by zone or lens and range from 80.10% to 89.90%.

Open pit Mineral Resources are reported within optimized pits using the parameters summarized in Table 11-2.

Item	F160	Principal	WMCP	F134	Unit		
Mining Cost Surface	\$3.46	\$3.46	\$3.46	\$3.46	\$/tonne		
Milling Processing cost	\$24.13	\$24.13	\$24.13	\$24.13	\$/tonne processed		
Process rate		4,400					
General and Administrative and other cost	\$10.34	\$9.96	\$10.02	\$9.96	\$/tonne processed		
Au price	\$1,750	\$1,750	\$1,750	\$1,750	\$/oz		
Au COG recovery	84.9	63.2	63.3	63.2	percent		

Table	STYLEREF	1 \s 11	Open Pit	Optimization	Parameters	Applied to	Mineral Resources
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Underground Mineral Resources are reported by tabulating all blocks within modeled mineral envelopes with estimated grades that exceed the calculated reporting cutoff grade for a given zone or lens (sub-zone). Sterilized ground, including pillars and buffer zones below the bottom of pits, are excluded from Mineral Resources. The cutoff grades used by Hecla for reporting underground Mineral Resources are calculated by the following equations:

- / Revenue per unit gold: US\$1,750/oz Au ÷ 31.10348g/oz Au = US\$56.26/g x Mill recovery
- / Cutoff grade = Operating costs / Revenue per unit gold. Table 11-3 provides a summary of the differences between the December 31, 2023, and December 31, 2022, Mineral Resource estimates. Gains and losses are a result of:
- / Geological reinterpretation of mineralized zones with new drilling.
- / Conversion of Mineral Resources into Mineral Reserves.
- / Mining depletion.
- / Subtraction of low-grade Mineral Resources (below cutoff grade).
- / Lower reporting cutoff grades in 2023.
- / Changes in pit optimization parameters, e.g. mining costs, administrative costs, etc.
- / Change in reporting gold price from \$1,700/oz to \$1,750/oz.
- / Dilution applied to open pit optimizations was lowered in 2023.
- / Sterilization beneath the planned pits was applied to underground resources.
- / Open pit designs were used to constrain Mineral Resources in 2023 rather than optimizations, which were used in 2022.
- / Apparent gains and losses by upgrade of Inferred or Indicated Mineral Resources to Indicated or Measured Mineral Resources.

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	December 31, 2023		December 31, 2022			Gain (Loss)		
	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Ounces (K oz Au)
			Ν	Aeasured				
Total Underground	997	7.30	234.0	2,440	5.08	530.2	(1,340.5)	(296.1)
Total Open Pit	61	0.96	1.9	438	1.39	19.5	(377.1)	(15.6)
Total Measured	1,058	6.94	235.9	2,878	6.45	549.7	(1,717.6)	(313.7)
			Ι	ndicated				
Total Underground	2,861	6.55	602.5	3,511	5.85	659.9	(649.9)	(57.4)
Total Open Pit	186	0.81	4.9	1,200	1.24	47.8	(1,014)	(43.0)
Total Indicated	3,048	6.20	607.4	4,711	4.67	707.8	(1,664)	(100.4)
			Measure	ed and Indicated				
Total Measured and Indicated	4,106	6.39	843.3	7,589	5.31	1257.5	(3,381)	(414.1)
	Inferred							
Total Underground	1,338	7.71	331.6	2,015	6.64	430.4	(676.6)	(98.8)
Total Open Pit	828	2.65	64.0	7,828	1.71	389.4	(6,351)	(325.4)
Total Inferred Mineral Resources	2,303	5.89	395.6	10,049	2.80	819.8	(7,028)	(424.2)

Table STYLEREF 1 \s 11-. Comparison of December 31, 2023 Versus December 31, 2022 Mineral Resources

Notes:

1. The 2022 Mineral Resources are superseded by the current 2023 Mineral Resources and are not relied upon by Hecla or RESPEC. RESPEC has not reviewed the 2022 Mineral Resource models or estimates.

- 2. The 2023 Mineral Resources are entirely attributable to Hecla.
- In situ Mineral Resources are classified in accordance with the S-K 1300 classification system. 3.
- 4. Mineral Resources were estimated by Hecla staff and reviewed and accepted by RESPEC.
- 5. Mineral Resources are exclusive of Mineral Reserves and do not have demonstrated economic viability.
- Underground Mineral Resources are reported at cutoff grades ranging from 3.78g/t Au to 5.84g/t Au. 6.
- Open pit Mineral Resources are reported at cutoff grades ranging from 0.97g/t Au to 1.13g/t Au. 7.
- Underground and open pit Mineral Resources are reported using US\$1,750/oz Au, based on consensus, long-term forecasts from banks, financial institutions, and other sources, and a US\$/C\$ exchange rate of 1.300. 8.

9. A minimum mining width of three meters was used for the modeled open pit and underground mineral envelopes used to estimate Mineral Resources.

10. Totals may not represent the sum of the parts due to rounding.

- 11. Mineral Resources potentially amenable to open pit mining methods are reported using a gold price of US\$1,750/oz, a throughput rate of 4,400 tonnes/day (combined material from underground and open pit sources), surface mining costs of US\$3.46/tonne mined, milling processing costs of US\$24.13/tonne processed, and general and administrative and other costs ranging from \$9.96-10.34/tonne processed. Metallurgical recoveries were based on metallurgical curves.
- 12. Mineral Resources potentially amenable to underground mining methods are reported using a gold price of US\$1,750/oz and a throughput rate of 4,400 tons/day (combined material from underground and open pit sources). Operating costs are US\$183.08/ton mined or US\$282.60/ton mined, depending on the underground zone or lens. Mill recoveries also vary by zone or lens and range from 80.10% to 89.90%.

11.2 DATABASE

The current Mineral Resource estimate is based on data available as of June 18, 2023. The drill-hole and rock-chip assay database structures are detailed in Appendix 2. Collar, down-hole survey, assay, and geology data from Hecla Québec/Aurizon, Inco Gold, and TVX were merged into the database from files from various sources.

Four companies have conducted exploration and delineation drilling programs in the Casa Berardi deposit areas since 1957, including Hecla, which began drilling in late 2013 following its acquisition of the property from Aurizon. In all, 16,486 holes totaling 2,541,144m have been drilled (Table 11-4). Holes drilled or with assays received after the effective date of the database are not included in the table. These drill holes, as well as Hecla's property limits and the Casa Berardi mineral resource outlines, are shown in Figure 7-1. Core drill holes account for 84.4% of the meterage drilled. RC and sonic holes represent only 0.5% and 0.6%, respectively, of the total project database.

Hole or Sample Type	Count	Meters
Core	13,917	1,959,133
RC	2,469	74,943
Sonic	103	3,401
Total Drilling	16,489	2,037,477
Channel Samples	14,747	106,770

Table STYLEREF 1 \s 11-. Summary of Core, Reverse Circulation and Sonic Drill Holes and Channel Samples at Casa Berardi

Table 11-5 presents descriptive statistics of all Casa Berardi drill-hole analytical sample data compiled into the SQL database by Hecla. Measured density and core geotechnical data are also summarized. Rejected sample assay data have been excluded from the table. Trace element and whole-rock geochemical data have also been provided by Hecla but are not shown in Table 11-5.

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Coefficient of Standard Valid Values Median Mean Minimum Maximum Units Deviation Variance 1,032,621 0.00 2884 From m 1,032,621 0.02 2885 То m 0.00 Length 1,032,621 1.00 1.16 377 m 1,006,534 0.040 1.014 5.936 5.856 0.00 1170 Au ppm 45,467 0.00 0.15 2.46 15.90 0.00 267 ppm Ag 7,917 2 74 2.77 0.24 0.09 0.01 4.6 Density g/cm3 99.84 40,795 100.00 3.06 0.03 0.00 110 % Recovery 0.46 RQD 540,623 83.33 70.93 32.43 0.00 7,000 %

Table STYLEREF 1 \s 11-. Descriptive Statistics of Sample Assays in Casa Berardi Drill-Hole Database

(accepted sample data only)

The Casa Berardi database contains 1,006,534 accepted gold assay records (Table 8-4). Only 45,467 (4.5%) of the accepted gold assay samples were analyzed for silver, although the grade of silver is generally too low to potentially contribute significantly to the economics of the mine.

At the stope-delineation stage, the locations of historical holes are being redrilled to validate the assay data in the older holes. Any assay or sample data determined to be imprecise compared to the new drill holes are excluded from use in Mineral Resource and Reserve estimation. Some assays were also removed from the database due to QA/QC failures, although the associated samples were generally re-assayed and replaced when necessary as determined by Hecla staff. Chip samples collected underground have been used for underground resource estimates but are excluded from open pit resource estimates.

Hecla entered collar, down-hole survey, geology and assay data into the drill-hole database and performed various verifications to ensure the data was correctly compiled. RESPEC conducted independent verification of gold assay data for the years 2021, 2022 and 2023 only.

11.3 DENSITY DETERMINATION

From 1991 to 1997, TVX used a single density of 2.77t/m³ for Mineral Reserve estimation and the mill operation. Since 1999, several density testing programs have been carried out. Density determinations were conducted on sections of whole core prior to crushing for assaying using the water immersion method. Since rocks at Casa Berardi are non-porous, no wax coating was applied to core samples. Density measurements were obtained at various laboratories, including Swastika, SGS and the mine's laboratory, and samples were selected to represent mineralized and non-mineralized rock and various lithologies. Samples for density measurements were taken from most of the mineralized lenses. The density database contains approximately 7,914 records, including a total of 3,151 that were taken within the mineralized lenses (lenses are essentially sub-zones within each open pit and underground numbered zone) containing resources and reserves.

Table 11-6 presents a summary of the density determinations by zone. Where there is a variable grade range applied to the block model, individual lenses within the given zone were assigned unique density values.

Open Pit Zone	Number	Density Range Applied to Block Model (t/m ³)	Mean (t/m ³)	Minimum (t/m ³)	Maximum (t/m ³)
105	46	2.77	2.68	2.57	2.84
123	29	2.70-2.85	2.78	2.57	3.10
124	472	2.69-2.95	2.83	2.35	3.73
134	39	2.7	2.66	2.19	3.47
146	46	2.8	2.68	2.55	2.80
148	200	2.8	2.68	2.13	2.99
152	47	2.8	2.77	2.55	2.93
159	19	2.72	2.77	2.66	2.97
160	333	2.72	2.69	2.38	3.03
Total	1,231		2.74	2.13	3.73
Underground Zone	Number	Density range Applied to Block Model (t/m ³)	Mean (t/m ³)	Minimum (t/m ³)	Maximum (t/m ³)
100 (Lower Inter),104	50	2.7	2.67	2.51	2.92
107 ,108	15	2.77	2.69	2.58	2.84
109	106	2.72	2.72	2.55	3.04
113	449	2.7-2.77	2.73	2.37	3.78
115	115	2.75	2.67	2.16	2.99
118	429	2.7-2.87	2.38	2.51	4.15
119	82	2.7	3.01	2.59	4.6
121	93	2.77	2.86	2.52	4.31
123	226	2.7-2.85	2.89	2.46	4.17
124	241	2.69-2.95	2.86	2.35	3.45
146,148	4	2.7-2.77	2.61	2.56	2.64
152,157	5	2.7-2.77	2.83	2.78	2.87
159,160	88	2.72	2.70	2.45	3.03
Total	1,920		2.79	2.16	4.6

Table STYLEREF 1 \s 11-. Density Determinations by Zone

Total Open Pit and Underground 3,15	51	2.77	2.13	4.6
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11.4 GEOLOGICAL INTERPRETATION

Hecla performed geological interpretation of overburden material and the Casa Berardi Fault on 1:250 scale vertical sections spaced 15m, 20m, 25m, or 50m, apart and on plan views spaced 10m and 20m apart. Individual mineral zones and lenses (sub-zones) were also modeled within and along the Casa Berardi Fault and related mineralized zones. Drill-hole spacing ranges from 10m to 50m. In general, the drill-hole spacing is sufficiently dense to interpret and correlate the geology and mineralized systems from section to section. Underground drill spacing is denser than for open pit models, so underground zones and lenses could be correlated with more confidence. Drill holes and chip sample data, along with underground mapping, were used to build individual lens solids. Once modeled, the lenses were projected onto multiple levels to verify continuity and to check interpretations. Adjustments on sections and plans were made, as necessary, in order to consistently interpret a given zone or lens through a set of sections and plans.

11.5 MINERALIZED ENVELOPE INTERPRETATION

For underground Mineral Resource estimation, Hecla created mineralized envelopes that coincide with a 4.0g/t Au grade shell and were based on logged structural zones. A generalized 1.0g/t Au envelope was created to constrain open pit Mineral Resource estimation. In both cases, a minimum true width of three meters was applied to the solid modeling, and points on the solids were snapped to intended drill-hole intervals in three-dimensional space. Some lower-grade assays were incorporated to preserve continuity; however, most of the assay results from drill holes and chips samples are higher than the envelope grades. Additional 10m dilution shells were also created outside the open pit mineral envelopes to estimate dilutionary grades. Geological and zone/lens interpretations guided mineralized envelope modeling.

Mineralization is commonly stratigraphically constrained, and sharp contacts between economic and non-economic grades are noted. The open pit Mineral Resource envelopes are always wider and can contain several underground envelopes. The open pit Mineral Resource envelopes are generally modeled from surface to a depth of 350m while the underground Mineral Resources are modeled from surface with no lower limit.

11.6 CAPPING AND COMPOSITING

Grade capping was applied to minimize the impact of excessively high-grade assays on the Mineral Resource estimate. Each zone or lens within given zones were evaluated separately and assigned appropriate capping values. Statistical distributions of assays within the mineralized envelopes were plotted on histograms and used to evaluate capping levels. Capping levels were applied to assays prior to compositing Figure 11-1 Open pit and underground capping levels applied to assays used in the various estimates are summarized in Appendix 3. Within the 10m pit dilution shells in the open pit models, a capping value of 1.5g/t Au was applied to avoid detrimental effects from isolated high-grade values outside the 1.0g/t Au mineralized envelope.

After validation of the gold mineralized envelope solids and capping of sample assays, the drill-hole assay data was composited. The down-hole composite length applied to samples used for underground and open pit estimation is 1.0m and 2.5m, respectively. The underground composite length was chosen because the majority of sample intervals in underground drilling is 1.0m. The open pit composite length was chosen to reflect the smallest mining unit (SMU) based on equipment being used in current open pit mining; the model block dimensions were also considered. Mineral envelope solid boundaries were honored during compositing, and composite data were stored at the midpoints of the intervals. Partial composite slivers were weight averaged with the adjacent 1m or 2.5m composites or left as a single composite such that composite lengths are always between 0.5m and 1.5m for underground and between 1.25m and 3.75m for open pit models.

Only drill-hole and rock-chip chips samples taken from the pits were composited for use in grade estimation in the open pit block models. There is a high-grade sampleselection bias incorporated in the underground rock-chip samples which could cause over-statement of gold grades within the relatively broad open pit mineralized envelopes.

A separate set of composites were created that represent the full interval length within each mineralized lens. These were generated for use in statistical evaluations, including the determination of capping values for gold assays. The second set of composites were not used in Mineral Resource or Reserve estimation.

11.7 BLOCK MODEL DIMENSIONS AND CODING

The block dimensions for the Principal, East, and 160 underground block models are 2.5m (column) x 1.25m (row) x 5.0m (vertical). The models were sub-blocked to 1.25m x 0.625m x 2.5m. The block dimensions for the West mine model are 2.5m x 1.25m x 2.5m (sub-blocked to 1.25m x 0.625m x 1.25m), because the veins in the 109 and 115 zones are relatively shallow dipping.

The most recent updates of the open pit block models were created in Gemcom software, then exported to Surpac and sub-blocked. The block size for the WMCP and 160 open pit models is $2.5m^3$ and is sub-blocked to $0.625 m^3$. The block dimensions for the Principal block model are $5m \times 5m \times 7.5m$ and are sub-blocked to $0.625m \times 0.625m \times 0.625m \times 0.625m \times 0.937m$. The block size for the Principal model was increased because the model size was excessive with the addition of the 134 Zone.

After validation of the various modeled wireframes, items in the block model were coded using their respective solids and surfaces. These included the overburden material (combined till and alluvium), topography, bedrock, clay zones, mineral zones and lenses, the 1.0g/t Au open pit and 4.0g/t Au underground mineralized envelopes, and the 10m open pit dilutionary envelope. All coding was by majority volume within each individual sub-block; no percentages within individual sub-blocks were coded from solids or surfaces. Open pits were also coded into the model by majority in a sub-block once optimizations were complete. Density values were assigned to model blocks according to Table 11-2 in Section 11.3.

Hecla's engineering department used a Cavity Monitoring System (CMS) to survey the extents of mined-out stopes. These cavity surveys were combined with previous stope and underground development solids, and sub-blocks in the Surpac model were coded as depleted or not depleted. The coded voids in the underground and open pit block models were used for engineering and reconciliation studies, and for reporting depleted Mineral Reserves and Resources. Pillars, buffer zones below open pits, and other sterilized areas that are deemed to be non-recoverable

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were coded to prevent their inclusion in reported Mineral Resources. Optimized pit shells and/or pit designs were applied to the model as resource and reserve codes.

11.8 MINERAL RESOURCE ESTIMATION METHODOLOGIES

Surpac 2023 HF 1(x64) was used for the preparation of Mineral Resources. Gold grades were estimated into the block models using inverse distance squared (ID^2) interpolation. Spherical search ellipsoids and distances were applied to mineralized envelopes individually. A total of 232 and 64 search ellipsoids were used to interpolate the underground and open pit Mineral Resources, respectively. Maximum search distances in the underground estimates range from 15m to 100m, and from 35m to 60m in the open pit estimates. Search anisotropies vary from 1:1 (spherical) to 6:1. Minimum composites required, maximum composites per hole, and maximum composites used to estimate a block grade were 2, 3 or 6, and 12 or 24 for the underground models, and 2 or 3, 3, and 24 for the open pit models. The mean anisotropic distances to composites used to estimate a given block grade, and the number of composites used were stored during the interpolation runs and were used for resource classification. Arsenic grades were also interpolated using XRF data, where available.

Base elevation levels were established for the open pit models, below which no grade was estimated. The lower limits were 4,677ft AMSL, 4367ft AMSL, and 4,552ft AMSL for the WMCP, Principal/F134, and F160 pit areas, respectively.

11.9 MINERAL RESOURCE VALIDATION

Hecla personnel conduct on-screen visual inspection of estimated gold grades in the block model in context with diamond drill-hole assays and composites on plans and vertical sections. Multiple iterations of interpolation were run with modified estimation parameters until issues, such as unestimated blocks, were corrected and the distribution of gold grade in the model was considered satisfactory.

11.10 MINERAL RESOURCE CLASSIFICATION

Definitions for Mineral Resource categories used in this TRS are those defined by the SEC in S-K 1300 and excerpted below. Mineral Resources were classified into Measured, Indicated, and Inferred categories.

Mineral Resource is a concentration or occurrence of material of economic interest in or on the Earth's crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. A Mineral Resource is a reasonable estimate of mineralization, considering relevant factors such as cutoff grade, likely mining dimensions, location or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all mineralization drilled or sampled.

Measured Mineral Resource is 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 QP to apply modifying factors, as defined in this section, 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 148

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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.

Indicated Mineral Resource is 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 QP 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 to a Probable Mineral Reserve.

Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. 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 Resource.

The classification of the Casa Berardi gold resources in the open pit and underground block models are based on the density and quality of drill-hole data, the established continuity of the auriferous zones, and production experience. Only blocks within modeled mineral envelopes could be classified as Measured, Indicated or Inferred resources. The classification is applied using polygons that are modeled based on the proximity of block centroids relative to drill-hole composites and mine workings. The average distance of drill-hole composites used to estimate a given block grade was stored in the block models and used to model the polygons on screen. Underground rock-chip samples provided the location of mined mineralization. The polygons were drawn to approximate the 25m or 35m average distances for Measured or Indicated material, so the actual distances of the blocks are slightly above or below the applicable distance. The polygons were expanded or contracted by Hecla depending on the demonstrated continuity of the mineralization, which is a function of drilling density. The average distances chosen to assign Measured, Indicated and Inferred classification were chosen based on general drill-hole spacing, which ranges from 15m to 50m for many of the deposits. The Mineral Resources were classified as follows:

For underground resources:

- / Measured Mineral Resources: Blocks in modeled mineral envelopes within a mean distance of ~25m and underground development within close proximity that supports the continuity of mineralization.
- / Indicated Mineral Resources: Blocks in modeled mineral envelopes within a mean distance of ~25m that are not Measured Mineral Resources.
- / Inferred Mineral Resources: Blocks in modeled mineral envelopes outside a mean distance of ~25m. The mean distance of Inferred Mineral Resources is generally between 25m and 35m, and rarely up to 50m.

For open pit resources:

/ Measured Resources: Blocks in modeled mineral envelopes within a mean distance of ~35m and surface mining within close proximity that supports the continuity of mineralization.

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- / Indicated Resources: Blocks in modeled mineral envelopes within a mean distance of ~35m that are not Measured Mineral Resources.
- / Inferred Resources: Blocks in modeled mineral envelopes outside a mean distance of ~35m. The mean distance of Inferred Mineral Resources is generally 60m or less.

RESPEC has evaluated Hecla's classification for the Casa Berardi Mineral Resources, and concludes the following:

- / Hecla's application of mean distances used to estimate a given block grade is a reasonable approach to classifying resources. Average and closest distances (isotropic and anisotropic) of composites relative to blocks is commonly used in the mining industry for resource classification.
- / It is reasonable to upgrade resource classification from Inferred to Indicated for blocks in close proximity to mined mineralization.
- / Hecla's data compilation and verification process generally ensures that the assay and other drill data that form the basis for mineral envelope modeling and resource estimation are generally reliable. RESPEC also verified gold assays in Hecla's database against certificates for 2021 to 2023 and found only 20 errors in 85,903 assay records. The data verification justifies the classification of material as Indicated.
- / All or parts of drill-hole assays determined to be unreliable, due to QA/QC failures or unverifiable/conflicting assays in historical holes, are generally removed or replaced in the database. This adds confidence in the drill-hole database used for resource modeling and justifies classification of some material as Indicated.
- / Hecla's geologic and mineral envelope models reasonably guide and constrain gold estimation, which increases confidence that the overall reported Mineral Resources.
- / Relatively dense drilling defines mineralization in most of the underground and much of the open pit deposits. Density of drilling could be applied to classification by adding the number of holes and/or composites used to estimate a given block grade to classification criteria in conjunction with distances to composites.
- / The general production history and reasonable mined-versus-model reconciliation results validates past models and estimates and justifies the continued classification of material as Measured and Indicated.

11.11 CASA BERARDI MINERAL RESOURCES

The Casa Berardi deposits have been and will continue to be mined by open pit and underground methods. However, the underground reserves will be depleted within the next year, and mining from underground will cease. The Mineral Resources were tabulated to reflect current open pit/underground mining and mill extraction. To meet the requirement of reasonable prospects for eventual economic extraction for open pit resources, pit optimizations were run using the parameters summarized in Table 11-7. The effective date of these Mineral Resources is December 31, 2023, which is the date new as-built surveys were applied to constrain the reported resources.

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	F160 Principal W			F134
	Mill	Mill	Mill	Mill
Mining - Waste	\$3.46	\$3.46	\$3.46	\$3.46
Pit - Fixed Costs (Opex)	\$2.00	\$2.00	\$2.00	\$2.00
Milling (Opex)	\$22.13	\$22.13	\$22.13	\$22.13
G&A - Casa (Opex)	\$4.96	\$4.96	\$4.96	\$4.96
G&A - Val d'Or (Opex)	\$1.48	\$1.48	\$1.48	\$1.48
Maintenance (Opex)	\$1.14	\$1.14	\$1.14	\$1.14
Electrical (Opex)	\$0.77	\$0.77	\$0.77	\$0.77
Pit - Prep (Capex)	\$0.68	\$0.30	\$0.35	\$0.30
Mill (Capex)	\$-	\$-	\$-	\$-
G&A - Casa (Capex)	\$0.09	\$0.09	\$0.09	\$0.09
Reclamation (Capex)	\$1.01	\$1.01	\$1.01	\$1.01
Exploration (Capex)	\$0.22	\$0.22	\$0.22	\$0.22
Total	\$34.46	\$34.09	\$34.14	\$34.09
Refining - Au	\$2.97	\$2.97	\$2.97	\$2.97
Dilution	27%	20%	20%	20%
Mining Recovery	100%	93%	93%	93%
Mill Metallurgical Recovery	84.9%	63.2%	63.3%	63.2%
Reporting Cutoff Grade	0.97g/t Au	1.13g/t Au	1.13g/t Au	1.13g/t Au
Royalty	None	None	None	None

Table STYLEREF 1 \s 11-. Open Pit Optimization Parameters by Pit

The reported open pit resources are fully block-diluted and constrained by an optimized pit shell. Resources were reported at the cutoff grades shown in Table 11-8, which range from 0.97g/t Au to 1.13g/t Au. The gold cutoff grade was calculated using the processing, general and administrative costs, gold price, recovery, and refining cost provided in Table 11-7. The mining cost is included in pit optimizations but is not included in the determination of the cutoff grade, as all material in a given pit would be removed as either ore or waste. The resource estimates are based on a combined open pit and underground mill feed of 4,400tpd.

Underground Mineral Resources are reported by tabulating all blocks within modeled mineral envelopes with estimated grades that exceed the calculated reporting cutoff grades, which vary for each zone or lens (sub-zone). Sterilized ground, including pillars and buffer zones below the bottom of pits, are excluded from Mineral Resources. The cutoff grades used by Hecla for reporting underground Mineral Resources as given in Table 11-9 range from 3.78g/t Au to 5.84g/t Au and are based on the following parameters:

/	Gold Price	US\$1,750/oz Au
/	Mill Recovery	Specific by Zone

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- / Operating Cost US\$183.08/t or US\$282.60/t
- / The cutoff grade is calculated by the following equations:
- / Revenue per unit gold: US\$1,750/oz Au ÷ 31.1035g/oz Au = US\$56.26/g x Mill recovery
- / Cutoff grade = Operating costs / Revenue per unit gold

Tana	Mill Recovery	Cutoff Grade	Operating Cost
Zone	(%)	(g/t Au)	(US\$/t)
104, 107 to 109, 111, 113, 116, 117, 119, 124 and 129	86.20	3.78	183.08
115, 118, 121, 123 and 128	80.10	4.06	183.08
134, 139, 146, 152, 159 and 160	89.90	5.59	282.60
148	86.00	5.84	282.60

Table STYLEREF 1 \s 11-. Underground Mineral Resource Cutoff Grades by Zone

Mineral Resources were reported using US\$1,750/oz Au, which was chosen based on consensus, long-term forecasts from banks, financial institutions, and other sources, and a US\$/C\$ exchange rate of 1.300. The Casa Berardi Mineral Resources are presented in Table 11-9. The reported open pit resources are fully block diluted and are exclusive of Mineral Reserves. Underground Mineral Resources are undiluted and are also exclusive of Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Table STYLEREF 1 \s 11-. Underground and Open Pit Mineral Resources by Zone – December 31, 2023

Classification and Zone	K Tonnes (t)	Grade (g/t Au)	Contained Metal (k oz Au)		
	Measured Mineral Resources				
		Underground			
100 Lower Inter	120	8.63	33.3		
101 North West	-	-	-		
107	132	5.50	23.4		
108	1	4.32	0.2		
109	13	7.65	3.2		
113	334	7.50	80.5		
115	36	6.57	7.7		
117	-	-	-		
118	133	6.48	27.8		

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Classification and Zone	K Tonnes (t)	Grade (g/t Au)	Contained Metal (k oz Au)
119	-	-	-
123	114	6.23	22.9
124	44	5.94	8.3
148	71	11.88	26.9
152	-		-
Total Underground	997	7.30	234.0
	1	Open Pit	
WMCP	61	0.96	1.9
Principal	-	-	-
134	-	-	-
160	-	-	-
Total Open Pit	61	0.96	1.9
Total Measured Resources	1,058	6.94	235.9
	2	Indicated Mineral Resources	
		Underground	
100 Lower Inter	7	5.93	1.3
107	95	4.73	14.5
108	1	4.02	0.1
109	61	9.06	17.6
113	323	6.99	72.6
115	3	5.38	0.4
118	870	6.99	168.8
119	150	6.12	29.5
121	18	5.74	3.3
123	501	6.40	103.0
124	495	5.76	91.6
128	61	5.35	10.5
134	30	6.68	6.4
146	13	6.40	2.8
148	200	11.18	71.8

Classification and Zone	K Tonnes (t)	Grade (g/t Au)	Contained Metal (k oz Au)
159	21	7.15	4.9
160	14	7.34	3.4
Total Underground	2,861	6.55	602.5
	·	Open Pit	
WMCP	27	0.96	0.8
Principal	54	0.98	1.7
134	1	0.96	0.0
160	104	0.69	2.3
Total Open Pit	186	0.81	4.9
Total Indicated Mineral Resources	3,048	6.20	607.4
Total Measured and Indicated	4,106	6.39	843.3
		Inferred Mineral Resources	
		Underground	
100 Lower Inter	5	14.15	2.2
104	85	5.70	15.6
107	0	4.02	0.0
108	6	4.65	0.8
113	89	6.98	20.0
116	214	13.28	91.5
118	182	6.23	36.4
119	55	5.65	10.0
121	8	5.22	1.4
123	233	6.43	48.2
124	150	6.14	29.6
129	56	7.03	12.7
134	25	7.13	5.7
139	96	7.80	23.9
146	15	6.11	2.9
148	55	9.44	16.8
152	12	7.78	2.9
157	3	6.67	0.6

Classification and Zone	K Tonnes (t)	Grade (g/t Au)	Contained Metal (k oz Au)
159	17	6.55	3.6
160	33	6.47	6.8
Total Underground	1,338	7.71	331.6
		Open Pit	
WMCP	51	1.81	3.0
Principal	522	2.96	49.6
134 (in reserve pit shell)	3	3.01	0.3
160 (in reserve pit design)	175	1.98	11.1
Total Open Pit	751	2.65	64.0
Total Inferred Mineral Resources	2,089	5.89	395.6

Notes:

- 1. In situ Mineral Resources are classified in accordance with the S-K 1300 classification system.
- 2. Mineral Resources were estimated by Hecla staff and reviewed and accepted by RESPEC.
- 3. Mineral Resources are exclusive of Mineral Reserves and do not have demonstrated economic viability.
- 4. Underground Mineral Resources are reported at cutoff grades ranging from 3.78g/t Au to 5.84g/t Au.
- 5. Open pit Mineral Resources are reported at cutoff grades ranging from 0.97g/t Au to 1.13g/t Au.
- Underground and open pit Mineral Resources are reported using US\$1,750/oz Au, based on consensus, long term forecasts from banks, financial institutions, and other sources, and a US\$/C\$ exchange rate of 1.300.
- 7. A minimum mining width of three meters was used for the modeled open pit and underground mineral envelopes used to estimate Mineral Resources.
- 8. Totals may not represent the sum of the parts due to rounding.
- 9. Mineral Resources potentially amenable to open pit mining methods are reported using a gold price of US\$1,750/oz, a throughput rate of 4,400 tonnes/day (combined material from underground and open pit sources), surface mining costs of US\$3.46/tonne mined, milling processing costs of US\$24.13/tonne processed, and general and administrative and other costs ranged from \$9.96-10.34/tonne processed. Metallurgical recoveries were based on metallurgical curves.
- 10. Mineral Resources potentially amenable to underground mining methods are reported using a gold price of US\$1,750/oz and a throughput rate of 4,400 tonnes/day (combined material from underground and open pit sources). Operating costs are US\$183.08/ton mined or US\$282.60/ton mined, depending on the underground zone or lens. Mill recoveries also vary by zone or lens and range from 80.10% to 89.90%.

Table 11-9 A comparison of the December 31, 2023, and December 31, 2022 Mineral Resource estimates is given Appendix 4, and is summarized in Table 11-4. Gains and losses are a result of:

- / Geological reinterpretation of mineralized zones with new drilling.
 - Conversion of Mineral Resources into Mineral Reserves.
- / Mining depletion.
- / Subtraction of low-grade Mineral Resources (below cutoff grade).
- / Lower reporting cutoff grades in 2023.
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- / Changes in pit optimization parameters, e.g., mining costs, administrative costs, etc.
- / Change in reporting gold price from \$1,700/oz to \$1,750/oz.
- / Dilution applied to open pit optimizations was lowered in 2023.
- / Sterilization beneath the planned pits was applied to underground resources.
- / Open pit designs were used to constrain Mineral Resources in 2023 rather than optimizations, which were used in 2022.
- / Apparent gains and losses by upgrade of Inferred or Indicated Mineral Resources to Indicated or Measured Mineral Resources.

The 2022 Mineral Resources are superseded by the current 2023 Mineral Resources and are not relied upon by Hecla or RESPEC. RESPEC has not reviewed the 2022 Mineral Resource models or estimates.

11.12 DISCUSSION OF MINERAL RESOURCE ESTIMATES

The RESPEC QP reviewed Hecla's Casa Berardi open pit and underground models, both visually and statistically. Gold-grade smoothing during estimation is the primary issue in the models. Similar relationships were observed in all block models to varying degrees during on-screen cross-sectional reviews of estimated block grades versus down-hole composites. The structural zone wireframes confine the underground estimates more tightly compared to the open pit wireframes, such that the observed smoothing was less pronounced, particularly where drilling data is relatively dense. All Population distribution plots comparing bench composite grades to coincident estimated model grades show similar patterns. Estimated block grades are materially lower than their coincident bench composites in the high-grade portion of the plots, and the block grades in lower-grade material are significantly higher than the bench composites. The net result of this smoothing can be an overall overstatement of contained metal. Mine planning and production could be affected if fewer tonnes and higher grade than predicted by the model is encountered during mining.

Some grade smoothing is an unavoidable consequence of the modeling process from compositing to grade estimation in all resource models. At Casa Berardi, the smoothing can be significant, particularly in the open pit models. Constraint by the structural zone wireframes and 1.0g Au/t envelopes for the underground and open pit models, respectively, control the smoothing to some degree. The grade smoothing increases risk and diminishes confidence in the local distributions of gold grades and tonnes within the broader wireframes. The models likely overstate tonnes and understate grade, although the extent and the ultimate effects during mining cannot be fully quantified. It is recommended that the smoothing be minimized as much as possible.

The mined versus model reserve reconciliations provided by Hecla since 2020 were reviewed by RESPEC. In 2023, less tonnes at higher grade were mined from open pits; these results are expected in a smoothed grade model. The net result was more gold ounces produced. However, in 2020 through 2022, tonnes, grade and ounces mined by open pit were greater than predicted. If more tonnes of ore were found during mining that were missed by drilling, then the drill-spacing may not be sufficiently dense for the deposits. While producing more ounces than projected from the open pits is better than overpredicting, the reason more tonnes at higher grade are being encountered needs to be understood.

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The uncertainties associated with grade and tonne smoothing in the current models are offset in part by the bulk-tonnage mining scenario and generally positive open pit mined versus model reconciliations. Also, the history of productive mining at Casa Berardi using similar models and applied methodologies as those in the current models suggests that the performance of the current models will be similar. Finally, the remaining underground mine life is short (<1 year), which limits the effects of any potential issues associated with excessive smoothing.

RESPEC believes the models could be improved by further confining and separating relatively low- and high-grade mineralization within the 1.0g/t Au and 4.0g/t Au envelopes currently in use. An immediate improvement could be realized in the open pit models by using both sets of solids, such that the higher-grade mineralization within the structural zone wireframes would be separated from the lower-grade mineralization between the 1.0g/t Au and 4.0g/t Au and 4.0g/t Au and 4.0g/t Au envelopes.

The best method to minimize smoothing and more accurately represent grade distribution in a mineral estimate is to physically constrain the model with domains in proper geological context. Population distribution plots of all gold values provide a starting point for identification of the different assay populations that are likely characterized by specific lithologic, alteration and/or mineralogical characteristics. Modeling gold domains at grade breaks evident on plots of these types would limit grade smoothing to within related assay populations. Domain modeling while reviewing core and log data will help to determine the geological context of each grade population.

In lieu of changing the modeling approach, infill drilling in portions of the deposits with more widespread drill data would serve to better control grade smoothing.

The primary recommendations made by RESPEC are:

- / Apply tighter constraints to Mineral Resource estimates with additional geologically defined mineral envelopes.
- / Increase drilling density for open pit deposits where mineralization is missed and therefore cannot be modeled because the current spacing is insufficient.
- / Use the same block dimensions based on the SMU for all open pit block models.
- / Add mapping of pit faces and floors, and blasthole logs to Project database, and incorporate when updating geologic and mineral envelope models.

In conclusion, if mine vs model reconciliation and production results continue to be reasonable, then minimal changes are required. More gold ounces are generally being produced in the open pits than were predicted by the models. RESPEC believes that improvements to the model as suggested above would improve the predictive ability of the models, and in turn aid in mine planning and production. Overall, RESPEC believes that all issues relating to relevant technical and economic factors likely to influence the prospect of reasonable extraction can be resolved with further work, including the recommendations discussed above.

RESPEC is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant technical and economic factors that would materially affect the Mineral Resource estimate.

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12.0 MINERAL RESERVE ESTIMATES

Underground Mineral Reserves were estimated by Hecla Québec and reviewed by RESPEC. Estimates were prepared for the 118, 123, and 124 zones of the Principal Mine. A long-hole stoping mining method without pillars is assumed for all of the estimates. All stopes are backfilled after mining using paste fill, cemented rock fill (CRF), or unconsolidated waste rock.

Open Pit Mineral Reserves were estimated by RESPEC, for the WMCP, Principal, F134, and F160 pits.

Measured and Indicated Mineral Resources were converted to Proven and Probable Mineral Reserves, respectively. Inferred Mineral Resources were not converted to Mineral Reserves. Mineral Reserves as of December 31, 2023 are summarized in Table 12-1.

Reserve Category	K Tonnes (k t)	Grade (g/t Au)	Contained Metal (k oz Au)	Metallurgical Recovery (%)
		Undergroun	d	
Proven	50	4.14	6.7	-
Probable	159	5.06	25.9	-
Proven + Probable	209	4.84	32.6	88.7
Open Pit				
Proven	3,846	3.07	379.4	-
Probable	10,327	2.59	858.5	-
Proven + Probable	14,174	2.72	1,237.9	81.3
Total				
Proven + Probable	14,383	2.75	1,270.5	81.5

Table STVI EDEE 1	Vall Summar	s of Minoral Decouver	December 21	2022
Iadie SIYLEKEF I	i \s 12 Summar	v of Mineral Reserves	– December 51.	, 2023

Notes:

1. Classification of Mineral Reserves is in accordance with the S-K 1300 classification system. Mineral Reserves are reported as in situ with the exception of mill stockpile volumes as defined in this report.

2. RESPEC is responsible for the statement of Proven and Probable Mineral Reserves.

3. Mineral Reserves are 100% attributable to Hecla.

4. Underground Mineral Reserves are estimated at a cutoff grade of 3.60g/t Au for 124 Zone and a 3.88g/t Au for the 118 and 123 Zones.

5. Open pit Mineral Reserves are estimated at a cutoff grade of 1.02g/t Au for the F160 pit and 1.18g/t Au for the WMCP, Principal, and F134 Pits.

Underground Mineral Reserves are estimated using short-term gold price of US\$1,850/oz Au and open pit Mineral Reserves are estimated using a long-term gold price of US\$1,650/oz Au respectively and a US\$/C\$ exchange rate of 1.300.

7. A minimum mining width of three meters was used for underground Mineral Reserves.

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8. Totals may not represent the sum of the parts due to rounding.

Underground and open pit Mineral Reserves by zone are presented in Table 12-2.

Zone	K Tonnes (k t)	Grade (g/t Au)	Contained Metal (k oz Au)		
Under	ground – Proven				
118	29	4.34	4.1		
123	14	3.91	1.7		
124	2	4.46	0.4		
Stockpile	5	3.39	0.5		
Total Underground – Proven	50	4.14	6.7		
Underground – Probable					
118	122	5.42	21.2		
123	37	3.91	4.7		
124	-	0.00	-		
Total Underground – Probable	159	5.06	25.9		
Total Underground Proven + Probable	209	4.84	32.6		
Open Pit – Proven					
WMCP	3,687	3.07	363.6		
Principal	103	3.89	12.9		
F134	-	0.00	-		
F160	-	0.00	-		
Stockpile	56	1.62	2.9		
Total Open Pit – Proven	3,846	3.07	379.4		
Oper	n Pit – Probable				
WMCP	1,215	2.62	102.2		
Principal	5,303	3.11	530.1		
F134	90	3.61	10.4		
F160	3,720	1.80	215.8		
Total Open Pit – Probable	10,327	2.59	858.5		
Total Open Pit Proven + Probable	14,174	2.72	1,237.9		
Grand Total					

Proven	3,896	3.08	386.1
Probable	10,487	2.62	884.4
Proven + Probable	14,383	2.75	1,270.5

Notes:

- 1. Classification of Mineral Reserves is in accordance with the S-K 1300 classification system. Mineral Reserves are reported as in situ with the exception of mill stockpile volumes as defined in this report.
- 2. RESPEC is responsible for the statement of Proven and Probable Mineral Reserves.
- 3. Mineral Reserves are 100% attributable to Hecla.
- 4. Underground Mineral Reserves are estimated at a cutoff grade of 3.60g/t Au for 124 Zone and a 3.88g/t Au for the 118 and 123 Zones.
- 5. Open pit Mineral Reserves are estimated at a cutoff grade of 1.02g/t Au for the F160 pit and 1.18g/t Au for the WMCP, Principal, and F134 Pits.
- 6. Underground Mineral Reserves are estimated using short-term gold price of US\$1,850/oz Au and open pit Mineral Reserves are estimated using a long-term gold price of US\$1,650/oz Au respectively and a US\$/C\$ exchange rate of 1.300.
- 7. A minimum mining width of three meters was used for underground Mineral Reserves.
- 8. Totals may not represent the sum of the parts due to rounding.

RESPEC is not aware of any risk factors associated with, or changes to, any aspects of the modifying factors such as mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

12.1 UNDERGROUND MINERAL RESERVES

Underground Mineral Reserves are reaching the end of their life and underground mining activities are planned to end in 2024.

Mineral Reserve estimates are based on the Mineral Resource 3D block models. Stope shapes are created based on individual zone and lens geometries. Stope designs, based on 15m spaced sections extrapolated along strike, are built to allow a preliminary economic assessment of the areas to be mined. The Mineral Resources within the stope shapes are exported to MS Excel and dilution and extraction factors are applied. Mining engineers then assess the economic prospects for each stope. Based on engineering considerations, lower grade blocks may be included in stope designs if their development is proposed in conjunction with other blocks. While the low grade block alone would not support the required development, it is considered economic if it can be developed with other blocks. Similarly, the evaluation of the extraction method or ground conditions may result in lower grade blocks being included in the Mineral Reserve estimate.

Underground zones containing Mineral Reserves are described below.

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Current production is situated between the 550m and 1,150m levels. From the 790m level, the 118 Zone's internal ramp system and mining levels are accessible. The 118 06,118 11 and 41 lenses and mined by longitudinal stoping. Paste fill is available in the 118 Zone.

The 123 Zone lies approximately 250m to the south of the 118 Zone. The 123 Zone is accessed via an internal ramp system and mining levels from the 790m level. The 123 Zone consists of several sub-parallel lenses. Paste fill is also available in the 123 Zone below the 470m level. An internal ramp which connects the upper and lower levels of the 123 Zone. The 123-02, 05, 12, and 19 are the lenses still containing reserves.

The 124 Zone is in the upper portion of the West Mine, and consists of several sub-parallel lenses, which are currently mined from the underground, below the 150m level. The upper portion of the 124 Zone, extending from surface to the 185m level, is planned for open pit mining. Paste fill is not available in the Principal Pit area of the West Mine. Stopes are backfilled with CRF and uncemented rock fill in this area. The 124-81 lens contains the reserve material.

12.2 OPEN PIT MINERAL RESERVES

With the completion of XMCP in 2023 the remaining open pits include F160, WMCP, Principal and F134.

12.2.1 F160 PIT

The F160 Pit is located northeast of the mill. The 159 and 160 lens (both included in the F160 Pit) are currently the most easterly identified lens on the Property. Currently, Phase 2 is being mined and overburden removal is expected to continue until Q4 2024. The final phase of the F160 Pit will be completely mined in 2026. The average planned ore tonnage is 3,395tpd. The F160 Pit will not intersect any underground workings.

12.2.2 WMCP PIT

The WMCP Pit is the most westerly pit in the Casa Berardi Mineral Reserves. Prior to commencing this project, surface infrastructure (e.g., a cement plant and access roads) will have to be redesigned and/or relocated and environmental considerations will have to be addressed. The WMCP Pit will intersect multiple underground excavations. The development of the WMCP Pit is planned to coincide with the end of underground mining in the West Mine area as it will affect West Mine infrastructure. Overburden removal is planned to commence in 2031 and will take three years. The WMCP Pit Mineral Reserve will be mined between 2032 and 2037, at a rate of 2,681tpd.

12.2.3 PRINCIPAL PIT

Overburden removal in the Principal Pit area is planned to begin in 2028 whereas ore mining is planned to begin in 2030 at a peak rate of 4,752tpd in 2031. Environmental and engineering challenges regarding pumping are being addressed and are still in progress. The Principal Pit will intercept underground workings (in the lower part of the pit).

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12.2.4 F134 PIT

The F134 Pit is located to the southeast of the Principal Pit. The 134 Pit will not intersect any underground workings and is independent of the Principal Pit. A dewatering program will be required to control water inflow from runoff and from the rock mass. Mining will begin in 2037 and be complete the same year. The overburden and waste rock will be used to backfill the Principal Pit.

12.3 CUTOFF GRADE

The cutoff grade used for reporting Mineral Reserves is based on the following parameters:

- / Gold price: US\$1,850/oz Au for Underground and US\$1,650/oz Au for Open Pit.
- / Exchange rate of C\$1.30/US\$1.00.
- / Metallurgical recovery by zone as presented in Table 12-3.
- / The underground and open pit cutoff grades are presented in Table 12-3.

Zone	Metallurgical Recovery	Cutoff Grade Mill Recovery	Cutoff Grade		
	(%)	(%)	(g/t Au)		
	Un	derground Zones			
118	81.1	-	4.28		
119	86.8	-	4.00		
123	81.1	-	4.28		
124	86.8	-	4.00		
		Open Pits			
Principal	83.0	64.5	1.18		
134	84.5	64.5	1.18		
160	88.7	85.3	1.02		
WMCP	75.9	64.3	1.18		

Table STYLEREF 1 \s 12-. Underground and Open Pit Reserve Cutoff Grades

When the grade of the Mineral Reserves is close to the cutoff grade, a more detailed review is completed considering the anticipated costs and revenues.

Individual stopes were evaluated using the cutoff grade for the applicable zone, after dilution and extraction factors had been applied.

Hecla has reviewed the market demands and projections for gold prices. They also provided long-term (ten-year) metal price forecasts. Gold is a viable product that is readily sold to open markets without any limitations. RESPEC has reviewed the gold pricing information with respect to the selected gold price for use in this feasibility and agrees with its use for estimating Mineral Reserves.

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12.4 DILUTION AND EXTRACTION

12.4.1 UNDERGROUND MINING

For underground mining, internal dilution is defined as material below the cutoff grade included within a mining block. Internal dilution represents areas included within the Mineral Resource envelopes for continuity and areas outside of the Mineral Resource envelope required to optimize the mining geometry. Internal dilution is intended to be mined with the ore and is included in the Mineral Reserve estimate of a stope.

External dilution is defined as unplanned and uneconomic material coming from the periphery of a mining block. It includes material from the hanging wall or footwall and from exposure of backfill in adjacent stopes. The estimation of underground external dilution is based on the 17 years of underground operating experience at the mine and is expressed as a percentage, calculated as:

Dilution % = (waste tonnes / ore tonnes) x 100.

The average total dilution from internal and external sources for the underground Mineral Reserves is 35% (Table 12-4).

Extraction is the proportion of the diluted Mineral Reserve which is expected to be extracted by mining. The extraction by zone is presented in Table 12-4.

Average extraction is estimated to be 94.5%. Timely placement of backfill and other measures to control stope deterioration are key to achieving high extraction rates in this pillarless mining scenario.

Dilution has been estimated on a stope-by-stope basis considering the planned mining and conditions in the given areas. The dilution estimates reflect the expected conditions in the mature mining areas.

A review of drill hole and block model grades immediately outside stope outlines indicates that mineral boundaries are generally gradational, ranging from 0.5g/t Au to 1.0g/t Au at stope boundaries, instead of being sharply cut. A grade of 0.5g/t Au has been applied to hanging wall/footwall dilution in all zones.

Table	STYLEREF	1 \s 12	Dilution	and Extra	actions Es	stimates –	Underground
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7	Dilutio	on	Extra	traction		
Zone	Longitudinal	Transverse	Longitudinal	Transverse		
118	33.5%	26.6%	94.7%	91.7%		
123	23.1%	22.2%	94.7%	91.7%		
124	26.4%	19.2%	94.7%	91.7%		

12.4.2 OPEN PIT MINING

For open pit mining, internal dilution is defined as material below the cutoff grade within the Mineral Resource envelope. Internal dilution can also be partially estimated by comparing the envelope geometry to bench geometry, as benches are square vertical blocks and the mineral zones dip at angles of between 45° and 70°.

External dilution in open pit mining is defined as material below the cutoff grade that is mixed with ore during the blasting process or picked up by the excavators at the contact between the mineralized package and the waste matrix.

The F160 Pit has been operating since 2020. The dilution estimates for the F160 Pit are based upon this recent mining experience. For subsequent pits, dilution estimates will reflect calculated ore loss and dilution.

Extraction by zone is presented in Table 12-5.

For open pit mining, a 100% extraction factor is used for F160 while a factor of 93% is used for the future pits which are planned to be mined on larger benches. These factors are supported by reconciliation numbers.

1able 51	Table 511 EERCET 1 512-, Drugton and Extractions Estimates – Open 1 R					
Pit	Dilution (%)	Extraction (%)				
WMCP	20	93				
Principal	20	93				
F134	20	93				
F160	27	100				

Table STYLEREF 1 \s 12-. Dilution and Extractions Estimates – Open Pit

12.5 ESTIMATION METHODOLOGY – OPEN PIT PROJECTS

For each of the open pit projects described in the following subsections, optimized pit shells based on the block models prepared by Hecla Québec's geology department were used. Surpac scripts were used to code materials and surfaces within the block model (i.e., overburden material types and bedrock contact). The pit shells were generated using Whittle. Implicit average diluted cutoff grades ranging from 0.90g/t Au to 1.07g/t Au were used. Slope angles and other design criteria are discussed in Section 13.0 of this TRS. The open pit cutoff grade mill recoveries below are solely used to calculate the cutoff. They represent the estimated metallurgical recoveries in the vicinity of the open pit gold cutoff grades and are significantly lower than the metallurgical recoveries related to the average mill fee gold grades.

12.5.1 F160 PIT

Hecla estimated the F160 Pit Mineral Reserves, using updated economic parameters and an updated block model developed by the Hecla Québec mine geology department. A pit optimization and design were completed by Hecla.

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Mineral Reserves were estimated for this pit design based on an implicit diluted cutoff grade of 1.02g/t Au, and the following inputs:

- / Operating costs of US\$34.46/t ore.
- / Cutoff grade mill recovery of 85.3%.
- / Gold price of US\$1,650/oz Au.
- / Dilution of 27%.

12.5.2 WMCP PIT

In Q4 2021, Hecla estimated the WMCP Pit Mineral Reserves, using updated economic parameters and an updated block model developed by the Hecla Québec mine geology department. A pit optimization and design were completed by Hecla.

Mineral Reserves were estimated for the WMCP Pit shell based on an implicit diluted cutoff grade of 1.18g/t Au, and the following inputs:

- / Operating costs of US\$34.14/t ore.
- / Cutoff grade mill recovery of 64.3%.
- / Gold price of US\$1,650/oz Au.
- / Dilution of 20%.

12.5.3 PRINCIPAL PIT

The Principal Pit Mineral Reserves were calculated using updated economic parameters, based on a block model developed by Hecla Québec (geology) department. A pit optimization and design were completed by Hecla.

Mineral Reserves were estimated for this pit shell based on an implicit average diluted cutoff grade of 1.18 g/t Au, and the following inputs:

- / Operating costs of US\$34.09/t ore.
- / Cutoff grade mill recovery of 64.5%.
- / Gold price of US\$1,650/oz Au.
- / Dilution of 20%.

12.5.4 F134 PIT

In Q4 2021, Hecla updated the F134 Pit Mineral Reserves, using updated economic parameters, and an updated block model developed by the Hecla Québec mine geology department. A pit optimization was completed by Hecla with RESPEC completing the design.

Mineral Reserves were estimated for this pit shell based on an implicit diluted cutoff grade of 1.18g/t Au, and the following inputs:

- / Operating costs of US\$34.09/t ore.
- / Cutoff grade mill recovery of 64.5%.
- / Gold price of US\$1,650/oz Au.

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/ Dilution of 20%.

12.6 COMPARISON TO PREVIOUS ESTIMATES

The December 31, 2023 Mineral Reserve estimate represents an overall decrease of 2.23M tonnes and 331k oz Au as compared to the December 31, 2022 Mineral Reserve estimate.

A summary of gains and losses is presented in Table 12-6.

From 2021 to 2023, Mineral Reserves underground decreased due to ongoing mining in all zones, as well as a write down in the East Mine due to ongoing challenging conditions. Over the same period, Mineral Reserves decreased in all open pits due to mining activity.

Zone	December 31, 2023				December 31	Change		
	K Tonnes	Grade (g/t Au)	Contained Metal (K toz Au)	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Contained Metal (K toz Au)
			I	Proven				
Lower Inter	-	-	-	6	9.58	2.0	(6)	(2.0)
113	-	-	-	37	5.24	6.3	(37)	(6.3)
118	29	4.34	4.1	117	5.56	21.0	(88)	(17)
123	14	3.91	1.7	145	5.52	25.7	(131)	(24)
124	2	4.46	0.4	23	5.64	4.2	(21)	(3.9)
East Mine U/G (148)	-	-	-	106	6.86	23.5	(106)	(23.5)
WMCP Pit	3,687	3.07	363.6	3,832	3.26	401.0	(145)	(37.4)
EMCP + Ext. Pit	-	-	-	5	2.78	0.4	(5)	(0.4)
Principal Pit	103	3.89	12.9	117	3.84	14.5	(15)	(1.6)
F134 Pit	-	-	-	-	-	-	-	-
F160 Pit	-	-	-	46	0.92	1.4	(46)	(1.4)
Total Proven Mineral Reserves	3,896	3.08	386.1	4,436	3.51	499.9	(539)	(113.8)
			P	robable				
Lower Inter	-	-	-	3	7.34	0.8	(3)	(0.8)
113	-	-	-	169	6.42	34.9	(169)	(34.9)
118	122	5.42	21.2	227	5.48	40.0	(105)	(18.8)
119	-	-	-	15	4.96	2.3	(15)	(2.3)

Table STYLEREF 1 \s 12-. Change in Mineral Reserves 2023 to 2022

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Zone		December 31,	, 2023		December 31	, 2022	Change	
	K Tonnes	Grade (g/t Au)	Contained Metal (K toz Au)	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Contained Metal (K toz Au)
123	37	3.91	4.7	235	5.48	41.3	(197)	(36.7)
124	-	-	-	120	5.31	20.5	(120)	(20.5)
East Mine U/G (148)	-	-	-	116	6.52	24.2	(116)	(24.2)
WMCP Pit	1,215	2.62	102.2	1,219	2.73	107.1	(4)	(4.9)
Principal Pit	5,303	3.11	530.1	5,446	3.12	546.6	(144)	(16.5)
F134 Pit	90	3.61	10.4	109	3.42	11.9	(19)	(1.5)
F160 Pit	3,720	1.80	215.8	4,322	1.87	259.2	(602)	(43.4)
Total Probable Mineral Reserves	10,487	2.62	884.4	12,177	2.81	1,101.6	(1,690)	(217.2)
	·		Proven	and Probable	·	·		
Total Proven and Probable Mineral Reserves	14,383	2.75	1,270.5	16,613	3.00	1,601.5	(2,230)	(331.0)

Notes:

1. The 2022 Mineral Reserves are superseded by the current 2023 Mineral Reserves and are not relied upon by Hecla or RESPEC. RESPEC has not reviewed the 2022 Mineral Reserve models or estimates.

2. The 2023 classification of Mineral Reserves is in accordance with the S-K 1300 classification system. Mineral Reserves are reported as in situ with the exception of mill stockpile volumes as defined in this report.

3. RESPEC is responsible for the statement of Proven and Probable Mineral Reserves for 2023.

4. Mineral Reserves are 100% attributable to Hecla.

5. The 2023, underground Mineral Reserves are estimated at a cutoff grade of 3.60g/t Au for 124 Zone and a 3.88g/t Au for the 118 and 123 Zones.

6. The 2023, open pit Mineral Reserves are estimated at a cutoff grade of 1.02g/t Au for the F160 pit and 1.18g/t Au for the WMCP, Principal, and F134 Pits.

The 2023, underground Mineral Reserves are estimated using short-term gold price of US\$1,850/oz Au and open pit Mineral Reserves are estimated using a long-term gold price US\$1,650/oz Au espectively and a US\$/C\$ exchange rate of 1.300.

8. A minimum mining width of three meters was used for the 2023 underground Mineral Reserves.

9. Totals may not represent the sum of the parts due to rounding.

12.7 RECONCILIATION

Tonnage and grade reconciliations between Mineral Reserves, mine plans, and mill production are carried out by Hecla on an individual stope by stope basis and reported on a monthly and annual basis. The annual results for 2006 to 2023, and the comparisons between the mill production and Mineral Reserves and mill production and planned mining are presented in Table 12-7 and Table 12-8. The same information on a monthly basis for 2023 is shown in Table 12-9 and Table 12-10.

Tonnes, gold grades, and gold ounces for the block model estimates and the final design plans are compared to mill production.

On an annual basis, the reconciliation between the mill production, Mineral Reserves, and mine plans with respect to tonnage, grade, and contained gold is very consistent, with 79 of the 162 data points within $\pm 5\%$.

		Mine ral F	leserve		Planned	Reserve	Mill		
Year	Tonnage	Grade	Contained Ounces	Tonnage	Grade	Containe d Ounc es	Tonnage	Grade	Containe d Ounc es
	kt	g/t Au	koz	kt	g/t Au	koz	kt	g/t Au	koz
2023 PIT	936.7	1.65	49.7	930.8	1.75	52.4	936.0	1.72	51.8
2023 UG	370.4	4.92	58.6	232.9	4.75	35.6	224.9	457	33.1
2022 PIT	799.3	1.70	43.7	827.5	1.82	48.3	841.4	1.81	48.9
2022 UG	551.5	4.98	88.2	433.2	5.24	72.9	444.9	529	75.6
2021 PIT	638.5	1.76	36.2	748.3	1.93	46.3	743.7	1.93	46.2
2021 UG	643.8	4.95	102.6	405.3	5.28	68.7	424.7	556	75.9
2020 PIT	502.1	2.08	33.5	505.2	2.22	36.1	520.1	2.07	34.7
2020 UG	713.2	5.26	120.6	285.6	6.99	64.2	284.0	7.44	67.9
2019 PIT	505.7	1.90	30.8	506.3	1.96	31.9	523.7	1.88	31.6
2019 UG	695.9	5.67	126.9	388.5	6.37	79.6	427.7	634	87.1
2018 PIT	498.1	2.22	35.5	521.6	2.02	33.9	570.4	1.99	36.5
2018 UG	715.9	6.68	153.7	521.4	6.56	110.0	531.8	7.13	121.9
2017 PIT	365.9	2.81	33.0	463.8	2.80	41.8	468.2	2.93	44.0
2017 UG	626.8	6.45	130.0	478.3	6.24	95.9	506.2	620	101.0
2016 PIT	94.5	2.50	76	132.8	2.61	11.1	132.7	226	9.7
2016 UG	676.0	5.98	130.0	509.9	6.31	103.4	564.5	6.64	120.6
2015 U/G	701.6	6.04	136.1	736.7	5.87	139.1	765.8	5.96	146.7
2014 U/G	653.9	6.59	138.6	725.2	5.93	138.2	750.8	5.90	142.4
2013 U/G	571.2	6.26	115.0	583.0	5.80	108.7	590.6	6.16	117.0
2012 U/G	632.2	7.75	1575	685.5	6.72	148.2	693.9	6.77	151.1
2011U/G	735.1	7.96	188.2	726.9	7.50	175.3	698.1	8.00	179.5
2010 U/G	683.4	6.83	150.0	670.4	6.69	144.2	722.7	6.76	157.1
2009 U/G	719.6	7.51	173.7	684.6	7.06	155.4	688.7	7.77	172.0
2008 U/G	662.1	8.54	181.7	706.7	8.06	183.0	654,4	8.16	171.6
2007 U/G	548.1	10.41	183.4	579.5	10.21	190.2	545.3	9.78	171.4
2006 U/G	64.0	9.18	18.9	66.6	8.89	19.0	68.5	8.58	18.9
Total	15,305.8	533	2,624.0	14,056.5	5.16	2,333.4	14,323.7	5.24	2,414.2

Table STYLEREF 1 \s 12-. Mine-Mill Reconciliation – 2006 to 2023

	Mill ver	sus Planne d	Reserve	Mill versus Mineral Reserve			
Year		(%)			(%)		
	Tonnes	Grade	Ounce s	Tonnes	Grade	Ounce s	
2023 PIT	101%	98%	99%	100%	104%	104%	
2023 UG	97%	96%	93%	61%	93%	56%	
2022 PIT	102%	100%	101%	105%	106%	112%	
2022 UG	103%	101%	104%	81%	106%	86%	
2021 PIT	99%	100%	100%	116%	110%	128%	
2021 UG	105%	105%	110%	66%	112%	74%	
2020 PIT	103%	93%	96%	104%	100%	104%	
2020 UG	99%	106%	106%	40%	141%	56%	
2019 PIT	103%	96%	99%	104%	99%	102%	
2019 UG	110%	100%	110%	61%	112%	69%	
2018 PIT	109%	98%	107%	115%	90%	103%	
2018 UG	102%	109%	111%	74%	107%	79%	
2017 PIT	101%	104%	105%	128%	104%	133%	
2017 UG	106%	99%	105%	81%	96%	78%	
2016 PIT	100%	87%	87%	140%	90%	127%	
2016 UG	111%	105%	117%	84%	111%	93%	
2015 U/G	104%	102%	106%	109%	99%	108%	
2014 U/G	104%	100%	103%	115%	90%	103%	
2013 U/G	101%	106%	108%	103%	98%	102%	
2012 U/G	101%	101%	102%	110%	87%	96%	
2011 U/G	96%	107%	102%	95%	100%	95%	
2010 U/G	108%	101%	109%	106%	99%	105%	
2009 U/G	101%	110%	111%	96%	103%	99%	
2008 U/G	93%	101%	94%	99%	96%	94%	
2007 U/G	94%	96%	90%	99%	94%	93%	
2006 U/G	103%	96%	99%	107%	94%	100%	
Total	102%	102%	103%	94%	98%	92%	

Table STYLEREF 1 \s 12-. Mine-Mill Reconciliation – 2006 to 2023

	Mir	ieral Reserve	28	Pla	anned Resea	rves		Mill	
Month	K Tonnes	Grade (g/t Au)	Contained Metal K oz Au	K Tonnes	Grade (g/t Au)	Contained Metal K oz Au	K Tonnes	Grade (g/t Au)	Contained Metal K oz Au
JANUARY U	G 31.4	4.36	4.4	27.2	4,49	3.9	26.7	4.25	3.6
JANUARY PI	T 118.9	1.23	4.7	97.8	1.61	5.1	94.2	1.65	5.0
FEBRUARY	JG 20.6	4.52	3.0	20.3	4.13	2.7	19.9	4.49	2.9
FEBRUARY P	IT 86.5	1.63	4.5	95.1	1.56	4.8	90.1	1.52	4.4
MARCH UC	3 30.4	6.15	6.0	34.6	4.59	5.1	32.5	4.35	4.5
MARCH PI	Г 63.9	1.08	2.2	68.6	1.49	3.3	68.5	1.45	3.2
APRIL UC	3 24.2	4.99	3.9	27.1	4.95	4.3	27.3	4.75	4.2
APRIL PIT	Г 107.1	1.35	4.7	104.3	1.41	4.7	99.8	1.38	4.4
MAYUC	3 18.4	6.02	3.6	27.6	4.82	4.3	27.0	3.96	3.4
MAY PI	ſ 110.3	1.42	5.0	96.8	1.74	5.4	100.2	1.63	5.3
JUNE UG	14.2	5.93	2.7	16.0	5.45	2.8	14.6	5.73	2.7
JUNE PIT	32.9	1.47	1.6	26.8	1.67	1.4	26.9	1.60	1.4
JULY UC	35.4	4.93	5.6	32.9	5.17	5.5	34.8	4.81	5.4
JULY PIT	77.4	1.73	4.3	74.4	1.79	4.3	80.4	1.92	5.0
AUGUST U	G 21.1	5.21	3.5	22.3	4.52	3.2	22.1	4.45	3.2
AUGUST PI	T 65.8	2.74	5.8	63.6	2.84	5.8	69.5	2.39	5.3
SEPTEMBER U	IG 23.6	6.25	4.7	25.9	5.02	4.2	26.4	4.67	4.0
SEPTEMBER P	IT 35.3	1.41	1.6	50.7	1.41	2.3	50.1	1.34	2.2
OCTOBER U	G 16.9	3.85	2.1	20.8	3.70	2.5	18.3	4.12	2.4
OCTOBER PI	T 112.7	2.02	7.3	108.3	1.96	6.8	106.7	2.13	7.3
NOVEMBER U	JG 63.5	2.12	4.3	66.9	1.83	3.9	70.5	1.74	4.0
NOVEMBER P	ПТ 29.3	5.04	4.7	28.8	4.72	4.4	27.6	5.06	4.5
DECEMBER U	G 62.6	1.85	3.7	77.6	1.83	4.6	79.1	1.73	4.4
DECEMBER P	IT 28.7	4.29	4.0	25.7	3.79	3.1	23.9	3.51	2.7
Total	1,230.9	2.48	98.0	1,240.0	2.47	98.4	1.237.1	2.39	95.2

Table STYLEREF 1 \s 12-. Mine-Mill Reconciliation – 2023

	Mill vs	. Planned R	es erve	Mill v	s . Mineral R	leserve
Month	Tonnes	Grade	Contained	Tonnes	Grade	Contained
JANUARY UG	98%	95%	93%	85%	98%	83%
JANUARY PIT	96%	103%	99%	79%	135%	107%
FEBRUARY UG	98%	109%	107%	97%	99%	96%
FEBRUARY PIT	95%	97%	92%	104%	93%	97%
MARCH UG	94%	95%	89%	107%	71%	76%
MARCH PIT	100%	97%	97%	107%	134%	144%
APRIL UG	101%	96%	97%	113%	95%	107%
APRIL PIT	96%	98%	93%	93%	102%	95%
MAY UG	98%	82%	81%	147%	66%	97%
MAY PIT	104%	94%	97%	91%	115%	104%
JUNE UG	91%	105%	96%	103%	97%	99%
JUNE PIT	100%	96%	96%	82%	109%	89%
JULY UG	106%	93%	98%	98%	97%	96%
JULY PIT	108%	107%	116%	104%	111%	116%
AUGUST UG	99%	98%	98%	105%	85%	89%
AUGUST PIT	109%	84%	92%	106%	87%	92%
SEPTEMBER UG	102%	93%	95%	112%	75%	84%
SEPTEMBER PIT	99%	95%	94%	142%	95%	135%
OCTOBER UG	88%	111%	98%	108%	107%	116%
OCTOBER PIT	98%	108%	107%	95%	106%	100%
NOVEMBER UG	96%	107%	102%	94%	100%	95%
NOVEMBER PIT	105%	95%	100%	111%	82%	92%
DECEMBER UG	93%	93%	87%	83%	82%	68%
DECEMBER PIT	102%	95%	96%	126%	93%	118%
Total	100%	97%	97%	101%	97%	97%

Table STYLEREF 1 \s 12-. Mine-Mill Reconciliation – 2023

The annual and monthly reconciliation charts for tonnage, grade, and contained ounces are provided in Figure 12-1 to Figure 12-3, respectively. The monthly variance between the mill production, Mineral Reserves, and mine plan has a larger range than the annual average, as demonstrated in Table 10-2 and in Figure 12-1 to Figure 12-3.

RESPEC is of the opinion that there is good reconciliation between the Mineral Reserves, mine planning, and the actual production. The annual and monthly reconciliation reports allow the reconciliation over time on a stope-by-stope basis and/or on a zone by zone basis to be examined. Based upon the reconciliation results, Hecla is of the opinion that the Mineral Reserve estimation and mine planning are reliable.
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Figure STYLEREF 1 \s 12-. Tonnage Reconciliation 2016 to 2023 Annual

Figure STYLEREF 1 \s 12-. Grade Reconciliation 2016 to 2023 Annual





Figure STYLEREF 1 \s 12-. Contained Gold Reconciliation 2016 to 2023 Annual

In the opinion of RESPEC, Casa Berardi Mineral Reserves have been estimated using industry best practices, and in accordance with the S-K 1300 classification system. RESPEC is not aware of any risk factors associated with, or changes to, any aspects of the modifying factors such as mining, metallurgical, infrastructure, permitting, or other relevant factors that could materially affect the Mineral Reserve estimate.

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13.0 MINING METHODS

13.1 MINING OPERATIONS – UNDERGROUND

Inco Gold operated the East Mine from 1988 to 1991. From 1991 to 1997, TVX operated the East and West underground mines. In 2006, Aurizon, now known as Hecla Québec, restarted underground operations at the West Mine, and in late 2017 Hecla began the rehabilitation of the East Mine.

Initially, both mines were developed as trackless operations, with all material transported to surface via ramps. In 1995, a track drift and the East Shaft were completed to connect the East and West Mines.

In 2006, the 5.5m diameter West Shaft was sunk to the 795m level, and ramp and level development were completed to access mining zones. In 2013, the West Shaft was deepened to the 1,080m level.

As of December 2023, the majority of future underground mining will come from the 118, 123, and 124 zones, which will account for 78%, 21%, and 1% of underground production, respectively. These zones represent the bulk of the underground Mineral Reserves.

13.1.1 UNDERGROUND DEVELOPMENT

Development openings have been sized to meet safety and regulation standards, accommodate mining equipment fleet, and meet the ventilation network requirements. / Ramp dimensions: 4.5m wide x 4.5m high.

/ Haulage drift dimensions: 4.5m wide x 4.5m high.

13.1.1.1 GROUND SUPPORT

Ground control measures are applied systematically to ensure safe workplaces, limit dilution and overbreak, and stabilize weak rock masses, particularly in the vicinity of the main fault zones.

The following ground control measures are applied:

- / Cable bolting or connectable inflatable friction bolts are used in intersections and large spans to provide long-term ground stability.
- / Intersections are limited to three-way intersections and the creation of four-way intersections is avoided.
- / Development parallel to major structures or faults (i.e., silling out along the fault) is minimized by developing perpendicular to major structures wherever possible.
- / Test holes are used to confirm the position and width of the Casa Berardi Fault. Based on these test holes zones requiring the installation of spiling and shortened development round support with fiber-reinforced shotcrete are identified. This support is applied an additional two meters before and beyond the Casa Berardi Fault.
- / Test holes, shotcrete, spiling, and other specialized ground support requirements are integrated in the weekly mine planning to ensure that potentially unstable conditions are supported in a rapid and timely manner.

Casa Berardi mine personnel identify potentially unstable joints and abnormal conditions as they are exposed. These situations are evaluated on an individual basis and where required the ground support is modified to stabilize the 174

potential instability. Information regarding ground conditions is communicated daily through the ground control logbook.

13.1.1.2 DEVELOPMENT PERFORMANCE

Mine development for much of the remainder of the mine life has been completed, and remaining development will be mined as necessary to facilitate the mine plan through the end of the mine life in 2024.

13.1.1.3 MINE DESIGN

The mine design and planning processes reflect the past mining experience at the West and East Mines. The following design criteria are used by Hecla Québec: 2024 cutoff grade varies by zone from 3.60g/t Au to 3.88g/t Au.

- / Production rate: target approximately 1,140tpd of ore.
- / Production and development crews work two ten-hour shifts, seven days per week, 365 days per year. The crew rotation is seven days on, seven days off.
- / The mill operates two 12-hour shifts, seven days per week, 365 days per year.
- / Crews work 7 days in and 7 days off on rotation.
- / Ramp and shaft access to the mining areas.
- / Ramp dimensions: 4.5m wide x 4.5m high.
- / Sublevel spacing: 20m.
- / Typical stope dimensions: 20m high, 15m strike-length, up to 20m wide
- / Minimum mining width of three meters.
- / Haulage drift dimensions: 4.5m wide x 4.5m high.
- / 2.7m diameter ore and waste passes.
- / 2.4m and 3.3m diameter ventilation raises.

13.1.2 WEST MINE AND PRINCIPAL AREA

The current Mineral Reserves at Casa Berardi comprise three zones in the West Mine including the Principal area. These zones are spread out over a distance of 200m perpendicular to strike, 1,500m to 2,000m along strike and from surface to 1,090m below surface. The 118, 123 and 124 zones comprise the Mineral Reserve tonnage.

The zones vary in thickness, ranging from over 50m to less than three meters (e.g., minimum mining width). In general, the zones are subvertical (e.g., 55° to 85°).

A combination of longitudinal and transverse blasthole stoping is used at Casa Berardi, depending on mineral zone geometry (width and attitude) and development requirements. While timely delivery of backfill plays a crucial role in controlling dilution and maintaining the short stoping cycle. 175

13.1.3 TRANSVERSE METHOD

The transverse mining method is used in areas with wide mineralization, 10m wide or more, and good access from nearby development such as haulage drift and multiple draw points. In wide areas, greater than 20m, stopes are subdivided into smaller panels and mined in sequence from the hanging wall to the footwall.

Stopes are nominally 15m long by 20m high, sill to sill, oriented in a transverse manner to the strike of the ore, and are mined using a primary and secondary sequence (Figure 13-1). Overcut and undercut draw points provide access to the top and bottom of the stope. Secondary support in the form of inflatable friction bolts and 0-gauge mine straps is installed in the back and sidewalls of the overcut. Support patterns vary based on sequence and adjacent mining (e.g., primary versus secondary stopes). Ring drilling is carried out using a production 75mm top hammer longhole drill. A Machines Roger V-30 boring head is used to drill 30-inch bore holes as slot raises in the stopes. The long-hole drill pattern is designed to contour the stope geometry by using smooth blasting techniques to control wall sloughing and dilution.

After blasting, broken ore is removed from the stope through the undercut drift using a remote controlled load-haul-dump (LHD) unit and loaded into a truck or trammed to an ore pass. When mining is completed, the stope is backfilled with paste fill or cemented rock fill (CRF) for primary stopes and unconsolidated waste rock for secondary stopes. Stope sequencing varies depending on zone, as only a few transverse stopes remain in the mine reserves.

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Figure STYLEREF 1 \s 13-. Transverse Mining Method

13.1.4 LONGITUDINAL METHOD

The longitudinal mining method is used in areas with narrow mineralization or minimal development infrastructure, such as sill development. Oriented along strike, longitudinal stoping is mined in retreat, back towards the access point. Once a stope is mined, it is backfilled with paste fill or a combination of CRF and unconsolidated waste.

Waste development requirements for the longitudinal method are lower than those for the transverse method, as accesses are located within the ore on each level and serve as overcuts and end-muck draw points for subsequent stopes. When compared to the transverse method productivity per level, as measured by sequence and access flexibility, is much lower since only one (i.e., abutment access) or two (i.e., central access) stopes can be mined simultaneously.

13.1.5 STOPE SIZE

In general, stope dimensions reflect standard development practices such as draw points on 15m centers and 20m sublevel spacing. When necessary, stope dimensions at Casa Berardi have been reduced in response to local ground conditions, as has been implemented in the 113 Zone, to mitigate sequencing/operational issues and to avoid exposing unconsolidated rock fill.

The remaining ore tonnages by zone are shown in Table 13-1. Stope tonnages will be campaigned through the mill throughout the first half of 2024 to maintain the required 1,240tpd production rate. Mine planning for these stopes considers the full stoping cycle, including providing time for backfill curing. The underground mining operations rely on production from multiple levels and stopes in several zones at any given time.

Zono	Tonnes
Zone	(t)
118	151,276
123	50,910
124	2,455
Total	204,641

Table STYLEREF 1 \s 13-. Tonnage per Stope

The typical stoping cycle for Casa Berardi is summarized in Table 13-2.

Table STYLEREF 1 \s 13-. Typical Stope Delays and Activity Duration

Description	Delay/Duration
Stope Preparation	8 to 10 days
Stope Drilling	2 x 300m (drill) / 3 to 5 days
Stope Blasting & Mucking	3 to 5 days
Stope Filling	7 to 10 days
Stope Curing	14 days (minimum)

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13.1.6 EAST MINE MINING HISTORY

The East Mine is accessed by a decline from surface to the 650m level. At the 300m level, a track drift connects the East and West mines. The East Shaft is used for a portion of underground services, the hoist has been removed and access via the manway is not currently possible.

In 1997, a partial failure of the Dynatec Plug at the 275m level occurred and resulted in a chimney failure of the Casa Berardi Fault to surface. Following the failure, a ruling from the Commission de la Santé et de la Sécurité au Travail (CSST) suspended underground mining activities at the East Mine. In 2017, based on a technical report and mining plan presented to the CSST, mining activities restarted. Activities included the rehabilitation of the ramp from surface to the 550m level, development of two exploration drifts at the 300m and 485m levels, diamond drilling of the 148 and 160 zones, ramp development below the 550m level, and stope preparation between the 500m and 550m levels.

In 1992, chimney failures along the Casa Berardi Fault resulted in the creation of two craters on surface. Underground, in the 148 Zone mining beneath these craters was isolated by a series of hydrostatic barricades installed between the 90m and 300m levels. The hydrostatic barricades are engineered to prevent inundation by rainwater traveling though the Casa Berardi Fault but are unable to continue to serve as an effective barricade with the addition of clay traveling through the fault. Clay and water inundation in the East Mine has resulted in the decision to close the East Mine.

The EMCP Pit has been mined and backfilled with waste. The waste fill has not mitigated the transmission of surface water (e.g., intense rainfall events and spring thaw) to the underground East Mine. Surface and ground water infiltrating into the East Mine drains primarily via the unconsolidated sand and rock fill of the mined stopes. Since 2017, measures have been implemented to control the drainage and pump the water to maintain a dewatered condition. There are a total of 23 barricades in the East Mine and six in the West Mine. Water valves and pressure gauges are installed on the hydrostatic barricades and monthly inspections are carried out to check for water ingress.

13.1.7 BACKFILL

Backfill is required to maximize mineral extraction and maintain stope stability. Three types of backfill are used for the remaining mine life at Casa Berardi: i) unconsolidated waste (rock fill), ii) cemented rock fill (CRF), and ii) paste fill. Rock fill is used in secondary stopes and longitudinal mining where access is no longer required. CRF and paste fill are used primarily in stopes for initial mining horizons which will be eventually redeveloped through the paste fill.

Development waste material is used for rock fill and CRF. Transport of the rock fill to the stopes is by LHDs or trucks. In addition to the stability provided by the rock fill, the use of waste material allows for optimization of the hoisted waste tonnage and equipment utilization by coordinating backfilling in proximity to development areas.

CRF is available throughout the West Mine, including areas above the 470m level where paste fill is not available. A surface plant produces cement slurry in batches, which is transferred underground via a series of boreholes and lateral piping to either a portable cement mixer or directly to the mix pit location.

The CRF is mixed and placed using special mobile equipment. This equipment prepares the cement pulp necessary for the designed CRF mixture. 179

A continuous, gravity-driven paste fill plant was constructed in 2013. The paste fill network can supply paste to the 118, and 123 zones, below the 470m level.

The advantages of paste fill include:

- / Reducing the use of mobile equipment for fill transportation.
- / Allowing better development performance through backfill.
- / Providing better flexibility in the mining sequence.
- / Allowing recovery and subsequent filling of caved stopes.

13.1.8 MINE EQUIPMENT

There is an extensive underground fleet of production, development, and support equipment and fixed plant equipment used at Casa Berardi.

The major equipment is:

- / 26 Tonne Haul Truck (1)
- / 40 Tonne Haul Truck (2)
- / 30 Tonne Haul Truck (12)
- / 5.3m LHD (13)
- / 3.1m LHD (2)
- / 4.6m LHD (1)
- / Two boom jumbo face drill (5)
- / Single boom jumbo face drill (2)
- / Long-hole drills (5)
- / Various utility and support equipment (34)
- / Personnel transport equipment (47)

13.2 GROUND STABILITY

A history of ground instability and incidents related to mining in proximity to the Casa Berardi Fault at the East and West mines has highlighted the importance of addressing rock mechanics issues for mining at Casa Berardi. Further details regarding specific incidents are described in previous technical reports (SLR, 2022).

13.2.1 GROUND CONDITIONS

Ground instability is primarily related to the Casa Berardi Fault system. Lithologies south of the Casa Berardi Fault are composed of relatively weak sediments with a frequent occurrence of schistose and graphitic rocks exhibiting weak contacts. Generally, the rock types vary from massive to fractured and heavily deformed in areas where the mineralization occurs along or near the main structural discontinuities.
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13.2.2 GROUND TESTING AND ANALYSIS

RQD estimation is systematically carried out on all core from diamond drilling and development faces in mineralized material are mapped by the Casa Berardi geology department. The design and approval process for all development headings and stopes includes the analysis of these data on an individual basis.

In situ stress measurements, measured at level 360m and level 430m and carried out in 1999 by Canada Centre for Mineral and Energy Technology, fall within the lower range of the regional trends measured in other hard rock mines of the Abitibi district. Given the relatively weak nature of the rock units at Casa Berardi (i.e., uniaxial compressive strengths of less than 100MPa) there is little evidence of high stress related failures. At depth and in specific zones, such as the 118-06 Zone, however, there is evidence of convergence or squeezing ground deformation. In general, ground stability issues are related to poor ground conditions near faults and gravity-driven wedge failures.

13.2.3 OPERATING PRACTICES

Hecla has responded to concerns pertaining to safety and stability of mine openings with the following actions:

- / Minimizing the open stope time, with mucking followed immediately by backfilling. Prioritizing critical stopes for rapid mucking out to minimize exposure of the Casa Berardi Fault. The cement slurry and paste fill plants operate year-round to supply CRF to the mine.
- / Limiting development in the Casa Berardi Fault, particularly the graphite and graphic sediments, by developing perpendicular rather than parallel to the fault.
- / Using pre-support, such as spilling, and support, such as, fiber-reinforced shotcrete arches with mine straps, Inflatable friction bolts, and Friction bolts, with shortened development specifically adapted to fault conditions.
- / Installing recessed cable bolts for hanging wall support, if required, due to ground conditions or development stope geometry.
- / Implementing proactive bolting of walls and intersections using long inflatable friction bolts or cable bolts with mesh straps where required by poor ground conditions or large spans.
- / Controlling of development length (transverse stoping) and heading size (longitudinal stoping) to minimize the creation of overhangs relative to mineral zone geometry in stope top cuts and undercuts.
- / Modifying production drilling for narrow (less than five meter widths) using 65mm diameter drill holes with a 1.5m x 1.5m drill pattern.
- / Changing the drift back profile to an arch configuration to improve the stability of the back.
- / Using standard stope dimensions (average of 15m strike length, 20m high, and up to 20m wide) and based on past mining experience and industry best practices.
- / Application of tight fill. The stope sequence is from the bottom towards the top of each mining horizon / zone, leaving no voids.
- / Locating permanent infrastructure in more stable ground, such as in massive volcanic rocks located to north of the Casa Berardi Fault.

The Casa Berardi ground support measures to maintain drift stability are in accordance with commonly accepted practices. The selected typical stope size and sublevel spacing are conservative, reflect historical best practices, and help maintain stability and minimize dilution. Secondary support is evaluated on a stope-by-stope basis to mitigate

181 181 unravelling and exposing faults and weaker lithologies or dilution problems. Different types of instruments are installed to monitor the stability of the excavations. These include five meters, 10m, and 15m extensioneters (MBPX), SMART cables to monitor the amplitude and depth of rock movement and Sloughmeters, which detect the crack locations following rock displacement.

13.3 MINE INFRASTRUCTURE

Mine infrastructure is located in a single area in the West mine. The production and ventilation shafts, shops, WRFs and ore stockpiles, cement plant, paste fill plant, and ramp portal are located at the West Mine. The mill and administration building, crusher, East Shaft (not currently in use), warehouse, and shops are located at the East Mine Figure 13-2 and Figure 13-3 illustrate each location.

13.3.1 WEST MINE SHAFT

Prior to restarting operations in 2006, the shaft at the West Mine was developed. The West Shaft is positioned outside the faults and beyond the zone of stress influence due to mining. The West Shaft design was deepened to the 1,080m level in 2013 and has been operational since 2015.

The West Shaft is a circular 5.5m diameter shaft with a 42m deep concrete shaft collar anchored in bedrock. Shaft stations are located at the 280m, 550m, 690m, 795m, 880m, 1,010m, and 1,030m levels. There are three skip loading stations at the 720m, 835m, and 1,055m levels, a loading pocket at the 880m level and a spill pocket at 1,080m level.

The West Shaft is concrete-lined and equipped with a steel structure that divides the shaft into four compartments. Two compartments are allocated for the 12t skips, each with a cage at the top. The third compartment intended for a service cage for personnel and material is not currently in use. The fourth compartment consists of a manway and a service area for pipes and electrical cables. The headframe is of conventional steel construction, 57m high, incorporating a skip dump arrangement with ore and waste storage bins. The ore bin capacity is 1,200t and the waste bin capacity is 370t.

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Figure STYLEREF 1 \s 13-. West Mine Surface Infrastructure


Figure STYLEREF 1 \s 13-. East Mine Surface Infrastructure



13.3.2 ORE AND WASTE PASS SYSTEMS

The ore and waste pass systems were sized and located according to the production requirements of the 113 and Lower Inter zones, which are no longer in production. Ore and waste passes are 2.4m in diameter.

The 118 and 123 zones, ore and waste passes terminate on the 985m level automated drift. The ore pass connection in the 123 Zone (550m to 985m levels) was completed in 2019. Two automated trucks transport material from the automated chutes to automated rock breaker on 985m level which is controlled from surface. The ore and waste pass systems on the 985m level terminate at the 1,055m level loading pocket. From the 1,055m level loading pocket, ore and waste are skipped to surface.

For the 124 Zone, all the material is brought to the surface by trucks. Ore and waste are transported to their respective dumps by LHD. Oversize material is handled by a rock breaker or moved to a suitable location for secondary blasting.

13.3.3 VENTILATION

The ventilation network design was based on physical mine configurations and accounts for the production rate, installed horsepower on diesel equipment, number of personnel, and simultaneous activities underground.

The main ventilation raises for mine air distribution system are 3.35m in diameter, excavated by a raise climber (Alimak) from the lower levels of each zone and connected with main airways. Raise ventilation access drifts (up to 10m long) are excavated on each level/sublevel during raise development and connected to the main haulage drifts when accessed later. A ventilation schematic circuit is presented in Figure 13-4.

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Figure STYLEREF 1 \s 13-. West Mine - Ventilation Schematic Circuit



The Mine requires 465,000 cubic feet per minute (cfm) at full production capacity. The ventilation network installations at the mine consist of:

- / The fresh air intake system, which is comprised of two fans in parallel installed at the West Mine portal. These fans are able deliver up to 600,000cfm of fresh air through the West Mine Principal ramp with an air lock system. The operating static pressure is 6.5 in of water.
- / The West Mine exhaust air points are the shaft and an old backfill raise.
- / Numerous installed airflow regulators, booster fans, and ventilation raises.
- / Due to broken fans the second fresh air intake system was downgraded; however, it remains an option to increase flexibility and the capacity of ventilation if needed. The second fresh air system had the potential of four 112kW (150hp) fans, and could provide 123m³/s (260,000cfm) airflow at an operating static pressure of 8.5in of water.

13.3.4 MAINTENANCE FACILITIES

The main fixed equipment, both on surface or underground, such as the hoist, compressors, ventilators, GEHO pumps, and cement plant, are covered by an integrated preventive maintenance program. Daily maintenance and parts replacement is completed on site. Major equipment overhauls are conducted off site in specialized maintenance shops.

The maintenance of mobile equipment, used on surface and underground, is conducted in a building located near the mill at the East Mine. This building includes a maintenance shop, warehouse, offices, a change room, and a communications system. The existing surface shop is well equipped (compressed air, lifting equipment, cranes, and welding facilities) and large enough to accommodate equipment employed at the site.

The warehouse is located nearby and facilitates the delivery of parts and materials for maintenance and repairs. Spare tires are stored on a nearby pad. The change room and sanitation facilities are located on the second floor of the building.

To improve the maintenance time and displacement of equipment, Hecla Québec installed an underground garage on the 550 Level, in 2010.

Another underground garage was completed in 2014 on the 810 Level, close to the 118 and 123 zones. Prior to developing the next open pit, new surface maintenance facilities will be expanded.

13.3.5 POWER

Electrical power is supplied to site by Hydro-Québec through a 120kV line from the town of Normetal (55km to the southwest). Two main transformers are installed in the main substation, located at the East Mine site. The East Mine site is supplied by a 120kV/4.16kV - 16 MVA transformer (T1) and the West Mine site is supplied by a 120kV/25kV - 20 MVA transformer (T2) as presented on the electrical single-line diagram (Figure 13-5, Figure 13-6).

The East Mine site distribution network supplies the mill, EMCP Pit and garage.

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The West Mine site employs a 25kV line network supplies the West Mine portal main ventilation fan, the headframe, hoist, shaft collar, and compressor buildings, West Mine facilities, and a 5kV transformer to supply 1,000kVA to underground substations in the mining areas. A 25kV underground station supplies 1,000kVA to substations in the 118 and 123 zones.

Underground power distribution is via cables installed in the West shaft or in the ramp. Power supply in Québec is very reliable. Hecla provides backup power for the West Mine headframe (135kW), the surface garage (350kW), the mill (525kW), and the West Mine backfill plant (200kW).

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Figure STYLEREF 1 \s 13-. Casa Berardi Main Station 120kV Flowsheet

13.3.6 PERSONNEL

The Casa Berardi workforce consists of company personnel and contractors. The Hecla personnel and contractor lists for mining operations at Casa Berardi are presented in Table 13-3.

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	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Plan Employees	541	251	251	162	147	148	178	252	252	252	252	252	247	238
UG Mine	184	0	0	0	0	0	0	0	0	0	0	0	0	0
OP Mine	79	85	85	16	85	85	85	85	85	85	85	85	85	85
UG Maint	78	0	0	0	0	0	0	0	0	0	0	0	0	0
OP Maint	25	25	25	11	20	20	22	25	25	25	25	25	25	25
Mill	91	84	84	84	0	0	22	84	84	84	84	84	83	82
GA	84	57	57	51	42	43	49	58	58	58	58	58	54	46
Plan Contractor	295	103	103	83	83	103	103	103	103	103	103	103	103	103
Total	836	354	354	245	230	251	281	355	355	355	355	355	350	341

Table STYLEREF 1 \s 13-. Personnel Requirements by Year

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The number of Hecla employees required for the Casa Berardi mining operation is expected to decrease in 2025 after the closing of the underground operation. Additionally, the number of personnel required will dip in 2027 through 2030 as surface mining pauses during a mill expansion. The number of contractors varies year to year depending on labor requirements at the mine.

Underground production and lateral development is carried out by Hecla personnel, while contractors conduct vertical raise development. Some contractor personnel are utilized in the processing plant, core logging facilities, maintenance, and surface drill and blast operations. Operators and technical staff work a schedule consisting of seven days of dayshift, seven days of nightshift, and seven days off. General staff work on a four day on, three day off shift cycle.

13.4 OPEN PIT MINING OPERATIONS

Open pit operations at Casa Berardi began in January 2016, in the EMCP Pit. This TRS considers the planned F160, Principal, WMCP, and F134 pits. These open pits involve both the recovery of crown pillars above underground mining (i.e., WMCP, and Principal pits) and mining of zones that have not been exploited underground (i.e., F160 and F134 pits).

13.4.1 MINING METHOD

Material is mined using conventional open pit mining methods, based on a truck/shovel operation. The rock is drilled, blasted, and loaded by hydraulic shovels into trucks, which deliver the material to a stockpile located near the primary crusher. Distances from the top of the ramp to the ore stockpile range from 300m (F160) to 5000m (WMCP).

Waste materials generated by mining include overburden (i.e., peat, clay, till and sand), waste rock (i.e., clean and low-grade mineralized) and backfill from stopes intercepted during mining (i.e., unconsolidated sand and rock fill). The overburden material is removed and hauled to the Mixed WRF, while peat is stored separately for restoration-revegetation. Higher quality clay has been used for tailings dams, isolation levees and reclamation projects (e.g., cover of tailings in preparation for revegetation). Clean waste rock is used for surface infrastructure work such as roads, levees, tailings dams and foundations for civil engineering constructions. A portion of the clean waste rock is crushed and screened to provide aggregates for roadway construction and maintenance, and for use as abrasives in icy weather conditions. Low-grade material (below cutoff grade) is stockpiled in a different location than the ore. Stope backfill is hauled to the Mixed WRF.

13.4.2 OPEN PIT DESIGN

F160 Pit designs employ 7.5m high mining benches, with a catch berm positioned every two benches (i.e., 15m). This allows greater flexibility in regard to blast tonnage and control on pre-shear blasting and excavation of final pit walls. For future pits, 10m high mining benches are designed to optimize production rates. The F160 pit has been mined in phases, with an additional pushback planned.

13.4.3 SLOPE PARAMETERS – OVERBURDEN

Overburden slope parameters are based on recommendations from previous geotechnical and mining studies (Itasca, 2020), (Golder, 2009) and (BBA, 2011). The overburden slope parameters vary as function of material type:

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/ Slopes in clay: 4H:1V (14.1°) – 3H:1V (18.4°).

/ Slopes in till: 2H:1V (26.6°).

In 2018, Hecla re-evaluated the 4H:1V slope angle in the clay material based on in situ observations and data from previous geotechnical characterizations using Rocscience's Slide 7.0 software (Hecla, 2018). Based on this analysis, the use of 4H:1V slopes in clay were demonstrated to be conservative and 3H:1V slopes were proved to be stable. As a result, the east and south overburden slopes of the EMCP Pit were excavated according to Golder Associates Inc.'s (Golder) (2009) recommendation of 4H:1V in clay. The north and west slopes, however, were excavated using a 3H:1V slope in clay. Inclinometers and prisms installed in the overburden confirm the stability of 3H:1V slope in the clay material. A part of the slopes in the EMCP Pit are covered with one meter of waste rock to prevent erosion.

Experience gained from the excavation of overburden in the EMCP Pit has demonstrated that information related to the bedrock-overburden contact was limited to drill hole locations. Although the surface topography is relatively flat, the bedrock contact varies significantly across the site and particularly above the Casa Berardi Fault. At this location the bedrock forms a valley which varies from approximately 40m below surface at the west end of the mine site to 50m below surface at the east end. On either side of the Casa Berardi Fault, the bedrock elevation is higher, rising to 20m below surface on the south side. The variation in the expected contact position (i.e., overburden thickness and topographic bench elevation) has required the Casa Berardi engineering personnel to modify the design in order to compensate for higher or lower pit wall positions.

For the F134, F160, WMCP, and Principal pits, the designs are based on a 3H:1V (14.1°) to 3.5H:1V (15.9°) slope in the clay and sand, and a 2H:1V (26.6°) in the till.

13.4.4 SLOPE PARAMETERS - ROCK

The slope parameters for the final pit wall in the rock are:

- / An Inter Ramp Angle (IRA) of 52.5°.
- / A Bench Face Angle (BFA) of 75°, over a 15m height or two 7.5m high benches in F160 and over a 20m height or two 10m high benches in the remaining pits.
- / A 7.5m wide catch berm every 15m in elevation for F160 and a 10m wide catch berm every 20m in elevation for the remaining pits.

13.4.5 RAMP DESIGN

Ramps for the F160 pit were designed with a nominal 10% centerline gradient. Switchbacks were designed with a centerline gradient of 8% to prevent the inside curvature gradient from becoming excessive. Ramp widths assume the use of rigid-body haul trucks with a width of 5.6m, although articulated trucks are planned to be used for overburden and may be used in other areas as needed. A 25.0m width was used for ramps with two-way traffic. This provides for a running width of three times the truck operating width and includes a 1.1m high safety berm. In the lower portions of the pit designs, where the stripping ratio is minimal, ramps were narrowed to 14.5m for one-lane traffic use.

Same parameters apply for the Principal, WMCP, and F134 except for the width. The ramps are 27m width because they are designed for 150-tonne rigid-body with an operating width of 7.0m and includes a 1.45m high safety berm. As in F160, one-lane ramp ramps were utilized with a minimum width of 17.0m. 196 196

13.4.6 UNDERGROUND WORKINGS

The previous EMCP Pit intercepted underground openings in the pit floor. These openings include unfilled drifts and raises, as well as backfilled stopes. Stope backfill is unconsolidated sand and rock fill. These excavations are largely isolated from the accessible areas of the underground East Mine by a series of hydrostatic barricades. The same types of openings will be encountered in the Principal and WMCP pits.

Procedures are in place for the definition of safety perimeters for specific mining activities, such as drilling, loading, and excavating, and for the movement of vehicles and personnel in proximity to these excavations or their remaining crown pillars. The use of C-ALS surveys and production drilling data (e.g., breakthrough locations) are used confirm the survey data and 3D models of the underground excavation. To date, no issues have been encountered related to the underground excavations. Underground mining is planned to be completed prior to the start of Principal and WMCP.

The F134 and F160 Pit projects will not intersect any underground excavations. These open pits are considered to have no impact on simultaneous underground operations and do not require any special precautions to be taken.

13.4.7 OPEN PIT MINING EQUIPMENT

Mining equipment is currently operated and maintained by a contractor until 2024. The current equipment fleet is summarized in Table 13-4. The projected Owner equipment fleet is summarized in Table 13-5.

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Equipment Type	Nominal Canacity	Contractor	Hecla Fleet	Hecla Fleet
	Capacity	Fleet (Actual)	(Actual)	(Реак)
Hydraulic excavator	$7.0\mathrm{m}^3$	2	1	2
	3.5m ³	2	-	-
	2.3m ³	-	2	2
	1.8m ³	2	-	-
	3.1m ³	2	-	-
	2.0m ³	1	-	-
Front-end loader	11.5m ³	-	1	2
	7m ³	-	2	2
	3.2m ³	-	1	1
	4.4m ³	1	-	-
Rigid-frame truck	92.2t	-	4	13
	63.0t	8	-	-
Articulated truck	55.0t	-	4	4
	41.0t	14	-	-
Dozer	360hp	-	2	4
	325hp	2	-	-
	215hp	2	-	-
Grader	5.5m	-	2	2
	4.3m	3	-	-
Mechanic service truck		2	1	4
Water truck		2	1	2
Fuel truck		2	1	1
Sand truck		-	1	1
Flatbed truck		1	1	1

Table STYLEREF 1 \s 13-. Mine Equipment List Open Pit

13.4.8 GEOTECHNICAL/HYDROGEOLOGICAL CONSIDERATIONS

The general soil stratigraphy encountered in geotechnical boreholes varies from east to west across the Property, grading from an esker, composed predominately of granular material (in vicinity of the Principal Pit), to a stratified cohesive deposit over glacial till. The esker has been identified over more than 75km, with a north-south orientation. A geotechnical study (Golder, 2010) confirmed the occurrence of the esker within the vicinity of the preliminary Principal Pit, where the thickness may reach more than 50m. Golder (2010) did not, however, allow for the identification of the esker limits, which have later been defined in more detail by others.

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The presence of the esker in the vicinity of the preliminary Principal Pit may potentially result in inflows and groundwater contamination during project operations. The primary source of potential contamination being the leaching of metals into groundwater, primarily arsenic, from the waste rock pile.

During 2021, SRK Consulting (Canada) Inc. (SRK), carried out a hydrogeology field investigation program (SRK, 2021) to install piezometers and evaluate conditions for the WMCP, Principal, F134, and F160 pits. This program followed up with numerical groundwater modelling of the Principal Pit for passive inflow predictions and made recommendations to manage expected inflow rates during mining. One of the key recommendations proposed was to commence pumping approximately 18 months prior to the start of mining to reduce the ongoing pumping rate during the mining operations. Stripping of the Principal Pit is scheduled to commence in 2024. The final eight years of mine production will come from the Principal Pit followed by the WMCP Pit and it will be essential to maintain efficient dewatering during this period.

The list of studies carried out for the Casa Berardi underground mines to address geotechnical, geomechanical, hydrological, and hydrogeological conditions are indicated in. Similar studies carried out for the surface open pit mines are summarized in Table 13-5.

Study	Year	By	Туре	Objective	Results Summary	Report Reference Name
				West Mine		
1	1999	CANMET	Geomechanics	In situ stress measurements	Stress measurements were taken at two locations in the West Mine, providing the regional stress tensor.	Canmet (1999)
2	2017	Hydro- Resources	Hydrogeology	Crown Pillar	Determined hydrological properties in the WMCP situated above the underground principal zone and identified prominent water bearing faults.	Hydro-Resources Inc. (2017)
3	2019	Hecla	Geomechanics	Ground Control Management Plan (GCMP)	Establishes common procedures developed for identifying, evaluating, communication and monitoring geotechnical risks (developed by Hecla).	Hecla Québec (2019)
4	2019	Hecla	Geomechanics	Backfill	Demonstrated the backfilling requirements for plug and mass strengths.	Alcott et al. (2019)
				East Mine		
1	2015	Hecla	Geomechanics	Reopening East Mine Operations	Demonstrated the impact of mining the lower East Mine on the surface.	Hecla Québec (2015)
2	2019	Hecla	Geomechanics	GCMP	Establishes common procedures developed for identifying, evaluating, communicating and monitoring geotechnical risks (developed by Hecla).	Hecla Québec (2019)

Table STYLEREF 1 \s 13-. Geotechnical, Geomechanical, Hydrological and Hydrogeological Studies (Underground Mines)

200 200

Study	Year	By	Туре	Objective	Results Summary	Report Reference Name	
				EMCP Pit			
1	2020	Itasca	Geomechanics	Slope Angle In Rock	Determined the optimal slope angles in rock, based on oriented core drilling/logging and additional rock laboratory tests.	Itasca (2020)	
2	2017	Hydro-Resources	Hydrogeology	Water Table	Established the water state in/near the EMCP, demonstrating the draining capability of the East Mine (under draining the clay overburdens).	Hydro-Resources Inc. (2017)	
3	2018	Hecla	Soil	Slope Angles in Overburden	Confirmed slope angles in overburden based on operational observations, recalibrated to numerical modeling response.	Hecla Québec (2018)	
4	2019	Hecla	Geotechnical	GCMP	Establishes common procedures developed for identifying, evaluating, communication and monitoring geotechnical risks (developed by Hecla).	Hecla Québec (2019)	
				F160 Pit			
1	2013	Golder	Geomechanics	Slope Angle in Rock	Determined the preliminary slope angles in rock, based on oriented core drilling/logging and numerical modeling.	Golder (2013)	
2	2019	Hecla	Geotechnical	GCMP	Establishes common procedures developed for identifying, evaluating, communication, and monitoring geotechnical risks (developed by Hecla).	Hecla Québec (2019)	

Table STYLEREF 1 \s 13-. Geotechnical, Geomechanical, Hydrological and Hydrogeological Studies (Open Pit Mines)

201 201

Study	Year	By	Туре	Objective	Results Summary	Report Reference Name	
3	2021	ConeTec	Soil	Determining Soil Strength Properties	Factual report establishing soil strength properties thru seismic piezocone penetration testing (SCPTU).	ConeTec (2021)	
4	2020	Itasca	Soil	Slope Angles in Overburden	Numerical analysis of slope angle in clay, for saturated overburden conditions.	Itasca (2020)	
5	2020	Hydro-Resources	Hydrogeology	Water Table	Preliminary assessment of the water table near the F160 Pit, with a crude assessment of well locations to depressurize the till overburden layer.	Hydro-Resources Inc. (2020)	
6	2021	SRK	Hydrogeology	Gap Analysis for Hydrology and Hydrogeology	Performed a gap analysis, reviewing all relevant past studies, to establish future requirements to meet permitting and/or feasibility level designs.	SRK (2021a)	
7	2021	SRK	Soil	Gap Analysis for Geotechnical Soil and Stratigraphy	Performed a gap analysis, reviewing all relevant past studies, to establish future requirements to meet permitting and/or feasibility level designs.	SRK (2021e)	
8	2021	SRK	Rock	Gap Analysis for Geomechanical Rock Stability	Performed a gap analysis, reviewing all relevant past studies, to establish future requirements to meet permitting and/or feasibility level designs.	SRK (2021g)	
9	2021	SRK	Hydrogeology	Hydrogeology in Rock	Determined the permeability of the rockmass.	SRK (2021f)	
				Principal Pit			
1	2011	Golder	Soil	Slope Angles in Overburden	Initial numerical analysis of slope angle in clay, for saturated overburden conditions.	Golder (2011)	
202 202							

Study	Year	By	Туре	Objective	Results Summary	Report Reference Name
2	2020	Geophysiqhe Sigma	Soil	Overburden Thickness and Stratigraphy	Established, thru geophysics, overburden thickness/stratigraphy in the Principal zone.	Geophysiqhe Sigma (2020)
3	2021	ConeTec	Soil	Determining Soil Strength Properties	Factual report establishing soil strength properties thru SCPTU.	ConeTec (2021)
4	2021	SRK	Hydrogeology	Evaluate the Passive Ground Water Inflow into the Principal Pit	Established the esker's hydrological characteristic (drawdown and zone of influence) thru long term pump tests and evaluated the preliminary pumpability performance. Related the observation to numerical modeling to forecast passive inflows of groundwater into the Principal Pit, per extraction phase.	SRK (2021a)
5	2021	SRK	Hydrogeology	Gap Analysis for Hydrology and Hydrogeology	Performed a gap analysis, reviewing all relevant past studies, to establish future requirements to meet permitting and/or feasibility level designs.	SRK (2021b)
6	2021	SRK	Soil	Gap Analysis for Geotechnical Soil and Stratigraphy	Performed a gap analysis, reviewing all relevant past studies, to establish future requirements to meet permitting and/or feasibility level designs.	SRK (2021e)
7	2021	SRK	Rock	Gap Analysis for Geomechanical Rock Stability	Performed a gap analysis, reviewing all relevant past studies, to establish future requirements to meet permitting and/or feasibility level designs.	SRK (2021g)
8	2021	SRK	Hydrogeology	Hydrogeology in Rock	Determined the permeability of the rockmass.	SRK (2021d)
		· · · · · · · · · · · · · · · · · · ·		WMCP Pit	·	

Study	Year	By	Туре	Objective	Results Summary	Report Reference Name
1	2020	ConeTec	Soil	SoilDetermining Soil Strength PropertiesFactual report establishing soil stren properties thru SCPTU.		ConeTec (2021)
2	2021	SRK	Hydrogeology	Gap Analysis for Hydrology and Hydrogeology	Performed a gap analysis, reviewing all relevant past studies, to establish future requirements to meet permitting and/or feasibility level designs.	SRK (2021a)
3	2021	SRK	Soil	Gap Analysis for Geotechnical Soil and Stratigraphy	Performed a gap analysis, reviewing all relevant past studies, to establish future requirements to meet permitting and/or feasibility level designs.	SRK (2021h)
4	2021	SRK	Rock	Gap Analysis for Geomechanical Rock Stability	Performed a gap analysis, reviewing all relevant past studies, to establish future requirements to meet permitting and/or feasibility level designs.	SRK (2021g)
5	2021	SRK	Hydrogeology	Hydrogeology in Rock	Determined the permeability of the rockmass.	SRK (2021d)

13.4.9 MATERIAL MANAGEMENT

Over the LOM, open pit operations will generate over 234Mt of material. This material will be comprised of overburden, ore, low-grade material, clean waste and backfill, and will be extracted from up to three different open pits at any one time at different stages of development.

Owing to the complexity associated with handling different types of material with different pits, a robust production plan needs to be supported with a robust waste management program. Casa Berardi's LRP has been built to manage the infrastructure material quantities. Shortage in any type of material could have negative effects on the mine plan if critical infrastructure cannot be put into place in a timely manner. Correcting these shortages will also result in increased costs which would be difficult to control. Accordingly, the construction of WRF infrastructure has been scheduled to start when building materials are available, as opposed to when a need for storage arises. At this time, different scenarios are being studied regarding the waste rock disposal. The current plan is to utilize backfilling in EXCP/XMCP and Principal as well as the creation of a WRF in the north of the property.

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13.4.10 WASTE ROCK CHARACTERIZATION

Maxxam Analytical Laboratory performed the following tests on waste rock samples:

- / Acid generation potential.
- / Metal content (partial digestion).
- / Leaching according to EPA-1311 test method (acetic acid).
- / Leaching according to EPA-1312 test method (nitric and sulfuric acid acid rain).
- / Leaching according to CTEU-9 test method (water).

Based on these analyses, the waste rock has been identified as non-acid generating but has been classified as leachable according to the Québec Directive 019 criteria. RESPEC notes, however, that the contents measured are below the criteria for the classification as a high-level risk mining waste.

The waste rock has been classified in two distinct categories, clean and low-grade mineralized. Clean waste rock can be used for construction, however, low-grade mineralized material cannot. Low-grade mineralized material is defined as the 10m envelope of material surrounding mineralization. This material must be buried with either clay or clean waste rock, at the Mixed WRF, to prevent it from being in contact with the air.

13.4.11 WASTE ROCK FACILITY LOCATIONS AND CONSTRUCTION

The following criteria have been used for the selection of potential waste rock and overburden storage sites:

- / Avoid material storage over wetlands (loading capacity).
- / Avoid material storage in streams and surface water bodies.
- / Limit transport distance within the mining pit.

Mixed WRFs have been designed as an engineered waste disposal complex capable of containing low cohesive material such as clay materials. The Mixed WRF uses a crown shape infrastructure, that acts as recipient for the clays. Low-grade mineralized waste rock and till are used to build containment cells within the crown. Each cell is accessed by a series of temporary roadways and dumping fronts, constructed using waste rock. These temporary infrastructures are ultimately buried in clay or covered by clean waste rock, as the WRF is finally capped, in the last step before full reclamation. The construction of the Mixed WRF is strictly controlled to allow for uniform deposition of waste materials in one meter lifts over its entire footprint.

In addition to the existing Mixed WRFs #1, #2, and #3, located to the southeast of the EMCP Pit, preliminary Mixed WRF facilities are planned, in the vicinity of the preliminary WMCP and Principal pits. Final locations, capacity, and configurations have not been finalized and will depend on future long-term mine plans.

Figure 13-6 presents a general plan of the Casa Berardi site and indicates the location of the actual WRF complex (i.e., HM3) and the preliminary WRF sites (i.e., HMF). Whenever possible, waste will be used to backfill the open pits that have been exhausted. Currently the operation is backfilling the EMCP Pit and backfilling of the Principal Pit is planned for 2033. Approximately 40Mt of material extracted from the WMCP Pit will be used to backfill the Principal Pit. Backfilling of the open pits will depend on the timing of their completion and on the haulage distances between the WRF site and the active pit. Figure 13-9 describes the dumping sequence as a function of material type for each open pit projects.

Figure STYLEREF 1 \s 13-. Open Pit and Waste Rock Locations



Area	Material	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
	Overburden																
EMCP-EXF	Rock Waste		MH3/EM CP fill	EMCP fill													
F134	Overburden																
	Rock Waste																
E160	Overburden	MH3/EM CP fill	MH3/EM CP fill	EMCP fill													
1100	Rock Waste	MH3/EM CP fill	MH3/EM CP fill	EMCP fill	MHF/EM CP fill	MHF/EM CP fill	MHF	MHF									
WMCD	Overburden							MHF	MHF	MHF	MHF						
WIVICF	Rock Waste							MHF	MHF	MHF	MHF	MHF	PRIN fill				
DDD ICHD (1	Overburden				MHF	MHF	MHF	MHF									
FRINCIPAI	Rock Waste					MHF	MHF	MHF	MHF	MHF	MHF						

Table STYLEREF 1 \s 13-. Dumping Sequencing

The design criteria for the WRFs are to:

- / Maximize capacity based on the bearing capacity of the ground, to reduce the environmental impact of the WRF footprints on the site.
- / Whenever possible, backfill completed open pits. It must be noted that hauling distances have a major impact on the economic viability of the open pit projects. Some open pits will be left unfilled, owing to uneconomical hauling distances.
- / Optimize pit scheduling to allow waste materials generated by mining to be used for the dump site infrastructure (e.g., access roads).
- / When backfilling open pits that intersect underground excavations, where possible use only free-draining materials. If overburden is used for backfill, ensure a freedraining area (drain) from the top to the bottom of the pit.

13.4.12 OVERVIEW OF OPEN PITS

13.4.12.1 F160 PIT

The F160 Pit design is based on:

/ Slopes in clay: 3H:1V (18.4°) to 3.5H:1V (15.9°).

- / Slopes in till: 2H:1V (26.6°).
- / Slopes in rock: Inter Ramp Angle (IRA) of 52.5°.
- / No underground excavations will be intercepted.
- / Mining the final phase currently.

A plan view of the ultimate F160 Pit is presented in Figure 13-7.

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Figure STYLEREF 1 \s 13-. Plan View of the F160 Pit Project

The F160 Pit is planned for mining over the period from 2024 to 2026 and includes a total estimated 3.8Mt of ore.

13.4.12.2 F134 PIT

The F134 Pit design is based on:

/ Slopes in clay: 3H:1V (18.4°).

- / Slopes in till: 2H:1V (26.6°).
- / Slopes in rock: IRA of 52.5°.
- / No underground excavations will be intercepted.
- / Mining to be carried out in a single phase.

A plan view of the ultimate F134 Pit is presented in Figure 13-8.



Figure STYLEREF 1 \s 13-. Plan View of the F134 Pit (Ultimate Pit Shell)

The F134 Pit is planned to be mined in 2037 and contained approximately 90kt of ore.

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13.4.12.3 WMCP PIT

The WMCP Pit design is based on:

/ Slopes in clay: 3H:1V (18.4°).

- / Slopes in till: 2H:1V (26.6°).
- / Slopes in rock: IRA of 52.5°.
- / Underground excavations, including the main ramp, will be intercepted in the east and north walls.
- / Geotechnical considerations: Casa Berardi and Auxiliary Faults will intersect the final west and north-east wall.
- / Stripping of this pit is planned to occur beginning in 2030.

The plan view of the ultimate WMCP Pit is presented in Figure 13-9.

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Figure STYLEREF 1 \s 13-. Plan View of the WMCP Pit Project (Ultimate Pit Shell)

RSI-M0206.22001

213 213 The WMCP Pit is planned to be mined in the final LOM years. Overburden stripping will commence in 2031 whereas ore mining will occur from 2030 until 2037 for a total of 4.9Mt ore. During 2035 and 2036, WMCP will be the only pit in production.

13.4.12.4 PRINCIPAL PIT

The Principal Pit design is based on:

/ Slopes in clay and sand: 3H:1V (18.4°).

- / Slopes in till: 2H:1V (26.6°).
- / Slopes in rock: IRA of 52.5°.
- / Underground excavations will be intercepted in the pit bottom.
- / Geotechnical considerations: excavation in proximity to an esker; inflow and contamination controls.

The plan view of the ultimate Principal Pit is presented in Figure 13-10.

214 214



Figure STYLEREF 1 \s 13-. Plan View of the Principal Pit Project (Ultimate Pit Shell)

The Principal Pit stripping will begin in 2028, and ore production is planned to be mined over the period from 2030 to 2034 for a total of 5.4Mt. 215

13.5 LONG-RANGE PLAN

Hecla's planning practice includes the development of an LRP. The LRP is based upon the Mineral Reserves plus a portion of the Mineral Resources. It is an internal Hecla document and is used as a guide for management's long-term production planning and expectations. The LRP includes operating cost requirements for the additional tonnes mined (i.e., Mineral Resources), as well as capital provisions for development, mine infrastructure and equipment for exploitation of the Mineral Reserve, and for conversion of the Mineral Resources that were included within the LRP. If mine production does not extend beyond the known Mineral Reserves, these costs would be less than the amount included in the LRP. The LRP is updated every year with the new information available.

13.6 LIFE OF MINE PLAN

The LOM plan for Casa Berardi closely follows the LRP with the Inferred Mineral Resources removed to ensure that only Mineral Reserves have been included for the economic analysis. The LOM plan includes 209kt grading 4.84g/t Au from underground and 14.2Mt grading 2.71 g/t Au from open pits, that will result in total recovered gold of 1.05Moz Au over the LOM.

Underground production is forecasted to average approximately 1,200tpd for 2024, while the open pits will average approximately 4000tpd over a 7-year period from 2030 to 2037 under the present operating plan, this excludes the years 2027 to 2029 as waste stripping years. In 2028 stripping on the Principal pit will begins, and mill material will be reached in 2030 and will level out at 1.6Mtpa in 2031 until the end of the mine life. Production will be provided from the open pits only starting in 2025 until 2037.

The processing plant will average a throughput of 3,500tpd over the LOM.

Silver production is estimated as 24% of the gold production based upon operating records and the silver revenue is included in the LOM plan financial analysis.

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Table STYLEREF 1 \s 13-. LOM Production Forecast

Description	Units	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Days	Day		366	365	365	365	366	365	365	365	366	365	365	365	366	365
UG Production	000 t	209	209	1120	- 2	120	- 2	1120	2	6120	- 2	1120	2	1120	2	122
OP Production	000 t	14,174	1,101	1,300	1,300	75		1.00	383	1,600	1,600	1,600	1,600	1,600	1,600	413
OP Waste & OB	000 t	219,455	22,795	7,500	18	122	9,752	19,345	29,811	29,838	30,049	30,171	26,910	6,009	3,171	4,086
Processing	000 t	14,383	1,310	1,300	1,300	75		1. Mar.	383	1,600	1,600	1,600	1,600	1,600	1,600	413
Grade UG	g/t Au	4.84	4.84	0.20	- 2	0.20	- 2	1/20	- 2	0.20	- 2	0.20	- 2	1/20	- 2	1/20
Grade OP	g/t Au	2.72	1.74	1.79	1.86	1.86			3.14	3.22	3.21	2.94	3.04	3.12	2.88	2.54
Grade UG+OP	g/t Au	2.75	2.24	1.79	1.86	1.86		(120	3.14	3.22	3.21	2.94	3.04	3.12	2.88	2.54
Gold Contained	000 oz Au	1,270	94	75	78	4		100	39	166	165	151	156	160	148	34
Mill Recovery	%	81.6%	89.5%	88.6%	88.8%	88.8%	0.0%	0.0%	83.1%	83.3%	83.3%	81.8%	77.6%	76.3%	75.7%	76.8%
Gold Production	000 oz Au	1,037	84	66	69	4		2000	32	138	137	124	121	122	112	26

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14.0 PROCESSING AND RECOVERY METHODS

This section was contributed by SLR. The SLR QP has reviewed the information disclosed in this section and takes full responsibility for this information.

14.1 INTRODUCTION

Gold extraction from the mill feed will be performed in the current operating mill. Historical operation and performance data for the mill is summarized in Section 10.0 of this TRS. This information in combination with metallurgical test results is used to predict mill recovery performances. These performances are based on the current plant as of December 31, 2023. A description of the overall process plant is presented in the following subsections.

14.2 PROCESS DESCRIPTION

The Casa Berardi mill processes 3,730tpd, with future maximum production of 4,400tpd. Gold is recovered by Gravity Concentration and Carbon In Leach (CIL) processes. These processes were selected to optimize the recovery of free gold and reduce the preg-robbing effect of graphitic carbon on the cyanide leach process. Individual circuits within the process are detailed in subsequent sections of this chapter. Figure 14-1 below presents the flowsheet of the processing facility.

Figure STYLEREF 1 \s 14-. Mill Flowsheet

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14.2.1 CRUSHING

Ore is hauled by truck from the West Mine headframe complex and the open pit to the crusher dump pocket, which is equipped with a static grizzly and a pneumatic hammer to break any oversize material. Ore passing the grizzly is screened again on the scalping screen. Oversize ore is fed to a jaw crusher and its discharge rejoins the scalping screen undersize. Crushed ore is stored in the ore storage bin.

14.2.2 GRINDING

Ore is conveyed from the storage bin to the SAG mill. The SAG mill feed conveyor is equipped with a scale to monitor and control the ore supply to the SAG mill, and a moisture analyzer to determine the moisture content of the mill feed and calculate dry feed tonnage. Dry quick lime is added onto the SAG mill feed chute for downstream pulp pH control, and mill water is added to the SAG mill feed chute to pulp the ore. The SAG mill operates in closed circuit with the SAG screen, discharging into the SAG screen pump box and pumping onto the SAG screen. SAG screen oversize material is returned to the SAG mill for further reduction and screen undersize flows to the cyclone pump box. The mill feed is sampled on the SAG screen undersize stream.

The ball mill operates in closed circuit with the cyclones cluster. The ball mill discharges to the cyclone feed pump box and the material is pumped to the cyclones. Since the last report, the classification circuit was modified from a two-stage cyclone system to a single-state cyclone system to manage the grinding circuit mass flow more efficiently. The cyclone underflow is fed by gravity to a distribution box to divert flow to the gravity circuit or to the ball mill for further size reduction. The diversion valve is operated to supply maximum feed to the gravity circuit. The

219 219
cyclones overflow reports to the production thickener, through a trash screen to remove debris. Trash screen oversize is sent to the tailings pump and the undersize feeds the production thickener.

14.2.3 GRAVITY CIRCUIT

The gravity circuit feed, which is fed from the cyclone underflow, is split to feed two parallel gravity circuits. Each circuit consists of a vibrating screen and a gravity concentrator. The screen oversize from each circuit reports back to the ball mill and the screen undersize feeds a gravity concentrator. The concentrator's tailings discharges to the ball mill feed chute. The gravity concentrate flows to an intensive leach reactor (ILR) for leaching. To promote gold leaching and control the pH, hydrogen peroxide, cyanide, and caustic soda are added to the ILR unit from their respective tanks using dosing pumps. The high-grade pregnant gold solution from the ILR unit is pumped to the electrowinning buffer tank and the tailings report to the ball mill feed chute.

14.2.4 CIL CIRCUIT

The production thickener is fed the cyclone overflow material after passing through the trash screen. Process water recycled from the tailings pond is added to the thickener feed well. The thickener overflow feeds the mill water tank for use in the process and the thickener underflow is pumped to the first CIL tank. CIL feed is sampled on the production thickener underflow stream. A CIL circuit is used to recover gold instead of a carbon-in-pulp circuit to hinder preg-robbing due to graphite in the ore and to maximize gold recovery by placing the gold in solution in contact with activated carbon immediately. The circuit comprises seven CIL tanks in series.

To promote gold leaching, a cyanide solution and lead nitrate is added to the #1 CIL tank. Compressed air is added to each CIL tank. Gold is leached from the ore and adsorbed onto activated carbon. Carbon is added in the #7 CIL tank and is pumped in counter-current fashion from the #7 CIL tank to the #1 CIL tank. Screens at the discharge of each CIL tank prevent carbon from overflowing from tank to tank with the pulp. The #7 CIL tank overflows onto a safety screen to recover any fugitive carbon. Recovered carbon is bagged to return in the circuit or sent to a refinery to recover the gold. The safety screen undersize is sampled and reports to the mixing tank. Fine quicklime is added to the mixing tank to prepare for cyanide destruction. Residual pulp from the CIL mixing tank is pumped to the two cyanide destruction tanks in series with sulfur dioxide and copper sulfate in the first tank. Compressed air is added to both tanks to destroy residual cyanide with agitation. After cyanide destruction, the treated pulp is pumped to the paste backfill plant or the tailings pond. Ferric sulfate is also added to the tailings material to reduce arsenic content in the solution.

14.2.5 CARBON CIRCUIT

The carbon, elution, and electrowinning circuits operate in batches unlike the CIL continuous process. Loaded carbon is pumped from the #1 CIL tank onto a washing screen. Loaded carbon from the washing screen falls into the loaded carbon tank while the pulp and residual cyanide solution return to the #1 CIL tank or #2 CIL tank. When carbon collection is completed, loaded carbon is transferred to the elution vessel. After elution, eluted carbon is transferred to the acid washing tank where hydrochloric acid is added and carbon is soaked for two hours to remove inorganic contaminants. When the acid wash is completed, the unloaded carbon is rinsed with process water to return to a neutral pH before being screened and sent either to the calibrated carbon tank or the regenerating kiln. Calibration screen undersize is sent to the carbon fines thickener. Carbon fines are recovered at the underflow, filtered using a filter press, and bagged. At the regenerating kiln, the carbon is heated to remove organic 220

contaminants. The kiln discharges in a quench tank and carbon is pumped back onto the calibration screen. Calibrated carbon is pumped back into the #7 CIL tank from the calibrated carbon tank. Fresh activated carbon is also added to the CIL circuit using the calibration screen after being processed via an attrition tank. Carbon moves in the circuit using a water eductor system.

14.2.6 ELUTION AND ELECTROWINNING CIRCUITS

The elution circuit uses the Zadra process, where caustic soda is added to process water in the barren solution tank to prepare for elution. The barren solution is pumped through a heat exchanger and a water heater before arriving at the bottom of the elution vessel. Under the correct pressure and temperature conditions in the elution vessel, gold desorbs from the loaded carbon and dissolves in the elution solution. The pregnant solution flows from the top of the elution vessel through the heat exchanger and cooling battery toward the electrowinning cells. The heat exchanger recovers heat from the pregnant solution to warm up the barren solution. The cooling battery completes the pregnant solution cooling to a safe temperature and pressure for electrowinning using process water at an ambient temperature.

Two electrowinning cells recover dissolved gold from the pregnant solution by deposition on its cathode plates to form a gold sludge. Barren elution solution is pumped from the electrowinning cells to the barren solution tank. During an elution cycle, elution solution flows continuously through the circuit. A third electrowinning cell, in loop with the ILR buffer tank, is dedicated to the ILR gold solution. When an elution cycle is over, gold sludge is recovered from the electrowinning cells, filtered, and dried before being smelted in the induction furnace and poured into gold doré at the gold room.

14.2.7 MAJOR EQUIPMENT LIST

Table 14-1 presents a list of major equipment and its characteristics.

Table STYLEREF 1 \s 14-. Major Equipment List

Equipment	Characteristics	
	Crushing	
Grizzly Screen	Static, 5m x 4.2m with 571.5mm x 489mm opening	
Rock Breaker	Hydraulic hammer	
Scalping Screen	Vibrating, 1.5m x 2m with 89mm opening and 11.2kW motor	
Jaw Crusher	762mm x 1400mm opening with 150hp motor	
Ore Storage Bin	14m diameter, 19m high with 3,000t capacity	
	Grinding	
SAG Mill	5.5m diameter x 2.7m EGL with 1,130kW motor	
SAG Screen	Vibrating, 1.8m x 2.9m with 5mm x 16mm opening and 2 x 3.7kW motors	
Ball Mill	4.0m diameter x 5.3m length with 1,325kW motor	
221 221		

Equipment	Characteristics
Cyclones	250mm diameter Metso, ten operating, two standby units
Trash Screen	Vibrating, 1.15m x 2.5m with 700 micron opening and 1.8kW motor
	Gravity Circuit
Gravity screens	Vibrating, 1.8m x 4.3m with 3mm x 20mm opening and 2 x 3hp motors
Gravity Concentrators	Two 762mm diameter Knelson concentrators
Intensive Leach Reactor	2.27m larger x 4.4m length Gekko Leach unit with tanks
Gravity Electrowinning cell	3.26m ³ cells with eight cathodes
	CIL
Production Thickener	34m diameter with high rate type feedwell
CIL Tanks	Seven 700m ³ capacity tanks
CIL Agitators	One 3.45m diameter double impeller with 37kW motor for each tank
CIL Screens	Two Westech 4m ² and three Westech 3.8m ² screens
Safety Screen	Vibrating, 1.2m X 2.4m with 20 mesh opening and 3.7kW motor
Tailings Mixing Tank	One 27m ³ capacity tank with 30kW agitator
Cyanide Destruction Tank	Two 322m ³ capacity tanks with 149kW agitator
	Carbon Circuit
Loaded Carbon Washing Screen	Vibrating, 1.2m x 2.4m with 20 mesh opening and 3.7kW motor
Loaded Carbon Tank	One 5.5t of carbon capacity
Acid Washing Tank	One 5.5t of carbon capacity
Carbon Calibration Screen	Vibrating, 1.2m x 2.4m with 16 mesh opening and 3.7kW motor
Carbon Calibrated Carbon Tank	One 15.8m ³ capacity tank
Regenerating Kiln	0.76m diameter, 7 3m length with 350kW of heating capacity
Carbon Fines Thickener	One 5m diameter with high-rate type feedwell
Carbon Fines Filter Press	One 23.5m of filtration with 20 chambers
	Elution
Elution Vessel	One 1.68m diameter tank 5.5t carbon capacity
Water Heater	870kW capacity water heater
Barren Solution Tank	One 153m ³ capacity tank
Electrowinning Cells	Two 4.53 m ³ cells with 12 cathodes each
	Refinery
Filter Press	One 24.8m ² of filtration with 21 chambers
222 222	

Equipment	Characteristics	
Induction Furnace	One 750lbs capacity with 125kW	

14.3 ENERGY, WATER, AND PROCESS MATERIALS REQUIREMENTS

Power requirements for the processing facilities are not anticipated to change significantly in the foreseeable future from the current power requirements (approximately 7MW).

Make-up water is supplied from the process water pond. Water consumption is not expected to change significantly from the recent historical annual water usage ($2.3 \text{ million} \text{ m}^3$) and no supply concerns have been noted.

Key reagents used in the process include quick lime, cyanide, caustic soda, ferric sulfate, fine quick lime, copper sulfate, hydrochloric acid, and sulfur dioxide. Reagent consumption is presented in Table 14-2.

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Reagent	kg/t
Hydrochloric acid	0.027
Caustic soda	0.275
Copper sulfate	0.176
Iron sulfate	1.134
Sulfur dioxide	0.843
Lead nitrate	0.128
Carbon	0.039
Sodium cyanide	0.504
Fine Limestone	0.711
Coarse Limestone	0.772
Hydrogen peroxide	0.029
Flocculant	0.004

Table STYLEREF 1 \s 14-. Reagent Consumption 2023

14.4 PERSONNEL

The total processing plant personnel required for 2024 operations is 91 Hecla employees, with an additional 11 mill maintenance contractors required. Required personnel will fluctuate throughout the remainder of the mine life, depending on operations needs but will generally remain at approximately 84 employees and 11 mill maintenance contractors, with the exception of 2028 through 2030, during a planned mill shutdown and expansion.

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15.0 INFRASTRUCTURE

Casa Berardi is a producing mine and has developed infrastructure to support the onsite operations. There are well-maintained gravel and paved roads that provide access to the property and there is a network of roads on the site to service the mine areas and various facilities. Water sources have been developed for the operation of the onsite surface and underground mines and power is supplied from the grid.

15.1 ROADS AND LOGISTICS

A 38km all season gravel road that provides access to the Casa Berardi Property branches off from the paved road (provincial roads 101 and 111) linking La Sarre and the Selbaie Mine approximately 21km north of the village of Villebois.

On the Property, a gravel road links the East and West mine areas and exploration roads provide access to the rest of the Property to the east and west of the active parts of the Property (Figure 15-1). A production road and a staff road are in use as discussed in Section 4.5. Roads will be relocated as required for the development of Principal, WMCP, and F134 pits and are presented in Figure 15-1.

A 5-kilometer track drift joins the East and West mine areas and will provide access to the planned Principal Mine at the 280m level. After the East Mine was closed, a bulkhead was constructed on the track drift to control water flow to the West Mine. There is currently no additional surface infrastructure related to the planned Principal Mine area which is located between the East and West Mines. 225
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Figure STYLEREF 1 \s 15-. Surface Infrastructure (Current and Preliminary)



Mine Layout

Tailings and waste rock management, waste generated at the site, water supply and usage, power supply, and fuel are discussed in Sections 15.1.1 through 15.1.8. The current and preliminary major infrastructure areas are presented in Figure 15-1 through Figure 15-3.

The active mining portion of the Casa Berardi Property is in the central part of the overall land package Figure 15-2 portion of the property is divided into the East and West mine areas which include most of the surface infrastructure, open pits, and underground mines.

Existing surface and underground infrastructure at the East Mine area (Figure 15-2) include the following:

- / A nominal 3,730tpd mill, with the ability to process 4,400tpd.
- / F160, EMCP, and XMCP open pits.
- / TSF with five tailings cells, a polishing pond, a sedimentation pond, and a process water pond.
- / Two-story administrative building with offices, warehouse, dry, laboratory, two heavy equipment maintenance garages, millwright shop, and electrical shop (main building, East Mine are in Figure 15-2.
- / Two core shacks.
- / Water pumping station.
- / Hoistroom, a headframe, and a 381m deep shaft (with no hoist).
- / Mine access decline and a series of ramp-connected levels.
- / Three petrol tanks with pump gas and fuel.
- / One mineralized rock stockpile.
- / One waste and till-clay pile.

Figure STYLEREF 1 \s 15-. East Mine Surface Infrastructure



Existing surface and underground infrastructure at the West Mine (Figure 15-3) include the following:

- / Backfill plant, including a compressor room and a ventilation raise intake.
- / Settling ponds.
- / Pumping station.
- / A 380m2 garage.
- / Two dry houses with offices.
- / Emergency building for mine rescue and infirmary.
- / Warehouse.
- / Core storage area.
- / Gatehouse.
- / Mine access decline providing access to the West Mine and Principal areas.
- / Hoistroom, headframe, and mine shaft to the 1,080-meter level.
- / A 140tph paste backfill plant and a cement plant with tailings feed line from the mill and distribution holes to the underground.
- / Mine ventilation fans and mine air heater with ventilation raise to the mine workings.
- / One WRF and one ore rock pile.

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Figure STYLEREF 1 \s 15-. West Mine Surface Infrastructure



15.1.1 TAILINGS MANAGEMENT AND FACILITIES

The site includes an existing tailings storage facility (TSF) with five tailings cells (Cells #1 through #4 and Cell #7), a polishing pond, a sedimentation pond for settling iron arsenate precipitates, and a process water pond (Figure 15-4).





In 2022, approximately 9% of the mine tailings were used in the mine backfill and approximately 8% were used for mine backfill in 2023. This cycle of mine tailings utilization will continue until closure of the underground mine in 2024. Tailings that are not used for mine backfill are placed on the surface at the TSF. Permits are in place for mine water management and operation of the TSF. The monitoring system associated with the TSF includes surface and groundwater monitoring, water level monitoring, geochemical and geotechnical monitoring, and regular inspections. An operation, maintenance, and surveillance (OMS) manual has been developed for the TSF.

Tailings deposition is currently ongoing in Cell #7. Cells #1 through #4 are no longer used for deposition, being at their design capacity and Cells #1 through #3 are currently in the process of progressive reclamation.

Cell #7 was constructed in 2019 and has undergone additional lifts in 2021 through 2023 to accommodate mill tailing disposal needs. Additional lifts will be constructed as needed to accommodate production.

The F160 Pit will become a tailings disposal site after the completion of Cell #7. Studies are underway to develop the F160 for this purpose. Given the permitting history at Casa Berardi and the high standards of practice followed by Hecla, the company believes that obtaining necessary permits for expanding the required TSFs will not present any issues.

15.1.2 WASTE ROCK MANAGEMENT AND STOCKPILES

Casa Berardi is permitted to store waste rock on the surface. The waste rock has been regularly monitored (sampled and analyzed) for its acid-generating potential since 2008. There has been no indication that it is acid generating.

15.1.3 Waste rock and overburden

Overburden (till, clay, and organics) from the F160 Pit are currently disposed of in the mined out EMCP pit. A new waste disposal facility is expected to be constructed for storage of waste materials from the planned Principal, WMCP, and F134 pits, as shown in The active mining portion of the Casa Berardi Property is in the central part of the overall land package Figure 15-2 portion of the property is divided into the East and West mine areas which include most of the surface infrastructure, open pits, and underground mines.

Existing surface and underground infrastructure at the East Mine area (Figure 15-2) include the following:

/ A nominal 3,730tpd mill, with the ability to process 4,400tpd.

- / F160, EMCP, and XMCP open pits.
- / TSF with five tailings cells, a polishing pond, a sedimentation pond, and a process water pond.
- / Two-story administrative building with offices, warehouse, dry, laboratory, two heavy equipment maintenance garages, millwright shop, and electrical shop (main building, East Mine are in Figure 15-2.
- / Two core shacks.
- / Water pumping station.
- / Hoistroom, a headframe, and a 381m deep shaft (with no hoist).
- / Mine access decline and a series of ramp-connected levels.
- / Three petrol tanks with pump gas and fuel.
- / One mineralized rock stockpile.
- / One waste and till-clay pile.

236 236 Figure 15-2 (mixed stockpiles). The new waste disposal facility will require additional permits, which Hecla believes will not present a material issue.

15.1.4 OTHER WASTES

All other waste (hazardous materials) produced at the site are disposed of in accordance with regulatory requirements and legislation. No modifications to the current mine practices will be necessary for future operations.

15.1.5 WATER SUPPLY

Fresh water supply is from groundwater production wells and groundwater collected in a series of underground seep collection areas.

Water management (mine, surface, and tailings) and effluent treatment are discussed in Section 17.0.

15.1.6 WATER USE

Groundwater is utilized for underground operations at the West mine area, in the paste backfill plant, and the cement plant. It is also used as potable water at the plant site facilities.

The primary source of water for plant operations is the reclaim water from the process water pond (recycled water). Fresh water has limited use at the plant.

15.1.7 POWER AND ELECTRICAL

Electrical power is supplied to the site by a 55km, 120kV power line from the town of Normétal. The electrical line will be relocated as necessary with the development of future pits.

15.1.8 FUEL

Three fuel tanks are located near the EMCP Pit as discussed in Section 15.1.3. Fuel tank locations will be reviewed as engineering design progresses for the planned Principal, WMCP, and F134 pits.

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16.0 MARKET STUDIES

Casa Berardi is in operation and has been operating steadily since 2006 producing gold and silver in doré bars.

16.1 MARKETS

16.1.1 OVERVIEW

Gold supply is approximately 165 million ounces, with mine production contributing 75% of gold supply and recycling accounting for the remaining 25%. In terms of gold demand, jewelry fabrication accounts for approximately 55% of total demand while Investment in physical bars, coins and Exchange Traded Funds is at 25% of overall demand. Gold's use in technology applications was around 11 million ounces, or 8% of total demand in 2021, according to the World Gold Council. Accommodative fiscal and monetary policies globally due to COVID-19 lent support to investment demand for gold in 2020 as gold prices reached record levels in 2020.

Silver demand is primarily composed of industrial demand, which accounts for 50% of total silver demand of 1 billion ounces. Investment demand (physical and exchange traded products) and jewelry and silverware account for 25% share each, respectively. Silver has the highest electrical conductivity of all metals and this property positions silver as a unique metal for a multitude of uses in electronic circuitry in automotive and electronics. Silver's use in photovoltaic cells has also seen a rapid expansion in the past five years and is expected to be one of the key growth areas in green energy.

16.1.2 COMMODITY PRICE PROJECTIONS

Metal prices used in the estimation of Mineral Resources and Mineral Reserves is determined by Hecla's corporate office in Coeur d'Alene, Idaho, USA. Casa Berardi Mineral Reserves are estimated using a price of US\$1,850/oz Au for the underground and US\$1,650/oz Au for the open pit, while gold Mineral Resources are estimated using a price of US\$1,750/oz Au. Due to the limited life of mine for the underground Hecla utilized a short-term metal price to state reserves.

Table 16-1 shows the realized metal prices Hecla has received for sales of its products.

Table STYLEREF 1 \s 16-. Hecla Historical Average Realized Metal Prices

Metal Prices	2021	2022	2023	3-Year Avg.
Silver (\$/oz)	25.24	21.48	22.97	23.23
Gold (\$/oz)	1,796	1,801	1,944	1,847

The economic analysis performed in the LOM plan assumes a constant gold price of US\$1,950/oz Au and US\$22.00/oz Ag based upon analysis of consensus metal price forecasts by financial institutions. Based on

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macroeconomic trends, RESPEC accepts the basis for using the higher metal prices for completing the economic analysis.

16.2 CONTRACTS

16.2.1 REFINING

Hecla currently has a refining agreement with Asahi Refining Canada (Asahi) whereby the refined gold and silver is refined and credited to Hecla's account at Asahi. The doré bars produced at Casa Berardi are refined at Asahi's facilities in Brampton, Ontario, Canada.

Gold and silver bullion is sold through commercial banks or metal traders via a sale contract at spot prices. Settlement of funds from bullion sales occurs two business days after the contract date.

The terms and conditions of the refining and bullion sales contracts are typical and consistent with standard industry practice and would be similar to contracts for the supply of gold elsewhere in North America.

16.2.2 OTHER CONTRACTS

Casa Berardi is in operation and has been operating steadily since 2006. There are numerous contracts in place for items including the operation of the F160 Pit, service contracts related to the operation, underground mine development contracts, and contracts for supplies. These are usual contracts for an operating mine.

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17.0 ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

17.1 ENVIRONMENTAL CONSIDERATIONS

Casa Berardi is an operating mine, and the Property was formerly the subject of environmental baseline studies and reviews prior to the start of operations in 2006. Additional studies were carried out for the F160 Pit including a hydrogeology study in 2019, a bird and amphibian study in 2017, and a fish habitat water quality and sediment study in 2017.

The primary mine waste products produced at the site are tailings from the onsite mill, waste rock, and clay and tilt from stripping. Tailings and waste rock disposal are discussed in Sections 15.1.1 and 15.1.2 of this TRS.

Hecla is committed to operating in compliance with all regulations and standards of good practice for environmental, health, and safety. To uphold this commitment, Hecla has developed corporate policies for environmental and health and safety practices and has prepared a detailed management plan to facilitate the continuous improvement of its environment and health and safety performance. An Environmental Management System (EMS) is currently in place and audited periodically.

Hecla participates in the Towards Sustainable Mining (TSM) initiative of the Mining Association of Canada and Québec Mining Association. In 2016, the Québec Mining Association evaluated the sustainable mining development initiative at the Property. An action plan has been put in place for the eight protocols of the initiative, including tailings management, Indigenous Peoples and community outreach, biodiversity conservation management, climate change, water management, energy use and greenhouse gas (GHG) emissions management, health and safety, crisis management planning, and the prevention of child and fore labor. Since 2016, Hecla has continued to work on the implementation and improvement of management systems. RESPEC understands that an external audit was completed at the end of 2022, with the objective of improving performance while ensuring that primary mining risks are managed responsibly at the mine facilities.

The current LOM plan includes extraction of mineralized material from the active F160 Pit, planned mining of the preliminary Principal, WMCP, and F134 pits, backfilling of the EMCP Pit, and upgrades to the milling facilities. The preliminary designs for the Principal, WMCP, and F134 pits are flexible and allow for modifications to improve performance as needed. Almost all future mining activities will be from surface operations with the remaining underground mining activities ending in 2024. The mine and facilities designs meet current standards of practice for the mining industry and continued implementation of the environmental and health and safety procedures ensures that the Casa Berardi Mine is prepared to meet future challenges.

17.2 WATER MANAGEMENT AND EFFLUENT TREATMENT

17.2.1 WATER MANAGEMENT

Casa Berardi has a positive water balance and discharges surplus water as effluent into Kaakakosig Creek. Site water is managed and handled in the TSF and then released to the environment via the PROCESS WATER POND (PWP).

Figure 17-1 presents a simplified illustration of the mine site water management system.

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Figure STYLEREF 1 \s 17-. Water Management Flow Sheet



17.2.2 MINE WATER MANAGEMENT

Mine water from the east and west underground mine dewatering systems is pumped to the surface and treated, when necessary, with ferric sulfate to precipitate arsenic prior to being discharged into the TSF cells. The mine water pumped from open pits is treated, when necessary, in a similar fashion prior to being discharged into the TSF. The mixed ore stockpile contact water is collected and pumped to the TSF. Where practical, the non-contact water is diverted from the site by ditches.

17.2.3 TSF WATER MANAGEMENT

Tailings slurry contains elevated levels of cyanide, cyanide metal complexes, cyanide degradation products (cyanate (CNO), thiocyanate (CNS), ammonia (NH₃)), and arsenic. The primary concern with discharge is elevated levels of these constituents, which could exceed effluent standards and/or cause effluent toxicity.

Casa Berardi uses the SO_2/air process for cyanide destruction in the slurry discharge prior to release to the TSF. Ferric sulfate is added to the slurry at the exit of the SO_2/air process, effectively eliminating soluble arsenic from the discharge. While the SO_2/air process does produce elevated levels of CNO, this compound is not likely to be present in hazardous concentrations, due to its natural degradation to ammonia and other compounds while in the tailings pond. Storage of the water in the tailing ponds, sedimentation pond, and PWP assist in nitrification of the water to reduce ammonia levels.

Hecla is permitted to discharge treated water year-round with no volume limitations. Actual treated water discharge is typically limited to the spring and late fall due to the demand for process water in summer and the inability to meet discharge requirements during the winter. Approximately two to three million cubic meters of process pond water that is not recycled at the mill is discharged annually into Kaakakosig Creek.

The final effluent meets Canada Metal and Diamond Mining Effluent Regulations (MDMER) and the limits outlined in Québec Directive 019 for mining industry discharge. A monitoring program is in place for surface and underground water. Regular monthly monitoring during periods of discharge of final effluent is carried out as required by applicable regulations.

17.2.4 ENVIRONMENTAL EFFECTS OF TREATED EFFLUENT

As required by MDMER, Environment Effect Monitoring (EEM) studies are conducted on a regular basis with the analytical results sent to federal regulatory agencies. Monitoring studies began in 2007 and are still in progress. Studies are conducted every three years until the end of mine life.

17.3 REGULATORY CHANGE AND ENVIRONMENTAL PERMITS

17.3.1 REGULATORY CHANGE

As of August 2018, the Québec territory north of the 49th Parallel is no longer subject to the regulation regarding compensation for adverse effects on wetlands and bodies of water under the Environmental Quality Act (R.S.Q., c. Q-2) (the EQA).

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17.3.2 ENVIRONMENTAL PERMITS

All necessary regulatory permits required for the operation of the Casa Berardi Mine, since its construction and that have been transferred or issued to Hecla, are listed in Table 17-1.

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Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 30	Installation of a secondary crusher(Modified)	Hecla Québec	4/13/20 23	Casa Berar di site
22-HQUE- 00453	Divert a section of Kaackakosig creek	Fisheries act/Sections 34.4(2)b) and 35(2)b)	Divert a section of Kaackakosig creek (Modified)	Hecla Québec	1/31/20 23	160 Pit
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 30	Cell#7 increasing dyke(Modified)	Hecla Québec	11/29/2 022	Casa Berar di site
01-10-0991- 20_MOD2	Divert a section of Kaackakosig creek	LCMVF	Divert a section of Kaackakosig creek (Modified)	Hecla Québec	3/8/202 2	160 Pit
7610-10-01- 70017-43	Open pit 160 (construction and operation)	EQA / Section 30	Expansion of open pit 160 (Modified)	Hecla Québec	2/14/20 22	160 Pit
7610-10-01- 70016-61	Open pit 160	EQA / Section 30	Expansion of open pit 160 in humid area (Modified)	Hecla Québec	2/14/20 22	160 Pit
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 30	Cell#7 increasing dyke(Modified)	Hecla Québec	8/20/20 21	Casa Berar di site
20-HQUE- 00110 - 2021-020	Fisheries Act authorization	Fisheries act/Sections 34.4(2)b) and 35(2)b)	Divert a section of Kaackakosig creek (1400 m) to operate 160 open pit	Hecla Québec	7/26/20 21	160 Pit

Table STYLEREF 1 \s 17-. Existing Environmental Permits

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
01-10-0991- 20_MOD	Divert a section of Kaackakosig creek	LCMVF	Divert a section of Kaackakosig creek (Modified)	Hecla Québec	7/23/20 21	160 Pit
01-10-0991- 20	Divert a section of Kaackakosig creek	LCMVF	Divert a section of Kaackakosig creek	Hecla Québec	4/26/20 21	160 Pit
7610-10-01- 70016-57	Dewatering open pit 160	EQA/Sectio n 30	Installation of 12 dewatering wells at the perimeter of 160 pit (Modified)	Hecla Québec	2/24/20 21	160 Pit
7610-10-01- 70016-61	Open pit 160	EQA/Sectio n 22	Construction of 160 open pit in Humid area	Hecla Québec	9/16/20 20	160 Pit
7610-10-01- 70016-57	Dewatering open pit 160	EQA/Sectio n 30	Installation of 12 dewatering wells at the perimeter of 160 pit (Modified)	Hecla Québec	9/15/20 20	160 Pit
7610-10-01- 70017-43	Open pit 160 (construction and operation)	EQA/Sectio n 30	Open pit 160 (construction and operation)	Hecla Québec	9/15/20 20	160 Pit
7610-10-01- 70016-48	Raise of the water process pond dyke	EQA/Sectio n 30	Raise of the water process pond dyke (Modified)	Hecla Québec	9/4/202 0	Casa Berar di site
7610-10-01- 70016-56	Ore crushing	EQA/Sectio n 30	Ore crushing on Casa Berardi site (Modified)	Hecla Québec	7/14/20 20	Casa Berar di site
7610-10-01- 70016-57	Dewatering of open pit 134	EQA/Sectio n 22	Dewatering 134	Hecla Québec	5/27/20 20	134 Pit
7610-10-01- 70016-58	Construction and operation of open pit 134 in humid area	EQA/Sectio n 22	Construction and operation of open pit 134 and stockpile #3 in humid area	Hecla Québec	5/27/20 20	134 Pit
7610-10-01- 70017-43	Open pit 134	EQA/Sectio n 30	Open pit 134 (construction and operation) and stockpile #3	Hecla Québec	5/27/20 20	134 Pit

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70016-51	Raise of internal dyke cell#4	EQA/Sectio n 30	Raise internal dyke in cell#4 third step (Modified)	Hecla Québec	3/27/20 20	Casa Berar di site
7610-10-01- 70016-51	Raise of internal dyke cell#4	EQA/Sectio n 30	Construction of filter dams in cell#1 (Modified)	Hecla Québec	3/11/20 20	Casa Berar di site
7610-10-01- 70017-07	Attestation d'assainissement en milieu industriel (permit of operation)		Attestation d'assainissement en milieu industriel (Modified)	Hecla Québec	1/9/202 0	Casa Berar di site
7610-10-01- 70016-56	Ore crushing	EQA/Sectio n 30	Ore crushing on Casa Berardi site (Modified)	Hecla Québec	10/16/2 019	Casa Berar di site
7610-10-01- 70017-43	Open pit EMCP	EQA/Sectio n 30	Ore stockpile #2	Hecla Québec	9/13/20 19	Casa Berar di site
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 30	Adding a tank and a compressor at the cyanide destruction	Hecla Québec	9/11/20 19	Casa Berar di site
7610-10-01- 70016-56	Ore crushing	EQA/Sectio n 22	Ore crushing on Casa Berardi site	Hecla Québec	6/25/20 19	Casa Berar di site
7610-10-01- 70016-55	Extension of EMCP	EQA/Sectio n 22	XMCP open pit	Hecla Québec	5/15/20 19	XMC P pit
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 30	Increase tonnage at the mill (Modified)	Hecla Québec	4/4/201 9	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70016-54	Expansion of tailing pond cell#7	EQA/Sectio n 22	Construction of cell#7	Hecla Québec	2/27/20 19	Casa Berar di site
7610-10-01- 70016-51	Raise of internal dyke cell#4	EQA/Sectio n 30	Raise internal dyke in cell#4 works 2018-2019 (Modified)	Hecla Québec	12/19/2 018	Casa Berar di site
7610-10-01- 70016-53	Closure of cell#2	EQA/Sectio n 22	Construction of a clay cover on cell#2	Hecla Québec	12/19/2 017	Casa Berar di site
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 122.2	Increase tonnage at the mill (Modified)	Hecla Québec	8/25/20 17	Casa Berar di site
7610-10-01- 70016-52	Raise dyke cell#4	EQA/Sectio n 22	Raise dyke cell#4	Hecla Québec	8/15/20 17	Casa Berar di site
7610-10-01- 70016-51	Raise of internal dyke cell#4	EQA/Sectio n 22	Raise internal dyke in cell#4	Hecla Québec	4/5/201 7	Casa Berar di site
7610-10-01- 70016-50	Use of leachable waste rock for construction in stockpile #1 and in tailing pond	EQA/Sectio n 22	Use of leachable waste rock for construction in stockpile #1 and in tailing pond	Hecla Québec	1/13/20 17	Casa Berar di site
7610-10-01- 70017-34	Expansion of the ore stockpile at west mine	EQA/Sectio n 122.2	Expansion of the ore stockpile pile at west mine (Modified)	Hecla Québec	12/20/2 016	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 122.2	Increase tonnage at the mill (Modified)	Hecla Québec	10/17/2 016	Casa Berar di site
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 122.2	Increase tonnage at the mill (Modified)	Hecla Québec	8/3/201 6	Casa Berar di site
7610-10-01- 70016-48	Raise of the water process pond dyke	EQA/Sectio n 22	Raise of the water process pond dyke	Hecla Québec	6/23/20 16	Casa Berar di site
7610-10-01- 70016-49	Crushing and screening of waste rock	EQA/Sectio n 22	Crushing and screening of waste rock	Hecla Québec	2/25/20 16	Casa Berar di site
7610-10-01- 70016-47	Dewatering EMCP	Règlement sur le captage des eaux souterraines/ Section 31.75 and 31.95	Dewatering EMCP and installation of the pumping station	Hecla Québec	1/12/20 16	EMC P pit
7610-10-01- 70017-43	Open pit EMCP	EQA/Sectio n 22	Open pit EMCP (construction and operation)	Hecla Québec	10/29/2 015	EMC P pit
7610-10-01- 70016-41	Tailing pond	EQA/Sectio n 122.2	Raise north dyke of cell#4 and water process pond pumping station redevelopment (Modified)	Hecla Québec	10/21/2 015	Casa Berar di site
7610-10-01- 70016-41	Tailing pond	EQA/Sectio n 122.2	Raise internal dyke in southern part of cell#4 (Modified)	Hecla Québec	8/12/20 15	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70017-07	Attestation d'assainissement en milieu industriel (permit of operation)		Attestation d'assainissement en milieu industriel (Modified)	Hecla Québec	1/12/20 15	Casa Berar di site
7610-10-01- 70017-44	Underground water collection at west mine	EQA/Sectio n 31.75	Increasing the capacity of the water collection	Hecla Québec	12/18/2 014	Casa Berar di site
7610-10-01- 70017-45	Drinking water distribution	EQA/Sectio n 32	Drinking water distribution	Hecla Québec	12/18/2 014	Casa Berar di site
7610-10-01- 70017-46	Underground water collection at west mine	EQA/Sectio n 31.75	Installation of a new well and water collection at West mine	Hecla Québec	12/18/2 014	Casa Berar di site
7610-10-01- 70016-46	Construction of 8 pads for drilling in humid area	EQA/Sectio n 22	Construction of 8 pads for drilling in humid area	Hecla Québec	12/15/2 014	Casa Berar di site
7610-10-01- 70016-43	Increase water collection	EQA/Sectio n 31.75	Increase underground water collection at East mine	Hecla Québec	11/28/2 014	Casa Berar di site
7610-10-01- 70016-28	Operation of a concrete plant	EQA/Sectio n 122.2	Operation of a concrete plant (transferred)	Hecla Québec	2/5/201 4	Casa Berar di site
7610-10-01- 70016-39	Oil and water separator	EQA/Sectio n 122.2	Treatment of oily water (transferred to Hecla Québec)	Hecla Québec	2/5/201 4	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70017-28	Oil and water separator	EQA/Sectio n 122.2	Oil and water separator (transferred to Hecla Québec)	Hecla Québec	2/5/201 4	Casa Berar di site
7610-10-01- 70017-41	Operation of cement plant	EQA/Sectio n 122.2	Operation of a cement plant (transferred to Hecla Québec)	Hecla Québec	2/5/201 4	Casa Berar di site
7610-10-01- 70016-42	Dewatering and backfill a pond	EQA/Sectio n 22	Dewatering and backfill a man- made pond	Hecla Québec	1/14/20 14	Casa Berar di site
7610-10-01- 70016-45	Construction access and pads for drilling in humid area	EQA/Sectio n 22	Construction access and pads for drilling in humid area	Hecla Québec	12/19/2 013	Casa Berar di site
7610-10-01- 70017-36	Operation of a Bekosplit unit	EQA/Sectio n 122.2	Operation of a Bekosplit unit (Modification)	Hecla Québec	11/21/2 013	Casa Berar di site
7470-10-01- 00006-04	Construction of access road in a humid area	EQA / Section 22	Construction of access and pads for drilling in humid area	Hecla Québec	6/28/20 13	West mine
7610-10-01- 70016-39	Oil and water separator	EQA/Sectio n 22	Treatment of oily water modification	Aurizon Mines Ltd	6/7/201 3	Casa Berar di site
7610-10-01- 70016-25	Quarry	EQA / Section 22	Quarry exploitation	Aurizon Mines Ltd	5/10/20 13	Casa Berar di site
7610-10-01- 70016-44	Construction of access road in a humid area	EQA/Sectio n 22	Construction of access road in a humid area	Aurizon Mines Ltd	3/14/20 13	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70017-40	Operation of a paste backfill plant	EQA/Sectio n 122.2	Construction and operation of a paste backfill plant (Modification)	Aurizon Mines Ltd	3/7/201 3	West mine
7610-10-01- 70017-40	Operation of a paste backfill plant	EQA/Sectio n 22	Construction and operation of a paste backfill plant transferred on 05-02-2014	Aurizon Mines Ltd	10/29/2 012	Casa Berar di site
7610-10-01- 70017-41	Operation of cement plant	EQA/Sectio n 22	Operation of a cement plant	Aurizon Mines Ltd	9/26/20 12	Casa Berar di site
7610-10-01- 70016-41	Tailing pond	EQA/Sectio n 22	Raise and extension of cell# 4 dyke modified on February 5 2014	Aurizon Mines Ltd	5/9/201 2	Casa Berar di site
7610-10-01- 70016-38	Underground water collection	Règlement sur le captage des eaux souterraines/ Section 31.75	Underground water collection at East mine	Aurizon Mines Ltd	4/2/201 2	Casa Berar di site
7610-10-01- 70017-39	Underground water collection at west mine	Règlement sur le captage des eaux souterraines/ Section 31	Underground water collection at west mine	Aurizon Mines Ltd	4/2/201 2	Casa Berar di site
7470-10-01- 00006-03	Construction of access road in a humid area	EQA / Section 22	Construction of access and pads for drilling in humid area	Aurizon Mines Ltd	2/24/20 12	West mine
7610-10-01- 70016-37	Ore extraction and processing ore	EQA/Sectio n 22	Tailing pond cell#4 construction (modification)	Aurizon Mines Ltd	11/21/2 011	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70017-07	Attestation d'assainissement en milieu industriel (permit of operation)		Attestation d'assainissement en milieu industriel	Aurizon Mines Ltd	11/11/2 011	Casa Berar di site
7610-10-01- 70017-38	Treatment for domestic wastewater	EQA/Sectio n 32	Treatment for domestic wastewater (Bionest west mine)	Aurizon Mines Ltd	9/21/20 11	Casa Berar di site
7610-10-01- 70016-39	Oil and water separator	EQA/Sectio n 22	Treatment of oily water	Aurizon Mines Ltd	8/26/20 11	Casa Berar di site
7610-10-01- 70016-39	Bekosplit	EQA/Sectio n 22	Operation of a Bekosplit unit	Aurizon Mines Ltd	6/17/20 11	Casa Berar di site
7610-10-01- 70016-40	Bekosplit	EQA/Sectio n 32	Installation of a Bekosplit unit	Aurizon Mines Ltd	6/17/20 11	Casa Berar di site
7610-10-01- 70017-25	Casa Berardi west mine exploitation	EQA/Sectio n 122.2	Casa Berardi west mine exploitation (Modification)	Aurizon Mines Ltd	2/21/20 11	Casa Berar di site
7610-10-01- 70017-35	Construction of access road and pad for drilling in a humid area	EQA/Sectio n 22	Construction of access road and pad for drilling in a humid area	Aurizon Mines Ltd	10/17/2 010	Casa Berar di site
7610-10-01- 70016-37	Ore extraction and processing ore	EQA/Sectio n 22	Tailing pond cell#4 construction modified on February 5 2014	Aurizon Mines Ltd	7/29/20 10	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70017-34	Ore stockpile at west mine	EQA/Sectio n 22	Ore stockpile at west mine	Aurizon Mines Ltd	6/30/20 10	Casa Berar di site
7470-10-01- 00006-00	Construction of access road in a humid area	EQA / Section 22	Construction of access and pads for drilling in humid area	Aurizon Mines Ltd	1/14/20 10	West mine
7610-10-01- 70016-33	Oil and water separator	EQA/Sectio n 22	Installation of an oil and water separator in mechanical shop at East mine (modification)	Aurizon Mines Ltd	12/18/2 009	Casa Berar di site
7610-10-01- 70016-36	Treatment for domestic wastewater	EQA/Sectio n 32	Treatment for domestic wastewater Bionest est modified on February 5 2014	Aurizon Mines Ltd	11/3/20 09	Casa Berar di site
7610-10-01- 70017-33	Construction of access road in a humid area	EQA/Sectio n 22	Construction of access road in a humid area	Aurizon Mines Ltd	7/17/20 09	Casa Berar di site
7610-10-01- 70017-31	Oil and water separator West mine	EQA/Sectio n 22	Operation of an oil and water separator West mine Garage Gabriel Aubé	Aurizon Mines Ltd	1/13/20 09	Casa Berar di site
7610-10-01- 70017-32	Oil and water separator West mine	EQA/Sectio n 32	Installation of an oil and water separator West mine Garage Gabriel Aubé	Aurizon Mines Ltd	1/13/20 09	Casa Berar di site
7610-10-01- 70016-33	Oil and water separator	EQA/Sectio n 22	Installation of an oil and water separator in mechanical shop at East mine modified on May 2, 2014	Aurizon Mines Ltd	6/26/20 08	Casa Berar di site
7610-10-01- 70017-27	Treatment for domestic wastewater	EQA/Sectio n 122.2 and 122.3	Treatment for domestic waste (Modification)	Aurizon Mines Ltd	5/29/20 08	Casa Berar di site
Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
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7610-10-01- 70017-30	Construction of access road in a humid area	EQA/Sectio n 22	Construction of access road in a humid area	Aurizon Mines Ltd	4/9/200 8	Casa Berar di site
7610-10-01- 70016-32	Installation of a humid dust collector and a dust collector	EQA/Sectio n 48	Installation of a humid dust collector and a dust collector modified on February 5 2014	Aurizon Mines Ltd	4/7/200 8	Casa Berar di site
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 122.2	Tailing pond filing plan cell# 1, 2 and 3	Aurizon Mines Ltd	12/19/2 007	Casa Berar di site
7610-10-01- 70017-28	Oil and water separator	EQA/Sectio n 22	Oil and water separator west mine	Aurizon Mines Ltd	10/17/2 007	Casa Berar di site
7610-10-01- 70017-29	Construction of access road in a humid area	EQA/Sectio n 22	Construction of access road in a humid area	Aurizon Mines Ltd	7/20/20 07	Casa Berar di site
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 122.2	Increase process water pond dyke	Aurizon Mines Ltd	9/14/20 06	Casa Berar di site
7610-10-01- 70017-27	Treatment for domestic wastewater	EQA/Sectio n 32	Treatment for domestic waste	Aurizon Mines Ltd	8/15/20 06	Casa Berar di site
7610-10-01- 70017-26	Installation of a power line of 25 kV	EQA/Sectio n 22	Installation of a power line 25kV in a humid area modified on February 5 2014	Aurizon Mines Ltd	1/26/20 06	Mine Oues t
7610-10-01- 70016-31	Installation of a fire station	EQA/Sectio n 32	Installation of a fire station in «Lac Sans Nom» (modified)	Aurizon Mines Ltd	9/22/20 05	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70016-31	Installation of a fire station	EQA/Sectio n 32	Installation of a fire station in «Lac Sans Nom» modified on February 5 2014	Aurizon Mines Ltd	7/4/200 5	Casa Berar di site
7610-10-01- 70016-30	Pipe installation in Koababikawi creek	EQA/Sectio n 32	Installation of 2 pipes in Koababikawi creek for fire station and industrial water modified on February 5 2014	Aurizon Mines Ltd	11/10/2 004	Mine Est
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 122.2	Increase tonnage at the mill (Modification)	Aurizon Mines Ltd	9/10/20 01	Casa Berar di site
7610-10-01- 70017-25	Casa Berardi west mine exploitation	EQA/Sectio n 122.2	Casa Berardi west mine exploitation (Modification)	Aurizon Mines Ltd	10/27/2 000	Casa Berar di site
7610-10-01- 70016-21	Diversion of Kaackakosig creek	EQA / Section 22	Diversion of Kaackakosig creek Casa Berardi East, transferred to Aurizon mines on September 14 1998, transferred to Hecla on February 5 2014	Aurizon Mines Ltd	9/14/19 98	Casa Berar di site
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 24	Ore extraction and processing ore transferred to Aurizon Mines Ltd	Aurizon Mines Ltd	9/14/19 98	Casa Berar di site
7610-10-01- 70016-24	Clay borrow pit	EQA / Section 24	Clay borrow pit exploitation (transferred)	Aurizon Mines Ltd	9/14/19 98	Casa Berar di site
7610-10-01- 70016-25	Quarry	EQA / Section 24	Quarry exploitation (transferred)	Aurizon Mines Ltd	9/14/19 98	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70016-26	Clay borrow pit	EQA/Sectio n 24	Clay borrow pit exploitation (transferred)	Aurizon Mines Ltd	9/14/19 98	Casa Berar di site
7610-10-01- 70017-25	Casa Berardi west mine exploitation	EQA/Sectio n 24	Casa Berardi west mine exploitation (transferred)	Aurizon Mines Ltd	9/14/19 98	West mine
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 22	Ore extraction and processing ore (Modification)	TVX Gold and Golden Knight Resources	2/19/19 98	Casa Berar di site
7610-10-01- 86019-00	Operation of ciment plant	EQA/Sectio n 22	Operation of a cement plant transferred to Aurizon Mines Ltd on September 14,1998 (761010-01-70016-28)	TVX Gold	11/6/19 95	Casa Berar di site
7610-10-01- 70016-00	Clay borrow pit	EQA / Section 22	Clay borrow pit exploitation	Les mines Casa Berardi	9/18/19 95	Casa Berar di site
7610-10-01- 70016-26	Clay borrow pit	EQA/Sectio n 22	Clay borrow pit exploitation	TVX Gold	9/18/19 95	Casa Berar di site
7610-10-01- 70016-24	Clay borrow pit	EQA / Section 22	Clay borrow pit exploitation	TVX Gold	8/7/199 5	Casa Berar di site
7610-10-01- 70016-25	Quarry	EQA / Section 22	Quarry exploitation (transferred)	TVX Gold	8/7/199 5	Casa Berar di site
7610-10-01- 70016-23	Ore extraction and processing ore	EQA / Section 22	Ore extraction and processing ore	TVX Gold and Golden Knight Resources	12/23/1 992	Casa Berar di site

Permit #	Permit title	Pursuant	Description	Issued To	Issuan ce (YYY Y-MM- DD)	Zone
7610-10-01- 70017-00	Casa Berardi west mine exploitation	EQA/Sectio n 22	Casa Berardi mine west mine exploitation transferred to Hecla Québec on February 5, 2014	Hecla Québec	7/2/199 2	Casa Berar di site
7610-10-01- 70016-09	Storage for dangerous waste	EQA / Section 22	Storage for dangerous waste transferred to TVX gold and Golden Knight Resources on June 19, 1992	TVX Gold and Golden Knight Resources	6/19/19 92	Casa Berar di site
7610-10-01- 70016-22	Storage for dangerous waste	EQA / Section 22	Storage for dangerous waste	Les mines Casa Berardi	1/18/19 91	Casa Berar di site
7610- 70049-00	Exploitation and operation of Casa Berardi west	EQA/Sectio n 22	Exploitation and operation of Casa Berardi west	Inco Gold	6/29/19 90	Casa Berar di site
7610-10-01- 70016-21	Diversion of Kaackakosig creek	EQA / Section 22	Diversion of Kaackakosig creek Casa Berardi East	Inco Gold	2/19/19 90	Casa Berar di site
7610-10-01- 70017-22	Treatment for domestic wastewater (projet C)	EQA/Sectio n 32	Treatment for domestic wastewater (projet C)	TVX Gold and Golden Knight Resources	9/10/19 87	Casa Berar di site
7610-10-01- 70017-21	Treatment for domestic wastewater at Golden Pond West	EQA/Sectio n 32	Treatment for domestic wastewater at Golden Pond West	TVX Gold and Golden Knight Resources	7/26/19 87	Casa Berar di site

17.3.3 ENVIRONMENTAL IMPACT ASSESSMENT

As described in Section 17.1, the current LOM plan incorporates the conclusion of underground mining activities during 2024 and mining of the F160 Pit into 2026. The planned development of the preliminary Principal, WMCP, and F134 pits along with their associated waste dumps and other surface infrastructure has the potential to trigger an Environmental Impact Assessment (EIA) for the Property. Hecla plans to initiate the process of this evaluation in April 2024 by submitting the project notice to the Provincial Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP). The notice will include an overview of the proposed development and a description of the plan of operations. Baseline studies, which have been ongoing at the Property since 2019 for normal operational monitoring, will provide data that will inform future mine permit applications, operational plans, and portions of the EIA. The overall EIA process typically takes several years to complete and considers the potential environmental, health, and social and economic impact of a proposed project, including the benefits of the project. Hecla expects multiple regulatory agencies to be involved with the process along with public comment periods.

17.4 MINE RECLAMATION AND CLOSURE

The most recent reclamation and closure plan was submitted in October 2019 and accepted in September 2020. This plan covers the global reclamation of the mine site, including the restoration of the EMCP, XMCP and F134 pits. It also includes the reclamation of Mixed Stockpile #3 and the construction of the first stage of Cell #7 of the tailings compound, which are the most recently authorized infrastructure on the Casa Berardi property. Reclamation plans must be updated every five years and submitted to submitted to the Ministere Ressources Naturelles et de la Faune (MRNF) for approval. The next update to the reclamation and closure plan for Casa Berardi is planned to be submitted to the MRNF in November 2024.

The Casa Berardi reclamation and closure plan includes:

/ Decommissioning of the surface infrastructure.

- / Dismantling of all surface structures, with sales/recycling of assets and disposal of wastes.
- / Grading and revegetation of all disturbed areas.
- / Capping/sealing of all mine access points in accordance with regulatory standards.
- / Grading of the tailing dikes followed by direct vegetation of the tailings dams.
- / Description of the financial guarantee, the amount of which corresponds to the anticipated costs of the reclamation work.
- / The closure period, which will include five years of monitoring activities.

Since August 2013, mining regulations require that financial guarantees cover all reclamation costs including dismantling of the headframes and buildings and sealing of all openings. The amount of this guarantee, which is in the form of a surety bond, corresponds to the total estimated costs for the reclamation of the entire actual mine site. The guarantee must be provided in three installments within two years of the date of reclamation plan approval. The estimated cost for reclamation and closure for the Casa Berardi site is US\$22,829,757 (C\$29,107,949).

260 260 This cost estimate covers the existing operations and current infrastructure but does not include the cost for reclamation and closure of future open pits. An update to the reclamation and closure plan along with calculations for closure costs are planned to be performed by Hecla in late 2024.

17.5 COMMUNITY AND SOCIAL ASPECTS

The Abitibi region is a well-established and mature mining area, with the mining industry being a key component of regional economic development. The area has a wealth of trained miners, and continued development of the mine is viewed by most residents as a positive activity that provides employment and tax revenue for the region. For instance, Hecla contributed over US\$450,000 (C\$548,700) in donations and sponsorships in 2022 to various organizations in the region.

Hecla has developed community engagement and integrated social responsibility policies and has a good relationship with stakeholders. Since January 2019, Hecla has established a liaison committee composed of stakeholders from a variety of areas, including municipal, Indigenous, economic, environmental, and educational communities, as seen in Table 17-2.

Year	Total Contributed (US\$)	Total Contributed (C\$)
2022	450,039	548,718
2021	363,837	463,892
2020	352,862	449,899
2019	406,377	518,131
2018	469,100	598,102

Table STYLEREF 1 \s 17-. Total Contributions to Regional Organizations from 2018 to 2022

The Casa Berardi property is situated on the territory of the Abitibiwinni First Nation, more precisely the community of Pikogan. In November 2018, Hecla and the Council of the Abitibiwinni First Nation signed a Memorandum of Understanding (MOU) regarding Hecla's exploration and mining activities in the Casa Berardi area. On December 9, 2020, and in accordance with the MOU, the parties agreed upon a negotiation process for collaboration. Employment, training, and business were identified as areas of opportunity for members of the Abitibiwinni First Nation.

17.6 COMMENTS ON ENVIRONMENTAL STUDIES, PERMITTING, AND COMMUNITY IMPACT

RESPEC is of the opinion that the environmental, permitting, and social aspects of the Property are being appropriately managed and planned to support the current LOM plan to 2037.

In the opinion of RESPEC: 261 261

- / Hecla has sufficiently addressed the environmental impacts of the operation, and subsequent closure and reclamation requirements such that the mine plan is deemed appropriate and achievable. Closure provisions are appropriately considered, and monitoring programs are in place.
- / Current permits held by Hecla for the Property are sufficient to ensure that surface and underground mining activities which will take place into 2026 are conducted in accordance with the local, provincial, and national regulatory frameworks.
- / Beyond 2026, the LOM plan includes the development of three additional open pits along with associated waste rock storage facilities and other infrastructure. This planned development may require an EIA to be performed at the property. Hecla will submit a project notice to the Provincial MELCCFP in 2024. Hecla expects the EIA process to take several years to complete and that mining of the planned open pits can take place in accordance with local, provincial, and national regulatory frameworks.
- / Hecla has developed a community' relations plan to identify and ensure an understanding of the needs of the surrounding communities and to determine appropriate programs for addressing those needs. Hecla appropriately monitors socio-economic trends, community perceptions, and mining impacts.
- / There are currently no known environmental, permitting, or social/community risks that could impact the extraction of Mineral Resources or Mineral Reserves at the Property.

18.0 CAPITAL AND OPERATING COSTS

18.1 CAPITAL COSTS

Please refer to the note regarding forward-looking information at the front of this report. Unless otherwise noted, all dollar amounts are presented in United States dollars based on a US\$/C\$ exchange rate of 1.35, and all other measurements are metric values.

Casa Berardi uses the LOM plan as the planning guide for the Casa Berardi operation. The LOM capital costs total US\$500 million and include mine development (contractor and owner), mine infrastructure, open pit costs, equipment costs, environmental permitting, and tailings management (Table 18-1) RESPEC is of the opinion that the estimated capital costs for Casa Berardi are reasonable.

263 263

Description	Units	Total	2024	2025	2026	202 7	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Ore Processing	US\$(00 0)	90,123	56,27 5	20,27 0	13,57 8	-	-	-	-	-	-	-	-	-	-	-
Major Projects	US\$(00 0)	10,352	1,463	2,963	2,963	2,96 3			-	-	_	_	-	-	-	-
Administrat ion	US\$(00 0)	387	209	178	-	-	-	-	-	-	-	-	-	-	-	-
Mine Stripping, Mine infrastructur e	US\$(00 0)	302,75 4	-	-	-	-	^{23,77} ₃ 47,159		53,758	52,96 4	61,35 5	63,744	-	-	-	-
Mobile Equipment	US\$(00 0)	94,813	3,098	11,52 3	-	6,82 3	7,277	25,111	17,276	6,847	2,240	4,072	3,515	3,515	3,515	-
Total Operating Capital Costs USD\$	US\$(00 0)	498,42 8	61,04 5	34,93 4	16,54 1	9,78 6	31,05 0	72,270	71,034	59,81 1	63,59 6	67,816	3,515	3,515	3,515	-
Salvage Value	US\$(00 0)	(19,73 6)	-	-	-	-	-	_	-	-	-	-	-	-	-	(19,73 6)

Reclamatio n & Closure	US\$(00 0)	21,561	-	-	-	-	-	-	-	-	-	-	-	-	-	21,561
Total Capital Costs USD\$	US\$(00 0)	500,25 3	61,04 5	34,93 4	16,54 1	9,78 6	31,050	72,27 0	71,03 4	59,811	63,59 6	67,81 6	3,515	3,51 5	3,51 5	1,825

Table STYLEREF 1 \s 18-. LOM Capital Costs

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The capital costs are based on updates from equipment suppliers and verified with engineering companies providing services to Casa Berardi. The capital costs accuracy would be considered +-15% with zero contingency.

Major Projects include permitting costs for the LOM which include environmental, hydrogeological, and geotechnical studies, and condemnation drilling. Mine Stripping includes the overburden removal from WMCP and Principal pits. Open pit costs include mobilization of the open pit contractor and capitalized stripping costs. In 2037, there is a salvage value of approximately US\$19.7 million for mine and other equipment that can be sold.

18.2 OPERATING COSTS

The operating costs for the Casa Berardi Mine for 2022 and 2023 are presented in Table 18-2. Gold production in 2022 and 2023 was lower than budget due to lower tonnes processed from the underground. Total open pit tonnes moved were higher in 2022 and slightly lower in 2023 with better than planned unit costs for both years. With the future of the property being almost exclusively open pit, RESPEC is of the opinion that the actual operating costs support the LOM operating costs.

266 266

Itom	Material	Produced
Item	2022	2023
Tonnes Processed (kt)	1,441	1,312
Gold Produced (k toz)	127.6	90.4
	Operati	ng Cost
	(US\$/t	milled)
UG Mine (West)	75.60	88.47
UG Mine (East)	86.72	155.10
Site Services (Mech & Elect.)	23.34	19.40
Administration	11.39	6.86
Environment	1.57	1.41
Geology	1.76	2.17
Engineering	2.72	2.07
Health and Safety	2.08	1.69
Open Pit - EMCP	0.00	0.00
Open Pit - F160	25.50	19.35
Mill	28.95	23.82
Backfill Paste Plant	0.96	0.93
Total Operating Costs	130.41	112.42

Table STYLEREF 1 \s 18-. 2020 and 2021 Operating Cost Data

18.2.1 LOM OPERATING COSTS

The LOM operating costs and unit operating costs are presented in Table 18-3 and Table 18-4, respectively. The mining cost decreases substantially after 2024 when only open pit mining will be conducted for the balance of the LOM period ending in 2037. The LOM unit operating costs compare well with the recent and current operating costs. Operating costs accuracy would be considered +-15% with zero contingency.

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Table STYLEREF 1 \s 18-. LOM Operating Costs

Description	Units	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Tonnes Milled	t(000)	14,383	1,310	1,300	1,300	75			383	1,600	1,600	1,600	1,600	1,600	1,600	413
Mining	US\$(000)	395,611	66,797	22,049	486	-		•	25,634	47,627	36,959	33,503	104,520	28,237	17,723	12,075
Processing	US\$(000)	330,271	30,086	29,855	29,855	1,730		1343	8,786	36,744	36,744	36,744	36,744	36,744	36,744	9,493
Administration	US\$(000)	71,704	19,111	16,593	3,111	2,815	2,815	2,815	2,222	3,556	3,556	3,556	3,556	3,556	3,556	889
Total Cost	US\$(000)	797,586	115,995	68,497	33,452	4,545	2,815	2,815	36,642	87,927	77,259	73,803	144,820	68,537	58,023	22,457

Table STYLEREF 1 \s 18-. LOM Unit Operating Costs

Description	Units	Average	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Mining	US\$/t	27.51	50.98	16.96	0.37				66.99	29.76	23.10	20.94	65.32	17.65	11.08	29.21
Processing	US\$/t	22.96	22.96	22.96	22.96	22.96		8	22.96	22.96	22.96	22.96	22.96	22.96	22.96	22.96
Administration	US\$/t	4.99	14.59	12.76	2.39	37.36	100	43	5.81	2.22	2.22	2.22	2.22	2.22	2.22	2.15
Total Cost	US\$/t	55.45	88.53	52.68	25.73	60.32	*		95.77	54.95	48.28	46.12	90.50	42.83	36.26	54.32

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19.0 ECONOMIC ANALYSIS

Please refer to the note regarding forward looking information at the front of this Report. The economic analysis contained in this TRS is based on the Casa Berardi Proven and Probable Mineral Reserves material only, economic assumptions, and capital and operating costs provided by Hecla's technical team in its LOM plan model and reviewed by RESPEC. All costs in this section are expressed in US dollars and all measurements are in metric values. Unless otherwise stated, all costs in this section of the TRS are expressed without allowance for escalation or currency fluctuation. All costs received from Hecla's site technical team in its Casa Berardi LOM 2024 Reserves only model were quoted in Canadian dollars and were converted to US dollars at an exchange rate of US\$1 = C\$1.35.

A summary of the key project criteria is provided in the subsequent subsections.

19.1 ECONOMIC CRITERIA

19.1.1 PHYSICALS

Open Pit operations

/ Mine life: 14 year LOM (between years 2024 and 2037)

- » Open pit mine life: 14 years (between years 2024 and 2037)
 - » Total ore tonnes mined: 14.2Mt at 2.72g/t Au
 - » Waste tonnes: 219Mt
 - » Maximum mining rate: 87ktpd (ore + waste)
- / Underground operations

»

- » Underground mine life: 1 year (2024)
- » Total ore tonnes mined: 209kt at 4.84g/t Au
- » Maximum mining rate: 1,200tpd
- / Processing of Mineral Reserves:
 - Total Ore Feed to Plant: 14.4Mt
 - Gold grade: 2.75g/t Au
 - » Maximum milling rate: 4,400tpd
 - » Contained Metal
 - Gold: 1.27Moz Au
 - » Average LOM Plant Recovery 81.5%
 - » Recovered Metal
 - Gold: 1.04Moz Au

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19.1.2 REVENUE

- / RESPEC conducted a preliminary economic analysis using Mineral Reserve pricing of US\$1,650/oz Au and confirmed the mine was economic at those prices.
- / For the purposes of this economic analysis described in this section, revenue is estimated over the LOM with a flat long-term price of US\$1,950/oz Au. RESPEC considers this price to be aligned with the latest industry consensus, long-term forecast prices. Transportation, insurance, and refining charges are estimated at US\$4.07/oz Au over the LOM. Payable metals in the Casa Berardi LOM 2024 plan are estimated at 99.9% for gold and 99.0% for silver. These rates are based on actual figures for refining losses. Silver credits have been estimated based on historical performance of the site.
- / LOM net revenue is US\$2,021 million (after Refining Charges).

19.1.3 CAPITAL COSTS

- / Total operating capital costs total US\$498 million
- / Closure costs of US\$21.6 million and a salvage value of \$19.7 million are included in the analysis at the end of the LOM.

19.1.4 OPERATING COSTS

- / Open Pit mining: US\$26.45/t ore mined
- / Underground mining: US\$106.23/t ore mined
- / Processing: US\$22.96/t ore milled
- / G&A US\$4.99/t ore milled
- / Total unit operating costs US\$55.45/t ore milled
- / LOM total operating costs US\$797.6 million
- / Excludes financing and corporate overhead costs

19.1.5 TAXATION AND ROYALTIES

- / Royalties: The current production zones as well as any in the 2024 LOM are not subject to an NSR or royalty to a third party / previous landowner.
- / Income tax is payable to the Federal Government of Canada, pursuant to the Income Tax Act (Canada). The applicable Federal income tax rate is 15% of taxable income.
- / Income tax is payable to the Province of Québec at a tax rate of 11.5% of taxable income.
- / No income taxes are payable until 2031 as Hecla uses its current tax pools and net operating loss carry forwards. Beginning in 2031, the effective tax rate used is 26.5% (combined federal and provincial).
- / Québec Mining Tax base rate is 16%.

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19.2 CASH FLOW ANALYSIS

RESPEC has reviewed and accepts Hecla's cash flow model as discussed in this section.

The Casa Berardi economics have been evaluated using the discounted cash flow method by considering annual processed tonnages and grade of ore. The associated process recovery, metal prices, operating costs, refining and transportation charges, and sustaining capital expenditures were also considered.

The full annual cash flow model is presented in Table 19-1 in US dollars with no allowance for inflation, show a pre-tax and after-tax NPV, using a 5% discount rate, of \$428 million and \$356 million, respectively. RESPEC is of the opinion that a 5% discount/hurdle rate for after-tax cash flow discounting of long lived precious/base metal operations in a politically stable region is reasonable and appropriate and commonly used. For this cash flow analysis, the internal rate of return (IRR) and payback are not applicable as there is no negative initial cash flow (no initial investment to be recovered) since Casa Berardi has been in operation for a number of years.

Table STYLEREF 1 \s 19-. Annual Cash Flow Model

Operating Days Tornes milled per day Tornes moved per day Production	UNITS days tonnes / day	TOTAL/AVERAGE	2024 Year 1	2025		Hech Min	ing Company-	Casa Berardi i	Mine								
Operating Days Toomes milled per day Toomes moved per day Production Au	UNITS days tonnes / day	TOTAL/AVERAGE	Heck Mining Company - Casa Berardi Nine 2024 2025 2026 2027 2028 2029 2030 2031 2032 2034 2035 2036 203 INTEX TOTAL/AVERAGE Yang 1 Yang 2 Yang 3 Yang 4 Yang 2 Yang 3 Yang 4 Yang 4														
Operating Days Toomes milled per day Toomes moved per day Production	UNITS days tonnes / day	TOTAL/AVERAGE	Year 1		1010	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	
Operating Days Toomes milled per day Toomes moved per day Production Au	days tonnes/day			Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	
Operating Days Tormes milled per day Tormes moved per day Production Au	days tonnes/day			2000			Open F	fit		010001							
Tornes milled per day Tornes moved per day Production Au	tonnes / day		366	365	365	365	366	365	365	365	366	365	365	365	366	78	
Tormes moved per day Production Au			3,008	3,562	3,562	206		25	1,048	4,384	4,372	4,384	4384	4,384	4,372	5,304	
Production	tennes / day		65,500	27,182	380	5	26,645	53,000	84,000	86,500	86,500	86,500	77,162	20,846	13,048	56,821	
Au	'000 tonnes	14,117	1,178	2,422	121	3			849	1,735	1,610	1,402	1,254	1,600	1,605	343	
2220	ya	2.72	1.79	1.81	187	•			2.87	3.22	3.21	2.96	3.11	3.12	2.88	2.51	
Ag	gt			14-1 1		<u>_</u>			-	1						12 1	
Waste	'000 tonnes	219,454	22,795	7,500	18		9,752	19,345	29,811	29,838	30,049	30,171	26,910	6,009	3,171	4,086	
Total Moved	'000 tonnes	233,571	23,973	9,921	139	i R	9,752	19,345	30,660	31,572	31,659	31,572	28,164	7,609	4,776	4,429	
Stripping Ratio	W30	15.55	19.36	3.10	015				35.10	17.20	18.67	21.52	21.46	3,76	1.98	11.93	
							Undergro	bund									
Operating Days	days	180	180	æ.	*			(*	1.00	(m) (
Tormes milled per day	tonnes / day	1,162	1,162						- 4		1.4.1						
Production	'000 tonnes	209	209	0		-	-		1.45	(a)	1.00				~		
Au	git	4.84	484	-						-							
Ag	git															-	
Waste	'000 tonnes	220	52	20	72	2	2		2.2	-	2	S2 -	S2		2	2	
Total Moved	000 tonnes	209	209	(¥)				- S2	14	243	14.1	12	24		2	. B	
							Stockpi	le									
Opening			1										1				
Tonnes	'000 tonnes.		56	133,093	1,254,747	75,348	(4)	14	(30)	466,745	601,191	610,803	412,527	66,393	66,393	70,785	
Au Grade	gt		1.62	2.13	186	1.85	-	-		2.64	2.76	2,79	2.78	2.74	2.74	2.74	
Ag Citade	g/t								-		(4)						
Addition															*		
Tonnes	1000 connes		200	1,139,042	10,309				535,795	194,074	9,612	4371	82,606	0	4,392		
Au Grade	u/t		2.13	1.83	1.43				2.64	3.05	4.40	1.68	2.73	3.74	2.76		
Ag Gade	git		12	0.000		2	2	<u></u>	2000	-	112000	100	2				
Deduction			3	S2	12	2		32	- C	141	04/7	5	32	52	2	32	
Tonnes	\000 tonnes		123	17,389	1,189,708	75,348	-	2	69,050	59,628		202,647	428,740	82	-	70,785	
Au Grade	git		1.89	2:13	186	1.86	÷	24	2.64	2.76	14.1	2.78	2,78	24	÷.	2.71	
Ag Grade	g/t		24	-	-	-	-		1.00		200	5.4		1.4		-	
Closing								2.6					-				
Tonnes	'000 tonnes		133	1,254,747	75,348				466,745	601,191	610,803	412,527	66,393	66,393	70,785		
Au Grade	g/t		2.13	1.86	185				2.64	2.76	2.79	2.78	2.74	2.74	2.74	-	
Ag Grade	g/t		2	18	145	2	2	<u>s</u>	201	5201	2231	2	2000	1	-	1	
1. WARRAN 2	1970 (J.																

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46										(ash Flow	Summ	iary															
									Hecla M	lining	Company	- Cas	a Berardi	Mir	ne													
				2024		2025	2026		2027		2028	2	029		2030		2031	2032		2033		2034		2035	3	036	3	2037
	UNITS	TOTAL/	AVERAG	E Year 1		Year 2	Year 3		Year4		Vear 5	Y	ear 6		Year 7		Year 8	Year 9		Year 10		Year 11		Year 12	Y	ear 13	Y	ear 14
											PROCE	SSIN	G			-			-				-					
Mill Feed	'900 tonnes		14,383	1,31)	1,300	13	00	7:						383		1,600	1,	00	1,600		1,600		1,600		1,600		413
Au	gi		2.75	2.2	4	1.79	1	86	1.80	5	(a)				3.14		3.22	3	21	2.94		3.04		3.12		2.88		2.54
Ag	gt		1.05	0.5	1	0.23	14	81	50				22		0.34		0.71	(76	0.81		0.93		0.75		0.69		0.74
Contained Au	ciz.	1	270,392	94,25	5	74,765	77,8	01	4,499	1			- #C		38,634		165,554	164,	14	151,259		156,302		160,319		148,295		33,796
Contained Ag	CIZ		304,881	22,62	1	17,943	18,6	71	1,080	χ.					9,272		39,731	39,	78	36,301		37,511		38,475		35,589		8,111
Net Recovery					1																							
Au	%		81.5%	88.6	1.	88.6%	88	8%	88.8	4	1.00		-		83.1%		83.3%	83	3%	81.8%	0	77.6%		76.3%		75.7%		76.89
Ag	%		81.5%	88.6		88.6%	88	8%	88.8	i.					83.1%		83.3%	83	3%	81.8%	6	77.6%		76.3%		75.7%		76.89
Total Recovered																												
Au	0Z	1,0	35,709	83,490		66,275	69,1	1	3,995		8		1		32,088		137,945	137,3	5	123,711		121,236		122,310		112,252		25,971
Ag	oz	2	48,560	20,037		15,905	16,5	4	959		12		12		7,701		33,105	32,9	9	29,689		29,095		29,353		26,939		6.2.33
											REVI	NUE	Ş			-			-				-					
Metal Prices	Input Units				1																1		-					
Au	USS/oz Au	\$	1,950	\$ 1.95	s	1,950	\$ 15	50 \$	1.954	S	1,950	s	1,950	s	1,950	s	1,950	\$ 12	50 5	1,9.50	\$	1,950	s	1,950	\$	1,950	\$	1,950
Ag	USSioz Au	s	22	\$ 2	2 5	22	\$	22 \$	2:	2 8	22	s	22	s	22	S.	22	\$	22 5	22	\$	22	s	22	\$	22	\$	22
Exchange Rate	US\$ 1.00 = X C\$		1.35	13	5	1.35	1	35	1.35	5	135		135		135		1.35	-	35	1.35		135		1.35		1.35		1.35
Au Payable Percentage			99.9%	99.9	5.	99.9%	99	9%	99.99	4	99,9%		99.9%		99.9%		99.9%	99	99%	99.9%	0	99.9%		99.9%		99.9%		99.99
Ag Payable Percentage			99.0%	99.0	%	99.0%	99	0%	99.0	6	99.0%		99.0%		99.0%		99.0%	99	0%	99.0%	6	99.0%		99.0%		99.0%		99.09
Au Gross Revenue	US\$ '000	\$ 2	D17,613	\$ 162,640	s :	129,106	\$ 134,6	13 5	7,783	\$		S		s	62,508	\$	268,724	\$ 267,	35 5	240,995	\$	236,173	\$	238,267	\$	218,673	\$	50,593
Ag Gooss Revenue	US\$'000	\$	5,414	\$ 430	5 5	346	\$ 1	61 \$	2	I S	-	S	22	\$	168	\$	721	\$	18 5	647	\$	634	s	639	\$	587	\$	136
Total Gross Revenue	USS '000	\$ 2,0	23,027	\$ 163,079	\$	129,453	\$ 134.9	4 9	7,804	s	12	5	÷.	\$	62,676	s	269,445	\$ 268,2	3 5	241.642	s	236,807	\$	238,906	\$	219,259	\$	50,729
Total Charges	US\$3000	\$	4,220	\$ 34	s i	270	S 0	82 \$	10	5 8	140	s	- 20	s	131	s	562	\$	60 5	564	\$	494	s	498	\$	457	\$	106
Net Smelter Return	US\$'000	5 2	018,807	\$ 162,739	5	129,183	\$ 134.0	92 \$	7,785	5		5	÷2	5	62,545	s	268,883	\$ 267,	93 5	241,138	5	236,313	s	238,408	\$	218,802	\$	50,623
Royalty NSR	US\$'000	\$	1.41	5 .	\$		5	5		5	0.00	5	÷.	5	*	\$		\$	5	÷ *	\$		\$		\$		\$	
Net Revenue	USS '000	\$ 2,0	18,807	\$ 162,739	\$	129,183	\$ 134.6	2 5	7,787	s		5		5	62,545	s	268,883	\$ 267.5	3 5	241,138	5	236,313	\$	238,408	\$	218,802	5	50,623

7											(ash Flow!	Sum	nary																
										Hecla Mi	ining	Company	• Ca	sa Berardi	Min	e														
				202	24	2025		2026		2027		2028		2.02.9		2030		2031	1	2032		2033		2034		2035		2036		2037
	UNITS	TOTAL/	AVERAGE	Yea	arl	Year 2		Year 3	1	Vear 4		Year 5		Year 6		Year 7		Year 8	1	Year 9	3	Year 10		Year 11	3	Year 12	i i	Year 13		Year 14
											- 8	OPERATI	NG	COST																
Mining (Open Pit)	US\$/1 ore mined	\$	26.45	s	37.85	S 9	10 \$	4.03	\$	1.4	s	1	\$	- 23	\$	30.18	s	27.46	\$	22.96	s	23.90	s	83.35	S	17.65	s	11.05	s	35.24
Mining (Underground)	USS/1 ore mined	\$	106.23	\$ 1	106.23	5	S		\$		\$		s	÷	s		S	-	\$	÷	\$		\$		S		\$		\$	÷
Processing	US\$4 milled	\$	22.96	\$	22.96	\$ 22	96 S	22.96	\$	22.96	s	19	s		\$	22.96	\$	22.96	\$	22.96	\$	22.96	\$	22.96	s	22.96	\$	22.96	s	22.96
G&A	US\$/t milled	\$	4.99	5	14.59	\$ 12	76 S	2.39	\$	37.36	s	100	\$. 5	\$	5.81	s	2.22	\$	2.22	s	2.22	s	2.22	\$	2.22	\$	2.22	\$	2.15
Total Unit Operating Cost	USS/t milled	s	55.45	S I	88.53	\$ 52.	8 5	25.73	8	60,32	s	12	5	14	5	95.77	\$	54.95	8	48.28	\$	46.12	s	90.50	8	42.83	\$	36.26	s	54.32
Mining (Open Pit)	U/S\$ '000	s	373,389	\$	44,575	\$ 22.	49 8	486	\$		\$		\$		\$	25,634	s	47,627	5	36,959	S	33,503	5	104,520	5	28,237	\$	17,723	5	12,075
Mining (Underground)	US\$'000	5	22,222	\$	22,222	\$	5		\$	(*)	\$	200	\$		5	-	\$		\$		\$	5	\$		5		\$		\$	
Processing	US\$'000	\$	330,271	\$ 3	30,086	\$ 293	55 \$	29,855	\$	1,730	8		\$	7.1	\$	8,786	\$	36,744	\$	36,744	\$	36,744	\$	36,744	\$	36,744	\$	36,744	\$	9,493
G&A	US\$ '000	\$	71,704	\$	19,111	\$ 16,	93 S	3,111	\$	2,815	s	2,815	s	2,815	\$	2,222	\$	3,556	s	3,556	\$	3,556	\$	3 5 5 6	s	3,556	s	3,556	\$	889
Total Operating Cost	US\$ '000	\$ 1	797,586	\$ 113	5,995	\$ 68,4	7 5	33,452	5	4.545	\$	2,815	\$	2,815	5	36,642	\$	87,927	s	77,259	5	73,803	\$	144,820	\$	68,537	5	58,023	\$	22,457
Operating Cashflow	USS '000	\$ 12	21,221	\$ 4	6,744	\$ 60,6	6 S	101,240	\$	3,242	s	(2.815)	\$	(2,815)	5	25,903	s	180,957	8	190,434	\$	167.335	s	91,493	\$	169.871	8	160,779	\$	28,166
							-					CAPITA	LCO	DST					-		_									
Operating	US\$'000	\$	498,428	\$ 4	61,045	S 34,9	34 S	16,541	\$	9,786	S	31,050	5	72,270	\$	71,034	\$	59,811	\$	63,596	S	67,816	5	3,515	s	3,515	\$	3,515	5	-
Salvuge Value	US\$ '000	\$	(19,736)	\$	1	s	5	÷	\$		\$	3	\$	100	\$	9	\$.	14) I	\$		\$	8	\$	*	s		\$	1	\$	(19,736
Reclamation and closure	US\$ '000	5	21,561	\$		s	\$	÷	\$		\$		8	5	\$	÷	\$		\$		\$		\$		s		\$		\$	21,561
Total Capital Cost	LISS '000	5 8	500,253	\$ 6	1,045	\$ 34,9	4 5	16,541	\$	9,786	ş	31,050	\$	72,270	\$	71,034	s	59,811	5	63,596	\$	67,816	\$	3,515	\$	3,515	\$	3,515	\$	1,825
57 57												CASH	FLO	w			_													
Net Pre-Tax Cashflow	US\$ '000	5	720,968	\$ ((14,301)	\$ 25,	52 \$	84,700	5	(6,544)	1.5	(33,865)	s	(75,085)	\$	(45,130)	\$	121,145	5	126,838	5	99,518	5	87,978	5	166,356	\$	157,264	5	26,341
Cumulative Pre-Tax Cashflow	US\$'000	\$	•	\$ ((14,301)	S 11,	52 5	96,151	5	89,608	s	55,743	s	(19,342)	s	(64,473)	s	56,672	\$	183,511	s	283,029	5	371,007	\$	537,363	\$	694,627	5	720,968
Quebec Mining Tax	US\$ '000	\$	(43,844)	5	(3.389)	S (2)	03) S	(2,162	s	(38)	\$		s		s	(485)	s	(7,318)	s	(7,288)	s	(6,242)	5	(6,064)	s	-	\$	(8,469)) \$	(386
Federal & Provincial Income Taxes	US\$'000	\$	(75,044)	5	3	\$	s		5		s		\$	5	s	ē.	s	(6,310)	\$	(13,348)	\$	(10,540)	\$	(0)	s	(20,665)	s	(24,180)) S	*
Atter-Tax Cashflow	US\$*000	\$	602,080	\$ {	(17,689)	\$ 23,	49 \$	\$2,537	\$	(6,581)	\$	(33,865)	s	(75,085)	\$	(45,616)	\$	107,517	\$	106,202	5	82,736	\$	81,914	ş	145,690	5	124,614	\$	25,955
Cumulative After-Tax Cashflow	US\$'000	5		5 ((17,689)	S 61	60 S	88,598	\$	82,016	S	48,151	S	(26,934)	S	(72,549)	S	34,968	\$	141,170	\$	223,906	S	305.820	S	451,511	S.	576,125	\$	602,080

PRO	PROJECTECONOMICS											
Pre-tax NPV at 5% discounting	USDS 000	\$428,514										
After-Tax NPV at 5% discounting	USDS 000	\$355,835										

RESPEC's economic analysis confirmed that the Casa Berardi Mineral Reserves are economically viable at the assumed metal price forecast. The undiscounted pre-tax cash flow is US\$721 million, and the undiscounted after-tax cash flow is US\$602 million. The pre-tax NPV at a 5% base discount rate is US\$429 million and the after-tax NPV at a 5% base discount is US\$356 million.

19.3 SENSITIVITY ANALYSIS

Project risks can be identified in both economic and non-economic terms. Key economic risks were examined by running cash flow sensitivities on after-tax NPV at a 5% discount rate. The following parameters were examined:

- / Gold metal price
- / US\$/C\$ Exchange Rate
- / Operating costs
- / Capital costs (Sustaining, salvage, and closure)

For the case that includes mine equipment capital leases, after-tax sensitivities have been calculated for -20% to +20%. The sensitivities are presented in Table 19-2.

275 275

Vielen En Des Con	Metal Prices	NPV at 5%
variance From base Case	(USS/oz Au)	(US\$ M)
-20%	1560	129
-10%	1755	248
0%	1950	356
10%	2145	459
20%	2340	562
	Exchange Rate	NPV at 5%
variance From Base Case	US\$/C\$	(US\$ M)
-20%	1.08	103
-10%	1.22	223
0%	1.35	356
10%	1.49	505
20%	1.62	674
N. P. P. C	Operating Costs	NPV at 5%
variance From Base Case	(US\$/t)	(US\$ M)
-20%	44.36	434
-10%	49.91	395
0%	55.45	356
10%	61.00	314
20%	66.55	272
	Capital Costs	NPV at 5%
variance From Base Case	(US\$ 000)	(US\$ M)
-20%	400.2	430
-10%	450.2	393
0%	500.3	356
10%	550.3	319
2007	(00.3	202

Table STYLEREF 1 \s 19-. Sensitivity Analysis Summary

A comparison of results for the various sensitivity cases using after-tax NPV at a 5% discount rate are presented in Figure 19-1.



Figure STYLEREF 1 \s 19-. After-tax NPV at 5% Sensitivity Analysis

The Mine is most sensitive to changes in metal prices and US\$/C\$ exchange rate followed by operating costs and capital costs.

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20.0 ADJACENT PROPERTIES

Hecla controls a 37km strike length of favorable geology for gold mineralization along the Casa Berardi Fault. There are no significant gold deposits located immediately adjacent to the Property's boundaries.

21.0 OTHER RELEVANT DATA AND INFORMATION

There is no other relevant data or information.

22.0 INTERPRETATION AND CONCLUSIONS

22.1 GEOLOGY AND MINERAL RESOURCES

22.1.1 GEOLOGY, MINERALIZATION AND DEPOSIT TYPES

The Casa Berardi Property is located in the northern part of the Abitibi Subprovince, within the Superior Province of the Archean core of the Canadian Shield. The regional geology is characterized by generally east-west assemblages of isoclinally folded and variably foliated and metamorphosed mafic volcanic rocks, flysch-type sedimentary iron formations, graphitic mudrocks, and a large granodioritic to granitic batholith. Structurally, the Property is within the Casa Berardi Break, a 15km wide corridor of strain that can be traced over 200km.

Three principal styles of mineralization have been recognized at Casa Berardi with gold occurring in: 1) quartz veins, 2) stockworks, and 3) banded iron formation. The mineralized zones are closely associated with the Casa Berardi Fault, which strikes east-west, dips 80° to the south, and was active along a disconformity between Archean volcanic and sedimentary rocks. The grade of gold mineralization associated with veins generally increases with increasing complexity, and contains only 1% to 3% sulfides, predominately arsenopyrite (the primary gold-bearing sulfide) and pyrite. Stockworks and gold-bearing banded iron formation generally contain lower grades. The Casa Berardi deposit can be classified as an Archean-age, sedimentary-hosted lode-gold deposit.

22.1.2 ADEQUACY OF DATA USED IN ESTIMATING THE PROJECT MINERAL RESOURCES

Compilation and subsequent verification of the Casa Berardi database has been performed by Hecla personnel since 2014. Hecla staff compiles and loads all drill-hole and other relevant data used for geologic and mineral envelope modeling. Prior to importing sample assay results, the Hecla geologists evaluate the QA/QC data for possible blank

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or CRM failures. All assays within a given part of the sample batches associated with the failures are rerun if the intervals are mineralized, and the re-assays used in the database if warranted. All data undergoes a verification process, after which any issues found are corrected, and a final database is produced.

During the site visit in September 2023, RESPEC observed the geology of the Casa Berardi deposit and confirmed the presence of alteration and quartz-veining that is conducive to gold mineralization. Mined versus modeled reconciliations, which were generally reasonable, were reviewed. RESPEC reviewed Hecla's process for compiling collar, down-hole survey, and assay drill-hole data, and the verification of that data once it is entered.

To further evaluate Hecla's database compilation and verification process, RESPEC conducted an audit of all 2021, 2022 and 2023 assay data. Only 20 discrepancies in 85,903 assay records were found, yielding an acceptable 0.023% failure rate. Hecla's productive mining history using models that relied on pre-2021 data compilations and positive mined versus modeled reconciliations provide an additional level of confidence in Hecla's assay databases.

RESPEC is satisfied that the data compilation and verification programs performed by Hecla on the Casa Berardi project drill-hole data adequately ensures that the data contained in the resulting database is sufficiently accurate. Given Hecla's database validation process, RESPEC's verification of all 2021, 2022 and 2023 assay data, and the fact that Hecla has been modeling and mining at Casa Berardi using data compiled and verified in a similar manner for ten years, the drill-hole database is considered to be sufficient for use in geological and mineral domain modeling, Mineral Resource and Mineral Reserve estimation, and mine planning.

22.1.3 MINERAL RESOURCES

Measured and Indicated Resources, effective December 31, 2023, consist of a total of 4.12Mt with an average gold grade of 6.39g Au/t containing 0.84Moz Au. Inferred Mineral Resources total 2.09Mt at 5.89g/t Au for 0.40Moz Au. The open pit resources are constrained within the designed pit while underground material was constrained by stope optimizations, reflecting the potential for underground and open pit mining and mill processing of the present Casa Berardi deposits.

Hecla considered density and quality of drill-hole data, the established continuity of the auriferous zones, and production experience in classification of the Casa Berardi gold Mineral Resources in the open pit and underground block models (Figure 1-1). Classification was applied based on the average distance of a given block centroid to drill-hole composites used to estimate the block grade, the proximity to mine workings, and the location within modeled mineral envelopes. RESPEC has evaluated Hecla's classification for the Casa Berardi Mineral Resources, and concludes the following:

- / Hecla's application of mean distances used to estimate a given block grade is a reasonable approach to classifying resources. Average and closest distances (isotropic and anisotropic) of composites relative to blocks is commonly used in the mining industry for resource classification, and satisfies S-K 1300 requirements;
- / It is reasonable to upgrade resource classification from Indicated to Inferred for blocks in close proximity to mined mineralization;
- / Hecla's data compilation and verification process generally ensures that the assay and other drill data that form the basis for mineral envelope modeling and resource estimation are generally reliable. RESPEC also verified

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gold assays in Hecla's database against certificates for 2021 to 2023, and found only 20 errors in 85,903 assay records. The data verification justifies the classification of material as Indicated.

- / All or parts of drill-hole assays determined to be unreliable, due to QA/QC failures or unverifiable/conflicting assays in historical holes, are generally removed or replaced in the database. This adds confidence in the drill-hole database used for resource modeling and justifies classification of some material as Indicated.
- / Hecla's geologic and mineral envelope models reasonably guide and constrain gold estimation, which increases confidence that the overall reported Mineral Resources.
- / The general production history and reasonable mined-versus-model reconciliation results validates past models and estimates, and justifies the continued classification of material as Measured and Indicated.

22.1.4 EXPLORATION POTENTIAL

RESPEC believes that exploration potential remains on the Property along strike and at depth of known gold mineralization along the Casa Berardi Fault, both within and outside the current mine areas. Geophysics and drilling will be important exploration tools for making new discoveries at Casa Berardi, particularly for gold mineralization concealed by glacial till and other post-mineral overburden material outside the mine areas.

22.2 MINING AND MINERAL RESERVES

- / Mineral Reserves have been classified in accordance with the definitions for Mineral Reserves in S-K 1300. Mineral Reserves as of December 31, 2023 total 14.38Mt grading 2.75g/t Au containing 1.27Moz Au.
- / Measured and Indicated Mineral Resources were converted to Proven and Probable Mineral Reserves, respectively. Inferred Mineral Resources were not converted to Mineral Reserves.
- / The mining methods at Casa Berardi are well established with many years of operating experience, providing the necessary expertise to, safely and economically, extract the Mineral Reserves.
- / Both transverse and longitudinal longhole stoping methods are employed underground. Challenging ground conditions require the use of various types of backfill to provide the necessary support.
- / Underground mining will come from the West Mine in 2024 as the East mine was abandoned in 2023 to allow for backfilling the adjoining EMCP pit. Mining from various open pits on surface represents the bulk of the Mineral Reserves to be mined, accounting for approximately 98.5% of the Casa Berardi Mineral Reserves.
- / The current LOM period is estimated to be 14 years ending in 2037. Underground Mineral Reserves totaling 209kt will be mined during the first year while open pit Mineral Reserves totaling 14.2Mt will be mined over the entire LOM period.
- / The LOM plan considers a 30-month delay in mining to allow for the expected permitting timeline.

22.3 MINERAL PROCESSING

- / Metallurgical and production models have been developed from extensive baseline sampling and are further adjusted annually to account for process and metallurgical improvements and changes.
- / The test work performed on open pit material was used to estimate gold recovery, while operating data was used for underground material. Extensive test work has been performed by an external laboratory on future open pit

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material (West Mine Crown Pillar (WMCP) and Principal). WMCP test results were used to inform the long-term mine plan.

Test work programs, both internal and external, continue to be performed to support current operations and potential improvements.

The current process facilities are appropriate for the mineralization material extracted from the mine. The flowsheet, equipment, and infrastructure are expected to support the current LOM plan.

22.4 INFRASTRUCTURE

- / Hecla is currently mining at Casa Berardi and has both open pit and underground infrastructure, as well as a mill. Hecla plans to develop three additional open pits (Principal, WMCP, and F134) and associated waste rock storage facilities, and other surface infrastructure for future mine operations.
- / With the increase of pit production, an expanded maintenance facility will be required. A capital allowance is included in cashflow model.

22.5 ENVIRONMENT

- / Hecla has sufficiently assessed the environmental impact of the operation, and subsequent closure and restoration requirements such that Mineral Resources and Mineral Reserves can be declared, and the mine plan deemed appropriate and achievable. Closure provisions are appropriately considered, and monitoring programs are in place.
- / Hecla has developed a community relations plan to identify and ensure an understanding of the needs of the surrounding communities and to determine appropriate programs for addressing those needs. Hecla appropriately monitors socio-economic trends, community perceptions, and mining impacts.
- / Current permits held by Hecla for the Property are sufficient to ensure that the planned surface and underground mining activities which will take place into 2026 are conducted in accordance with the local, provincial, and national regulatory frameworks.
- / Beyond 2026, the LOM plan includes the development of three additional open pits along with associated waste rock storage facilities and other infrastructure. This planned development may require an EIA to be performed at the Property. Hecla expects to submit a project notice to the Provincial MELCCFP in 2024 that describes the proposed development and proposed plan of operations. Hecla expects from the EIA process that all necessary permits will be obtained so that mining of the planned open pits can take place in accordance with local, provincial, and national regulatory frameworks.
- / There are currently no known environmental, permitting, or social/community risks that could impact the extraction of Mineral Resources or Mineral Reserves.

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23.0 RECOMMENDATIONS

It is normal that there are not many recommendations for mature operations like Casa Berardi. RESPEC offers the following recommendations by area.

23.1 GEOLOGY AND MINERAL RESOURCES

RESPEC makes the following recommendations regarding QA/QC procedures and evaluations:

- / Investigate the high bias in ALS pulp duplicate assays relative to the Labomine and Swastika lab original assays;
- / Discontinue external check assays for coarse reject material;
- / Implement procedures that will reduce CRM mislabeling or "swaps";
- / Evaluate duplicate, CRM, blank and check assays independently for each lab;
- / Track CRM assay failures by lab for each standard, and document steps taken to follow up on the failures;
- / Evaluate duplicate data on plots that show individual sample pairs. Averages of data provides an overall measure of assay bias, but does not characterize assay variability, which is usually a function of natural heterogeneity of gold in the deposits. Individual plots also better characterizes bias; and
- / Investigate blank assay values that exceed a 5x detection limit, and particularly those that are at or above potential mining cutoff grades. Evaluate relative to preceding assay values to determine if contamination could be occurring from previously processed mineralized samples. Document follow-up process and results.

The primary issue noted in the resource models by RESPEC is significant grade and tonne smoothing, particularly in the open pit models. RESPEC believes the models could be improved by further confining and separating relatively low- and high-grade mineralization within the 1.0g/t Au and 4.0g/t Au envelopes currently in use. An immediate improvement could be realized in the open pit models by using both sets of wireframes, such that the higher-grade mineralization within the structural zone wireframes would be separated from the lower-grade mineralization between the 4.0g/t Au and the 1.0g/t Au envelopes.

The best method to minimize smoothing and more accurately represent grade distribution in a mineral estimate is to physically constrain the model with domains in proper geological context. Population distribution plots of all gold values provide a starting point for identification of the different assay populations that are likely characterized by specific lithologic, alteration and/or mineralogical characteristics. Modeling gold domains at grade breaks evident on plots of these types would limit grade smoothing to within related assay populations. Domain modeling while reviewing core and log data will help to determine the geological context of each grade population.

The primary recommendations to resource estimation made by RESPEC are:

- / Apply tighter constraints to Mineral Resource estimates with additional geologically defined mineral envelopes.
- / Increase drilling density for open pit deposits where mineralization is missed and therefore cannot be modeled because the current spacing is insufficient.

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- / Use the same block dimensions based on the SMU for all open pit block models.
- / Add mapping of pit faces and floors, and blasthole logs to Project database, and incorporate when updating geologic and mineral envelope models.
- / For classification, density of drilling could be applied directly to classification by adding the number of holes and/or composites used to estimate a given block grade to classification criteria in conjunction with distances to composites.

23.2 MINING AND MINERAL RESERVES

- / Review marginal underground Mineral Resources for extraction due to higher spot prices in the near term.
- / Continue to convert Mineral Resources to Mineral Reserves to extend the underground operation past 2024, and extend open pit mining where possible.
- / Investigate adding marginal underground Measured and Indicated Mineral Resources to the Mineral Reserves.
- / Since the existing cost model is based on contractor rates, an evaluation of a complete haulage model will provide a more comprehensive understanding of late-stage owner operator costs. It would be expected that mining operating costs could be lowered for future studies.

23.3 MINERAL PROCESSING

/ Continue to conduct additional metallurgical testing to better understand the processing of mineralization from the Principal and WMCP pits. This will aid in projecting metallurgical recoveries for these pits and will indicate any variability in gold recovery and grindability of the material.

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25.0 RELIANCE ON INFORMATION PROVIDED BY THE REGISTRANT

This TRS has been prepared by RESPEC for Hecla. The information, conclusions, opinions, and estimates contained herein are based on:

- / Information available to RESPEC at the time of preparation of this TRS,
- / Assumptions, conditions, and qualifications as set forth in this TRS, and
- / Data, reports, and other information supplied by Hecla and other third party sources.

RESPEC has not researched property title or mineral rights for Casa Berardi as we consider it reasonable to rely on the Hecla personnel at Casa Berardi responsible for maintaining this information.

RESPEC has relied on Hecla for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from the Property in the Executive Summary and Section 19.0 As the Property has been in operation for over 30 years, Hecla has considerable experience in this area.

RESPEC has taken all appropriate steps, in its professional opinion, to ensure that the above information from Hecla is sound.

Except for the purposes legislated under provincial securities laws, any use of this TRS by any third party is at that party's sole risk.

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26.0 DATE AND SIGNATURE PAGE

This report titled "Technical Report Summary on the Casa Berardi Mine, Northwestern Québec, Canada" with an effective date of December 31, 2023, was prepared and signed by:

Dated at Reno, NV February 15, 2023 Signed RESPEC Company, LLC RESPEC Company, LLC

Dated at Bothell, WA February 15, 2023 291 291 Signed SLR Consulting US LLC SLR Consulting US LLC
Exhibit 96.3

APPENDIX A Claims Table

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APPENDIX A: CLAIMS TABLE

A.1 Claims Table

Project	Titleholde r	Type of Title	Title No	NS R	Expiry Date (YYYYMMD D)	Area (ha)	Registration Date (YYYYMMD D)	Required Fees (C\$)	Required Work (C\$)	Excess Work (C\$)
Casa Berardi Mine	Hecla Québec Inc.	BM (Mining Lease)	1054	-	20241005	92.56	20201006	\$4,974.03	\$0.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097901	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$461,119.67
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097902	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$163,103.11
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097903	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$3,819.94
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097904	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,019.94
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097905	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$13,560.17
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097906	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,019.94
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097930	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$250,023.64
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097931	-	20240729	37.02	20020911	\$73.25	\$2,500.00	\$158,855.16

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Casa Berardi Mine	Hecla Québec Inc.	CDC	1097932	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,019.94
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097957	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.42
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097958	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,008.25
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097959	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$149,197.80
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097960	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$138,113.25
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097961	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$125,685.18
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097962	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,008.25
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097963	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,008.25
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097964	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$82,512.45
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097965	-	20240729	43.25	20020911	\$73.25	\$2,500.00	\$60,042.12
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097966	-	20240729	23.90	20020911	\$37.50	\$1,000.00	\$1,378,638.84
Casa	Hecla Québec Inc.	CDC	1097967	-	20240729	41.75	20020911	\$73.25	\$2,500.00	\$305,600.11

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Berardi Mine										
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097968	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,014.09
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097991	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,002.41
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097992	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,002.41
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097993	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,002.41
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097994	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,002.41
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097995	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,002.41
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097996	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,002.41
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097997	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,008.25
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097998	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,008.25
Casa Berardi Mine	Hecla Québec Inc.	CDC	1097999	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$14,641.84
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098000	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,008.25
Casa	Hecla Québec Inc.	CDC	1098001	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,008.25

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Berardi Mine										
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098002	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,008.25
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098041	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$23,697.41
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098074	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098085	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098086	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$429.32
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098087	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$21,188.88
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098088	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$30,594.09
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098089	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$32,912.57
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098090	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098091	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098092	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$0.00
Casa	Hecla Québec Inc.	CDC	1098093	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$0.00

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Berardi Mine										
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098094	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$4,610.36
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098095	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$32,415.08
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098109	-	20240509	42.75	20020911	\$73.25	\$2,500.00	\$336,334.84
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098110	-	20240509	40.23	20020911	\$73.25	\$2,500.00	\$91,214.22
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098111	-	20240509	40.48	20020911	\$73.25	\$2,500.00	\$131,809.79
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098112	-	20240509	40.74	20020911	\$73.25	\$2,500.00	\$1,273,375.74
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098113	-	20240509	42.26	20020911	\$73.25	\$2,500.00	\$403,750.23
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098114	-	20240509	43.76	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098115	-	20240509	51.18	20020911	\$73.25	\$2,500.00	\$444,595.04
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098124	-	20240509	29.58	20020911	\$73.25	\$2,500.00	\$622,121.12
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098125	-	20240509	4.98	20020911	\$37.50	\$1,000.00	\$0.00
Casa	Hecla Québec Inc.	CDC	1098126	-	20240509	20.03	20020911	\$37.50	\$1,000.00	\$5,055.24

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Berardi Mine										
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098127	-	20240509	16.16	20020911	\$37.50	\$1,000.00	\$801.54
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098128	-	20240509	13.40	20020911	\$37.50	\$1,000.00	\$200,575.71
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098129	-	20240509	12.86	20020911	\$37.50	\$1,000.00	\$99,315.13
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098130	-	20240509	12.32	20020911	\$37.50	\$1,000.00	\$18,436.02
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098131	-	20240509	0.16	20020911	\$37.50	\$1,000.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098132	-	20240509	9.35	20020911	\$37.50	\$1,000.00	\$13,818.50
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098133	-	20240509	5.78	20020911	\$37.50	\$1,000.00	\$57,451.47
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098134	-	20240729	2.32	20020911	\$37.50	\$1,000.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098135	-	20240509	11.42	20020911	\$37.50	\$1,000.00	\$59,185.51
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098136	-	20240729	14.22	20020911	\$37.50	\$1,000.00	\$369,866.50
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098141	-	20240509	6.06	20020911	\$37.50	\$1,000.00	\$0.00
Casa	Hecla Québec Inc.	CDC	1098142	-	20240509	48.61	20020911	\$73.25	\$2,500.00	\$6,782.24

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Berardi Mine										
Casa Berardi Mine	Hecla Québec Inc.	CDC	1098149	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	2639908	-	20250308	55.81	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Mine	Hecla Québec Inc.	CDC	2639909	-	20250308	55.81	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2639910	-	20250308	55.81	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2639911	-	20250308	55.82	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2639912	-	20250308	55.82	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2639913	-	20250308	55.82	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2639914	-	20250308	55.82	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2639915	-	20250308	55.82	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2639916	-	20250308	55.82	20220309	\$73.25	\$1,200.00	\$0.00

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Casa Berardi Regional	Hecla Québec Inc.	CDC	2639917	-	20250308	55.82	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2639918	-	20250308	55.82	20220309	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	BM (Mining Lease)	768	-	20240428	397.09	19880429	\$22,304.47	\$0.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	BM (Mining Lease)	833	-	20241217	84.35	19951218	\$4,533.81	\$0.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097832	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$10,929.20
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097833	-	20240509	55.90	20020911	\$73.25	\$2,500.00	\$10,390.16
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097834	-	20240509	55.90	20020911	\$73.25	\$2,500.00	\$7,215.16
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097835	-	20240509	55.90	20020911	\$73.25	\$2,500.00	\$7,215.16
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097836	-	20240509	55.90	20020911	\$73.25	\$2,500.00	\$11,021.09
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097837	-	20240509	55.90	20020911	\$73.25	\$2,500.00	\$9,215.16

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097840	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$10,020.35
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097841	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$8,709.20
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097842	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$8,784.20
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097843	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$7,209.20
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097844	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$9,709.20
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097845	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$10,157.33
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097846	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$9,634.38
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097847	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$5,307.12
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097848	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$9,209.20
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097849	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$9,209.20

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097851	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$10,503.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097852	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$9,203.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097853	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$11,703.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097854	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$11,703.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097855	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$9,203.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097856	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$7,300.55
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097857	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$9,203.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097858	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$9,260.18
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097859	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$11,703.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097860	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$11,703.23

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097861	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$11,703.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097862	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$11,703.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097863	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$43,631.60
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097864	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$22,578.52
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097865	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$60,153.79
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097866	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$5,703.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097867	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$10,497.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097868	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097869	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097870	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097871	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097872	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097873	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097874	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097875	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097876	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097877	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097878	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$74,111.83
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097879	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$11,697.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097880	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$11,691.31

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097881	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$11,691.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097882	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$11,691.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097883	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$11,691.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097884	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$11,691.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097885	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$44,427.36
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097886	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$10,491.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097895	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$9,285.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097896	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$128,248.74
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097897	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$609,898.82
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097898	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$788,714.03

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097899	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$1,165,342.42
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097900	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$1,529,499.74
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097907	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097908	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097909	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$11,691.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097910	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$16,853.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097911	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$28,943.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097912	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$32,009.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097913	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$34,961.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097914	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$25,094.31

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097915	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$27,248.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097916	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$24,815.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097917	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$20,138.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097918	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$27,615.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097919	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$28,240.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097920	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$29,716.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097921	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$33,625.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097922	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$32,801.31
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097925	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097926	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$44,660.16

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097927	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$26,075.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097928	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$62,140.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097929	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$68,281.47
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097933	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$14,185.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097934	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097935	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097936	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$25,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097937	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$25,512.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097938	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$24,561.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097939	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$16,687.34

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097940	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097941	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097942	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097943	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097944	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097945	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097946	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$11,685.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097947	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$22,986.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097948	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$24,077.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097949	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$21,582.34

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097950	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$14,836.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097951	-	20240509	55.85	20020911	\$73.25	\$2,500.00	\$16,105.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097952	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097953	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097954	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097955	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097956	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097969	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$123,152.89
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097970	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$117,817.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097971	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097972	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097973	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$27,642.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097974	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$81,151.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097975	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$27,430.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097976	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$24,065.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097977	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097978	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097979	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097980	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097981	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1097982	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097983	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097984	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097985	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097986	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097987	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097988	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1097989	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$11,679.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098003	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098004	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1098005	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098006	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098007	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098008	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$148,405.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098009	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098010	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098011	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$1,180,088.20
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098012	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$2,213,769.20
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098013	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098014	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1098015	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098016	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098017	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$131,221.23
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098018	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098019	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098020	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$19,636.06
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098021	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$19,688.79
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098022	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$20,879.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098023	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098024	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1098025	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098026	-	20240509	55.83	20020911	\$73.25	\$2,500.00	\$11,673.41
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098027	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098028	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098029	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098030	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098031	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098032	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098033	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098034	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1098035	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098036	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098037	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098038	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098039	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098040	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098042	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098043	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098044	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098045	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$11,667.46

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1098061	-	20240509	29.17	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098062	-	20240509	25.83	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098063	-	20240509	25.11	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098064	-	20240509	25.33	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098065	-	20240509	25.36	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098066	-	20240509	55.77	20020911	\$73.25	\$2,500.00	\$11,637.63
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098067	-	20240509	55.88	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098068	-	20240509	25.81	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098069	-	20240509	27.82	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098070	-	20240509	28.54	20020911	\$73.25	\$2,500.00	\$0.00

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1098071	-	20240509	38.86	20020911	\$73.25	\$2,500.00	\$1,552.08
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098072	-	20240509	55.87	20020911	\$73.25	\$2,500.00	\$1,257.90
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098076	-	20240509	4.89	20020911	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098077	-	20240509	14.30	20020911	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098078	-	20240509	16.88	20020911	\$37.50	\$1,000.00	\$1,417.65
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098079	-	20240509	36.16	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098080	-	20240509	38.65	20020911	\$73.25	\$2,500.00	\$1,426.83
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098081	-	20240509	36.52	20020911	\$73.25	\$2,500.00	\$156.44
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098082	-	20240509	36.82	20020911	\$73.25	\$2,500.00	\$335.37
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098083	-	20240509	50.28	20020911	\$73.25	\$2,500.00	\$8,363.25

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1098084	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$4,419.99
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098096	-	20240509	55.86	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098104	-	20240509	25.51	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098105	-	20240509	13.04	20020911	\$37.50	\$1,000.00	\$69,240.52
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098106	-	20240509	5.21	20020911	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098107	-	20240509	6.93	20020911	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098108	-	20240509	40.38	20020911	\$73.25	\$2,500.00	\$2,458.64
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098118	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098119	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$388.96
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098120	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$2,718.82

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1098121	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$3,092.91
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098122	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$9,534.22
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098123	-	20240509	55.84	20020911	\$73.25	\$2,500.00	\$10,650.64
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098137	-	20240509	34.60	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098138	-	20240509	9.95	20020911	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098143	-	20240509	52.13	20020911	\$73.25	\$2,500.00	\$8,166.63
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098144	-	20240509	43.22	20020911	\$73.25	\$2,500.00	\$4,152.49
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098145	-	20240509	36.24	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098146	-	20240509	7.95	20020911	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098147	-	20240509	9.91	20020911	\$37.50	\$1,000.00	\$0.00

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1098150	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098151	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098152	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098153	-	20240509	55.82	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098157	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098158	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098159	-	20240509	55.89	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098160	-	20240509	36.25	20020911	\$73.25	\$2,500.00	\$3,327.12
Casa Berardi Regional	Hecla Québec Inc.	CDC	1098161	-	20240509	30.31	20020911	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133304	-	20260111	26.71	20050902	\$73.25	\$2,500.00	\$0.00

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1133305	-	20260111	30.05	20050902	\$73.25	\$2,500.00	\$1,367.50
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133306	-	20260111	30.76	20050902	\$73.25	\$2,500.00	\$1,831.01
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133307	-	20260111	30.55	20050902	\$73.25	\$2,500.00	\$1,693.91
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133308	-	20260111	30.52	20050902	\$73.25	\$2,500.00	\$739.61
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133309	-	20260111	0.10	20050902	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133310	-	20260111	55.87	20050902	\$73.25	\$2,500.00	\$48,925.74
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133311	-	20260111	55.87	20050902	\$73.25	\$2,500.00	\$18,223.53
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133312	-	20260111	55.87	20050902	\$73.25	\$2,500.00	\$84,365.34
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133313	-	20260111	55.87	20050902	\$73.25	\$2,500.00	\$14,574.89
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133314	-	20260111	55.87	20050902	\$73.25	\$2,500.00	\$44,906.41

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1133315	-	20260111	30.06	20050902	\$73.25	\$2,500.00	\$1,374.03
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133316	-	20260111	28.05	20050902	\$73.25	\$2,500.00	\$61.84
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133317	-	20260111	27.33	20050902	\$73.25	\$2,500.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133318	-	20260111	17.00	20050902	\$37.50	\$1,000.00	\$3,798.08
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133319	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$18,217.01
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133320	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$47,123.47
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133321	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$42,120.43
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133322	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$18,217.01
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133323	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$18,217.01
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133324	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$47,409.72

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1133325	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$38,229.17
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133326	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$49,890.84
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133327	-	20260111	50.96	20050902	\$73.25	\$2,500.00	\$15,018.14
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133328	-	20260111	41.56	20050902	\$73.25	\$2,500.00	\$42,091.96
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133329	-	20260111	38.98	20050902	\$73.25	\$2,500.00	\$15,118.74
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133330	-	20260111	19.70	20050902	\$37.50	\$1,000.00	\$23,627.26
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133331	-	20260111	55.85	20050902	\$73.25	\$2,500.00	\$18,210.48
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133332	-	20260111	55.85	20050902	\$73.25	\$2,500.00	\$18,210.48
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133333	-	20260111	55.85	20050902	\$73.25	\$2,500.00	\$18,210.48
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133334	-	20260111	55.85	20050902	\$73.25	\$2,500.00	\$18,210.48

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1133335	-	20260111	55.85	20050902	\$73.25	\$2,500.00	\$18,210.48
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133336	-	20260111	55.85	20050902	\$73.25	\$2,500.00	\$18,210.48
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133337	-	20260111	55.85	20050902	\$73.25	\$2,500.00	\$18,210.48
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133338	-	20260111	30.34	20050902	\$73.25	\$2,500.00	\$1,556.82
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133339	-	20260111	2.07	20050902	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133340	-	20260111	19.63	20050902	\$37.50	\$1,000.00	\$5,515.03
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133341	-	20260111	25.56	20050902	\$73.25	\$2,500.00	\$213,428.07
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133342	-	20260111	7.94	20050902	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133343	-	20260111	55.87	20050902	\$73.25	\$2,500.00	\$18,223.53
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133344	-	20260111	55.87	20050902	\$73.25	\$2,500.00	\$346,192.91

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1133345	-	20260111	7.93	20050902	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133346	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$18,217.01
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133347	-	20260111	55.86	20050902	\$73.25	\$2,500.00	\$18,217.01
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133348	-	20240202	17.21	20050902	\$37.50	\$1,000.00	\$118,933.76
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133349	-	20240202	19.34	20050902	\$37.50	\$1,000.00	\$28,391.61
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133350	-	20240202	19.04	20050902	\$37.50	\$1,000.00	\$27,853.47
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133351	-	20240202	5.58	20050902	\$37.50	\$1,000.00	\$3,709.27
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133352	-	20240202	42.81	20050902	\$73.25	\$2,500.00	\$140,180.52
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133353	-	20240202	50.64	20050902	\$73.25	\$2,500.00	\$231,644.87
Casa Berardi Regional	Hecla Québec Inc.	CDC	1133354	-	20240202	48.92	20050902	\$73.25	\$2,500.00	\$143,711.70

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Casa Berardi Regional	Hecla Québec Inc.	CDC	1133355	-	20240202	15.49	20050902	\$37.50	\$1,000.00	\$21,485.58
Casa Berardi Regional	Hecla Québec Inc.	CDC	1134230	-	20240509	7.97	20051104	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	1134231	-	20240509	5.78	20051104	\$37.50	\$1,000.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2438781	-	20250329	55.82	20160330	\$73.25	\$1,800.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2443561	-	20250426	7.99	20160427	\$37.50	\$750.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2449153	-	20250614	55.89	20160615	\$73.25	\$1,800.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491530	-	20240503	55.84	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491531	-	20240503	55.81	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491532	-	20240503	55.80	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491533	-	20240503	55.80	20170504	\$73.25	\$1,200.00	\$0.00

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Casa Berardi Regional	Hecla Québec Inc.	CDC	2491534	-	20240503	55.84	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491535	-	20240503	55.84	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491536	-	20240503	55.84	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491537	-	20240503	55.84	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491538	-	20240503	55.84	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491539	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491540	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491541	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491542	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491543	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00

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Casa Berardi Regional	Hecla Québec Inc.	CDC	2491544	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491545	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491546	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491547	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491548	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491549	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491550	-	20240503	55.83	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491551	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491552	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491553	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00

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Casa Berardi Regional	Hecla Québec Inc.	CDC	2491554	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491555	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491556	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491557	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491558	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491559	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491560	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491561	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491562	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491563	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00

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Casa Berardi Regional	Hecla Québec Inc.	CDC	2491564	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491565	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491566	-	20240503	55.82	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491567	-	20240503	55.81	20170504	\$73.25	\$1,200.00	\$0.00
Casa Berardi Regional	Hecla Québec Inc.	CDC	2491568	-	20240503	55.81	20170504	\$73.25	\$1,200.00	\$0.00
Totals		CDC	2491569	-	20240503	55.81	20170504	\$73.25	\$1,200.00	\$0.00

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APPENDIX B

Drill-Hole and Rock-Chip Sample Database Structures

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APPENDIX b: Drill-Hole and Rock-Chip Sample Database Structures

B.1 Drill-Hole and Rock-Chip Sample Database Structures

Table	Description	Main Fields
	·	Drill-Hole Sample Database
Header	Collar table	Hole_Id, Hole_Type, Max_Depth, Orig_Grid_Id, X, Y, Z, Orig_Survey_Method, Orig_Survey_Date, Orig_Survey_By, Orig_Survey_Company, Lease_Id, Prospect, Hole_Status, Date_Started, Date_Completed, Validated, Validated_Date, Validated_By, Responsible_Person, Historic_Hole_Id, Hole_Purpose, Map_Sheet, Target, Hole_Cemented, Equipment_In_Hole, Casing_Pulled, Casing_Length, Water_Intersected, Hole_Location, Plugged, File_Location, Program_Type, Comments
Survey	Deviation tests	Hole_Id, Depth, Survey_Method, Dip, Azimuth, Mag, Mag_Dip, Gravity, Date_Surveyed, Survey_Company, Survey_Operator, Survey_Instrument, Comments, Deviation, Data_Quality, Priority
Assay	Gold assay results	SampleID, Hole_ID, Depth_From, Depth_To, Sample_Type, Au_Batch_No, Au_GenericMethod, Au_ppm, Sampled_Date, Sampled_By, Comments, OR_TRA_Def_ppm, As_ppm
Lithology	Lithology main table	Hole_Id, Depth_From, Depth_To, Interval_Length, Priority, Lith_Plot, Lith1_Code, Lith1_Texture, Lith1_Structure, Lith1_Grainsize, Lith_Description, Colour_Description, Relogged_By, Comments, Data_Source, Logged_By, Logged_Date
Mineral0	Mineral Main Table	Hole_Id, Depth_From, Depth_To, Interval_Length, Priority, Min1_Code, Min1_Pct, Min1_Style, Min2_Code, Min2_Pct, Min2_Style, Min3_Code, Min3_Pct, Min3_Style, Min4_Code, Min4_Pct, Min4_Style, Min5_Code, Min5_Pct, Min5_Style, Comments, Logged_Date, Nom_Complet, Data_Source
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Structure0	Structure Main Table	Hole_Id, Depth_From, Depth_To, Interval_Length, Structure_Type, Priority, True_Width, Structure_Class, Younging_Indicator, Plane_Type, Plane_Intensity, Plane_Azimuth, Plane_Dip, Lineation_Type, Lineation_Trend, Lineation_Plunge, Lineation_Delta, Kinematic_Indicator, Movement_Sense, Computed_Plane_Azimuth, Computed_Plane_Dip, Computed_Lineation_Trend, Computed_Lineation_Plunge, Comments, Core_Angle, Data_Source				
Vein0	Vein Main Table	Hole ID, Depth From, Depth To, Interval Length, Priority, Vein1 Code, Vein1 Style, Vein1 Pct, Vein1 Core Angle, Vein1 Colour, Vein1 Colour Tone, Vein1 Min1 Code, Vein1 Min1 Pct, Vein1 Min2 Code, Vein1 Min2 Pct, Vein1 Min3 Code, Vein1 Min3 Pct, Vein2 Code, Vein2 Style, Vein2 Pct, Vein2 Core Angle, Vein2 Colour, Vein2 Colour Tone, Vein2 Min1 Code, Vein2 Min1 Pct, Vein2 Min2 Code, Vein2 Min3 Pct, Vein3 Code, Vein3 Code, Vein3 Core Angle, Vein3 Colour Tone, Vein3 Code, Vein3 Style, Vein3 Pct, Vein3 Core Angle, Vein3 Colour Tone, Vein3 Min1 Pct, Vein3 Min1 Code, Vein3 Min1 Pct, Vein3 Min2 Pct, Vein3 Code, Vein3 Min3 Pct, Vein3 Code, Vein3 Min3 Pct, Vein3 Code, Vein3 Min3 Pct, Vein3 Style, Vein3 Min2 Pct, Vein3 Min3 Pct, Vein3 Min3 Pct, Description, Data Source				
		Rock-Chip Sample Database				
Table	Description	Main Fields				
Collar	Main table	Hole_id, X, Y, Z, Max_depth, Azimuth, Dip				
Survey	Deviation Tests	Hole_id, Depth, Dip, Azimuth				
Assays	Gold Assay Results	Hole_id, Depth_from, Depth_to, Samp_id, Or_tra , Tag, Geo, Geo_1, Geo_2				
Litho_0	Geology Main Table	Hole_id, Depth_from, Depth_to, TITRE, DESCRIPTIO, SELECTCODE, CODE_TRACE, SU_TYPE, VEINE_TYPE, ALT_TYPE, DEF_TYPE				
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APPENDIX C Capping Levels

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APPENDIX C: Capping Levels

C.1 Capping Levels

Zone	Location	Lens Numbers	Core Capping Levels (g/t Au)	Chip Capping Levels (g/t Au)
104	Underground	03, 04	No capping	No capping
107	UNDERGROUND	02, 03	18.5	42
Inter	UNDERGROUND	01, 02, 04	18	18
105	OPEN PIT	01	46	46
105	OPEN PIT	02	51	51
105	OPEN PIT	03	11	11
105	OPEN PIT	04	19	19
105	OPEN PIT	06	No capping	No capping
114	OPEN PIT	01	16	16
Lower Inter	UNDERGROUND	01	120	120
109	UNDERGROUND	01, 02, 03, 04, 05, 06	45	45
113	UNDERGROUND	Main, 05, 07	175	100
113	UNDERGROUND	04	35	35
113	UNDERGROUND	06	50	50
113	UNDERGROUND	12	14	14
113	UNDERGROUND	41, 42, 43, 44	17	17
113	UNDERGROUND	61	No capping	No capping
115	UNDERGROUND	01	100	100
115	UNDERGROUND	02, 03, 04, 05, 06	50	50
116	UNDERGROUND	01	No capping	No capping
117	UNDERGROUND	Main	35	35
118	UNDERGROUND	82,83	14	14
118	UNDERGROUND	09, 34	15	15
118	UNDERGROUND	05	19	19
118	UNDERGROUND	11, 12, 13, 41, 42	24	24
118	UNDERGROUND	47	25	25
118	UNDERGROUND	62, 63, 64	34	34
118	UNDERGROUND	07	40	40
118	UNDERGROUND	10	43	36

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Zone	Location	Lens Numbers	Core Capping Levels (g/t Au)	Chip Capping Levels (g/t Au)
118	UNDERGROUND	06	45	45
118	UNDERGROUND	20, 21, 22, 27	50	40
118	UNDERGROUND	31	51	50
118	UNDERGROUND	43, 44, 45	65	65
118	UNDERGROUND	14,15,16,17,18,81	No capping	No capping
119	UNDERGROUND	01	20	20
119	UNDERGROUND	02	No capping	No capping
119	UNDERGROUND	03, 04	14	No capping
119	UNDERGROUND	05	11	11
119	UNDERGROUND	06	13	13
119	UNDERGROUND	07	12	12
121	UNDERGROUND	01, 02	30	30
123	UNDERGROUND	09	12	12
123	UNDERGROUND	10, 14	14	14
123	UNDERGROUND	15, 16	16	16
123	UNDERGROUND	19	22	22
123	UNDERGROUND	12	32	27
123	UNDERGROUND	05	39	40
123	UNDERGROUND	04	42	42
123	UNDERGROUND	03	64	40
123	UNDERGROUND	01	68	68
123	UNDERGROUND	02	70	68
123	UNDERGROUND	17,18	No Capping	No Capping
123	OPEN PIT	23	06	06
123	OPEN PIT	21	08	08
123	OPEN PIT	09	13	13
123	OPEN PIT	05	39	39
123	OPEN PIT	17, 18, 22, 24, 25	No Capping	No Capping
124	UNDERGROUND	52, 61	15	15
124	UNDERGROUND	30	20	20
124	UNDERGROUND	17	30	20
124	UNDERGROUND	86	30	30
124	UNDERGROUND	40, 41, 42 ,43	35	35
124	UNDERGROUND	81, 82, 87	45	45

Zone	Location	Lens Numbers	Core Capping Levels (g/t Au)	Chip Capping Levels (g/t Au)
124	UNDERGROUND	83	45	48
124	UNDERGROUND	84	45	16
124	UNDERGROUND	85	45	20
124	UNDERGROUND	12	64	64
124	UNDERGROUND	13	64	17
124	UNDERGROUND	22	66	66
124	UNDERGROUND	15, 16	75	75
124	UNDERGROUND	11, 18, 19, 32, 33, 35, 36, 37	No Capping	No Capping
124	OPEN PIT	32	6	6
124	OPEN PIT	31, 36	7	7
124	OPEN PIT	33, 37 51, 52	9	9
124	OPEN PIT	14, 20 35, 38	10	10
124	OPEN PIT	11	11	11
124	OPEN PIT	87	12	12
124	OPEN PIT	86	17	17
124	OPEN PIT	15	18	18
124	OPEN PIT	30	20	20
124	OPEN PIT	41, 43	33	33
124	OPEN PIT	81	46	46
124	OPEN PIT	13	66	66
124	OPEN PIT	22	67	67
124	OPEN PIT	62	No Capping	No Capping
128	UNDERGROUND	01	18	18
129	UNDERGROUND	01	No capping	No capping
134	OPEN PIT	02	9	9
134	OPEN PIT	01	16	16
134	OPEN PIT	05	17	17
134	OPEN PIT	4	19	19
134	OPEN PIT	08, 09, 10	No Capping	No Capping
139	UNDERGROUND	01	No capping	No capping
146	UNDERGROUND	08	8	8
146	UNDERGROUND	09	14	14
146	UNDERGROUND	01, 03, 05, 06, 07, 10	No Capping	No Capping
146	OPEN PIT	01	No Capping	No Capping

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Zone	Location	Lens Numbers	Core Capping Levels (g/t Au)	Chip Capping Levels (g/t Au)
146	OPEN PIT	03, 04	8	8
148	UNDERGROUND	19, 20	8	8
148	UNDERGROUND	21, 22	9	9
148	UNDERGROUND	24	11	11
148	UNDERGROUND	10	13	13
148	UNDERGROUND	09	14	14
148	UNDERGROUND	05, 25	18	18
148	UNDERGROUND	01	54	-
148	UNDERGROUND	08	20	20
148	UNDERGROUND	01, 02, 03, 04, 05, 07	50	50
148	UNDERGROUND	18	No Capping	No Capping
148	OPEN PIT	14, 16	3	3
148	OPEN PIT	11	5	5
148	OPEN PIT	07, 08	12	12
148	OPEN PIT	09	14	14
148	OPEN PIT	03	20	20
148	OPEN PIT	01, 04	36	36
148	OPEN PIT	02, 06, 12, 13	50	50
148	OPEN PIT	17	No Capping	No Capping
152	UNDERGROUND	05	8	8
152	UNDERGROUND	01	20	13
152	UNDERGROUND	02, 03	20	20
152	UNDERGROUND	09	No Capping	No Capping
152	UNDERGROUND	06	10	10
152	OPEN PIT	08	3.7	3.7
152	OPEN PIT	02	5.3	5.3
152	OPEN PIT	01, 03, 06	10	10
152	OPEN PIT	07	50	50
157	UNDERGROUND	01, 02, 03	12	12
159	UNDERGROUND	03	12	12
159	UNDERGROUND	01	15	15
159	UNDERGROUND	04	No capping	No capping
159	OPEN PIT	03, 06	8	8
159	OPEN PIT	04, 05	12	12

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Zone	Location	Lens Numbers	Core Capping Levels (g/t Au)	Chip Capping Levels (g/t Au)
159	OPEN PIT	01	15	15
159	OPEN PIT	02	18	18
160	UNDERGROUND	05, 09	12	12
160	UNDERGROUND	01, 03	17	17
160	UNDERGROUND	04	22	22
160	OPEN PIT	06	7	7
160	OPEN PIT	03	16	16
160	OPEN PIT	01	23	23
160	OPEN PIT	07	27	27
160	OPEN PIT	04	28	28
-C -C	· · · · ·			·

APPENDIX D

Comparison of 2023 and 2022 Mineral resource Estimates

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APPENDIX D: Comparison of 2023 and 2022 Mineral resource Estimates

		December 31, 2	023		December 31, 202	22	Gain (Loss)		
Classification and Mine Zone	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Ounces (K oz Au)		
		· · · · ·		Measured	·		·			
Underground										
100 Lower Inter	120	8.63	33.3	160	8.38	43.1	(39.93)	(9.81)		
101 North West	-	-	-	42	6.41	8.6	(41.56)	(8.56)		
107	132	5.50	23.4	151	5.35	26.0	(18.96)	(2.64)		
108	1	4.32	0.2	1	5.55	0.2	0.01	(0.05)		
109	13	7.65	3.2	26	6.89	5.8	(13.46)	(2.67)		
111	-	-	-	-	-	-	-	-		
113	334	7.50	80.5	483	7.97	123.7	(149.51)	(43.24)		
115	36	6.57	7.7	37	6.75	8.0	(0.56)	(0.33)		
117	-	-	-	5	6.72	1.1	(5.02)	(1.09)		
118	139	6.52	29.1	313	7.25	73.0	(174.59)	(43.96)		
121	-	-	-	-	-	-	-	-		
123	114	6.23	22.9	409	6.93	91.2	(295.20)	(68.30)		
124	44	5.94	8.3	165	6.15	32.5	(121.08)	(24.22)		
148	71	11.88	26.9	421	8.64	116.9	(350.22)	(89.92)		
152	-		-	-	0.00	-	-	-		
Total Underground	1,003	7.30	235.4	2,440	5.08	530.2	(1,333.90)	(294.80)		
				Open Pit						
WMCP	410	1.39	18.2	438	1.39	19.5	(28)	(1.3)		
Principal	0	1.32	0.0	-	-	-	0	0.0		
EMCP	-	-	-	0	1.37	0.0	0	(0.0)		
160	-	-	-	-	-	-	-	-		
Total Open Pit	410	1.39	18.2	438	1.39	19.5	(28)	(1.3)		

D.1 Mineral Resource Estimates

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	December 31, 2023			December 31, 2022			Gain (Loss)	
Classification and Mine Zone	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Ounces (K oz Au)
Total Measured	1,413	5.58	253.6	2,878	6.45	549.7	(1,362)	(296.1)
				Indicated				
				Underground				
100 Lower Inter	7	5.93	1.3	1	4.58	0.1	5.86	1.2
107	95	4.73	14.5	96	4.70	14.5	(1.11)	(0.1)
108	1	4.02	0.1	0	0.00	0.0	1.03	0.1
109	61	9.06	17.6	61	9.00	17.7	(0.72)	(0.1)
113	323	6.99	72.6	214	5.38	37.0	109.10	35.6
115	3	5.38	0.4	2	5.71	0.4	0.23	0.0
118	870	6.99	168.8	1,012	5.80	188.7	(142.05)	(19.9)
119	150	6.12	29.5	145	5.92	27.6	4.44	1.8
121	18	5.74	3.3	8	6.25	1.7	9.84	1.7
123	501	6.40	103.0	433	5.69	79.2	68.28	23.8
124	4.95	5.76	91.6	530	5.56	94.8	(35.56)	(3.2)
128	61	5.35	10.5	64	5.28	10.9	(3.26)	(0.4)
134	30	6.68	6.4	104	5.29	17.8	(74.27)	(11.3)
146	13	6.40	2.8	63	5.17	10.5	(49.70)	(7.7)
148	200	11.18	71.8	331	7.55	80.3	(130.94)	(8.5)
152	0	0.00	0.0	80	5.45	14.0	(79.77)	(14.0)
159	21	7.15	4.9	75	6.16	14.8	(53.55)	(9.9)
160	14	7.34	3.4	292	5.32	49.9	(277.75)	(46.6)
Total Underground	2,861	6.55	602.5	3,511	5.85	659.9	(649.88)	(57.4)
				Open Pit				
WMCP	71	0.89	2.0	202	1.39	9.0	(132)	(7.0)
148_EMCP	-	-	-	11	1.36	0.5	(11)	(0.5)
Principal	463	0.70	10.4	375	1.38	16.6	88	(6.2)
134	2	0.91	0.1	3	1.40	0.1	(1)	(0.1)
160	235	0.67	5.1	609	1.10	21.6	(375)	(16.5)
Total Open Pit	770	0.71	17.6	1,200	1.24	47.8	(430)	(30.2)

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	December 31, 2023			December 31, 2022			Gain (Loss)	
Classification and Mine Zone	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Ounces (K oz Au)
Total Indicated	3,632	5.31	620.1	4,711	4.67	707.8	(1,080)	(87.6)
Total Measured and Indicated	4,759	5.61	858.3	7,589	5.31	1257.5	(2,728)	(399.1)
				Inferred				
				Underground				
100 Lower Inter	5	14.16	2.2	5	14.06	2.2	(0.04)	(0.01)
104	85	5.70	15.6	96	5.48	16.9	(10.82)	(1.31)
107	0	4.02	0.0	0	3.83	0.0	(0.22)	(0.03)
108	6	4.65	0.8	3	4.69	0.5	2.21	0.33
113	89	6.98	20.0	150	5.47	26.5	(61.28)	(6.47)
116	214	13.29	91.5	213	13.36	91.3	1.66	0.21
118	182	6.23	36.4	190	6.02	36.8	(8.47)	(0.41)
119	55	5.65	10.0	60	5.55	10.6	(4.28)	(0.58)
121	8	5.22	1.4	2	4.55	0.2	6.69	1.16
123	233	6.43	48.2	230	6.29	46.5	3.59	1.79
124	150	6.14	29.6	154	6.04	29.9	(3.82)	(0.28)
129	56	7.03	12.7	57	6.98	12.8	(0.80)	(0.10)
134	25	7.13	5.7	85	5.28	14.4	(59.90)	(8.70)
139	96	7.80	23.9	182	6.26	36.7	(86.91)	(12.76)
146	15	6.11	2.9	53	5.11	8.8	(38.69)	(5.88)
148	55	9.44	16.8	121	6.35	24.8	(66.07)	(8.01)
152	12	7.78	2.9	26	7.88	6.7	(14.70)	(3.76)
157	3	6.67	0.6	9	5.62	1.6	(6.43)	(1.08)
159	17	6.55	3.6	242	5.24	40.8	(225.02)	(37.21)
160	33	6.47	6.8	136	5.15	22.5	(103.26)	(15.70)
Total Underground	1,338	7.71	331.6	2,015	6.64	430.4	(676.57)	(98.79)
				Open Pit				
WMCP	54	1.75	3.1	61	2.14	4.2	(6)	(1.1)
Principal	651	2.50	53.0	453	3.69	53.6	199	(0.7)

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	December 31, 2023			December 31, 2022			Gain (Loss)	
Classification and Mine Zone	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Grade (g/t Au)	Contained Metal (K oz Au)	K Tonnes	Ounces (K oz Au)
134 (in reserve pit shell)	4	2.58	0.3	2	4.69	0.3	2	0.0
134 (below reserve pit shell)	0	0.00	0.0	938	1.86	56.2	(938)	(56.2)
160 (in reserve pit design)	181	1.93	11.2	167	2.31	12.4	(14)	(1.2)
160 (below reserve pit design)	0	0.00	0.0	5,481	1.49	262.6	(5,481)	(262.6)
Total Open Pit	982	2.36	67.6	7,828	1.71	389.4	(6,211)	(321.8)
Total Inferred Mineral Resources	2,457	5.57	399.2	10,049	2.80	819.8	(6,888)	(420.6)

Notes:

1. The 2022 Mineral Resources are superseded by the current 2023 Mineral Resources and are not relied upon by Hecla or RESPEC. RESPEC has not reviewed the 2022 Mineral Resource models or estimates.

- 2. The 2023 Mineral Resources are entirely attributable to Hecla.
- 3. The 2023 Mineral Resources are classified in accordance with the S-K 1300 classification system.
- 4. The 2023 Mineral Resources were estimated by Hecla staff and reviewed and accepted by RESPEC.
- 5. The 2023 Mineral Resources are exclusive of Mineral Reserves and do not have demonstrated economic viability.
- 6. The 2023 underground Mineral Resources are reported at cutoff grades ranging from 3.78g/t Au to 5.84g/t Au.
- 7. The 2023 open pit Mineral Resources are reported at cutoff grades ranging from 0.97g/t Au to 1.13g/t Au.
- The 2023 underground and open pit Mineral Resources are estimated using US\$1,750/oz Au, based on consensus, long term forecasts from banks, financial institutions, and other sources, and a US\$/C\$ exchange rate of 1.300.

9. A minimum mining width of three meters was used for the modeled open pit and underground mineral envelopes used to estimate the 2023 Mineral Resources.

10. Totals in the 2023 Mineral Resources may not represent the sum of the parts due to rounding.

- 11. The 2023 Mineral Resources potentially amenable to open pit mining methods are reported using a gold price of US\$1,750/oz, a throughput rate of 4,400 tonnes/day (combined material from underground and open pit sources), surface mining costs of US\$3.46/tonne mined, milling processing costs of US\$24.13/tonne processed, and general and administrative and other costs ranging from \$9.96-10.34/tonne processed. Metallurgical recoveries were based on metallurgical curves.
- 12. The 2023 Mineral Resources potentially amenable to underground mining methods are reported using a gold price of US\$1,750/oz and a throughput rate of 4,400 tons/day (combined material from underground and open pit sources). Operating costs are US\$183.08/ton mined or US\$282.60/ton mined, depending on the underground zone or lens. Mill recoveries also vary by zone or lens and range from 80.10% to 89.90%.

S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada Prepared by:

Mining Plus Canada Ltd. 999 Canada Pl, Suite 504 Vancouver, B.C., Canada Canada V6C 3E1

Prepared for:

Hecla Mining Company 6500 N. Mineral Drive, Suite 200 Coeur d'Alene, Idaho USA 83815

Report Effective Date – December 31, 2023

Report Issue Date – February 15, 2024

NOTE REGARDING FORWARD-LOOKING INFORMATION

This Technical Report Summary contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (and the equivalent under Canadian securities laws), which are intended to be covered by the safe harbor created by such sections. Words such as "may", "will", "should", "expects", "intends", "projects", "believes", "estimates", "targets", "anticipates" and similar expressions are used to identify these forward-looking statements. Such forward-looking statements include, without limitation, statements regarding Hecla's expectation for its mines and any related development or expansions, including estimated cash flows, production, revenue, costs, taxes, capital, rates of return, mine plans, material mined and processed, recoveries and grade, future mineralization, future adjustments and sensitivities and other statements that are not historical facts. Other forward-looking statements in this Report may involve, without limitation, the following:

- Probable Mineral Reserves that have been modified from Indicated Mineral Resource estimates.
- Assumed commodity prices and exchange rates.
- Proposed mine and process production plan.
- Projected mining and process recovery rates.
- Ability to market the two types of concentrate on favorable terms as shown in the LOM plan.
- Sustaining capital costs and proposed operating costs.
- Assumptions as to closure costs and closure requirements.
- Assumptions as to ability to obtain remaining outstanding permits.
- Assumptions about environmental, permitting, and social risks.

The material factors or assumptions used to develop such forward-looking statements or forward-looking information include that Hecla's plans for development and production will proceed as expected and will not require revision as a result of risks or uncertainties, whether known, unknown, or unanticipated, to which Hecla's operations are subject.

Estimates or expectations of future events or results are based upon certain assumptions, which may prove to be incorrect, which could cause actual results to differ from forward-looking statements. Such assumptions, include, but are not limited to: (i) there being no significant change to current geotechnical, metallurgical, hydrological and other physical conditions; (ii) permitting, development, operations and expansion of Hecla's projects being consistent with current expectations and mine plans; (iii) political/regulatory developments in any jurisdiction in which Hecla operates being consistent with its current expectations; (iv) the exchange rate for the USD/CAD being near CAD 1.35 = USD 1.00, the

approximate rate as of the date of this Report; (v) certain price assumptions for silver, lead, and zinc; (vi) prices for key supplies being approximately consistent with current levels; (vii) the accuracy of our current mineral reserve and mineral resource estimates; (viii) there being no significant changes to Hecla's plans for 2024 and beyond with respect to availability of employees, vendors and equipment; (ix) Hecla's plans for development and production will proceed as expected and will not require revision as a result of risks or uncertainties, whether known, unknown or unanticipated; (x) sufficient workforce is available and trained to perform assigned tasks; (xi) weather patterns and rain/snowfall within normal seasonal ranges so as not to impact operations; (xii) relations with interested parties, including First Nations and Native Americans, remain productive; (xiii) maintaining availability of water rights; (xv) factors do not arise that reduce available cash balances; and (xiv) there being no material increases in our current requirements to post or maintain reclamation and performance bonds or collateral related thereto.

In addition, material risks that could cause actual results to differ from forward-looking statements include, but are not limited to:

- Unanticipated reclamation expenses.
- Unexpected variations in quantity of mineralization, grade, or recovery rates.
- Exploration risks and results, including that mineral resources are not mineral reserves, they do not have demonstrated economic viability and there is no certainty that they can be upgraded to mineral reserves through continued exploration.
- Geotechnical or hydrogeological considerations during operations being different from what was assumed.
- Failure of mining methods to operate as anticipated.
- Operating risks, including but not limited to failure of plant, equipment, or processes to operate as anticipated.
- Accidents and other risks of the mining industry.
- Silver and other metals price volatility.
- Currency fluctuations.
- Increased production costs and variances in ore grade or recovery rates from those assumed in mining plans.
- Community relations.
- Conflict resolution and outcome of projects or oppositions.
- Litigation, political, regulatory, labor, and environmental risks.
- Inflation causes our costs to rise more than we currently expect.



For a more detailed discussion of such risks and other factors, see Hecla's 2023 Annual Report on Form 10-K. Hecla does not undertake any obligation to release publicly, revisions to any "forward-looking statement," including, without limitation, outlook, to reflect events or circumstances after the date of this presentation, or to reflect the occurrence of unanticipated events, except as may be required under applicable securities laws. Investors should not assume that any lack of update to a previously issued "forward-looking statement" constitutes a reaffirmation of that statement. Continued reliance on "forward-looking statements" is at investors' own risk.



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1. EXECUTIVE SUMMARY

Mining Plus Canada Ltd. (Mining Plus) was retained by Hecla Mining Company (Hecla) to prepare an independent Technical Report Summary (sometimes referred to herein as TRS or Report) on the Keno Hill Mine (sometimes referred to herein as Keno Hill or KHM). The purpose of this TRS is to support the disclosure of the Keno Hill Mineral Resource and Mineral Reserve estimates as of the Effective Date, December 31, 2023. This TRS conforms to the United States Securities and Exchange Commission's (SEC) Modernized Property Disclosure Requirements for Mining Registrants as described in Subpart 229.1300 of Regulation S-K, Disclosure by Registrants Engaged in Mining Operations (S-K 1300) and Item 601 (b)(96) Technical Report Summary.

The reported Mineral Resources and Mineral Reserves are based on data collected up to the Effective Date, including operational data collected from the Keno Hill Mine. The cost and economic estimates are current as of the Effective Date December 31, 2023. The database's cut-off date for drillholes included in this report is October 30, 2023.

The conclusion, recommendations, and forward-looking statements made by Qualified Persons (QPs) are based on reasonable assumptions and results interpretations. Forward-looking statements cannot be relied upon to guarantee Keno Hill Mine' performance or outcomes and naturally include inherent risks and risks relating to the industry, Hecla and KHM. Refer to the note regarding forward-looking information at the front of this Report.

Hecla is a public company, established in 1891 with its headquarters in Coeur d'Alene, Idaho, USA. Hecla owns a 100% interest in the mineral rights for KHM through its subsidiaries following its successful acquisition of Alexco Resources Corp. (Alexco) in September 2022.

Keno Hill contemplates the conventional mining and milling of silver-lead-zinc ore from three deposits and there is an existing conventional flotation plant that processes high-grade silver-lead-zinc ore. Over the eleven-year mine life contemplated in this report, the mines are expected to produce 1.88 million (M) tonnes (t) of mill feed (the Probable Mineral Reserves) at an average of 912 grams per tonne (g/t) silver (Ag), 2.81% lead (Pb), 2.53% zinc (Zn) and 0.22 g/t gold (Au). The mill will produce two concentrates: a high-grade silver-lead concentrate (aka silver concentrate) and a zincsilver concentrate (aka zinc concentrate). The total Ag production is expected to be approximately 52.9 M ounces (oz) over the mine life.

1.1 PROPERTY DESCRIPTION AND OWNERSHIP

1.1.1 PROPERTY DESCRIPTION

Keno Hill is located within the Keno Hill Silver District in Canada's Yukon Territory. The property is situated 350 kilometers (km) north of Whitehorse and lies within the traditional territory of the First Nation of



Na-Cho Nyäk Dun. Access to the property is via the Alaska Highway from Whitehorse to Stewart Crossing (354 km), then from Stuart Crossing to Mayo via the Silver Trail Highway (53 km), and an all-weather gravel road northeast from Mayo to Elsa (45 km); a total distance of 452 km.

Hecla has exploration, maintenance, and camp facilities near the location of the historic mining town of Elsa, which is located just off the Silver Trail Highway, and administration, mill, and mine facilities at the mill complex located near Keno City, as shown in Figure 1-1. Keno Hill is well connected by a network of public and private gravel roads including the Silver Trail Highway and the Bellekeno haul road, which was built to bypass the mining traffic around the village of Keno City. Keno Hill is supplied with electrical power by Yukon Energy Corporation (YEC) from a hydroelectric plant near Mayo and has a connection to the Yukon-wide electrical grid. The area is covered by National Topographic System (NTS) map sheets 105M/13 and 105M/14.



Figure STYLEREF 1 \s 1- - Keno Hill Mining Operations Overview.

Central Yukon is characterized by a subarctic continental climate with cold winters and warm summers. Exploration and mining work can be carried out year-round. The average annual precipitation ranges from 300 millimeters (mm) in the valleys to 600 mm on mountaintops. Half of this amount falls as snow, which starts to accumulate in October and remains into May or June.



Keno Hill's property area is characterized by rolling hills and mountains with a relief of up to 1,600 meters (m). The highest elevation is Keno Hill at 1,975 m. Slopes are gentle except for the north slopes of Keno Hill and Sourdough Hill. The mining properties at the KHM are located between 900 m and 1,300 m elevation.

1.1.2 OWNERSHIP

Hecla owns a 100% interest in the mineral rights for Keno Hill through its subsidiaries following its successful acquisition of Alexco in September 2022. Elsa Reclamation & Development Company Ltd. (ERDC), a wholly owned subsidiary of Hecla, continues to advance the development and eventual implementation of the District Wide Closure Plan (Existing State of Mine Reclamation Plan) which addresses the historic environmental liabilities of the district from past mining activities pre-dating Alexco's and Hecla's acquisition of KHM. The potential liabilities associated with the historic operations in Keno Hill are indemnified by the Government of Canada under the terms and conditions of the Amended and Restated Subsidiary Agreement dated July 18, 2013, executed by ERDC, Alexco and Her Majesty the Queen in right of Canada (ARSA), subject to the requirement for ERDC to develop, permit, and implement the site Reclamation Plan, or if Hecla and the Government agree to transfer portions of the historic area to active mining operations within KHM, in which case such indemnification ceases to the extent of such transferred area.

Keno Hill quartz mining claims and quartz mining leases are held by one of two wholly owned subsidiaries of Alexco (which does business as Hecla Yukon): ERDC or Alexco Keno Hill Mining Company Ltd. (AKHM), except for holding a 50% share with third party individuals in three leases (Rico, Kiddo, and Argentum). The total Keno Hill property quartz mineral holdings as of December 31, 2023, excluding the mineral claims that are the subject of the separate technical report titled Mineral Resource Estimation Elsa Tailings Project Yukon, Canada, by SRK dated June 16, 2010, covers an area of 238.12 km² and comprises 717 quartz mining leases, 867 quartz mining claims, and two Crown Grants.

1.2 HISTORY

The Keno Hill mining camp area has a rich history of exploration and mining dating back to the beginning of the 1900s. In the ensuing 100 years of mining, activity peaked and decreased with changes in silver prices, world events, and operating companies in the Yukon. Notable periods of interest in the historic evolution of the Keno Hill mining camp included:

• After WWI, success at the Keno mine led to a staking rush, resulting in the discovery of a number of rich deposits. In the early 1920s, the Treadwell Yukon Company Limited (TYC) acquired a number of claims and started mining.



- After WWII, there was a sharp decline in activity in the Keno Hill camp until a new company, Keno Hill Mining Company Ltd., later United Keno Hill Mines Ltd. (UKHM), purchased all TYC properties, started production and sparked increased exploration activity.
- Peak mining activity occurred in the 1950s through to the 1970s, with new discoveries across the district adding to mineral inventory.
- UKHM restarted the TYC mill in April 1947 processing ore primarily from Hector Calumet mine and Elsa mine. Production from the Hector Calumet mine increased in the 1950s and it was the primary silver producer in the region. Overall, Hector Calumet produced 96 million ounces of silver over its mine life.
- Open pit mining began in the late 1970s, mainly to recover selected crown pillars; from 1982 to 1985 Sadie-Ladue and Shamrock were mined on a small-scale basis, and from 1989 to 1990 Shamrock, Silver King, Hector-Calumet, Lucky Queen, Bermingham, and Keno were mined.
- UKHM stopped production from the Keno Hill Silver District permanently in early 1989.
- Between 1990 and 1998 Dominion Mineral Resources and Sterling Frontier Properties Company of Canada Limited (Dominion) carried out both reclamation work across the district as well as exploration at the Bellekeno, Husky Southwest, and Silver King mines in order to reopen the camp.
- In the late 1990s, Dominion abandoned its UKHM right driving UKHM into bankruptcy.
- In 2001, the site was declared abandoned by the Government Operations Centre, and the federal government inherited the assets.
- In June 2005, Alexco was selected as the preferred purchaser of the assets of UKHM by PwC, the court-appointed interim receiver and receiver-manager of the Project holdings. In February 2006, the Supreme Court of the Yukon approved Alexco's purchase of UKHM's assets through Alexco's wholly owned subsidiary ERDC.
- Between 2010 and 2013, Alexco operating at approximately 200 tpd produced 5.64 million ounces of silver before suspending mining operations.
- In Q4 of 2020, Alexco returned to operation and produced approximately 0.57 million ounces of silver between 2020 and 2022.
- On September 7, 2022, Hecla completed the acquisition of Alexco.



1.3 GEOLOGY AND MINERALIZATION

The Keno Hill Mine is located within the northwestern part of the Selwyn Basin in central Yukon. The area is underlain by Upper Proterozoic to Mississippian metasedimentary rocks originally deposited in a marine shelf environment along the northern Cordilleran continental margin. The Robert Service Thrust Sheet lying immediately to the south of Keno Hill is composed of Late Proterozoic to Cambrian dominantly coarse-grained quartz-rich turbidite sequence. The Tombstone Thrust Sheet of Devonian phyllite, felsic meta-tuffs, and metaclastic rocks is overlain by the Mississippian Keno Hill Quartzite Formation. The stratigraphy is locally thickened due to folding while the basal portion of the Keno Hill Quartzite forms the dominant host to the silver-lead-zinc mineralization.

Phases of intrusive rocks identified include gabbro and diorite sills, voluminous felsic Tombstone granite intrusions that are regionally related to gold mineralization, and peraluminous megacrystic potassium feldspar granitoids of the Upper Cretaceous McQuesten suite.

The region hosts other mineral occurrences including tungsten, copper, gold, lead, zinc, antimony, and barite.

The Keno Hill local geology is dominated by the Mississippian Keno Hill Quartzite Formation comprising the Basal Quartzite Member conformably overlying Sourdough Hill Member. The sequence is overthrust from the south by the Upper Proterozoic Hyland Yusezyu Formation and is conformably underlain in the north by the Devonian Earn Group.

In 2007, a project was initiated by Alexco to digitally capture the historic UKHM data which included extensive mining plans and geology maps describing up to 70 years of mining. Remapping of the surface geology in the Keno Hill area supported the subdivision of the Keno Hill Quartzite Formation into the Basal Quartzite Member and the Sourdough Hill Member, which reflected the importance of competent Basal Quartzite in the vein formation events.

The Basal Quartzite Member is the dominant host to silver mineralization comprising quartzite and graphitic schists that can reach a thickness of up to 1,100 m thick attributed to structural thickening. The overlying Sourdough Hill Member is up to 900 m of predominantly graphitic schist with minor limestone beds.

Mineralization at Keno Hill exhibits a succession of hydrothermally precipitated minerals in veins from multiple pulses of hydrothermal events. The supergene alteration may have changed the mineralogy in the veins, although this material may have been removed by glacial erosion.

Silver occurs predominantly in argentiferous galena and argentiferous tetrahedrite (freibergite) with associated native silver. Other silver-bearing sulfosalts such as polybasite, stephanite, and pyrargyrite are also present. Lead occurs in galena and zinc in sphalerite which can be in iron-rich or iron-poor varieties. Other sulfides include pyrite, pyrrhotite, arsenopyrite, and chalcopyrite.



The Keno Hill deposit has been recognized as a polymetallic silver-lead-zinc vein style with characteristics similar to other known mining deposits such as the Kokanee Range (Slocan), British Columbia; Coeur d'Alene, Idaho; Freiberg and the Harz Mountains, Germany; and Príbram, Czech Republic.

1.4 EXPLORATION

The Keno Hill mining district exploration history dates to the beginning of the 1900s with early gold prospecting near the Mayo township. In 1903, the first silver mineralization was found followed by small-scale manual mining in 1913 at Silver King. United Keno Hill Mines (UKHM) undertook extensive exploration in Keno Hill until the mines closed and production stopped in 1989 (Cathro, 2006).

Exploration conducted by Alexco Resource Corp. after 2006 represented the first modern comprehensive exploration effort in Keno Hill since 1989. In the period from 2006 to 2022, Alexco completed surface exploration holes and underground drilling located at five main deposits comprising Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek. The focus of Alexco's exploration drilling was primarily at, and adjacent to, historic mining areas.

In 2006, a wide-spaced district-scale aerial magnetic and electromagnetic geophysical survey and air photography was undertaken. Subsequent diamond drilling was conducted on targets from the geophysical survey assessed as having the potential for additional silver resources with work focusing on the Bellekeno, Silver King, and Lucky Queen mine areas.

Between 2006 and 2010, core was logged onto paper forms that were later entered into a commercial computerized logging program. More recently all logging data has been directly digitally entered into a SQL-based database.

In late 2018, Alexco undertook a detailed aerial RESOLVE EM-Magnetic geophysical survey over Galena Hill, later extended to cover Keno Hill in 2020. The survey provided detailed structural information that in addition to the district geologic mapping defines a general 1km periodicity of largedisplacement northeast oriented transverse vein-faults that hosts mineralization assisting with the definition of drill targets. This structural understanding has substantially increased the success rate of intersecting mineralization with exploration drilling.

During 2020, Alexco commenced underground mining activities initially at Bellekeno and subsequently at the Bermingham and Flame and Moth deposits. The commencement of mining development shifted the focus of exploration drilling into areas adjacent to the previously outlined resources.

In 2021, Alexco conducted a directional drilling program which included 17,742 m of directional drilling at Bermingham Northeast Deep zone. During 2021 and 2022, Alexco suffered delays to both mining and exploration due to COVID-19 isolation restrictions and reduced staffing of personnel which resulted in lower productivity.



In early September 2022, the ownership of the Keno Hill Mine passed to Hecla while mining operations and exploration drilling activity continued through the change of ownership period.

Under Hecla, exploration drilling was maintained near the Bermingham underground mine development and at Coral Wigwam and Hector-Calumet.

Face sampling of underground mining production has been conducted for each heading advance ranging from 1.5 m to 3 m. The underground face sample data has not been incorporated into the resource estimation except at the Bellekeno deposit.

As part of its regular procedures, Hecla maintains standard logging and sampling conventions to capture information from its drilling programs.

1.5 MINERAL RESOURCE ESTIMATES

The Keno Hill 2023 Mineral Resource Estimate comprises five discrete estimates from the following areas: Bellekeno, Lucky Queen, Flame and Moth, Onek, and Bermingham. These Mineral Resources have been estimated in compliance with the Securities and Exchange Commission requirements (SEC, 2018) and are reported in accordance with S-K 1300 regulations. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.

Possible risk factors included in the rationale used and any mitigating factors established to reduce any risk have been investigated and were noted during a detailed review of the drilling databases, methods used to estimate density, the application of grade capping, methods for grade interpolation and the classification methodology for each of the mineral resources.

It is the opinion of the Mining Plus geology QP that the Mineral Resource models presented in this report are representative of the informing data and that the data is of sufficient quality and quantity to support the Mineral Resource estimate to the Classifications applied.

A summary of the Mineral Resources at Keno Hill is shown in Table 1-1 with an effective date of December 31, 2023. The Mineral Resource is considered potentially mineable through optimized underground mining methods. All Mineral Resources declared in this report are reported inside underground shapes optimized at an economic cut-off of CAD \$185/tonne.



Table STYLEREF 1 \s 1- Summary of Mineral Resources – December 31, 2023 – Hecla Yukon – Keno Hill Mine.

Category	Deposit	Mass (,000 t)	Ag (g/t)	Pb (%)	Zn (%)	Au (g/t)	Contained Silver (,000 oz)
	Bellekeno	-	-	-	-	-	-
	Lucky Queen	135	340	0.72	0.70	0.07	1,472
Indicated	Flame and Moth	1,629	256	0.87	3.37	0.21	13,389
mulcated	Onek	901	150	1.00	8.38	0.41	4,349
	Bermingham	1,421	322	0.92	0.81	0.06	14,716
	Total Indicated	4,086	258	0.91	3.49	0.20	33,926
	Bellekeno	372	229	0.75	3.98	-	2,735
	Lucky Queen	212	312	0.74	0.58	0.05	2,123
Informad	Flame and Moth	184	207	0.32	3.04	0.15	1,220
imerred	Onek	234	96	0.74	5.68	0.28	721
	Bermingham	1,571	495	1.42	0.77	0.10	24,991
	Total Inferred	2,573	384	1.13	1.83	0.10	31,791

Notes:

1. Classification of the Mineral Resource is in accordance with the S-K 1300 classification system.

2. Mineral Resources were estimated by Hecla and reviewed and accepted by Mining Plus.

3. Mineral Resources are reported in-situ and are exclusive of Mineral Reserves.

4. Mineral Resources are 100% attributable to Hecla.

5. Totals may not represent the sum of the parts due to rounding.

6. Mineral Resources were estimated using an NSR cut-off value of CAD 185/tonne and a minimum mining width of 1.5 m.

7. The Mineral Resource estimates for the Bermingham and Flame and Moth deposits have an effective date of December 31, 2023.

8. The Mineral Resource estimates for the Lucky Queen and Onek deposits have an effective date of January 3, 2017.

9. The Mineral Resource estimate for the Bellekeno deposit is based on an internal Mineral Resource estimate completed by Alexco Resource Corp. and externally audited by Mining Plus. This Mineral Resource estimate has been depleted to reflect all mine production from Bellekeno to the end of December 2021. Bellekeno deposit has an effective date of December 31, 2023.

1.6 **MINERAL RESERVE ESTIMATES**

The current Mineral Reserve Estimate, as prepared by Hecla and reviewed and accepted by Mining Plus, is effective as of December 31, 2023, and is summarized in Table 12-1.

Only Indicated Mineral Resources were converted to Mineral Reserves. Any Inferred Mineral Resources included within the Mineral Reserve designs are carried at zero grade.



Table STYLEREF 1 \s 1- - Summary of Mineral Reserves - December 31, 2023, - Hecla Yukon - Keno Hill Mine.

Deposit	Class	Volume (m ³)	Mass (t)	Ag (g/t)	Pb (%)	Zn (%)	Au (g/t)	Ag (oz)
	Proven	-	-	-	-	-	-	-
Lucky Queen	Probable	37,055	103,365	948	2.03	1.06	0.09	3,151,253
	Proven	-	-	-	-	-	-	-
Flame and Moth	Probable	136,334	455,244	764	2.86	5.83	0.48	11,184,405
Dorminghom	Proven							
Bermingnam	Probable	438,155	1,318,748	961	2.85	1.51	0.15	40,732,370
Total	Proven							
	Probable	611,544	1,877,357	912	2.81	2.53	0.22	55,068,028

Notes:

1. Classification of Mineral Reserves is in accordance with the S-K 1300 classification system.

2. Mineral Reserves were estimated by Hecla and reviewed and accepted by Mining Plus.

3. The point of reference for the Mineral Reserves is defined at the point where the ore is delivered to the processing plant.

4. Mineral Reserves are 100% attributable to Hecla.

5. Mineral Reserves are estimated at an NSR cut-off value of CAD 350/tonne.

6. The NSR values reflect the discrete metallurgical responses for the Mineral Reserve blocks.

7. Mineral Reserves are estimated using metallurgical recoveries of 92.0% Ag, 25% Au, 4.0% Zn and 88% Pb for the silver lead concentrate and 5.24% Ag, 0% Au, 68% Zn and 4.0% Pb for the Zinc concentrate.

8. Mineral Reserves are estimated using long-term silver price of USD 17.00/oz, lead price of USD 0.90/lb, zinc price of USD 1.15/lb and a CAD: USD exchange rate of 1.30.

9. A minimum mining width of 3.5 m was used for all assets.

10. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

The Mineral Reserves have been classified in accordance with the definitions for Mineral Reserves in S-K 1300. Detailed information on mining, processing, and other relevant factors are contained in the following sections and combined demonstrate that Keno Hill Operation is an economically viable Property.

1.7 MINING METHODS

Keno Hill comprises five separate deposits including Bellekeno, Lucky Queen, Flame and Moth, Onek, and Bermingham. The location of the deposits is shown in Figure 13-1; the mill, administration, and shop complexes are located near the Flame and Moth Deposit.

All deposits are characterized by high grades, narrow vein widths, and challenging ground conditions.

The operations at Bellekeno deposit were suspended in 2021, and the mine was placed under care and maintenance. Onek is a historic mine with remnant Mineral Resources but is not currently planned to be reopened without further study. Bermingham and Flame and Moth deposits are operating, and Lucky Queen is in the advanced exploration stage. The Mineral Reserve is included in the Life of Mine Plan (LOM).

At Keno Hill, mining is currently undertaken using a mechanized cut and fill method (MCF). Where the ore width is wider than can be safely extracted in one cut, the ore will be mined in adjacent drifts. Lenses



are predominantly mined in a bottom-up sequence and filled with cemented rock fill (CRF) using a 3%-8% binder content. The 8% binder CRF is restricted to cuts which will form the back of an underhand stope — the initial cut of panels that are above others along the same vein. All other cut and fill excavations will use unconsolidated rock fill (URF) or 3% binder where an adjacent cut is to be mined.

The overall production schedule is based on feeding a consistent 400 to 550 tpd to the centrally located mill. The current LOM period is estimated to be eleven years ending in 2034. Underground Mineral Reserves totaling 1.88 Mt are expected to be mined over the entire LOM period.

1.8 MINERAL PROCESSING

The Keno Hill is a polymetallic silver-lead-zinc vein type mineralization. There are three deposits included in the mine plan and mill feed. Production commenced in 2023 with feed from the Bermingham deposit. The mine plan continues with the mill feed from Bermingham followed by ore from the Flame and Moth deposit, and finally from Lucky Queen. The mill ramps up to process ore at 400 tpd in the first three years before reaching the peak capacity of 550 tpd in year five.

Ore is crushed and then processed in a conventional flotation mill producing silver-lead concentrate and zinc concentrate. A simplified process flowsheet is included in Section 14.2. The constant concentrate grades and recoveries are detailed in Section 10. The total concentrate production and grades over the life of mine are shown in Table 1-3.

Concentrate	LOM				
Silver Concentrate					
Dry tonnes	103,199				
Ag g/t	15,269				
Pb %	45				
Zinc Concentrate					
Dry tonnes	68,748				
Ag g/t	997				
Pb %	4.02				
Zn %	47				

Table STYLEREF 1 \s 1- - LOM Projected Concentrate Grades.

Notes:

1. Based on the Probable Mineral Reserves presented in Section 12 and the mine plan presented in Section 13.

The corresponding expected metallurgical recoveries and total recovered metal are shown in Table 1-4.

DEFINE | PLAN

OPERATE

Table STYLEREF 1 \s 1- - LOM Projected Concentrate Grades.

	Average Recovery (%)	Total Recovery			
Into Ag-Pb Concentrate					
Ag	92.0	50.7 Moz			
Pb	88.0	46,440 tonnes			
Into Zn-Ag Concentrate					
Ag	4.0	2.2 Moz			
Zn	68.0	32,311 tonnes			

Note: based on the total Probable Mineral Reserves presented in Section 12 and mine plan presented in Section 13.

Concentrates are thickened, filtered, and trucked off site for sale. Tailings are also thickened, filtered, and stored in a dry stack tailing facility adjacent to the mill. Process water is stored in the mill pond adjacent to the mill complex and recycled to the plant for varied applications.

Hecla has completed all mill upgrades planned by Alexco, the former site operator.

1.9 INFRASTRUCTURE

There is considerable infrastructure on site from the previous Alexco mining operations.

In Elsa, there are administrative, training, and exploration offices. The nearby Flat Creek camp facilities include bunkhouses, a kitchen facility, recreation facilities, miners' dry facilities, as well as houses at the old Flat Creek town site (part of Elsa). At the District mill, there are mine and mill offices, dry facilities, an assay lab, an equipment maintenance facility, a warehouse, and the mill and dry stack tailings facility (DSTF) complex.

Power, water, roads, and communications are in place and maintained throughout the site. There is a network of access roads and haul roads throughout the District. A bypass has been constructed around Keno City to reduce traffic and noise for the residents.

Offsite infrastructure includes highway access between Whitehorse and the Keno Hill site as well as to Skagway (for concentrate shipping). Hecla has an administrative office in Whitehorse. No additional offsite infrastructure is required for this operation.

DSTF Phase 2 construction is scheduled to start in summer 2024. The design is currently being revised to incorporate comments received from the Yukon Government. Design revisions include revisions to the seismic criteria and re-evaluation of geotechnical design under updated criteria.

The current permit limits for the Dry Stack Tailings Facility and the Waste Rock Dump Facility are insufficient to cover the planned waste rock and tailings produced over the LOM. Permitting studies are



underway and a reasonable timeframe has been identified in the LOM to obtain appropriate permits to establish additional facilities for tailings and waste rock dumps.

1.10 ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

Hecla is committed to operating in compliance with all regulations and standards of good practice for environmental, health, and safety. To uphold this commitment Hecla has developed and approved corporate policies for environmental, health and safety practices and has prepared a detailed management plan to facilitate the continuous improvement of its environment and health and safety performance. An Environmental Management System (EMS) is currently in the process of being implemented, completion is expected by the end of 2024.

The mine design meets current standards and the implementation of the proposed environmental and health and safety practices ensures that the Keno Hill Mine is prepared to meet future challenges.

Hecla, and its subsidiary ERDC are parties to the ARSA with the Government of Canada in which Hecla is responsible for the care, maintenance, and closure of the historical mines, with funding from the government and the company to address the historical liabilities. The commercial agreement also allows Hecla to undertake exploration of the AKHM site and undertake active mining. Under this agreement, Hecla is responsible for environmental assessment, permitting, compliance, and costs associated with its ongoing exploration and new mine development activities. Additionally, if a new mine is brought into production including the use of infrastructure associated with a historic mine, terrestrial liabilities (i.e., waste rock storage areas and roads) and water-related liabilities located within a designated "Production Unit" become the responsibility of Hecla. At this time, Bellekeno and Flame and Moth have been defined as one combined active Production Unit under the Bellekeno Production Unit. The Bermingham Production Unit notice was submitted to Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and approved on November 24, 2023. When commercial ore production occurs at Lucky Queen a Production Unit would need to be declared. That Production Unit would encompass the Lucky Queen mining area that is reasonably expected to be affected by production-related activities, including production features authorized in required permits and surface and groundwater expected to be affected by the permitted activities. Liability for reclamation and closure of the defined Production Unit would fall to AKHM.

Hecla, along with territorial, federal, and First Nation governments, is also responsible for developing a District-Wide Reclamation Plan that addresses these historic environmental liabilities arising from past mining activities. Under the agreement, Hecla is indemnified from the historic environmental liabilities. The latest reclamation plan, revision 7, was prepared by Alexco and issued in October 2022. Currently, water treatment is carried out at five locations in Keno Hill (Galkeno 300, Galkeno 900, Silver King, Onek 400, and Valley Tailings), as required by the ERDC's Water Licence QZ21-012.



Alexco developed a reclamation plan that was used by Hecla to acquire Water Licence QZ21-012 in April 2023. Hecla is working towards implementing this water license and reclamation plan.

Permits held by Hecla for the Property are sufficient to ensure that mining activities are conducted within the regulatory framework required by regulations. The QP notes that the Bellekeno, Bermingham, and Flame and Moth deposits have all permits and authorizations in place to commence or continue with full-scale mine production. The Bermingham deposit has the required permits which should allow it to sustain mine production for a number of years, however, it will require an amendment to include recent additions to the Mineral Reserve in Bermingham Deep Northeast Zone. In addition, it is likely that the Quartz Mining Licence (QML-0009) and the Water Licence QZ18-044 will need modifications in order to increase water discharge amounts/rates, increase the volume or change location of waste rock and tailings storage. The Lucky Queen deposit has in place a Quartz Mining Licence (QML-0009) which authorizes mining operations, but Water Licence QZ18-044 would require an amendment before water-based activities for Lucky Queen can proceed.

1.11 CAPITAL, AND OPERATING COST ESTIMATES

The Keno Hill Mine is currently producing and there is no pre-production capital. Capital costs over the LOM total USD 194.85 million and are summarized in Table 1-5.

Table STYLEREF 1 \s 1- - Capital Cost Summary.

Capital Cost	\$M
Drilling	23.58
Mine Development, Rehab, Stripping	96.39
Mine Infrastructure	11.83
Mobile Equipment	38.43
Ore Processing	15.88
Reclamation and Closure	8.74
Total Capital Costs	194.85

The forecasted LOM operating costs totaling \$257.4/t milled are summarized in Table 1-6.



Operating Cost	\$/t milled	\$M
Mining	130.05	244.1
Milling	47.04	88.3
G&A	80.35	150.8
Total Operating Costs	257.43	483.3

Table STYLEREF 1 \s 1- - Overall Operating Cost Estimate.

Hecla-forecasted capital and operating costs estimates are derived from annual budgets and historical actuals over the life of the current operation and other Hecla owned operations. According to the American Association of Cost Engineers (AACE) International, these estimates would be classified as Class 1 with an accuracy range of -3% to -10% to +3% to +15%, for Bermingham and Flame and Moth deposits and an AACE Class 3 estimate with an accuracy of -10% to -20% on the low side and +10% to +30% on the high side for the Lucky Queen deposit.

1.12 ECONOMIC ANALYSIS

Please refer to the note regarding forward-looking information at the front of this Report. The economic analysis contained in this TRS is based on the Keno Hill Mine Probable Mineral Reserves material only, economic assumptions, and capital and operating costs provided by Hecla's technical team in its LOM plan model and reviewed by the QPs. All costs in this section are expressed in US dollars (USD), unless otherwise stated. All costs in this section of the TRS are expressed without allowance for escalation or currency fluctuation. Where required, costs quoted in Canadian dollars (CAD) were converted to USD at an exchange rate of USD 1.00 = CAD 1.35.

The results of this economic analysis represent forward-looking information. The results depend on the inputs that are subject to several known and unknown risks, uncertainties, and other factors that may cause actual results to differ materially from those presented in this section. Information that is forward looking includes Mineral Reserve estimates, commodity prices, the proposed mine production plan, projected recovery rates, proposed capital and operating cost estimates, closure cost estimates, and assumptions on geotechnical, environmental, permitting, royalties, and hydrogeological information.

An economic analysis was undertaken on a 100% project ownership basis to determine pre-tax and post-tax net present value (NPV). The operation consists of an eleven-year mine life producing between 400 and 550 tpd mill feed.

A summary of the key project criteria is provided in the subsequent subsections.



1.12.1 REVENUE

For the purposes of this economic analysis described in this section, revenue is estimated over the LOM with a flat long-term price of USD 22.00/oz Ag, USD 0.95/lb Pb and USD 1.15/lb Zn. Mining Plus's QP considers these prices to be aligned with end of year 2023 industry consensus long term forecast prices. Payable metals in the Keno Hill Mine 2023 plan are estimated at 95.0% Ag and 93.3% Pb in the silver-lead concentrate and 83% Zn and 70% Ag in the zinc concentrate.

LOM net revenue is USD 1,118 million (after Refining Charges and Royalty).

1.12.2 TAXATION AND ROYALTIES

- There is an NSR royalty of 1.5% payable to the Government of Canada.
- Approximately CAD 1.2 million of the total CAD 4.0 million has been paid or accrued for as of the date of this Report.
- Taxes include Quartz Mining Tax, federal, and Yukon Taxes. It is assumed that the three operating deposits are treated as 'one mine' for income tax and royalty tax purposes.

1.12.3 CASH FLOW ANALYSIS

The Hecla post tax financial analysis QP has reviewed Hecla's Keno Hill Mine LOM 2024 Reserves only model and has prepared its own unlevered after-tax LOM cash flow model based on the information contained in this TRS to confirm the physical and economic parameters of the Keno Hill Mine.

The Keno Hill Mine economics have been evaluated using the discounted cash flow method by considering annual processed tonnages and grades of ore. The associated process recovery, metal prices, operating costs, refining and transportation charges, and sustaining/growth capital expenditures were also considered.

The economic analysis results, presented in Table 1-7 in USD with no allowance for inflation, show a pre-tax and after-tax NPV, using a 5% discount rate of \$318.1 million and \$304.5 million, respectively. The Hecla post tax financial analysis QP is of the opinion that a 5% discount rate for after-tax cash flow discounting of an active Canadian precious/base metal operations in a politically stable region is reasonable and appropriate, and commonly used. For this cash flow analysis, the internal rate of return (IRR) and payback are not applicable since the Keno Hill Mine has been producing and selling concentrate for a number of years under Hecla and previous ownership. Please refer to the note regarding forward-looking information at the front of the Report.



Item	Unit	LOM Total		
Life of Mine	years	11.0		
Production				
Ore Milled	'000 tonnes	1,877		
Waste Mined	000 tonnes	1,275		
Silver Grade	g/t	912		
Gold Grade	g/t	0.22		
Lead Grade	%	2.81		
Zinc Grade	%	2.53		
Contained Metal in Mine Production				
Silver	koz	55,068		
Gold	oz	0		
Lead	tonnes	52,772		
Zinc	tonnes	47,517		
Produced Metal				
Silver	koz	52,865		
Lead	tonnes	49,205		
Zinc	tonnes	34,212		
Metal Prices				
Silver	\$/oz	22.0		
Lead	\$/oz	0.95		
Zinc	\$/oz	1.15		
Gross Revenue				
Gross Revenue	\$ million	1,252		
Treatment and Refining Charges	\$ million	131.8		
Royalty	\$ million	2.1		
Costs				
Capital Costs	\$ million	194.8		
Operating Costs	\$ million	483.3		
Financial Summary				
Pre-Tax Undiscounted Cash Flow	\$ million	439.5		
Pre-Tax NPV at 5%	\$ million	318.1		
Taxes	\$ million	19.7		
After-Tax Undiscounted Cashflow	\$ million	419.8		
After Tax NPV 5%	\$ million	304.5		

Table STYLEREF 1 \s 1- – Financial Summary.

DEFINE | PLAN | OPERATE

1.13 CONCLUSIONS

The Keno Hill is a polymetallic silver-lead-zinc vein type mineralization. There are three deposits included in the mine plan and mill feed. Production commenced in 2023 with feed from the Bermingham deposit. The mine plan continues with the mill feed from Bermingham and the Flame and Moth deposits, and finally from Lucky Queen. The mill ramps up to process ore at 400 tpd in the first three years before reaching the peak capacity of 550 tpd in year five. The current LOM period is estimated to be eleven years ending in 2034.

The mining method at the Keno Hill Mine is overhand mechanized cut and fill using cemented and uncemented rockfill as backfill. Mechanized cut and fill is a highly selective method that enables extraction of the Mineral Reserves safely and economically while adapting to the variable nature of the narrow vein geometry. Hecla has maintained an active drilling program that seeks to identify mineralization extensions and to support the evaluation of Mineral Resources and provide grade control definition ahead of mining operations. Mining Plus considers the drilling, logging and drill core meet existing industry standards and are sufficient to support Mineral Resource Estimation.

The crushed ore is processed in a conventional flotation mill producing silver-lead concentrate and zinc concentrate. The total concentrate production over the life of mine is 103.2 kt at Ag 15,269 g/t and Pb 45.0%, and 68.7 kt at Ag 997 g/t and Zn 47.0% of silver and zinc concentrates respectively.

In terms of project execution, Hecla has been able to leverage the existing infrastructure onsite to resume mining and milling operations and the positive economic results support the updated Mineral Reserves Estimate.

1.14 **RECOMMENDATIONS**

Mining Plus outlines the recommendations in the following subsections.

1.14.1 GEOLOGY AND MINERAL RESOURCES

- Mining Plus has recommended that the current data spacing, and distribution is maintained at all deposits and suggested monitoring the subsequent geological and grade continuity to ensure it continues to be appropriate for Mineral Resource Estimation.
- Review the logging disparities identified in drillings conducted before 2010 and conduct a comprehensive assessment of logging consistency across various drilling campaigns. This review aims to enhance the interpretation and modeling criteria for mineralized structures.



- Discrepancies observed between the entered assay data and the laboratory certificates were noted in the Onek database, and to a lesser extent at Bellekeno and Lucky Queen. Mining Plus considers that a more comprehensive audit be conducted to address these inconsistencies and verify if any other issues exist.
- Constant monitoring of the pulp bulk density is recommended by conducting checks using the paraffin wax method on samples estimated using the Archimedes density method. The checks will provide information on any relevant biases and must be included in the company's procedures.
- Mining Plus considers that adjustments to the procedures for underground face sampling and an improvement in onsite assaying may be sufficient to support the incorporation of face samples within future grade estimation processes. Face samples are normally reliable source data for estimations as they can be controlled at uniform boundaries and set locations within the mining development. Face sample data represents the closest spaced samples that can be used to determine local grade variability or continuity.
- Mining Plus recommends the following improvements to the Quality Control program:
 - Hecla should include an investigation of the origin of any quality control failures and to implement timely corrective measures.
 - Hecla should continue to incorporate field duplicates, pulp duplicates and umpire check samples as essential parts of the Quality Control procedure to assess the precision of samples at various stages of sampling and comminution.
 - o The incorporation of pulverized blank standard samples is recommended to evaluate contamination during the analysis stage.
- The applied geological interpretation and modelling criteria should be clearly defined and consistent during the interpretation of each structure and deposit, which will help improve precision in locally estimated resources.
- It is recommended that future resource estimates should establish clear and consistent estimation criteria as far as practicable, including:
 - o An update of the estimated resources at Onek, Lucky Queen and Bellekeno, with appropriate documentation and traceability of the data and information used.
 - o The block model should use parent cells and sub cells to facilitate underground optimizations.
 - A consistent capping method be applied uniformly across all deposits. The recommended approach is to consider capping after the compositing process, where the influence of high grades is mitigated.



- o The NSR economic cut-off should be based on Hecla's current costs, which should include at a minimum the cost of mine and mineral processes, which can be tangible and realistic depending on the level of knowledge of mining development in the area.
- Monitor the estimation results of those domains with no record (NR or NULL) intervals mainly in Flame and Moth, to see potential risks in this area resulting from these samples.
- Continue with the Resource classification criteria for Indicated Resources using a distance of 25 m, which should be consistent wherever possible for all deposits.
- Implement mining reconciliation practices that help to better understand the veracity of mineral resource estimates and anticipate future improvements.

1.14.2 MINING AND MINERAL RESERVES

The QP notes that the overall mine plan benefits from increased flexibility and working fronts as the mine matures and the capital development advances. In the initial years, there is an opportunity to further de- risk the overall LOM plan and better predict the operational performance of future mining zones by addressing the following items:

- Undertake a more detailed dilution and extraction study, including consideration of any existing reconciliation studies, to better quantify the extraction recovery, dilution, and other modifying factors that Hecla is currently applying to all production designs. Specifically, the final cut underneath a planned sill can be expected to have a higher dilution from CRF failure due to blasting cycles of the final lift and previous lift. Use the results of the above noted studies to determine the actions necessary to align mine production grades with the Mineral Reserve Estimates.
- Complete additional geotechnical assessments to determine the amenability of the orebody to more productive and less costly mining methods. Hecla is reviewing opportunities to trial long hole stope mining methods in the Flame and Moth mine between 2024 and 2026 to refine the method and application without affecting the overall LOM plan. The outcomes of these trials should be incorporated into future reserve estimates.
- Complete additional optimization on the Mineral Reserve mine plan and de-risk the mine plan on a development basis by assessing the potential for slower than planned increases to efficiency and underground unit development operations or rates. Complete additional scenario scheduling to better understand the risk and plan appropriately to meet the schedule.
- Continue evaluating the option of mining at Flame and Moth earlier than planned as a large portion of the underground access has been completed and the mine is ready to produce ore with minimal development. This will assist with reducing the LOM plan risk by creating additional mining fronts with minimal upfront capital.



- Continue conducting definition diamond drilling throughout the remainder of the underground mining operation to convert Inferred to Indicated Mineral Resources and increase the understanding of the mineralization. Doing so may result in increased Mineral Reserves near planned capital and operational development and reduce the overall capital development intensity of the schedule.
- Investigate adding marginal underground Indicated Mineral Resources to the Mineral Reserves where appropriate.
- Complete hydrogeological studies to better understand the sources of water at Flame and Moth and Bermingham.
- Review mining plans and benchmark other relevant Hecla operations to define definitive actions to attain the planned improvements in mining productivity, daily development advance and associated costs over the first four years.

1.14.3 MINERAL PROCESSING

Sedgman's QP considers that there is an opportunity to improve the level of detail of the metallurgical predictions and particularly the concentrate production at a month-to-month operational level. Further locked cycle tests at the next stage of study are recommended for samples representing the Flame and Moth deposit and different blends according to the LOM production plan. There may be an opportunity to improve the concentrates grades with further testing, particularly of the zinc concentrate. Additional metallurgical testing at different head grades would also support the approach to capping recoveries, particularly for the comportment of lead to concentrates at lower head grade mill feed. In addition, further hardness tests are recommended on these samples to verify potential grindability variations for future mill feeds. It is also recommended that testing of the increased plant throughout above the 400 tpd be done in the first year of operation to identify potential bottlenecks and confirm requirements for mill modifications to achieve the 550 tpd throughput. Sedgman recommends that Hecla perform a series of debottlenecking exercises and productivity tests on the mill prior to and well in advance of the expected throughput increases. This will help to de-risk the production profile and ensure a smooth ramp up.

1.14.4 ENVIRONMENTAL STUDIES, PERMITTING, SOCIAL OR COMMUNITY IMPACTS

The QP notes that the Mineral Reserves contain material that is not fully permitted for extraction at both Bermingham (Bermingham Deep Northeast Zone) and Lucky Queen. In addition, the current permit limits for the Dry Stack Tailings Facility and the Waste Rock Dump Facility are insufficient to cover the planned waste rock and tailings produced over the LOM.



The QP recommends that Hecla continue with its planned permit approvals and amendment process to reduce the risk to the overall mine plan and investigate alternatives if required.

1.14.5 ECONOMICS ANALYSIS

The QP is of the opinion that as Keno Hill is an operating mine within a relatively stable tax jurisdiction, and the information contained in Section 19.4 Economic Analysis accurately represent the current conditions at the mine. As such, the QP has no additional material recommendations to make.



2. INTRODUCTION

2.1 TERMS OF REFERENCE AND PURPOSE OF THE REPORT

Mining Plus Canada Ltd. (Mining Plus) was retained by Hecla to prepare a Technical Report Summary on the Keno Hill Mine (KHM). The purpose of this TRS is to support the disclosure of the Keno Hill Mineral Resource and Mineral Reserve estimates as of December 31, 2023. This TRS conforms to the United States Securities and Exchange Commission's (SEC) Modernized Property Disclosure Requirements for Mining Registrants as described in Subpart 229.1300 of Regulation S-K, Disclosure by Registrants Engaged in Mining Operations (S-K 1300) and Item 601 (b)(96) Technical Report Summary. Mining Plus visited the Property on October 23 to 26, 2023.

Hecla is a public company, established in 1891, it has headquarters in Coeur d'Alene, Idaho, USA. Hecla owns a 100% interest in the mineral rights for the Keno Hill through its subsidiaries following its successful acquisition of Alexco in September 2022. Elsa Reclamation & Development Company Ltd. (ERDC), an indirect wholly owned subsidiary of Hecla, continues to advance the development and eventual implementation of the District Wide Closure Plan (ESM Reclamation Plan) which addresses the historic environmental liabilities of the district from past mining activities. The potential liabilities associated with the historic operations in Keno Hill are indemnified by the Government of Canada under the terms and conditions of the commercial agreement subject to the requirement for ERDC to develop, permit and implement the site Reclamation Plan.

Keno Hill is located within the Keno Hill Silver District in Canada's Yukon Territory. The Property is situated 350 kilometers (km) north of Whitehorse and lies within the traditional territory of the First Nation of Na-Cho Nyäk Dun. It comprises 242 square kilometers (km²) with numerous mineral deposits and more than 35 historical past-producing mine sites. The property includes Bellekeno, Lucky Queen, Flame and Moth, Onek, and Bermingham deposits and a processing plant (District Mill) along with associated infrastructure. The site is currently operating one underground deposit (Bermingham) and has plans to commence operations in Flame and Moth and Lucky Queen deposits as part of the LOM plan. The operations mine silver, lead, zinc, and gold which is processed to produce silver-lead and zinc concentrates.

In 2010, Alexco constructed a 408 tpd capacity conventional flotation processing plant and they commenced mining at the Bellekeno deposit.

Following the acquisition of Alexco Resource Corp. in September 2022, Hecla focused effort on development activities at Bermingham and Flame and Moth deposits. In 2023, Hecla restarted ore production at both deposits. Flame and Moth production was idled in September 2023 to focus on production and development of the Bermingham deposit but could be restarted to support mill production at any time.

This Report contains forward-looking information; refer to the note regarding forward-looking information at the front of this Report.



2.2 QUALIFICATIONS OF QUALIFIED PERSONS/FIRMS AND SITE VISIT

2.2.1 QUALIFIED PERSONS OR FIRMS

The qualified persons (QP) preparing this technical report are specialists in the fields of geology, exploration, Mineral Resource and Mineral Reserve estimation and classification, underground mining, geotechnical, environmental, permitting, metallurgical testing, mineral processing, processing design, capital and operating cost estimation, and mineral economics.

The following serve as the qualified persons or qualified firms for this Report in compliance with 17 CFR § 229.1302 (b)(1)(i) and (ii) qualified person definition:

- Mining Plus Canada Ltd.
- Ms. Christina Vink, P.Eng. of Sedgman Canada Ltd.
- Mr. Baoyao Tang, P.Eng. of Hecla Yukon
- Mr. Matthew Blattman, PE of Hecla.

The QPs have supervised the preparation of this Report and take responsibility for the contents of the Report as set out in Table 2-1. The Date and Signature summary can be found in Section 26 Date and Signature Page.

Table STYLEREF 1 \s 2- - Report Contributors and Responsibility.

Qualified Person or Firm	Report Responsibilities	Report Sections	
Mining Plus Canada Ltd.	Geology, Mineral Resource Estimate, Mine Design, Mineral Reserve, market studies, mining capital costs and operating costs, pre-tax economics	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.10, 1.11, 1.12.1, 1.13, 1.14.1, 1.14.2, 1.14.4, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 16, 17, 18, 19.1, 19.2, 19.3, 20, 21, 22.1, 22.2, 22.3, 22.6, 22.7, 23.1, 23.2, 23.3, 23.5, 24, 25	
Ms. Christina Vink, P.Eng.	Metallurgy, mineral processing, recovery methods, infrastructure (excludes waste rock management and Dry Stack Tailings Facility (DSTF)	1.8, 1.9 (excludes waste rock management and DSTF), 1.14.3, 10, 14, 15.1, 15.2, 15.3 15.4 15.5, 22.4, 22.5, 23.4	
Mr. Baoyao Tang, P.Eng.	Dry Stack Tailings Facility and waste rock management	1.9 (waste rock management and DSTF only), 15.6, 15.7	
Mr. Matthew Blattman, PE	Post-tax financial model and economics	1.12.2, 1.12.3, 19.4, 19.5, 19.6, 22.8, 23.6	

Mining Plus Canada Ltd. is a mining technical services provider, consisting of professionals specializing in geology, mining engineering (Surface and Underground), geotechnical engineering, mine ventilation and operational management. Mining Plus has grown and diversified over the years to cover a broad range of mineral commodities across the project value chain, from the conceptual stage of projects, right through to feasibility study work, project delivery, commissioning, and mine closure.



OPERATE

Ms. Christina Vink with Sedgman Canada Ltd. is a Professional Engineer (P.Eng.) of Engineers and Geoscientists British Columbia and a Registered Professional (No. 171306) in British Columbia. Ms. Christina Vink is an independent consultant to the Commodity industry and a Qualified Person (QP) as defined by 17 CFR §229.1302 (b)(1)(i). Ms. Christina Vink graduated from the University of Dalhousie with a Bachelor of Applied Science in Chemical Engineering in 2012. Ms. Christina Vink has been directly involved with metallurgical test work and flowsheet development from preliminary testing through to detailed design and process optimization over the last 12 years working on projects in Canada and the United States. Her roles have included providing advice on process flowsheet development, undertaking, and managing process optimization improvements, installing process plant circuit equipment, supervising metallurgical modeling, and the development of test programs.

Mr. Baoyao Tang, P.Eng. is the Chief Mine Engineer for Hecla's Keno Hill Mine. He has over 30 years of experience working in the mining industry in China and Canada in coal, uranium, potash, gold, silver, lead, and zinc deposits on various scopes involving planning, geotechnical engineering, and project management. He holds a Bachelor of Engineering in Mine Construction Engineering from the Shandong University of Mining Technology, Tai'An, China, a Master of Engineering in Mine Construction Engineering from the China University of Mining Science and Technology, Beijing, China, and a Ph.D. in Mine Engineering from the McGill University, Montreal, Canada. He is registered as a Professional Engineer (P.Eng.) with Engineers and Geoscientists of British Columbia, Canada and with Engineers Yukon, Canada. In his role with Keno Hill Operations, he provides technical support and collaborates with site staff on mine design and planning, geotechnical engineering for both underground and surface infrastructures. He has worked at the Keno Hill Mine since April 2022 to the present and has inspected the property on multiple occasions. His most recent inspection to the property was January 28, 2024.

Matthew Blattman, PE, is the Director – Technical Services at Hecla's corporate office. He has over 28 years of experience working in large and small underground and open pit operations in North, Central and South America as well as Northern Europe. He holds a Bachelor of Science in Mining Engineering from the University of Nevada (Mackay School of Mines) and is registered as a Professional Engineer (PE) in the state of Nevada. Mr. Blattman is a Registered Member of the Society of Mining, Metallurgy and Exploration (RM-SME). In his role with Hecla, he leads the Corporate Technical Services group in supporting the operating sites with mine planning, geotechnical, metallurgical, and capital projects. He has visited the site multiple times in his role at Hecla over the period of March 2022 to December 2023.

2.2.2 SITE VISIT

Mining Plus most recently visited the site between October 22 to 25, 2023. During this site visit, Mining Plus Qualified Persons (QP) received a project overview by site management with specific activities as follows:

• The Mining Plus geology QP conducted a comprehensive tour of various geological information collection areas. This included a visit to the logging room, where she held discussions with the



technical staff on topics such as geological context, deposit type, mineralization, logging processes, sampling process, chemical analysis methods, quality control, and chain of custody. Additionally, discussions encompassed the procedures of the previous owner (Alexco) and the historical data. A visit of core storage facilities, reject samples, and pulp samples, inspection of ongoing diamond drilling on the surface and at the old pit. Underground tours to observe structures and mineralization and a visit to the in-house laboratory, where the applied methodology and its impact on mining reconciliation results were discussed.

- The Mining Plus mining QP visited production, development, and critical infrastructure areas in the Bermingham and Flame and Moth underground deposits. Overhand cut and fill/drift and fill production areas were visited where discussions were carried out on the mining cycle, backfill, productivities, dilution, and recovery. The QP discussed mining methods, planning, and scheduling activities, mobile equipment, ventilation, egress, services and geotechnical procedures with relevant site and supervisory personnel.
- The Mining Plus mining QP visited surface facilities/operations around the District Mill site, Dry Stack Tailings Facility (DSTF) and Bermingham deposit and interviewed environmental and applicable staff for environmental/social management systems, permitting and compliance programs, reclamation/closure plans and associated budget.
- Ms. Christina Vink, P.Eng., the processing QP, did not visit the site as it was deemed a desktop review of the current mill operations data and correspondence with relevant site personnel would suffice for purposes of this Technical Report Summary.
- Mr. Baoyao Tang, P.Eng., QP for the Dry Stack Tailings Facility and the waste rock storage areas, has completed a personal inspection of the Property on multiple occasions from the April 2022 to January 2024 and he is currently engaged in site based rotational employment at the Property.
- Mr. Matthew Blattman, PE, QP for the post-tax economic model and cashflow analysis, has completed a personal inspection of the Property on multiple occasions from March 2022 to December 2023.

2.3 EFFECTIVE DATE

The Effective Date of this TRS is December 31, 2023.



2.4 PREVIOUS TECHNICAL REPORTS

This S-K 1300 Technical Report Summary is the first that has been prepared by Hecla for the Keno Hill Mine. Thus, this report is not an update of a previously filed Technical Report Summary under the S-K Regulations.

However, multiple technical reports on Keno Hill have been published between 2011 and 2021:

- Technical Report on the Lucky Queen Deposit, Lucky Queen Property, Keno Hill District, Yukon, prepared by SRK Consulting in 2011 (SRK, 2011a).
- Technical Report on the Onek Deposit, Keno Hill District, Yukon, Onek Property, Keno Hill District, Yukon, prepared by SRK consulting in 2011 (SRK, 2011b).
- Technical Report on the Flame & Moth Deposit, Flame & Moth Property, Keno Hill District, Yukon, prepared by SRK Consulting in 2012 (SRK, 2012a).
- Technical Report on the Bermingham Deposit, Bermingham Property, Keno Hill District, Yukon, prepared by SRK Consulting in 2012 (SRK, 2012b).
- Updated Technical Report on the Flame & Moth Deposit, Flame & Moth Property, Keno Hill District, Yukon, prepared by SRK Consulting in 2013 (SRK, 2013).
- Updated Preliminary Economic Assessment for the Keno Hill Silver District Project Phase 2, Yukon, Canada, prepared by SRK Consulting in 2014 (SRK, 2014).
- Technical Report Preliminary Economic Assessment of the Keno Hill Silver District Project, Yukon Territory, Canada, prepared by RPA in 2017 (RPA, 2017).
- NI-43101 Pre-feasibility Study the Keno Hill Silver District Project, Yukon Territory, Canada, prepared by Mining Plus in 2019 (Alexco, 2019b).
- NI-43101 Pre-feasibility Study the Keno Hill Silver District Project, Yukon Territory, Canada, amended on February 13, 2020 (Alexco, 2020).
- NI 43-101 Technical Report on Updated Mineral Resource and Reserve Estimate of the Keno Hill Silver District. Prepared by Mining Plus in 2021 (Alexco, 2021b).

2.5 SOURCE OF INFORMATION

This report has been prepared by Mining Plus Canada Consulting Ltd. (Mining Plus) for Hecla. The information, conclusions, opinions, and estimates contained herein are based on:



Information available to Mining Plus at the time of preparation of this report including supporting information from report titled: "NI 43-101 Technical Report on Updated Mineral Resource and Reserve Estimate of the Keno Hill Silver District, dated May 26th, 2021, prepared by Mining Plus and filed with the Canadian Securities Exchange System for Electronic Document Analysis and Retrieval (SEDAR) and internal (Hecla) technical reports.

- Documentation for licensing and permitting, published government reports, and public information as included in the References section of this report (Section 0) and cited in this report.
- Assumptions, conditions, and qualifications as set forth in this report.
- Data, reports, and other information supplied by Hecla and other third-party sources as listed below.

Discussions in relation to past and current operations at the Keno Hill Mine were held with the following personnel:

- Mr. Keith Blair, Chief Geologist, Hecla.
- Mr. Wes Johnson, Chief Engineer, Hecla.
- Mr. Matthew Blattman, Director Technical Services, Hecla.
- Mr. Zach Ward, Senior Mining Engineer, Hecla.
- Mr. Benjamin Chambers, Corporate Resource Geologist, Hecla.
- Mr. Seymour Iles, Keno Hill District Exploration Manager, Hecla Yukon.
- Mr. Shawn Pelechaty, Mill Manager, Hecla Yukon.
- Mr. Derrick Colquhoun, Mill Superintendent, Hecla Yukon.
- Mr. Mike Tanasa, Senior Mine Engineer, Hecla Yukon.
- Mr. Justin Patterson, Technical Services Manager, Hecla Yukon.
- Mr. Scott Snider, Senior Geologist, Hecla Yukon.
- Mr. Kevin Eppers, Environmental Manager, Hecla Yukon.
- Ms. Arlene Stearman, Senior Environmental Coordinator, Hecla Yukon.
- Mr. Sebastien Tolgyesi, Assistant GM, Hecla Yukon.
- Ms. Loralee Johnston, Director Indigenous Affairs & Canadian Community Relations, Hecla Yukon.



- Mr. Gordon Wong, Director of Finance, Hecla Canada Ltd.
- Mr. Samuel Santos, Site Controller, Hecla Yukon.
- Ms. Lori Paslawski, Senior Exploration Geologist, Hecla Yukon.

The third-party sources providing information in support of this document are:

- SRK Consulting (Canada) Inc.
- Tetra Tech (Canada).

Geotechnical parameters:

• Keno Hill Silver District-Pre-Feasibility Study Geotechnical Engineering. Project No. DMNY5500 Rev #2 March 21, 2019, prepared by Jacobs Engineering Group Inc.

Metallurgical laboratory testing including:

- An Investigation into The Flotation of Samples from The Bermingham and Christal Zone Deposits, prepared for Alexco Resource Corp. Project 15774-002 – SGS Final Report #2 March 15, 2019, prepared by SGS Canada Inc.
- An Investigation into the Flotation of Samples from the Bermingham Deposit, prepared for Alexco Resource Corp. Project 15774-001 SGS Final Report October 25, 2018, prepared by SGS Canada Inc.
- An Investigation into The Comminution and Flotation of Samples from the Lucky Queen and Flame and Moth Deposits prepared for Alexco Resource Corp. Project 15774-002 SGS Final Report, November 29, 2018.

2.6 UNITS OF MEASURE AND GLOSSARY OF TERMS

Units of measurement used in this TRS conform to the metric system unless otherwise noted.

All currency in this TRS is United States dollars (USD) unless otherwise noted. Canadian dollars (CAD) have been converted to United States dollars at an exchange rate of USD 1.00 = CAD 1.35 unless otherwise noted. Table 2-2 includes a full list of abbreviations used in this report and their associated definitions.

Table STYLEREF 1 \s 2- – List of Abbreviations, Acronyms and Their Associated Definition.

ltem	Definition		Item	Definition
°C	degree Celsius		m³	cubic meter
°F	degree Fahrenheit		m³/h	cubic meters per hour

DEFINE | PLAN | OPERATE

ltem	Definition
μm	micrometer
а	annum
А	ampere
AKHM	Alexco Keno Hill Mining Company Ltd.
ARSA	Amended and Restated Environmental Subsidiary Agreement
bbl	barrels
Btu	British thermal units
BWI	Bond Ball Mill Work Index
C\$	Canadian dollars
cal	calorie
ССВА	Comprehensive Cooperation and Benefits Agreement
cfm	cubic feet per minute
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
cm	centimeter
cm ²	square centimeter
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CRF	cemented rock fill
CRIRSCO	Committee for Mineral Reserves International Reporting Standards
d	day
DCF	discounted cash-flow
dia	diameter
DIAND	Department of Indian Affairs and Northern Development
dmt	dry metric tonne
DSTF	dry stack tailings facility
dwt	dead-weight tonnage
EOM	end of mine life
ERDC	Elsa Reclamation & Development Company
FNNND	First Nation of Na-Cho Nyäk Dun
ft	foot
ft/s	foot per second
ft ²	square foot
ft ³	cubic foot
FW	footwall
g	gram
G	giga (billion)
G&A	General and Administrative
g/L	gram per liter
Gal	Imperial gallon

Item	Definition	
m³/s	cubic meters per second	
Ma	mega-annum/million years ago	
MASL	meters above sea level	
MCF	mechanized cut and fill	
mi	mile	
min	minute	
mm	millimeter	
mph	miles per hour	
MVA	megavolt-amperes	
MW	megawatt	
MWh	megawatt-hour	
N-AML	non-acid material leaching	
NP	neutralizing potential	
NPV	net present value	
NTS	National Topographic System	
OMS	Operation, Maintenance, and Surveillance	
OZ	Troy ounce (31.1035 g)	
oz/st, opt	ounce per short ton	
P-AML	potentially-acid material leaching	
PLC	programmable logic controller	
ppb	part per billion	
ppm	part per million	
PRA	Inspectorate America Corporation	
psia	pound per square inch absolute	
psig	pound per square inch gauge	
QEMSCAN	quantitative evaluation of materials by scanning electron microscopy	
QMA	Quartz Mining Act	
QML	Quartz Mining Licence	
RCP	reclamation and closure plan	
RL	relative elevation	
ROM	run of mine	
RQD	rock quality designation	
S	second	
S&A	Starkey & Associates	
SGS	SGS Canada Inc.	
SI	slope indicator	
st	short ton	
stpa	short ton per year	

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Item	Definition
stpd	short ton per day
t	metric tonne
TMP	tailings management plan
TRS	technical report summary
tons	short tons
tpa	metric tonne per year
tpd	metric tonne per day
TYC	Treadwell Yukon Company Limited
UKHM	United Keno Hill Mines
URF	uncemented rock fill
USD	United States dollar
Usg	United States gallon
Usgpm	US gallon per minute
V	volt
w	watt
wmt	wet metric tonne
WRDA	waste rock disposal area
WRSF	waste rock storage facility
wt%	weight percent
WTF	water treatment facility
WUL	Water Use Licence
wwi	First World War
WWII	Second World War
yd³	cubic yard
YESAA	Yukon Environmental and Socio-economic Assessment Act
YG	Government of Yukon
yr	year
μ	micron
μg	microgram
μm	micrometer

Item	Definition
Gpm	Imperial gallons per minute
gpt	gram per tonne
gr/ft ³	grain per cubic foot
gr/m ³	grain per cubic meter
GTC	ground temperature cable
ha	Hectare
hp	Horsepower
hr	hour
HW	hanging wall
Hz	hertz
ICP	inductively coupled plasma
in.	inch
in ²	square inch
J	joule
k	kilo (thousand)
kcal	kilocalorie
kg	kilogram
km	kilometer
km/h	kilometer per hour
km ²	square kilometer
kPa	kilopascal
kVA	kilovolt-amperes
kW	kilowatt
kWh	kilowatt-hour
L	liter
L/s	liters per second
lb	pound
LCT	locked cycle flotation test
m	meter
М	mega (million); molar
m²	square meter

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3. PROPERTY DESCRIPTION

3.1 PROPERTY LOCATION, COUNTRY, REGIONAL, AND GOVERNMENT SETTING

The Keno Hill Mine is located in the central Yukon Territory, Canada, and covers an area of approximately 15,000 ha (Figure 3-1) in central Yukon (63° 54' 32" N, 135° 19' 18" W; NTS 105M/14 and 105M/13). The operations are located in the traditional territory of the First Nation of Na-Cho Nyäk Dun (FNNND).

Access to the property is via the Alaska Highway from Whitehorse to Stewart Crossing (354 km), then from Stuart Crossing to Mayo via the Silver Trail Highway (53 km), and an all-weather gravel road northeast from Mayo to Elsa (45 km); a total distance of 452 km.

The property lies along the broad South McQuesten River valley on three prominent hills to the south of the valley: on and around Galena Hill, Keno Hill, and Sourdough Hill, collectively known as the Keno Hill District. The Bermingham deposit is located on Galena Hill (Figure 3-2). The Lucky Queen and Onek deposits are located on Keno Hill, while the Bellekeno deposit is located on Sourdough Hill. The Flame and Moth deposit and the Keno Hill District Mill are located at the headwaters of Christal Creek.

Hecla has exploration, maintenance, and camp facilities near the location of the historic mining town of Elsa, which is located just off the Silver Trail Highway, and administration, mill, and mine facilities at the mill complex located near Keno City. The Keno Hill Mine is supplied with electrical power by Yukon Energy Corporation from two hydroelectric plants near Mayo as well as an interconnection to the larger Whitehorse hydropower generating facility. The project area is covered by NTS map sheets 105M/13 and 105M/14.

3.2 MINERAL TENURE, AGREEMENT, AND ROYALTIES

Mineral exploration in the Keno Hill area was initially permitted under the terms and conditions set out by the Government of Yukon (Yukon Government) in the Class 3 Quartz Mining Land Use Permit LQ-00186, issued on July 5, 2006, and valid until July 4, 2011. The former owner, Alexco, subsequently obtained a Class 4 Quartz Mining Land Use Permit – LQ-00240 on June 17, 2008. The two permits were amalgamated on December 8, 2008, under LQ-00240, which has subsequently been renewed as Class 4 Mining Land Use Approval LQ00476 on June 17, 2018.

All quartz mining leases, and Crown Grants have been legally surveyed; the quartz mining claims have not been legally surveyed. The Keno Hill Silver Property quartz mining claims and quartz mining leases are held by one of two wholly owned subsidiaries of Alexco Resource Corp. (doing business as Hecla Yukon): Elsa Reclamation & Development Company Ltd. (ERDC) or Alexco Keno Hill Mining Company Ltd. (AKHM), except for holding a 50% share with third party individuals in three leases (Rico, Kiddo, and Argentum).



The total Hecla Keno Hill property quartz mineral holdings as of December 31, 2023, excluding the mineral claims that are the subject of the separate technical report titled Mineral Resource Estimation Elsa Tailings Project Yukon, Canada, by SRK dated June 16, 2010, covers an area of 238.12 km² and comprises 717 quartz mining leases, 867 quartz mining claims and two Crown Grants as shown in Figure 3-3 (also attached separately with claim label detail in Appendix A).



Figure STYLEREF 1 \s 3- Keno Hill Mining Operations Location Map.



S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada



S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada



Figure STYLEREF 1 \s 3- - AKHM/ERDC Quartz Mining Claim and Lease Holdings in the Keno Hill Excluding the Elsa Tailings Property.



The Bellekeno deposit is centered at Latitude 63.90853 degrees north; Longitude 135.26201 degrees west. The Mineral Resources for the Bellekeno deposit reported herein are located on the following quartz mining leases: SAM 55327, TUNDRA 12838, WHIPSAW 14081, and NOD FR. 16170.

The Lucky Queen deposit is centered at Latitude 63.94786 degrees north; Longitude 135.25421 degrees west. The Mineral Resources for the Lucky Queen deposit are located on the following quartz mining leases: ANTHONY 12909, OK FRACTION 13094, UNCLE SAM 12923, MATHOLE 12937, and MAYO 12919.

The Flame and Moth deposit is centered at Latitude 63.90588 degrees north; Longitude 135.32931 degrees west. The Mineral Resources for the Flame and Moth deposit are located on the MOTH, FLAME, FRANCES 5, FRANCES 7, and BLUE quartz mining leases.

The Onek deposit is centered at Latitude 63.91293 degrees north; Longitude 135.29134 degrees west. The Mineral Resources for the Onek deposit are located on the following quartz mining leases: FISHER, ELI, GALENA FARM, and LONE STAR.

The Bermingham deposit is centered at Latitude 63.908 degrees north; Longitude 135.424 degrees west. The Mineral Resources for the Bermingham prospect reported herein are located on the ATLANTIC, ARCTIC, ETTA, MASTIFF, LILY, DARWIN, HUXLEY, JUMBO, GIBRALTAR, FIG TREE quartz mining leases.

3.3 MINERAL RIGHTS AND PERMITTING

The Bellekeno, Bermingham, and Flame and Moth mines have all permits and authorizations in place to commence full-scale mine production. However, it to maintain full-scale production for an extended period of time, or to increase production at those mines, it is likely that modifications to certain permits will be required, including the Quartz Mining Licence (QML-0009) and the Water Licence QZ18-044, in order to increase water discharge amounts/rates, increase the volume or change location of waste rock and tailings storage or other changes. In addition, the Lucky Queen deposit has in place a Quartz Mining Licence (QML-0009) which authorizes mining operations, but Water Licence QZ18-044 would require an amendment before water-based activities for Lucky Queen can proceed. The key permits for the activities at the Keno Hill Mine are summarized in Table 3-1.

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Purpose	YESAA Approval Quartz Mining Act Approval		Water Use Licence
Alexco Keno Hill Mining Permit	5		
Bellekeno Advanced Exploration	Project # 2008-0039 Decision Document	Class 4 Mining Land Use Approval (LQ00476, expires 2028)	Type B Water Use Licence QZ07- 078/Amendment 1 QZ10- 060, Licence cancelled in 2015 as authorizations moved to amended type A Water Licence in 2015 ²
Bermingham Advanced Exploration	Project#2017-0086 Decision Document	Class 4 Mining Land Use Approval (LQ00476, expires 2028)	Schedule 3 Notice of Water Use/Deposit of Waste without a Licence
Bellekeno Mine Production	Deduction Project # 2009-0030 Decision Document Quartz Mining Licence (QML-0009, amendment 2, expires 2037) ¹ Upper Mino Ouartz Mining Licence (QML-0009, amendment 2, expires 2037) ¹		Type A Water Use Licence QZ18-044 issued, Expires 2037 ²
Onek and Lucky Queen Mine Production	Project#2011-0315 Decision Document	Quartz Mining Licence (QML-0009, amendment 2, expires 2037) ¹	No current type A Water Use Licence
Flame and Moth Mine Production	ame and Moth Mine oduction Project # 2013-0161 Decision Document		Type A Water Use Licence QZ18-044 issued, Expires 2037 ²
Bermingham Mine Production	Project#2017-0176 Decision Document	Quartz Mining Licence (QML-0009, amendment 2, expires 2037) ¹	Type A Water Use Licence QZ18-044 issued, Expires 2037 ²
Flat Creek Camp Construction	Project#2006-0157 Decision Document	Class 4 Mining Land Use Approval (LQ00476, expires 2028)	
Exploration	Project#2017-0183 Decision Document	Class 4 Mining Land Use Approval (LQ00476, expires 2028)	
Elsa Reclamation & Developme	nt Company Permits		
Care and Maintenance	Project # 2006-0293 and 2012-0141	N/A	Type B Water Use Licence QZ21-012 expires April 18 2043 ²
Reclamation Plan	Project #2011-0187 Decision Document (construction and operation of land treatment facility) Project #2012-0077 Decision Document (building demolition) Project #2018-0169 Decision Document (Reclamation Plan implementation)	N/A	Submitted application QZ21-012 to Water Board following the issuance of YESAB Decision Document for Project #2018- 0169

Table STYLEREF 1 \s 3- – Relevant Assessment and Regulatory Approvals.

Notes:

1. https://emr-ftp.gov.yk.ca/emrweb/COMM/major-mines/keno-hill/mml-keno-2021-annual-report.pdf

2. http://www.yukonwaterboard.ca/waterline/

3.4 AGREEMENTS AND ROYALTIES

Future production from the Project is subject to a 1.5% NSR royalty payable to the Government of Canada. This royalty is a condition of the ARSA. Approximately CAD 1.2 million of the total CAD 4.0 million has been paid or accrued for as of the date of this Report.

Other underlying agreements and contracts are discussed in Section 16.2



3.5 ENVIRONMENTAL LIABILITIES AND OTHER PERMITTING REQUIREMENTS

Under the commercial agreement with the Government of Canada, responsibility for the historic environmental liabilities within Keno Hill is assigned to ERDC, an indirectly wholly owned subsidiary of Hecla, as the tenure holder of Keno Hill. However, under the commercial agreement among ERDC, Alexco, and the Government of Canada, dated July 18, 2013, Canada has agreed to indemnify ERDC in respect of the environmental state of Keno Hill known and unknown as of April 14, 2006. The commercial agreement contains a provision that addresses the liability for the Existing State of the Mine if Hecla brings either historic mines or newly discovered deposits into production or operation.

Under the agreement, ERDC must give notice to Canada for commercial production of ore for commercial purposes. This creates a Production Unit and terminates the indemnity for the Production Area. However, the Indemnity continues to apply to any contamination that may migrate from Keno Hill onto a Production Unit with the exception of contamination from another Production Unit or Advanced Exploration area.

Yukon Government requires financial security from AKHM to cover potential liabilities associated with the cost of reclamation and closure for the Quartz Mining Licence QML-0009. The closure cost estimate is consistent with the plan requirements and closure costing guidance as per the August 2013 Reclamation and Closure Planning for Quartz Mining Projects. AKHM has completed a cost estimate to implement the Revision 7 of the Reclamation and Closure Plan for the Keno Hill Mine and the estimated cost to implement the reclamation and closure plan at the End of Mine Life (EOM) is CAD 9,643,943. Following an internal review process, the amount of security currently required by the Yukon Government for the reclamation and closure of the Keno Hill Mine is CAD 9,681,500 which includes any security already held under the Water Act. AKHM was issued a Type A Water Licence (QZ18-044), and the Yukon Water Board also requires AKHM to furnish and maintain financial security with the Yukon Government which includes any security held under the Quartz Mining Act. Following the review of the Reclamation and Closure Plan Rev 6, pursuant to the Waters Act, AKHM has furnished security of CAD 11,346,433. It is important to note that not all the liabilities included in the cost estimate have yet been realized or created.

Mining Plus is not aware of any other environmental liabilities on the property. The permits and Licenses are discussed in Chapter 17 Environmental Studies, Permitting, and Plans, Negotiations, or Agreements with Local Individuals or Groups.

Hecla has all the required permits to conduct the proposed work on the property and to continue production except for the amendments noted in Section 3.3. Mining Plus is not aware of any other significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the property.



3.6 MINERAL AND SURFACE PURCHASE AGREEMENTS

Prior to Hecla's acquisition of Alexco, United Keno Hill Mines, the previous owner of the properties ceased operations in 1989. In January 2001, the Minister of the Department of Indian Affairs and Northern Development (DIAND) exercised its authority under the Yukon Waters Act by issuing a determination that the mine had been abandoned. In October 2001, the site was declared a Type II Site under the Devolution Transfer Agreement, which meant that the Yukon Government would manage the property, but financial responsibility for environmental liabilities would remain with the Government of Canada.

In June 2005, PricewaterhouseCoopers (PwC), a court-appointed interim receiver and receiver-manager of United Keno Hill Mines Limited and United Keno Hill Minerals Limited (collectively UKHM), selected Alexco as the preferred purchaser of the assets of UKHM. In February 2006, following the negotiation of a Subsidiary Agreement (which subsequently became the ARSA described above) between the Government of Canada, the Government of Yukon, and Alexco, the Supreme Court of Yukon approved the purchase of the assets of UKHM by Alexco through its wholly owned subsidiary ERDC.

The UKHM assets comprised two Crown grants, 674 mining leases, 289 mineral claims, a concentration plant, various buildings, and equipment, as well as partial ownership interest in three mining leases, 36 mineral claims, in addition to a leasehold interest in one mineral claim. Title to all UKHM assets was transferred to Alexco in late November 2007, following the approval of a Type B Water Licence by the Yukon Water Board. In September 2022, Hecla completed the acquisition of Alexco along with its subsidiaries and previously negotiated agreements. All quartz mining leases have been legally surveyed, whereas most of the quartz mining claims have not.

Under the ARSA, ERDC is responsible for ensuring that the site remains in compliance with the terms and conditions of the Water Licence, and all applicable environmental laws. The commercial agreement requires ERDC to develop and implement a Reclamation Plan for Keno Hill, and to retain the liabilities of the UKHM site subject to indemnification by the Government of Canada. Under the commercial agreement, the Government of Canada, as represented by Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), retains the obligation for funding for the Reclamation Project.

The ARSA also allows Hecla to undertake exploration of the AKHM site and undertake active mining. In the event that Hecla wishes to designate a portion of the AKHM site for development and production (a "Production Unit"), agreements between CIRNAC and ERDC will govern which party is responsible for the costs of reclamation and water-related components of that Production Unit. There is a the Bellekeno Production Unit which covers the affected areas for both Bellekeno and Flame and Moth. Bermingham Production Unit notice was submitted to CIRNAC and approved November 24, 2023.



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

4.1 ACCESSIBILITY

The Project is located in central Yukon Territory, Canada. The closest sizable town is Mayo, which is located on the Stewart River, approximately 45 km to the southwest of the Project location. Mayo is accessible from Whitehorse via a 460 km all-weather road and is also serviced by the Mayo airport, which is located just to the north of Mayo. An all-weather gravel road known as the Silver Trail Highway leads from Mayo to the Project, the historic company town of Elsa, and the village of Keno City

4.2 TOPOGRAPHY, ELEVATION, VEGETATION AND CLIMATE

The Property area is characterized by rolling hills and mountains with a relief of up to 1,600 meters (m). The highest elevation is Keno Hill at 1,975 m. Slopes are gentle except for the north slopes of Keno Hill and Sourdough Hill. The mining properties in the Keno Hill District are located between 850 m and 1,540 m elevation.

The Property is located in the North Yukon Plateau ecoregion, which is a climatic and biophysical subset of the Boreal Cordillera ecozone. Snowfall is minimal during the long cold winters with a mean temperature of -20°C, and extreme lows down to -50°C. Winter days are short with the sun low on the horizon such that north-facing slopes can experience 10 weeks without direct sunlight throughout the winter solstice. The summers are usually dry and warm with maximum temperatures reaching 32°C. Exploration and mining work can be carried out year-round. The growing season is short, but vigorous because of the extended daylight hours in the summer. The average annual precipitation ranges from 300 mm in the valleys to 600 mm on mountaintops. The maximum precipitation is in August and minimum precipitation occurs in April. The Property area is within the Extensive Discontinuous Permafrost Zone. Permafrost is commonly encountered under thick organic layers that cover the South McQuesten River valley and north-facing slopes. Since soil is limited, only low-growing plants exist at higher elevations such as sedges, grasses, and creeping shrubs. Sub-alpine firs and larger shrubs become more dominant in the subalpine and upper boreal zones. The primary tree species along the mid and lower slopes are white spruce (Picea glauca), trembling aspen (Populus tremuloides), Alaskan birch (Betula neoalaskana), and the occasional balsam poplar (Populus balsamifera). There is a matrix of scrub birch (Betula glandulosa), willow (Salix sp.), and ericaceous shrubs with sparse to open black spruce cover. Streams web among the tussocks of sedges and hummocks of moss eventually joining the South MacQuesten River that flows to the Stewart River a tributary of the Yukon watershed.



4.3 PHYSIOGRAPHY

The landscape in this area was formed by past glacial activity, large deposits of glaciofluvial and glaciolacustrine material blanket the valley floor. Morainal till covers the lower to mid-mountain slopes, but only a thin veneer of soil remains in the alpine, here often bedrock and talus are exposed.

4.4 LOCAL INFRASTRUCTURE AND RESOURCES

The Keno Hill Mine is well connected by a network of public and private gravel roads including the Silver Trail Highway and the Bellekeno haul road, which was built to bypass the mining traffic around the village of Keno City. A large number of roads constructed for past mining operations are still serviceable. Local resources in terms of manpower, rental equipment, materials, and supplies are limited and in high demand depending on other resource activities.

The existing infrastructure at or near the Property includes:

- A network of public and private roads connecting the mines, process plants, and other facilities, including the Silver Trail Highway.
- Administration, maintenance, and camp facilities near the town of Elsa.
- Mine workings and infrastructure including water treatment at the Bellekeno deposit.
- Mine workings and infrastructure at both Flame and Moth and Bermingham deposits.
- Mine workings and minor surface buildings at Lucky Queen deposit.
- Waste rock storage facilities at the Flame and Moth, Lucky Queen, Bellekeno, and Bermingham deposits.
- Crushing plant and flotation processing plant.
- Dry stack tailings facility located adjacent to the process plant.
- Process and potable water sources.
- Hydro electrical grid power is available in the area from the Yukon Electrical Company Limited grid. Diesel power backup onsite.
- Airstrip located in the village of Mayo, YT.



5. HISTORY

The history of the Keno Hill mining camp is described in Cathro (2006). The information presented in this section draws heavily from that source.

The Keno Hill mining camp area has a rich history of exploration and mining dating back to the beginning of the 1900s. Earliest prospectors had been working the area in the vicinity of Mayo for gold, especially after the Klondike gold rush of 1898. The first silver was found in 1903; however, interest was low due to the prospector's interest in gold alone — despite an assay from 1905 yielding more than 11 kg/t of silver. Small-scale mining finally commenced in 1913 at the Silver King mine with the first shipment of 50 tonnes of vein material to a smelter in San Francisco, CA.

In the ensuing 100 years of mining, activity peaked and decreased with changes in silver prices, world events, and operating companies in the Yukon. Notable periods of interest in the historic evolution of the Keno Hill mining camp included:

- After WWI, success at the Keno mine led to a staking rush, resulting in the discovery of a number of rich deposits. In the early 1920s, the Treadwell Yukon Company Limited (TYC) acquired a number of claims and started mining.
- After WWII there was a sharp decline in activity in the Keno Hill camp until a new company, Keno Hill Mining Company Ltd., later United Keno Hill Mines Ltd. (UKHM), purchased all TYC properties, started production and sparked increased exploration activity.
- Peak mining activity occurred in the 1950s through to the 1970s, with new discoveries across the district adding to mineral inventory.
- UKHM restarted the TYC mill in April 1947 processing ore primarily from Hector Calumet mine and Elsa mine. Production from the Hector Calumet mine increased in the 1950s and it was the primary silver producer in the region. Overall, Hector Calumet produced 96 million ounces of silver over its mine life.
- Open pit mining began in the late 1970s, mainly to recover selected crown pillars; from 1982 to 1985 Sadie-Ladue and Shamrock were mined on a small-scale basis, and from 1989 to 1990 Shamrock, Silver King, Hector-Calumet, Lucky Queen, Bermingham, and Keno were mined.
- UKHM stopped production from the Keno Hill Silver District permanently in early 1989.
- Between 1990 and 1998 Dominion Mineral Resources and Sterling Frontier Properties Company of Canada Limited (Dominion) carried out both reclamation work across the district as well as exploration at the Bellekeno, Husky Southwest, and Silver King mines in order to reopen the camp.
- In the late 1990s, Dominion abandoned its UKHM right driving UKHM into bankruptcy.



- In 2001, the site was declared abandoned by the Government Operations Centre, and the federal government inherited the assets.
- In June 2005, Alexco was selected as the preferred purchaser of the assets of UKHM by PwC, the court-appointed interim receiver and receiver-manager of the Project holdings. In February 2006, the Supreme Court of the Yukon approved Alexco's purchase of UKHM's assets through Alexco's wholly owned subsidiary ERDC.
- Between 2010 and 2013, Alexco, operating at approximately 200 tpd produced 5.64 million ounces of silver before suspending mining operations.
- In Q4 of 2020 Alexco returned to operation and produced approximately 0.57 million ounces of silver between 2020 and 2022.
- On September 7, 2022, Hecla completed the acquisition of Alexco.

The production history for the District has been documented in Cathro (2006) and reproduced in Table 5-1. Note that the original reference is presented in imperial units and reproduced as such in the table.

	Tops ((000)	Red	covered Grades				7n ((000 lb)
Mine	Ions (1000)	Ag (oz/ ton)	Pb (%)	Zn (%)	Ag ('000 oz)	(מו 2001) מק	2n ('000 lb)
Hector-Calumet	2,721.30	35.4	7.5	6.1	96,220	406,913	334,571
Elsa	491	61.4	4.9	1.4	30,158	47,708	13,485
Husky	429.4	41.7	3.9	0.4	17,889	33,290	3,309
Sadie Ladue	244.3	52.1	6.5	4.5	12,726	31,924	22,029
Keno	283.8	44.4	10.7	3.7	12,602	60,549	21,189
Lucky Queen	123.6	89.2	7.0	2.7	11,019	17,223	6,653
Silver King	207.6	53	7.7	0.8	10,996	31,918	3,510
No Cash	166.5	29.8	3.6	1.9	4,969	11,912	6,188
Galkeno	167.1	27.2	5.2	2.7	4,544	17,437	8,999
Bermingham	186.3	20.3	4.2	0.6	3,778	15,576	2,158
Bellekeno	40.5	42.6	9.8	2.3	1,724	7,967	1,829
Black Cap	48.6	27.4	1.6	0.3	1,331	1,560	269
Onek	95.3	13.6	5.5	3.4	1,299	10,456	6,452
Ruby	40.7	25.2	3	1.3	1,024	2,421	1,023
Shamrock	5.3	180.3	37.6	0.3	962	4,013	37
Comstock	22.9	39.7	10.7	3.8	907	4,891	1,719
Dixie	23.9	20.2	3.8	5.1	482	1,813	2,456
Husky Southwest	10.5	39.6	0.3	0.1	414	56	17
Townsite	18.6	16.4	4.3	2	305	1,583	730
Mt. Keno	1.6	139.3	17.7	-	221	562	-

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Table STYLEREF 1 \s 5- – District Production through to 1989 (Cathro, 2006).

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Miller (UN & Dragon)	9.4	15.1	2.2	0.7	141	420	140
Flame and Moth	1.6	18.3	1.1	0.9	29	35	29

5.1 HISTORY, DRILLING, AND PAST PRODUCTION OF THE BELLEKENO DEPOSIT

The Bellekeno area hosts ten veins on the north-facing slope of Sourdough Hill across the Lightning Creek valley from the Keno mine. Initially staked in 1919 by Andrew Johnson following the discovery of the Tundra vein, the nearby Ram vein was staked the following year. In 1921, Alex Gordon staked the Eureka, Whipsaw, and Extension mining claims. Combined, these five claim groups covered all the known veins in the Bellekeno deposit.

The Bellekeno deposit was mined during four periods between 1921 and 2011. Each period of mining was followed by a period of extensive exploration to replace exhausted mineral inventory. Between 1921 and 1928, 495 t of hand-sorted vein material grading 9,621 g/t silver was sacked and shipped to San Francisco, CA.

The Depression, World War II, and perhaps some litigation marked the transition into larger-scale mining. In 1947, the claims were purchased by Mayo Mines Ltd. After extensive exploration and adit development, production was briefly recommenced. Under the ownership of Mayo Mines, the Bellekeno mine extracted two products: a direct shipping high-grade product, and a lower-grade concentrate that was processed at the nearby Mackeno mill. With high development requirements, small deposits, and poor milling recovery (<70%), the company operated at a net loss between 1947 and 1954.

Between 1955 and 1965, the property changed owners a number of times, as production attempts proved unsuccessful before it was purchased by UKHM. After acquiring the deposit, UKHM began intermittent exploration, development, and rehabilitation programs, and the development of the Bellekeno 625 adit. Exploration programs included surface overburden drilling, soil and geophysics surveys, trenching, and core drilling. Bellekeno was in production between 1988 and 1989, until UKHM was forced into bankruptcy. Purchased in 2006 by Alexco, the small mineral inventory has been expanded and it was in commercial production from 2011 to 2013, and then between 2020 and 2021. Mining to date by Alexco has extracted 6.2 M oz of silver along with lead, and zinc.

The historic production results for Bellekeno Mine are summarized in Table 5-2.

Year	Tonnes (t)	Ag (g/t)	Pb (%) ⁴	Ag (oz)
1921-1989 ¹	42,790	1,640	3.7	2,257,200
2010-2013 ¹	242,152	725	9.2	5,644,000
2020-2021	20,170	874	11.9	566,791
Total	305,112	863	8.6	8,467,991

Table STYLEREF 1 \s 5- — Past Production Records for Bellekeno Property.

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1. Sourced from Alexco, 2021b.

Table 5-3 summarizes the latest Resource and Reserve estimates for the Bellekeno deposit.



Table	STYLEREF 1	\s 5- – Historic	Resource and	Reserve Estimates -	- Bellekeno	(Alexco.	2022a
rabic	STILLILI I	15.5 111510110	nesource and	neserve Estimates	Denekeno	p nexeo,	20220)

Deposit	Class	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)				
	Resource									
Bellekeno	Indicated	213,000	620	n/a	5.5	5.5				
	Inferred	302,000	359	n/a	2.5	5.4				
	Total	515,000	467	n/a	3.7	5.4				
	Reserve									
	Proven	0	0	n/a	0	0				
	Probable	12,809	936	n/a	13	7.3				
	Total	12,809	936	n/a	13.0	7.3				
	Reserve									
Bellekeno Surface Stockpile	Proven	0	0	n/a	0	0				
	Probable	3,397	1,150	n/a	21.7	4.5				
	Total	3,397	1,150	n/a	21.7	4.5				

Notes:

1. All Mineral Resources are classified following the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) of NI 43-101.

2. Indicated Mineral Resources are inclusive of Probable Mineral Reserves estimates.

3. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All numbers have been rounded to reflect the relative accuracy of the estimates.

4. Tonnage and grade measurements are in metric units. Contained gold and silver ounces are reported as troy ounces

5. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

6. The Mineral Resource estimate for the Bellekeno deposit is based on an internal Mineral Resource estimate completed by Alexco Resource Corp. and externally audited by SRK Consulting Inc., having an effective date of January 01, 2021. This Mineral Resource estimate has been depleted to reflect all mine production from Bellekeno to the end of December 2020.

7. The Mineral Reserves are based on an NSR cut-off value using estimated metallurgical recoveries, assumed metal prices and smelter terms, which include payable factors, treatment charges, penalties, and refining charges.

8. Mineral Reserves reported herein are dated May 26, 2021, and do not include depletion since that time.

5.2 HISTORY, DRILLING, AND PAST PRODUCTION OF THE LUCKY QUEEN DEPOSIT

The Lucky Queen deposit was mined from 1927 to 1932 when mineral inventory was exhausted, producing 112,100 t of vein material at 3,060 g/t Ag from two mineralized shoots. Four levels of underground workings (50, 100, 200, and 300) totaling approximately 1,085 m, were developed, with level development roughly coincident with extensive stoping, resulting in the Lucky Queen production totals listed in Table 5-4. There were no historical Mineral Resources or Mineral Reserves remaining at the Lucky Queen mine.

Table STYLEREF 1 \s 5- – Past Production Records for the Lucky Queen Property (Alexco, 2021b).

Lucky Queen 112,100 3,060 7 2.7 11,020 17,220 6,650	Mine	Tonnes	Ag (g/t)	Pb (%)	Zn (%)	Ag ('000 oz)	Pb ('000 lb)	Zn ('000 lb)
	Lucky Queen	112,100	3,060	7	2.7	11,020	17,220	6,650

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The Lucky Queen vein and strike extensions were explored intermittently by surface overburden drilling, trenching, and soil sampling throughout the decades from 1950 to the early 1980s.

A 500-level exploration drift collared near the Black Cap prospect, totaling approximately 1,800 m, was developed by UKHM in 1985-1987. It was designed to come in underneath the historical Lucky Queen workings and to drive a raise up to the 300 level and connect with the No 2 inclined shaft. Poor ground conditions near the shaft, combined with difficulty in locating the vein and an urgent need for miners elsewhere in the Keno Hill caused the adit to be abandoned.

Drilling by Alexco in the Lucky Queen prospect area totaled four surface core drill holes (875 m) in 2006, three surface core drill holes (557 m) in 2007, 12 surface core drill holes (2,999 m) in 2008, 14 surface core drill holes (3,048 m) in 2009, and 14 surface core drill holes (3,625 m) in 2010.

Following the rehabilitation of most of the 500 level, four underground core holes (210 m) were drilled in 2012 outside of the resource area.

Table 5-7 summarizes the most recent Resource and Reserve estimates for the Lucky Queen deposit.

Table STYLEREF 1 \s 5- - Historic Resource and Reserve Estimates - Lucky Queen (Alexco, 2022a).

Deposit	Class	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)				
Lucky Queen	Resource	Resource								
	Indicated	132,300	1,167	0.2	2.4	1.6				
	Inferred	257,900	473	0.1	1	0.8				
	Total	390,200	708	0.1	1.5	1.1				
	Reserve									
	Proven	0	0	0	0	0				
	Probable	70,648	1,269	0.13	2.71	1.56				
	Total	70,648	1,269	0.1	2.7	1.6				

Notes:

1. All Mineral Resources are classified following the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) of NI 43-101.

2. Indicated Mineral Resources are inclusive of Probable Mineral Reserves estimates.

3. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All numbers have been rounded to reflect the relative accuracy of the estimates.

4. Tonnage and grade measurements are in metric units. Contained gold and silver ounces are reported as troy ounces

5. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

6. The Mineral Resource estimate for the Lucky Queen deposits has an effective date of January 3, 2017.

7. The Mineral Reserves are based on an NSR cu-toff value using estimated metallurgical recoveries, assumed metal prices and smelter terms, which include payable factors, treatment charges, penalties, and refining charges.

8. The Lucky Queen deposit is supported by disclosure in the news release dated May 26, 2021, titled "Alexco Announces 22% Increase to Silver Reserves; Updated Technical Report Demonstrates Robust Economics at Keno Hill".



5.3 HISTORY, DRILLING, AND PAST PRODUCTION OF THE FLAME AND MOTH DEPOSIT

Claim staking and prospecting began at Flame and Moth in 1920. By 1923, numerous surface workings and a 13 m inclined shaft had been sunk with a 4.6 m crosscut developed from it on the Moth claim. An adit was developed to a length of 12.2 m on the Frances 7 claim. Production for this period is not known.

After this early work, little or nothing appears to have happened on the property until the acquisition by UKHM. A 27.4 m inclined shaft was sunk to a vertical depth of 21.3 m along the footwall of what was likely the Moth vein. A crosscut, through the zone 13.7 m below the surface and 42.7 m of drifting 22.9 m below the surface, identified quartz-carbonate vein-hosted mineralization averaging 343 g/t Ag, 1.6% Pb, and 5% Zn developed in quartzite and greenstone along a zone approximately 30.5 m long and up to 9.1 m wide. Thirteen horizontal core drill holes totaling 193 m were drilled from the drift, but the core recovery was poor.

During 1954 and 1955, mineralization of pyrite and minor arsenopyrite was reported up to 240 m along strike to the north. This was explored by bulldozer trenching, soil sampling, and ground geophysics, but was unsuccessful because of the depth of gravel overburden, reported to a 12 m depth.

UKHM returned to Flame and Moth in 1961 with a program of soil sampling and ground geophysics and drilled five surface core drill holes located near the shaft to test the mineralization at depth. The soil samples and geophysics yielded little information, and no veining was intercepted in the drilling.

In 1965, 28 vertical overburden drill holes were drilled, along with another attempt at soil sampling and geophysics. A proposal to excavate an open pit was first made on this date, based on a calculated resource of 3,360 t grading 573 g/t Ag, 1.4% Pb, and 5.6% Zn. The pit would have reached 18.3 m below the surface.

In 1974, four lines of angled overburden drill holes totaling 989 m were drilled for extensions along a 180 m strike length with limited success due to deep overburden and broken ground conditions, although a weakly mineralized structure was located at 76 m in the footwall of the main vein.

More overburden drilling was completed along strike in 1984 and four core drill holes were sited to test the downward projection of the known mineralization. The deeper drilling (60 to 90 m below the surface) returned only very low values from a wide but diffuse pyritic vein zone. A small amount of vein material (368 t grading 699 g/t Ag, 1.39% Pb, and 0.72% Zn) was sent to the mill, which may have come from vein material exposed during stripping of overburden in preparation for the open pit development. In May 1987, the open pit Mineral Resources were re-evaluated at 12,600 t grading 699 g/t Ag and 4.0% Pb to a depth of 24.4 m. The key assumptions used to estimate this historical estimate are not known. That estimate is superseded by the Mineral Resources reported herein.

Total production at the Flame and Moth property is listed in Table 5-6 as 1,440 t grading 627 g/t Ag, 1.1% Pb, and 0.9% Zn. It is assumed most of these figures came from the underground work in the 1950s.

Historic production and production during Alexco operations are combined in Table 5-6.



Mine	Year	Tonnes	Ag (g/t)	Pb (%)	Zn (%)	Ag (oz)	Pb (lb)	Zn (lb)
Flame and Moth	1950s*	1,440	627	1.1	0.9	29,100	35,400	28,900
	2022	8,563	496	1.5	5.4	136,686	275,603	1,021,533
	2023	16,285	621	1.8	5.6	324,984	640,218	2,025,712
	Total	26,288	581	1.6	5.3	490,771	951,221	3,076,145

Table STYLEREF 1 \s 5- – Past Production Records for the Flame and Moth Property.

*Cathro, 2006.

Surface core drilling was performed by the previous owner, Alexco, in the Flame and Moth resource area and totaled 14 drill holes (3,986.2 m) in 2010, 32 drill holes (7,149.2 m) in 2011, and 48 drill holes (10,106.5 m) in 2012, eight drill holes (1,835 m) in 2013, 53 drill holes (13,360 m) in 2014, six drill holes (781 m) in 2021, and 8 holes (879 m) in 2022.

Underground drilling resumed later in the 2022 year under Hecla management completing a further 11 holes for 1,059 meters. No additional drilling was conducted at Flame and Moth in 2023.

Table 5-7 summarizes the most recent Resource and Reserve estimates for the Flame and Moth deposit.

Table STYLEREF 1 \s 5- – Historic Resource and Reserve Estimates – Flame and Moth (Alexco, 2022a).

Deposit	Class	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)					
	Resource	Resource									
	Indicated	1,679,000	498	0.4	1.9	5.3					
	Inferred	365,200	356	0.3	0.5	4.3					
Flowe and Math	Total	2,044,200	473	0.4	1.6	5.1					
Flame and Moth	Reserve										
	Proven	0	0	0	0	0					
	Probable	721,322	672	0.5	2.7	6.2					
	Total	721,322	672	0.5	2.7	6.2					

Notes:

1. All Mineral Resources are classified following the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) of NI 43-101.

2. Indicated Mineral Resources are inclusive of Probable Mineral Reserves estimates.

3. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All numbers have been rounded to reflect the relative accuracy of the estimates.

4. Tonnage and grade measurements are in metric units. Contained gold and silver ounces are reported as troy ounces

5. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

6. The Mineral Resource estimate for the Flame and Moth deposit has an effective date of January 3, 2017.

7. The Mineral Reserves are based on an NSR cut-off value using estimated metallurgical recoveries, assumed metal prices and smelter terms, which include payable factors, treatment charges, penalties, and refining charges.



8. The Flame and Moth deposit is supported by disclosure in the news release dated May 26, 2021, titled "Alexco Announces 22% Increase to Silver Reserves; Updated Technical Report Demonstrates Robust Economics at Keno Hill".

5.4 HISTORY, DRILLING, AND PAST PRODUCTION OF THE ONEK DEPOSIT

The Onek Mining Company Ltd. was organized in 1922 to explore the core Onek claims via a number of open cuts and shallow underground workings in two shafts. From 1950 to 1952, UKHM reopened the shafts and drove an adit in from the northwest to drift along the vein strike at the 400 level for approximately 396 m, driving raises up into the historic workings along the way. Some developmental mineralized material was removed. The Onek deposit was revisited in the early 1960s with limited success due to manpower shortages and poor ground support, as the timbers from the 1950s had been left in place. All mining at Onek ceased in 1965 until the late 1980s when a 20 m to 40 m deep open pit was developed over the length of the majority of the Onek workings near the historical shafts. Historical production from the Onek deposit is shown in Table 5-8.

Surface exploration consisted of extensive overburden drilling along the vein strike as exploration stepouts and as infill drilling for open pit delineation.

Table STYLEREF 1 \s 5- - Past Production Records for the Onek Property (Alexco, 2021b).

Mine	Tonnes	Ag (g/t)	Pb (%)	Zn (%)	Ag (oz)	Pb (lb)	Zn (lb)
Onek	86,447	466	5.5	3.4	1,299,333	10,456,254	6,452,107

Drilling was performed by the previous owner (Alexco) in the Onek prospect area and totaled 13 surface core drill holes (2,803 m) in 2007, 29 surface core drill holes (5,127 m) in 2008, 25 surface core holes (2,913 m) in 2010, 12 surface core holes (1,138 m) in 2011, and two surface core holes (531.98 m) in 2012.

A 220 m decline was driven towards the Onek deposit in 2012 and 2013 following the drilling of a single 236.77 m surface core portal cover hole. In 2013, 12 underground core holes (738.50 m) were drilled.

Table 5-9 summarizes the most recent Resource for the Onek deposit. There are no Reserves for the Onek deposit.



Deposit	Class	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)			
Onek	Resource								
	Indicated	700,200	191	0.6	1.2	11.9			
	Inferred	285,100	118	0.4	1.2	8.3			
	Total	985,300	170	0.5	1.2	10.9			

Table STYLEREF 1 \s 5- - Historic Resource and Reserve Estimates - Onek (Alexco, 2022a).

Notes:

1. All Mineral Resources are classified following the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) of NI 43-101.

2. Indicated Mineral Resources are inclusive of Probable Mineral Reserves estimates.

3. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All numbers have been rounded to reflect the relative accuracy of the estimates.

4. Tonnage and grade measurements are in metric units. Contained gold and silver ounces are reported as troy ounces

5. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

6. The Mineral Resource estimate for the Onek deposit has an effective date of January 3, 2017.

5.5 HISTORY, DRILLING, AND PAST PRODUCTION OF THE BERMINGHAM DEPOSIT

The first claims in the Bermingham area were staked in 1921, within a decade of commercial production starting in Keno Hill. Shallow underground workings were initiated in 1923 with the discovery of vein float and limited production of high-grade silver and lead from the Bermingham vein ensued. When TYC optioned the Mastiff claim group in 1928, a 30 m shaft and 223 m of drifting had been completed on three separate levels. The underground workings showed a structure with a maximum width of 17 m on the 100 level that contained multiple bands of mineralization with interstitial waste that was cut off at its southwest extent by the Mastiff fault.

The TYC optioned the ground in 1928, completed additional underground workings, and identified a fault offset vein portion but dropped the lease in 1930 due to low silver prices and a lack of ore-grade material. Trenching and prospect shafts identified the offset vein approximately 91 m to the west-northwest, where TYC sank the No. 1 shaft and completed 22 m of drifting. An oxidized siderite-pyrite vein with some galena was located below the position of the future main Bermingham pit but no mineralized material was reported from 127 m of drifting completed on the 200 level. TYC relinquished the lease in 1930 due to low silver prices and the absence of economic-grade material. A variety of individual workers extracted another 676 t grading 7,875 g/t Ag and 70% Pb between 1930 and 1940. This work was poorly documented but is known to include considerable trenching, shafting, and drifting during 1930, 1932 to 1937, and 1939 to 1940.

From 1948 to 1951, UKHM drove an adit and drift approximately 9 m below the bottom of the TYC workings. In 1952, many of the old TYC workings were surveyed and sampled, but the adit level was subsequently abandoned in 1954 after very little ore-grade material was realized. During this time, UKHM reportedly milled 5,165 tons of ore at 47.3 oz/ton (opt) Ag, 8% Pb, and 1.3% Zn, of which all but 60 tons were recovered from the old dumps.



Between 1965 and 1982, 874 overburden drillholes totaling 19,931 m, and 27 core holes totaling 2,407 m were drilled in the Bermingham area, a small portion of which occurred in the present resource area. Poor ground conditions prevented many of these holes from adequately penetrating the vein zone, however, they outlined an open pit resource and stripping began in 1977.

Stripping on the main Bermingham pit began in 1977 and until 1983 there was reportedly produced 82,649 t grading 572 g/t Ag. Overburden drilling and open pit mining led to a much better understanding of geology. The feasibility of deepening the Bermingham pit was evaluated from 1980 to 1982 with several percussion drill holes testing the vein below the pit and two diamond drill holes testing the Bleiler extension to the northeast. The drill holes indicated a narrowing of the vein to 3.0 m to 4.5 m wide and did not encounter an economical grade.

To the southwest of the open pit and in the hanging wall of the Mastiff Fault, several historic shafts had tested the offset extension of the Bermingham Vein. These included the No. 3 shaft, sunk by TYC, which included 22 m of drifting on the 45 level. The vein was reported to be 2.4 m wide and to mainly consist of siderite with small bunches of galena; however, no ore was encountered. A small open pit did operate on this segment of the vein in the mid-1980s, and an intended second pit located 150 m to the southwest was stripped to bedrock in 1983. However, the veins exposed there appeared weak and un-mineralized. The historical mineral resource estimate does not use Mineral Resource categories stipulated by S-K 1300. The historical estimate should not be relied upon; it is only stated here for historical completeness.

The exploration conducted by Alexco was the first comprehensive exploration effort in the District since 1997. The first holes drilled by Alexco in the Bermingham area were in 2009 (two core holes totaling 523 m), targeting the Bermingham Vein at depth in the hanging wall of the Mastiff Fault below an area with a historic shallow open pit resource. The results of this drilling were sufficiently encouraging to continue exploration in 2010 and 2011. Alexco conducted further diamond drilling programs at Bermingham in 2012, 2014, 2015, and 2016 in the Bermingham deposit and surrounding area.

Between 2009 and September 2022, a total of 93,777 m surface core diamond drilling was completed by Alexco at Bermingham, with a total of 169 drill holes, including two drill holes (523 m) in 2009, nine drill holes (3,045 m) in 2010, 25 drill holes (6,888 m) in 2011, 17 drill holes (5,576 m) in 2012, eight drill holes (2,667 m) in 2014, eight drill holes (2,606 m) in 2015, 50 drill holes (17,371 m) in 2016, 38 drill holes (13,277 m) in 2017 and 12 drill holes (4,369 m) in 2018. In addition, 24 underground drill holes (4,214 m) were completed from the exploration decline in 2018. 25 holes (12,965 m) were completed in the Bermingham Northeast Deep zone in 2019 and 2020, 60 holes (18,341 m) in 2021, and 6 holes (730 m) in 2022. All holes were diamond-cored in HQ/HTW apart for a few reduced to NQ/NTW because of ground conditions.

In total, Bermingham reportedly produced 3,777,932 oz of silver from 168,979 tonnes of material milled prior to the 1960's, and 1,568,000 oz of silver from 56,061 tonnes from 2020 through 2023.

Historic production and production during Alexco operations are combined in in Table 5-10.



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Table STYLEREF 1 \s 5- Past Production Records for the Bermingham Property.

Mine	Year	Tonnes (t)	Ag (g/t)	Pb (%)	Zn (%)	Ag ('000 oz)	Pb ('000 lb)	Zn ('000 lb)
Bermingham	Before 1960s*	168,979	695	4.2	0.6	3,778	15,575	2,158
	2020-2022	16,307	625	1.5	1.5	328	535	548
	2023	39,754	1,227	3.2	1.2	1,568	2,832	1,031
	Total	225,040	784	3.8	0.8	5,674	18,943	3,736

*Cathro, 2006.

Table 5-11 summarizes the most recent Resource and Reserve estimates for the Bermingham deposit.

Table STYLEREF 1 \s 5- – Historic Resource and Reserve Estimates – Bermingham (Alexco, 2022a).

Deposit	Class	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)			
	Resource								
	Indicated	1,562,700	939	0.2	2.6	1.7			
	Inferred	843,400	735	0.2	2.0	1.3			
Dorminghom	Total	2,406,100	867	0.2	2.4	1.6			
Berningham	Reserve								
	Proven	0	0	0.0	0.0	0.0			
	Probable	630,173	899	2.3	1.3	0.1			
	Total	630,173	899	2.3	1.3	0.1			

Notes:

1. All Mineral Resources are classified following the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) of NI 43-101.

2. Indicated Mineral Resources are inclusive of Probable Mineral Reserves estimates.

3. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. All numbers have been rounded to reflect the relative accuracy of the estimates.

4. Tonnage and grade measurements are in metric units. Contained gold and silver ounces are reported as troy ounces

5. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

6. The Mineral Resource estimate for the Bermingham deposit is supported by disclosure in the news release dated January 18, 2022, titled "Alexco Reports 43% Expansion of Bermingham Indicated Resource to 47 Million Ounces of Silver at 939 Grams per Tonne; Remains Open" and the Mineral Resource estimate has an effective date of November 30, 2021.

7. The Mineral Reserves are based on an NSR cut-off value using estimated metallurgical recoveries, assumed metal prices and smelter terms, which include payable factors, treatment charges, penalties, and refining charges.

8. The Bermingham deposit is supported by disclosure in the news release dated May 26, 2021, titled "Alexco Announces 22% Increase to Silver Reserves; Updated Technical Report Demonstrates Robust Economics at Keno Hill".



6. GEOLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

6.1 REGIONAL GEOLOGY

The Keno Hill (KH) is located within the northwestern part of the Selwyn Basin in the central Yukon. The area is underlain by Upper Proterozoic to Mississippian metasedimentary rocks that were originally deposited in a marine shelf environment along the northern Cordilleran continental margin (Figure 6-1).

A compressional regime that existed during the Jurassic and Cretaceous produced thrusts, folds, and penetrative fabrics of various scales, with the geological structure in the area dominated by the highly deformed northwest trending Robert Service and Tombstone Thrust Sheets. Early large-scale deformation (D1 and D2) produced recumbent folds, resulting in local structural thickening of strata. A third deformational event (D3) produced gentle southwest plunging synform and antiform pairs (Roots, 1997). The dominant structural fabric (foliation) is essentially axial planar to the early recumbent folds.

The Robert Service Thrust Sheet lies immediately to the south of the Keno Hill and is composed of a Late Proterozoic to Cambrian coarse-grained quartz-rich turbidite sequence containing interbedded shales and locally limestone of the Hyland Group Yusezyu Formation.

The Tombstone Thrust Sheet underlies the KH and consists of basal Devonian phyllite, felsic meta-tuffs, and metaclastic rocks of the Earn Group that are conformably overlain by the Mississippian Keno Hill Quartzite Formation. The stratigraphy is locally thickened due to folding and/or thrusting and the basal part of the Keno Hill Quartzite is the predominant host of the silver-lead-zinc mineralization.

Four periods of intrusive rocks are recognized. During the Late Triassic, at about 232 million years ago (Ma), gabbro to diorite formed sills within the Tombstone Thrust Sheet. A second phase of plutonism took place approximately 92 Ma ago in the early Cretaceous and resulted in the widespread and voluminous felsic Tombstone intrusions of granitic to granodioritic composition that are regionally associated with gold mineralization. Cretaceous lamprophyre dated at 89 Ma occurs as meter scale dykes and sills. The youngest intrusions are peraluminous megacrystic potassium feldspar granite of the Upper Cretaceous McQuesten suite dated at approximately 65 Ma.

In addition to the polymetallic silver-lead-zinc mineralization occurring at Keno Hill, the region also hosts other mineral occurrences including showings of tungsten, copper, gold, lead, zinc, antimony, and barite.





Figure STYLEREF 1 \s 6- - Regional Geology (Yukon Geological Society, 2022).

6.2 LOCAL GEOLOGY

The KH geology is dominated by the Mississippian Keno Hill Quartzite Formation comprising the Basal Quartzite Member and conformably overlying Sourdough Hill Member. The sequence is overthrust from the south by the Upper Proterozoic Hyland Yusezyu Formation and is conformably underlain in the north by the Devonian Earn Group as shown in the simplified local stratigraphic column in Figure 6-2.



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Figure STYLEREF 1 \s 6- - Local Geology Simplified Stratigraphic Column of the Keno Hill.

The Earn Group and Keno Hill Quartzite are locally intruded by stratigraphically conformable, although lensoidal, Middle Triassic greenstone sills, for which any feeder dykes are unrecognizable. The sequence was metamorphosed to greenschist facies assemblages during Cretaceous regional deformation at about 100 Ma and subsequently intruded by aplite sills or dikes considered to be related to the Tombstone intrusive suite.

Illustrated in Figure 6-3 is a local geological cross-section along Line A-A' with an accompanied legend (Figure 6-4), with its location marked on the generalized Property Geology map in Figure 6-5.





Figure STYLEREF 1 \s 6- - Local Geology Cross-section of the Keno Hill (Yukon Geological Society, 2020).



LEGEND

Figure STYLEREF 1 \s 6- - Keno Hill Simplified Stratigraphy Legend (Yukon Geological Survey, 2020).

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6.3 **PROPERTY GEOLOGY**

The Yusezyu Formation of the Precambrian Hyland Group comprises greenish quartz-rich chlorite-muscovite schist with locally clear and blue quartzgrain gritty schist and is separated from the Keno Hill sequence by the regionally extensive Robert Service Thrust Fault that occurs immediately south of the area.

The Earn Group, formerly mapped as the "lower schist formation" (Boyle, 1965) is typically composed of recessive weathering grey graphitic schist and green chlorite-sericite schist with an upper siliceous graphitic schist found locally.

Within the Keno Hill Quartzite Formation, the Basal Quartzite Member that is the dominant host to the silver mineralization comprises commonly calcareous, thick to thin-bedded quartzite and graphitic schist and may be up to approximately 1,100 m thick where structurally thickened. The overlying Sourdough Hill Member, formerly mapped as the "upper schist formation" (Boyle, 1965), is up to approximately 900 m in thickness and comprises predominantly graphitic and sericitic schist, chloritic quartz augen schist some of which may be of volcanogenic origin, and minor thin embedded limestone.

Three phases of folding are identified with the two earliest phases consisting of isoclinal folding with sub-horizontal, east, or west-trending fold axes, the axial plane forming the dominant regional foliation. The later fold phase displays sub-vertical axial planes and moderate southeast-trending and plunging fold axes. The first phases of folding formed structurally dismembered isoclinal folds of which the Basal Quartzite Member outlines synforms at Monument Hill where the Lucky Queen deposit is located and at Caribou Hill, while between Galena Hill and Sourdough Hill the Bellekeno deposit, the Flame and Moth and Bermingham deposits are located on the upper limb of a large-scale anticline that closes to the north.

Up to four main periods of faulting are recognized with the oldest fault set consisting of south-dipping foliation parallel structures that developed contemporaneously with the first phases of folding, sometimes shown as "low angle bedding faults". The Robert Service Thrust Fault truncates the top of the Keno Hill Quartzite Formation and sets the Precambrian schist of the Yusezyu Formation above the Mississippian Sourdough Hill Member. The silver mineralization in Keno Hill is hosted by a series of northeast-oriented, southeasterly dipping veins formed in pre- and syn-mineral faults referred to as vein-faults (Boyle, 1965) that display left lateral normal oblique displacement. There are two related sets locally recognized as either a more easterly trending "longitudinal" vein set that, depending on the competency of the host rock, can form up to a 30 m wide zone of anastomosing subparallel veins, or a more northerly trending "transverse" vein set that can reach up to 5 m in thickness.

The mineralized vein-faults are commonly offset by northwest striking, steeply southwest dipping, post-mineral cross faults, which display right lateral normal oblique displacement. The simplified geology of Keno Hill and the location of the mineral deposits are shown in Figure 6-5.





Figure STYLEREF 1 \s 6- – Geology Map of the Keno Hill (RPA, 2017).

6.4 MINERALIZATION

Mineralization in the KH comprises carbonate vein-hosted polymetallic silver-lead-zinc as described by Boyle (1965), Cathro (2006), Murphy (1997), and Roots (1997). Mineralized zones typically exhibit a succession of hydrothermally precipitated minerals deposited in veins or veinlets resulting from multiple pulses of hydrothermal fluid boiling events, probably related to repeated depressurization due to movement along the host fault structures. As a result, a progressive series of differing mineral depositional stages, assemblages, and textures can be identified. To a minor extent, supergene alteration may have further changed the nature of the mineralogy in the veins, although this may have been largely removed due to glacial erosion.

In general, common gangue minerals include (manganiferous) siderite and, to a lesser extent, quartz, and calcite. Silver occurs predominantly in argentiferous galena and argentiferous tetrahedrite (freibergite) with associated native silver, and the silver-bearing sulfosalts polybasite, stephanite, and pyrargyrite are other important silver-bearing minerals. Lead occurs in galena and zinc in sphalerite, which can be either an iron-rich or iron-poor variety. Other sulfides include pyrite, pyrrhotite, arsenopyrite, and chalcopyrite.



Historically, it was believed that economic mineralization in the Keno Hill mining camp was restricted to a shallow zone of approximately 120 m thickness. However, the 370 m depth of production from the Hector-Calumet mine and drill indicated mineralization to over 350 m depth at Flame and Moth and Bermingham demonstrate that silver-rich veins do exist over greater vertical intervals and suggest that other known veins may exhibit exploration potential at depth. It has been suggested (Cathro, 2006) that the mineralization may exhibit a vertical zonation with a typical mineralized shoot displaying a high silver and lead-rich top down to a low silver-zinc-rich base; however, this has not been verified.

Across the District, favorable environments for mineralization are considered to occur where:

- Competent quartzite or greenstone host rock is present on one wall of the vein fault as it can be observed that veins pinch down
 significantly in schist-bound structures.
- The vein-fault splits to form a more northerly striking orientation.
- The vein-fault changes to a steeper dip.

Wide veining with the development of high-grade silver mineralization is spatially associated with vein-fault domains exhibiting steeper dips and/or more northerly strikes.

6.4.1 BELLEKENO DEPOSIT MINERALIZATION

The Bellekeno vein system consists of ten known veins with variable characteristics. Vein material has been extracted from Ram, Eureka, Tundra, 48, 49, and 50 veins that generally strike 030° to 040°, with dip directions varying from 60° southeast to 80° northwest. Recent mechanized mining has focused on the stronger 48 Vein structure, while conventional historical narrower mining focused on the smaller, higher-grade vein structures.

There are three main zones within the 48 Vein structure: the Southwest, 99, and East zones with a strike length ranging between 200 m to 500 m and have been traced by drilling to over 350 m depth extent, each with distinctive silver to lead ratios, zinc content, and accessory mineral assemblages Figure 6-6.

The thickness of the vein ranges between a few cm to upwards of 5.5 m. Post-mineral faulting typically shows intense iron carbonate alteration and local brecciation while the distribution of syn-mineral faulting is observed to have a strong impact on silver grades and mineral textures (Figure 6-7). Left oblique-normal movement along the 48 Vein structure is estimated from stratigraphic offset to be approximately 35 m.

The mineralized zones appear as discontinuous steeply plunging shoots, hosted within manganese-rich siderite vein structures and may have pervasive secondary limonitic alteration when exposed to groundwater. Minerals of economic interest include very fine-grained silver-bearing sulfosalts associated with galena and sphalerite. Common accessory minerals include pyrite, arsenopyrite, and chalcopyrite while anglesite, cerussite, smithsonite, malachite, and azurite have been occasionally observed.





Figure STYLEREF 1 \s 6- - Schematic Long Section of the 48 Vein Bellekeno Mine Showing Workings (SRK, 2013).



Abbreviations are: (gn) galena; (sid) manganese rich siderite; (sp) iron rich; (Fe 65) sphalerite; (lim) limonitic alteration of carbonate facies; (sslts) nonspecific sulfosalts; (qtz) siliceous floods and concretions associated with late breccias; (crb) white carbonate.



Figure STYLEREF 1 \s 6- - 48 Vein Structures and Mineralogy, Bellekeno Deposit (SRK, 2013).

6.4.2 LUCKY QUEEN MINERALIZATION

The Lucky Queen vein-fault structure is essentially a singular structure with an average strike of approximately 043°, that locally varies between 025° to 060°, and has an average dip of approximately 045° to the southeast with a range of 30° to 55°. The main structure has a drill-defined length of approximately 650 m and 230 m recognized through drilling; with vein thickness ranging from a few centimeters to several meters and is open along strike in both directions. Stratigraphic units correlated across the structure show a normal separation of approximately 30 to 35 m across the veinfault. Mineralized zones are largely composed of brecciated wall rock, siderite (± limonite), vein quartz, with silver sulfosalts, galena, sphalerite, and native silver with minor arsenopyrite and pyrite (Figure 6-8).



Figure STYLEREF 1 \s 6- – Vein-Fault Intercept in Drill Hole K-07-0114, Lucky Queen (SRK, 2013).

6.4.3 FLAME AND MOTH MINERALIZATION

The Flame Vein is unique because of its uniformly singular form, width, grade, and length. It occurs over a strike length of one kilometer (km) orientated at a strike of 025° and dipping approximately 65° southeast and has been traced by drilling to over 300 m depth extent. Two main styles of mineralized veining commonly with multiple banding, internal brecciation, and often re-healed textures are observed



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(Figure 6-9). The early phase comprises dominantly quartz gangue with abundant but irregular amounts of pyrite, pyrrhotite, sphalerite and arsenopyrite, while a later phase comprises predominantly siderite containing abundant sphalerite, pyrite, galena, with minor chalcopyrite and trace amounts of tetrahedrite, pyrargyrite, jamesonite, boulangerite and cassiterite as identified in thin section samples.

The vein is divided into two parts by an approximate 90 m right lateral offset on the post-mineral Mill Fault that is referred to as the Lightning Zone in the southeast and the Christal Zone in the northwest.

The associated Moth Vein, the subject of historic prospecting, is considered to represent a footwall splay of the Flame Vein, although the relationship is not fully understood.



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Figure STYLEREF 1 \s 6- - Vein-Fault Intercept in Drill Hole K-12-0432, Flame and Moth (SRK, 2013).

6.4.4 ONEK MINERALIZATION

The Onek vein system comprises at least three individual vein-faults occurring within a broad northeast striking, southeast dipping structural zone. The vein-faults occur over a strike length of at least 650 m with 250 m depth extent, formed in brittle fractured or milled zones, locally containing massive sulfide vein material in, or associated with, siderite comprising sphalerite and galena along with minor pyrite, and arsenopyrite (Figure 6-10).



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Figure STYLEREF 1 \s 6- - Vein-Fault Intercept in Drill Hole K-10-0306, Onek (SRK, 2014).

6.4.5 BERMINGHAM MINERALIZATION

The Bermingham zone comprises a closely spaced series of subparallel steeply southeast dipping vein sets related to the master Bermingham veinfault system. These are identified (hanging wall to footwall) as the Bermingham, Bermingham Footwall and Bear veins that can be traced over a northeasterly strike distance exceeding 850 m. In addition, a small resource is contained in a conjugate set of related West Dipping veins. In places less extensive, north-northeast striking vein geometries are observed within the mineralized system. Recent detailed underground and surface drilling work has focused on the Arctic and Bear Zones where the vein sets are connected either laterally or vertically within the wider Bermingham



vein-fault structural corridor. Mineralization extends from between 90 m to 160 m below the surface to a depth of approximately 450 m where veining remains open.

The mineralized veins are displaced by several post-mineral faults that subdivide the system into several zones used for Mineral Resource estimation purposes, with the sequence from the southwest being Etta, Arctic, Bear, and Northeast Zones separated by the Mastiff, Arctic, and Ruby B faults, respectively.

The early Aho Vein comprises predominantly quartz that occurs over several meters' width within a wide halo of structurally damaged rocks. Minor sulfides are present with arsenopyrite and pyrite being the most abundant, with accessory galena and sphalerite.

The Bermingham Vein has a strike between 029° and 042° and dips between 40° and 64° to the southeast and the structure accommodates approximately 65 m of the total Bermingham displacement. In the Etta Zone, and within the hanging wall of the post-mineralization Mastiff fault, the Bermingham vein at its most southwestern extent is observed to converge with the Aho Vein structure; while to the northeast, it converges with the Bermingham Footwall vein.

The Bermingham Footwall Vein has a strike of between 040° and 060°, and dips between 67° and 73° to the southeast, and the structure accommodates approximately 70 m of the total Bermingham displacement. In the Etta Zone, the Bermingham Footwall Vein terminates against the Bermingham Vein up-dip and this intersection plunges moderately steeply to the northeast into the Arctic Zone in the footwall of the post-mineral Mastiff fault. At depth, the Bermingham Footwall Vein terminates against the Aho Vein along a steep plunging north-easterly trajectory.

The Bermingham and Bermingham Footwall veins typically exist within a 5 m to 10 m wide structurally damaged zone containing numerous stringers, veinlets, breccias, and gouge and generally form a discrete silver mineralized vein 0.5 m to 2.5 m wide within this zone. It consists predominantly of carbonate (dolomite, ankerite, siderite, and calcite), and quartz gangue, with the sulfides galena, sphalerite, pyrite, and arsenopyrite, and accessory, chalcopyrite, argentiferous tetrahedrite (freibergite), jamesonite, pyrargyrite and native silver (Figure 6-11).

The Bear Vein strikes between 010° and 050° and dips between 65° and 80° to the southeast and accommodates approximately 30 m of the total Bermingham displacement. It occupies a position in the footwall of the system beneath a major flexure in the Bermingham Vein, with which it joins up-dip. At depth and to the southwest, the Bear Vein junctions with the Bermingham Footwall Vein. Early phase mineralization is absent, and the Bear structure is considered a late response to the slip-impeding flexure in the Bermingham Vein noted above, with the high-grade silver mineralization located on the more northerly striking and steeper dipping areas.

The West Dipping Vein is located between the Bear and Bermingham veins and it strikes 020° and dips 50° to the west. It displays only minor displacement that is considered to represent an adjustment due to a pronounced curvature in the hanging wall surface of the Bear Vein. Similarly, oriented veins were observed historically in the Keno Hill District in the Elsa, Husky, Runer, and Black Cap mines and are also



interpreted at Hector-Calumet and Lucky Queen (Boyle, 1965; Cathro 2006; UKHM, 1997). The Bear and West Dipping veins are structurally and mineralogically similar to the Bermingham Vein, although early quartz and calcite are less abundant or absent, whilst silver sulfosalts are more abundant. This difference is considered a product of a shorter period of later deformation on the Bear and West Dipping vein faults that provided mineral depositional sites only during the latter stages of the mineralizing cycle.

The post-mineralization faults that are recognized within the Bermingham resource area include the Mastiff, Hanging Wall, Arctic, Ruby B, and Super faults. The attitude of these southwest dipping faults appears bimodal, with one set striking at approximately 285° and another at approximately 315°, and likely represent end members of a single fault set. These northwest-trending structures cut and displace all mineralized veins, and while they are typically non-mineralized, it is sometimes observed that mineralization may have been dragged into the later fault.

The Mastiff Fault has an attitude of 137° / 51° SW and displaces the hanging wall obliquely 131 m down to the northwest along a vector of 302° / -23°. Its location is well constrained by drilling and exposure in the main pit. When discussing the location of the mineralization, the vein zones located to the east in the footwall of the Mastiff Fault are referred to as the Arctic, Bear, and Northeast zones, and as the Etta Zone in the west in its hanging wall.

The Hanging Wall Fault strikes between 000° and 025° and dips easterly at between 53° and 65° and is represented in the drill core by very wide (10 - 30 m) zones of unconsolidated fault breccia and gouge, with sporadic weakly developed mineralization that occurs as trails of fragmented clasts interpreted to represent pre-fault material. The Hanging Wall Fault extends to the surface where it was intersected by historic trenching northeast of the current resource area.

The Arctic Fault strikes between 120° and 130° and dips between 45° and 68° to the southwest and displaces all veins 76 m down to the southwest along a vector 274° / -29°. It includes two sub-parallel splays, and their generation is considered a response to a strong flexure in the main fault shape. A splay off the Arctic Fault, named the A Fault, is mapped in the open pit but this does not appear to have significant displacement and does not affect the current resource area.

The Super Fault is exposed in the eastern end of the open pit where the fault surface exhibits a thin skin of fault breccia on an undulating surface that has an average altitude of 133° / 25° SW with the hanging wall displaced approximately 42 m down to the southwest along a vector 272° / -15°. The structure is well represented in the drill core and separates the mineralization in the shallow historic underground mine workings and open pit from the current resource area which is wholly situated in its footwall.

The Ruby B Fault strikes between 115° and 130° and dips between 60° and 70° to the southwest and separates the Bear Zone mineralization from the Northeast Zone by approximately 60 m right-lateral offset. A similar separation of veining is observed on the fault within the historical underground Ruby Mine located approximately 200 m to the northwest.




Note: for the interval 307.82 - 313.16 m, being a 5.34 m interval that composited at 9,250 g/t (297.4 oz/t) Ag, 10.9 Pb and 0.4%Zn.

Figure STYLEREF 1 \s 6- – Vein-Fault Intercept in Drill Hole K-15-0580 in the Bermingham Deposit (Mining Plus, 2019).

6.5 DEPOSIT TYPES

The Keno Hill deposits do not readily fit into a recognized mineral deposit model and attempts to classify a "deposit type" for the mineralization are questionable given that the source(s) of metals and conditions related to ore-deposition are poorly understood.

Beaudoin and Sangster (1992) classified the Keno Hill as sediment-hosted veins, likened to the silver bearing deposits in the Coeur d'Alene Mining District, USA and the Kokanee Range, Canada. A genetic relationship between silver-lead-zinc and intrusion-related gold mineralization has also been postulated (Mair et al., 2006).

The mineralization has been more recently classified as belonging to the Lithogene genetic group (Greybeal and Vikre, 2010) which invokes a depositional environment of re-mobilized metals, with no magmatic contribution or associated gold.



Current information, however, shows that this latter classification is not correct, as there is some magmatic component, with local felsic intrusives acting at least in part as a heat source for hydrothermal fluid circulation, and gold is associated with the mineralization.

Mineral precipitation occurred within the thick sequence of clastic metasedimentary rock from hydrothermal fluids at temperatures from 250°C to 400°C and estimated depths of up to 11 km. Mineral deposition probably occurred in multiple pulses in response to pressure and temperature changes as boiling or fluid mixing took place preferentially in structurally prepared open spaces primarily in the competent Basal Quartzite Member and Greenstone lithologies. The source of the metals is not fully known and could be leached from crustal rocks by hot circulating fluids or derived from late-stage fractionation of the intrusives.



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7. EXPLORATION

The Keno Hill mining District exploration history dates to the beginning of the 1900s with early gold prospecting near the Mayo township. In 1903, the first silver mineralization was found followed by small-scale manual mining in 1913 at Silver King.

Following a lull in activity during and after the Second World War, a new company Keno Hill Mining Company Ltd, which was later renamed United Keno Hill Mines Ltd, purchased properties, and commenced production opening a new period of exploration activity. The peak of mining activity during the 1950s and 1960s saw the discovery of new deposits across the area with increased production from larger underground complexes such as the Hector Calumet camp.

United Keno Hill Mines (UKHM) undertook extensive exploration in Keno Hill until the mines closed and production stopped in 1989 (Cathro, 2006). The bulk of this historic exploration work was completed by driving along vein structures. This activity was complemented by underground drilling designed to explore and extend mineral resources in the underground mines together with extensive surface drilling, mapping, and district-scale geophysical surveys. It is beyond the scope of this report to describe all the historical exploration work completed in the District and only the relevant historical work is referred to below.

Despite the project's long history, the exploration work conducted by Alexco Resource Corp after 2006 comprised the first modern comprehensive exploration effort in Keno Hill since 1989. Alexco's initial work commenced with a program of digital scanning and compiling of many UKHM mining plans, geological maps, and documents covering nearly 70 years of historic mining and compiling a coherent database comprising over 6,000 historic diamond and 16,000 overburden (RAB) drill holes. The data has been made available on a mapping platform used to construct mine scale maps and three-dimensional (3D) mine models.

During its ownership period from 2006 to 2022, Alexco completed a total of 945 surface exploration holes for a total of 240,978 m. In addition, a total of 445 underground holes for 31,318 m have also been completed, mainly at Bellekeno, but also includes 24 holes for 4,213 m drilled in 2018 from the Bermingham exploration decline. A further 34 RC holes and one sonic hole for a total of 1,242 m have been completed in the South McQuesten Valley area, exclusive of the resource definition drilling previously undertaken for the Elsa Tailings deposit. Table 7-1 provides an overview of all Alexco drilling across the District by area, from 2006 to the end of its ownership period in September 2022.

Table STYLEREF 1 \s 7- – Distribution of Drill Holes Completed by Alexco from 2006 to September 2022.

Deposit	Surface Holes	Surface Meters	Underground Holes	Underground Meters	Total Holes	Total Meters
Bellekeno	72	20,227	373	23,466	445	43,692
Lucky Queen	49	11,538	4	211	53	11,749
Onek	87	13,455	12	975	99	14,430

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Deposit	Surface Holes	Surface Meters	Underground Holes	Underground Meters	Total Holes	Total Meters
Flame and Moth	177	40,385	25	1,451	191	41,836
Bermingham	260	89,169	31	5,217	291	94,385
Other*	265	64,963	-	-	264	64,963
RC/Sonic	35	1,242	-	-	35	1,242
Total	945	240,979	445	31,320	1,378	272,297

*Other includes prospects Black Cap, Brefalt, Bulldozer, Coral Wigwam, Eagle, Elsa, Galkeno, Hector-Calumet, Husky, Inca, Keno 700, Leo, Mackeno, McQuesten, Mom & Son, No Cash, Ruby, Runer, Shamrock, Silver King, Tick, Townsite.

The focus of Alexco's exploration drilling efforts primarily targeted immediately adjacent to historic mining areas with less reduced activity evaluating other structurally controlled narrow vein mineralization targets. The majority of drilling was undertaken at the five main deposits comprising Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek. In the area around the Flame and Moth deposit a blind exploration discovery was made in 2010 based on following up historic drill results. Further exploration has been completed beyond the central resource zone to the Flame West, Mackeno, and Northeast Flame areas, with the total drilling in the wider Flame and Moth area comprising 42,695 m in 187 surface drill holes. Exploration work in the Flame and Moth area later changed to underground drilling to support the commencement of mining operations in 2021.

During 2020, Alexco commenced underground mining development activities initially at Bellekeno and subsequently at Bermingham and Flame and Moth. The commencement of mining development shifted the focus of exploration drilling to areas adjacent to the outlined resources.

In 2021 Alexco conducted a directional drilling program which included 17,742 m of directional drilling at Bermingham Northeast Deep zone. During the periods in 2021 and 2022, Alexco suffered delays to both mining and exploration due to COVID-19 isolation restrictions and reduced staffing of personnel resulting in a reduction in productivity.

By June 2022, Alexco had suspended mineral processing operations due to a shortfall in mining production that was originally forecast to meet the 400 tons per day processing rate. Mining operations continued to stockpile material in anticipation of processing recommencing when mining rates improved.

In early September 2022, the ownership of the Keno Hill Project passed to Hecla Mining Company, owner of producing silver mines in Alaska and Idaho, USA, a gold mine in Quebec, and 14 projects in North America. Mining operations and exploration drilling activity continued throughout the change of ownership period.

Under Hecla, exploration drilling was maintained in areas in proximity to the Bermingham underground mine development. Drilling programs at Coral Wigwam and Hector-Calumet initiated by Alexco continued into the Hecla ownership period.



During the period from September 2022 to November 2023, Hecla completed a total of 93 exploration holes for a total of 25,336 m with details provided in Table 7-2.

Deposit	Surface Holes	Surface Meters	Underground Holes	Underground Meters	Total Holes	Total Meters
Bellekeno						
Lucky Queen						
Onek						
Flame and Moth			11	1,059	11	1,059
Bermingham	21	8,258	41	5,581	62	13,839
Other*	20	10,439			20	10,439
RC						
Total	41	18,697	52	6,640	93	25,337

Table STYLEREF 1 \s 7- – Distribution of Drill Holes completed by Hecla from September 2022 to November 2023.

*Other includes prospects Coral Wigwam, Hector-Calumet, and Silver Spoon.

During 2023, Hecla completed surface exploration drilling using two rigs with a focus on the vicinity of the historic Silver King mine and the Coral Wigwam area, approximately 800 m along a west-southwest structural trend from the Bermingham deposit. The drilling completed by Boart Longyear comprised 8 holes for 4,001 m. Early indications from shallow geology-defining drill holes in the Coral Wigwam area identified a structural geology framework similar to that which hosts the Bermingham deposit.

7.1 SURFACE SAMPLING AND MAPPING

A district-wide surface geological mapping and structural study which started in 2007, was completed in 2018 with a revised Geological Map of the Keno Hill District being published in conjunction with the Yukon Geological Survey in 2021.

Limited historical trenching work was completed along vein strike extensions, with very limited assaying and little geological information documented.

In 2013, Alexco completed a six-trench program totaling 375 m on Galena Hill between the Bermingham and Hector-Calumet historic mines.



7.1.1 LUCKY QUEEN

At Lucky Queen, the district-wide surface geological mapping and structural study took place from 2007 and was continued through the 2012 field season with findings incorporated into the Lucky Queen geologic model where applicable.

7.1.2 FLAME AND MOTH

During 2010, a soil geochemical survey was completed in the Flame and Moth area defining anomalies that were tested in a follow-up program of 32 drillholes for 7,150 m in 2011 with the results leading to the publication of the initial resource estimate (SRK, 2012a).

7.1.3 BERMINGHAM

In 2010, a soil-gas survey was conducted along a 2,200 m long by 175 m wide corridor stretching from Coral-Wigwam, over the historic Bermingham pit area, to the Townsite mine. An induced polarization and resistivity geophysical survey was conducted over the same area. As a result of these surveys, some anomalies were identified on the Bermingham trend along the strike southwest of the historic open pit workings and these remain as future drilling targets.

The soil-gas survey, in conjunction with the district-wide geological mapping and structural study, detailed re-mapping of the historic Bermingham open pit, and interpretation of drill results have been used to resolve the stratigraphy and structural complications at Bermingham and to further refine vein targeting.

7.2 UNDERGROUND SAMPLING

Sampling of the underground production faces is conducted regularly, occurring at each advance with a frequency ranging from 1.5 m to 3 m, depending on the advance length. This involves using a hammer and chisel with the chip channel sampling method.

The samples are collected between the hanging wall and footwall contacts of mineralized zones, with common lengths being 1.0 and 1.5 meters. However, it has been noted that a small proportion of the samples (4% of face samples) deviate from these common lengths, with some as short as 0.30 m and others exceeding 3.00 meters, reaching up to 7.21 meters.

Upon analysis at the in-house laboratory, it was observed that the assay results could show a positive bias from the long-range model and mill head grades. The exact reasons for this bias remain unclear, but it is



hypothesized that it may be attributed to oversampling influenced by the physical properties of the higher-grade zones currently under investigation.

The sampling has been conducted in Onek, Bellekeno, Lucky Queen, Bermingham, and Flame and Moth. However, in the resource estimation process, face samples have been excluded, except for Bellekeno, which was included in the estimation process undertaken by SRK Consulting Inc. (SRK) in 2013. To address potential bias during resource estimation, factoring has been applied to the face samples. As of now, there have been no significant changes in Bellekeno, and consequently, SRK's resource model has not been updated.

7.3 EXPLORATION DRILLING – 2006 TO 2023

In 2006, Alexco purchased the UKHM Keno Hill project and commenced exploration activities including an active surface exploration program. Core drilling during 2006 was performed by Peak Diamond Drilling, of Courtenay, British Columbia, utilizing two skid-mounted drill rigs, an LF-70 drill, and an EF-90 drill. Drilling employed the wireline method using N-size equipment (NQ2). Drilling in 2006 focused on several target areas that included the Bellekeno, Lucky Queen, Ruby, Shamrock, Silver King, and Husky deposit areas. In 2007 and 2008, core drilling was performed by Quest Diamond Drilling, of Abbotsford, British Columbia, utilizing four skid-mounted drill rigs, two LF-70 drills, and two LF-90 drills in 2007; and two skid-mounted drill rigs, one LF-90, and one QD-4 drills in 2008. Drilling employed the wireline method using H-size equipment (HQ).

The 2009 surface drilling was performed by Kluane Drilling of Whitehorse, Yukon, utilizing two skid-mounted KD-1000 drills. Drilling employed the wireline method using N- and H-size equipment.

Surface drilling in 2010 was split among three contractors: Cabo Drilling of Surrey, BC, Kluane Drilling of Whitehorse, Yukon, and Ensign Encore Drilling from Calgary, Alberta.

In the period from 2011 onwards, the Boart Longyear drilling company based in Calgary completed much of the surface drilling extending through the project ownership period from Alexco to Hecla. Drilling has been conducted predominantly with LF70 and LF90 wireline drill rigs or an LX11 multipurpose rig for RC pre-collar and diamond tail drillholes. All core was recovered in PQ, HQ, or NQ sizes.

For all programs the drilling was well supervised, the drill sites were clean and safe, and the work was efficiently completed. Diamond drill operational safety inspections were conducted on each drill rig at various times throughout the drilling programs.

Underground core drilling at Bellekeno, Lucky Queen, and Onek conducted in 2009, 2010, 2011, 2012, and 2016 was completed in NQ or HQ core size by Boart Longyear utilizing skid-mounted LM90 diamond drill rigs. Underground core drilling at Bermingham in 2018 was conducted by Boart Longyear utilizing two LM90 drill rigs and recovered, in most cases, HQ-size core.



Air rotary geotechnical/hydrological drilling programs completed at Flame and Moth and Bermingham in 2013 and 2016 were completed by Midnight Sun Drilling, based in Whitehorse, Yukon, utilizing a Sandvik Marlin M5 Truck Mount rig. This drilling is not included in the drilling summary above.

Proposed surface drill hole collars were initially located using a handheld Garmin GPS device, with the completed collars being surveyed with either an Ashtech GPS device utilizing post-processing software or a Sokkia GRX1 RTK GPS.

All underground collars and drill stations were surveyed by underground surveyors (employed by Procon Mining & Tunnelling Ltd. or Alexco) using a total station survey instrument. In 2017–2018 all underground surveying was undertaken by Alexco personnel with drill hole collar orientations set by Reflex Gyrocompass.

All coordinates are recorded in the Universal Transverse Mercator (UTM) NAD 83 Zone 8 map projection system. Up until 2010, downhole surveys were recorded using Reflex survey tools at regular intervals between 15 m and 30 m depending on the hole location and geologic conditions. Since 2011, surface holes have been surveyed progressively down holes at 24 m intervals using Reflex single shot tools, while underground surveys have been by Reflex Multishot at 12 m intervals obtained on retreat from the hole.

In early September 2022, the ownership of the Keno Hill Project was passed to Hecla Mining Company. Mining operations and exploration drilling activity continued throughout the change of ownership period.

Hecla retained Boart Longyear as diamond drilling contractor for surface exploration drilling. A large portion of the geologic diamond drilling program in 2023 comprised surface and underground drilling at Bermingham and Flame and Moth to support the mining operations and extend the near-mine mineral resource. Through 2022 and 2023, one underground rig from Boart Longyear completed underground coring programs initially at Flame and Moth followed by drilling at Bermingham.

The database's cut-off date for drillholes included in this report is October 30, 2023.

7.3.1 BELLEKENO DEPOSIT

A series of surface and underground core drilling programs have been conducted on the Bellekeno deposit since 2006. The combined drilling programs by Alexco have produced 43,693 m of drill core from 445 drill holes targeting mineralized zone extensions including the Ram, Eureka, and 48 Vein systems, including the projected southwest Thunder Zone extension of the 48 Vein and the northern extension at the Balto prospect. Results were used to verify historical results and for mineral resource estimation (Wardrop, 2009).

The drilling programs conducted included surface drilling totaling 20,227 m of HQ core in 72 surface holes and 23,466 m in 373 underground holes; the underground holes were mostly HQ except for 79 NQ holes totaling 5,095 m). Since the interim closure of the Bellekeno Mine in 2013, modeling of the mine geology



has assisted in the development of a Keno District exploration model that has helped to develop an understanding of the structural controls of mineralization.

The Bellekeno Mine commenced operations in 2011 and at that time was Canada's only operating primary silver mine. Mining operations were suspended in 2013.

The last drill hole completed at Bellekeno was in 2015 and no further drilling has been conducted by Hecla following the change of ownership.

Underground mining was restarted at Bellekeno by Alexco in 2021 to provide short-term ore supply for the processing plant to expand longer-term operations at Bermingham and Flame and Moth. Toward the end of 2021, Alexco reported that the underground assets at Bellekeno had been removed and redeployed with the mine transitioned to long-term monitoring.

7.3.2 LUCKY QUEEN DEPOSIT

Drilling in the Lucky Queen prospect area in 2006 totaled 875 m in four surface core holes that targeted the vein structure below the southwest end of the historic workings and around the lowermost reaches of the internal winze.

Further drilling late in the 2007 season consisted of 557 m in three surface core drill holes; however, only one reached the target depth before inclement weather forced an end to the program. In 2008, a further twelve surface core holes totaling 2,999 m were completed as step-outs along the strike of the vein to the southwest. Closer spaced and infill drilling around the 2007 drill hole intercept was the focus of the 2009 and 2010 programs when a total of 6,673 m drilling was completed in 28 surface holes to form the basis for a resource estimate (SRK, 2011a).

Following partial rehabilitation of the historic 500-level adit in 2013, four underground core holes totaling 211 m were drilled outside of the resource area.

A district-wide surface geological mapping and structural study started in 2007 and was continued through the 2012 field season with findings incorporated into the Lucky Queen geological model where applicable.

No further drilling has been conducted by Hecla since the change of ownership with the last drilling completed in 2017.

7.3.3 FLAME AND MOTH DEPOSIT

Field mapping in the vicinity of shallow historic prospect workings on the Moth Vein identified the presence of a north-northeast trending vein-fault interpreted to have a displacement of approximately 450 m based on the offset of local stratigraphy (McOnie and Read, 2009). In conjunction with the review



of past exploration results on the property, this led to the generation of drill targets and the completion of 3,986 m of drilling in 14 drill holes in 2010 that included the Flame Vein discovery hole (Drill Hole K-10-0264) intersecting 693 g/t silver over a 4.64 m interval.

In 2010, a soil geochemical and a ground magnetic geophysical survey were also completed over the area. A further 32 drill holes for 7,150 m were drilled in 2011 with the results leading to the publication of the initial resource estimate (SRK, 2012a). Follow-up drilling of 49 drill holes for 10,325 m completed in 2012 supported a revised resource estimate (Farrow and McOnie, 2013).

In 2013, an additional eight drill holes were completed for 1,835 m, extending the strike length of the mineralization for at least 220 m to the southwest to a total of over 900 m. Several ground geophysical surveys were also undertaken at this time; however, these were not successful in delineating the mineralization.

Drilling completed in 2014 comprised 53 holes for 13,360 m that was largely designed to increase the source data to support an updated resource estimate (RPA, 2017) and to explore further along the strike to the southwest.

Initial portal development of approximately 20 m was completed by Alexco in 2016. In total, 17 geotechnical underground drill holes were completed along the proposed decline trace, for a total of 572 m. By the end of September 2018, the decline had progressed to 312 m and a further 11 geotechnical holes combined with metallurgical drilling were completed for 1,167 m; one hole for 113 m was completed in 2020.

In early 2021, Alexco completed an additional 6 surface diamond holes for 781 m while development of the underground decline continued. Drilling was conducted by drilling contractor Boart Longyear using an LF70 rig.

At the end of March 2022, the Flame and Moth underground development had reached the planned ore mining levels.

With the availability of access into the underground, drilling in the first half of 2022 shifted to a series of underground diamond holes with the completion of 8 holes for 879 m in May and June 2022. Drilling was reduced during the change of ownership period until later in 2022 when Hecla completed 11 holes for 1,059 m. During the 2022 period, drilling was completed by Boart Longyear in HQ core size for all drillholes completed by Alexco and Hecla. No drilling was completed at underground or surface locations during 2023.

7.3.4 ONEK DEPOSIT

Drilling on the Onek prospect in 2007 totaled 13 surface core drill holes for 2,803 m that targeted the down-plunge extension of the mineralization outlined in the historical workings. Twenty-nine surface



core drill holes for 5,130 m were drilled in 2008 as infill and extension around the well-mineralized 2007 intercepts and targeted the historical resource blocks. No work was completed in 2009, but renewed focus in 2010 saw an additional 29 surface holes drilled for 3,694 m farther along the strike to the southwest of the historical workings. Infill drilling to the southwest was completed in 14 surface core holes for 1,295 m in 2011 and in 2012 two surface holes for 532 m were drilled along strike to the southwest outside of the resource area.

The drill data and detailed open pit mapping were used to construct a geological model that formed the basis of the initial resource estimate completed in 2011 (SRK, 2011b).

Following the drilling of a 237 m long surface core portal cover hole in 2012, a 220 m decline was driven northwest from the Lightning Creek valley and remains just short of the mineralized vein system. In 2013, eleven underground core holes for 739 m were drilled.

No further exploration drilling has been completed by Alexco or Hecla after the underground diamond drilling in 2013.

7.3.5 BERMINGHAM DEPOSIT

The first targets generated in the Bermingham area were drilled by Alexco in 2009 with two holes completed for 523 m. The Bermingham Vein was targeted at depth in the hanging wall of the Mastiff Fault below an area where a historic shallow open pit resource had been outlined by UKHM and some anomalous silver drill hole intercepts existed. The results of this drilling were sufficiently encouraging to continue exploration in 2010 and 2011 when an additional 34 holes were completed for 9,933 m.

Seventeen drill holes were completed for 5,576 m in 2012 to identify southwesterly extensions of the vein system and to investigate vein continuity to the northeast into the footwall of the Mastiff Fault. This drilling was incorporated into an initial Mineral Resource estimate for the Etta and Arctic Zones completed (SRK, 2012b).

Eight drill holes were completed for 2,667 m in 2014, to establish continuity of the northeastern extensions of the mineralization, and in 2015, a further eight drill holes were completed for 2,606 m to follow up on a very high-grade intersection on what is now recognized as the Bear Vein in the footwall of the Bermingham Vein. A revised mineral resource estimate was prepared in 2015 (RPA, 2017).

Fifty drill holes were completed for 17,371 m in 2016, to define the extent of this high-grade Bear Vein and to better understand vein geometries and the position of some post-mineral faults known in the area. As reported later, the drilling was completed at sufficient intercept spacing to allow an updated resource estimate (RPA, 2017). In addition, because all holes had been drilled in a northwesterly direction against the dip of the target structures, and some unexplained mineralized vein intercepts could not be readily correlated, the presence of a reverse dipping vein set as seen in some historic mines was suspected. To



test this, a series of five holes for 1,729 m were deliberately drilled in a southeasterly direction which confirmed the presence of the mineralized west-dipping veins.

In 2017, a drill program was dedicated to the infill and improved definition of mineralized vein structures previously outlined at Bermingham. A total of 38 drill holes for 13,277 m were completed. Geological data from the drilling assisted with the confirmation of the geological interpretation and provided the tenor of silver grades. Mining of a 550 m underground exploration decline was completed by June 2018 to provide a platform for close-spaced infill resource definition drilling.

In 2018, the Bermingham exploration program comprised a 24-hole, 4,213 m infill underground drilling component as well as a 12-hole 4,369 m surface program for deeper and more extensive targets. Wide-spaced step-out exploration drilling comprising 25 holes for 12,965 m was completed on the Bermingham Northeast Deep zone in 2019 and 2020.

The 2020 drilling program was designed to assess the Northeast Deep target area in more detail using a nominal drill intercept spacing of 100 m along strike and 50 m in dip separation with all holes drilled from the surface. Completed drilling confirmed the Northeast Deep zone mineralization lies within a structurally complex corridor with a varying horizontal to shallow northeast plunge. The drilling results outlined a strike extent of 550 m and a dip extent of up to 100 m. The company considered an additional 400 m strike zone extended toward the southwest through the Bear, Arctic, and Etta target zones with a more moderate northeast plunge. The location of this drilling is shown in the long section presented in Figure 7-1.





Figure STYLEREF 1 \s 7- – Long Section Showing the Location of 2020 Bermingham Northeast Deep Drilling (Alexco, 2021a).

Further drilling in the Bermingham area continued into 2021 with the location of hole paths depicted in Figure 7-2. The completed program provided a nominal intersection spacing of 35 m in strike and 25 m in dip separation along the subparallel Bermingham Main and Bermingham Footwall veins. The program incorporated directional drilling methods from surface drill sites to maximize the opportunity from the completed meters. The drilled intercepts confirmed the varying northeast plunge with observed mineralogy showing characteristics similar to the nearby Bermingham deposit. The mineralized widths ranged up to 20 m coincident with changes in strike and dip of the hosting fault structure in response to variations in rock competency and proximity to the intersection of the two veins. The accumulated drilling extended over a strike extent of 900 m primarily characterized by thick-bedded quartzites of the Keno Hill Quartzite that also hosts the nearby Hector-Calumet deposit.





Figure STYLEREF 1 \s 7- – Location Plan Showing Bermingham Deep Northeast Drill Holes (Alexco, 2021d).

The results of the district-wide surface geological mapping and structural study have been used in conjunction with the interpretation of the drill results and detailed remapping of the historic Bermingham open pit to resolve the stratigraphy and structural complications at Bermingham and to further refine vein targeting.

From early September 2022, the ownership of the Keno Hill Project passed to Hecla Mining Company; mining operations and exploration drilling activity continued throughout the change of ownership period.

In 2022, Bermingham exploration reverted to underground drilling from within the mine to test the Arctic Vein followed by further underground drilling in 2023. Of the 62 holes completed during 2023, 39 were drilled from underground at Bermingham testing the Artic Vein and two holes were drilled into the Townsite Vein. The remaining 21 holes were drilled from surface locations for an aggregate of 8,258 m. All drilling of surface and underground holes in recent years was completed by Boart Longyear except four underground holes completed by Hy-Tech.



Significant intercepts recovered from the Bermingham UG drilling program have been presented in Table 7-3. The selection of intercepts uses a >30g/t Ag threshold where intercepts may include up to 2 m of internal waste.

Drillhole	Azi/Dip	Sample From (m)	Sample To (m)	True Width (m)	Ag g/t	Zn %	Pb %	Zone
BMUG23-037	140/4	132.86	135.24	1.58	421.72	1.7	0.6	Bermingham
BMUG23-038	140/-8	158.50	158.86	0.21	106.29	0.5	0.5	Bermingham
BMUG23-039	137/-1	136.49	138.01	1.07	168.00	0.5	0.2	Bermingham
BMUG23-040	134 / -4	123.78	126.43	1.28	54.86	0.5	1	Bermingham
BMUG23-041	131 / 7	107.99	108.11	0.06	185.14	0.7	2	Bermingham
BMUG23-042	131/1	129.11	129.54	0.21	99.43	0.8	3.5	Bermingham
BMUG23-043	128/4	122.83	123.75	0.52	3.43	0.1	0	Bermingham
BMUG23-044	120/7	70.93	71.84	0.85	4145.18	1.5	3.3	Bermingham
BMUG23-045	116/1	75.01	78.00	2.71	216.00	0.6	0.2	Bermingham
BMUG23-046	105/12	109.09	109.55	0.30	54.86	0.6	0.5	Bermingham
BMUG23-047	97/13	111.92	112.93	0.52	65.14	0.8	1.2	Bermingham
BMUG23-048	134/-18	81.75	84.83	2.29	144.00	0.3	2.1	Bermingham
BMUG23-049	128/-7	69.62	70.99	1.25	1429.73	1.9	2.9	Bermingham
BMUG23-050	119/-6	88.51	89.95	1.07	456.00	3.2	3.6	Bermingham
BMUG23-051	119/-9	146.94	149.35	2.16	34.29	0.2	0.4	Bermingham
BMUG23-052	120/-19	175.84	178.77	1.86	2722.31	3	1.3	Bermingham

Table STYLEREF 1 \s	7- – Significant II	ntercepts from the	2023 Bermingham	Underground Drilling	(Hecla, 2023c)
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7.3.6 OTHER DEPOSITS

During the period from 2006 to 2022, Alexco's exploration drilling efforts were primarily focused on testing targets immediately adjacent to the historic mining and resource areas with reduced emphasis on evaluating other structure-controlled narrow vein mineralization targets. The majority of the drilling completed was undertaken at the five main deposits comprising Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek. During Alexco's ownership, drilling was also completed at a wide range of smaller deposits and target areas.

In the western part of the District, initial drill programs were completed at the McQuesten and the Leo prospects. The McQuesten prospect was optioned by Alexco to Banyan Gold under an earn-in expenditure agreement. At Silver King, drilling of 13,193 m in 50 drill holes was mainly focused on extending the historic resource in the No. 5 Vein in the hanging wall of the historically mined



mineralization. Some significant intercepts recovered during the drilling indicated that further exploration was required of this structure, as well as along the extensions of the past producing No. 1 and No. 2 veins.

Along the Husky – Husky SW vein system, the northeastern extension of the Silver King structure, Alexco completed 12,224 m of drilling in 46 drill holes. The results of this drilling confirmed that the historically mined veins locally extend at depth beneath the mine workings, and it was considered that potential exists for locating additional mineralization.

The mineralized Bermingham vein structure, first drilled by Alexco in 2009, was spatially related to the southwest extension of the major 96 M oz historic silver-producing Hector-Calumet mine vein system and extended further southwest to the Coral Wigwam and Brefalt offset area. The mineralized structure was complex, and several interpreted veins were identified in the area. Exploration drilling in this area comprised 14,473 m of drilling in 54 surface drill holes targeting the Galena Hill area beyond the Bermingham resource and including several other subparallel mineralized vein structures such as Elsa, Townsite, No Cash, and Ruby. This drilling resulted in the discovery of significant high-grade silver mineralization and has possibly also located the Brefalt fault offset to the Bermingham system to the southwest. Other targets drilled at the northeastern end of Galena Hill at Inca, Eagle, and Galkeno have also identified mineralized intercepts that will be followed up in the future.

At the Keno Hill deposit, and beyond the drilling related to the Lucky Queen and Onek resource areas, Alexco completed exploration drilling on the Keno, Shamrock, Black Cap, and Runer vein systems for an aggregate of 19 holes and 3,717 m. In each of these locations, results and geological data collected by Alexco indicated additional exploration work was justified although no drilling has been completed after 2018.

With the commencement of mining activities in 2020, Alexco's exploration drilling returned to focusing on the mining projects and nearby resource areas interpreted from evaluating historic exploration data.

In the first half of 2022, Alexco commenced surface exploration drilling focused on testing new targets at the Silver King, Coral Wigwam, and Hector-Calumet deposits. The Coral-Wigwam deposit area is located 800 m west-southwest along the strike from the Bermingham deposit. A plan showing the location of the exploration drilling sites relative to the Bermingham deposit has been presented in Figure 7-3.

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Figure STYLEREF 1 *s* 7- – *Plan Showing the Location of 2022 Exploration Drilling (Hecla, 2023a).*

Mineralization in these target areas was considered to represent structural analogs to the nearby Bermingham deposit identified through the ore control model where northeast-trending transverse structures intersect with east-northeast trending longitudinal structures.

While many areas of mineralization are hosted within the basal quartzite, several mineralized intercepts at both Coral-Wigwam and Silver King are in rocks above this favored host position. The intercepts at Silver King were located on the longitudinally oriented structures. The observation of mineralized intercepts in these sites suggested that further evaluation of the previous drilling in this area was warranted. Drilling continued in the Coral-Wigwam area, testing predominantly the Walleye Vein from May until November 2022.

From early September 2022, the ownership of the Keno Hill Project passed to Hecla although exploration drilling activity continued throughout the change of ownership period.

Significant drill intercepts recovered from the 2022 drilling program were reported by Hecla as regular press releases. Tabulated data was provided in imperial measurements which have been converted to metric using the conversion formula provided in Table 7-4.



Table STYLEREF 1 \s 7- – Conversion Formula for Imperial to Metric Intercepts.

Imperial	Metric		
1 foot	0.3048 m		
1 troy oz/ton	34.286 g/tonne		

Drilling at Silver King included multiple intersections in different splay veins with some mineralized intervals hosted in historically less productive portions of the Keno Hill stratigraphy that overlie and project into the more favorable basal quartzite. Drilling for the 2022 year included a total of 12 holes for 4,674 m. Significant intercepts recovered from the 2022 drilling program are presented in Table 7-5.

Drillhole	Azi/Dip	Sample From (m)	Sample To (m)	True Width (m)	Ag g/t	Zn %	Pb %	Prospect		
K-22-0804	153/-51	79.52	81.72	0.58	1,330	4.7	1.4	Silver King		
K-22-0804	153/-51	98.94	99.36	0.12	34.29	0	0	Silver King		
K-22-0804	153/-51	160.48	161.91	0.37	34.29	0	0	Silver King		
K-22-0804	153/-51	169.96	171.27	0.34	58.29	0	0	Silver King		
K-22-0804	153/-51	284.99	285.45	0.12	44.57	1.1	0.4	Silver King		
K-22-0808	315/-66	101.25	105.86	3.75	75.43	1.2	0	Silver King		
K-22-0808	315/-66	109.76	110.22	0.37	65.14	0.3	0.1	Silver King		
K-22-0810	305/-66.5	109.27	115.98	4.97	270.86	0.9	0.2	Silver King		
K-22-0810	305/-66.5	118.63	123.44	3.57	672.01	0.2	0.9	Silver King		
K-22-0810	305/-66.5	257.71	258.65	0.76	48	0	0	Silver King		
K-22-0810	305/-66.5	262.04	262.59	0.46	168	0.3	0.7	Silver King		
K-22-0810	305/-66.5	267.52	268.74	0.98	85.72	0	0	Silver King		
K-22-0810	305/-66.5	271.61	272.46	0.67	68.57	0	0	Silver King		
K-22-0812	300/-71	231.28	232.23	0.55	30.86	0.1	0.2	Silver King		
K-22-0812	300/-71	252.8	259.99	4.11	37.71	0.4	0.2	Silver King		
K-22-0812	300/-71	263.53	267	1.68	377.15	0	0.8	Silver King		
K-22-0812	300/-71	294.01	299.13	3.29	78.86	0	0	Silver King		
K-22-0814	288/-80	262.83	288.01	11.31	37.71	0	0	Silver King		
K-22-0817	352/-64	111.47	112.68	0.91	185.14	0.7	0.2	Silver King		
K-22-0819	307/-74	173.55	177.55	2.38	185.14	0	1.3	Silver King		
K-22-0819	307/-74	184.53	195.25	6.43	192	0	0.5	Silver King		
K-22-0824	306/-57	639.41	640.26	0.76	233.14	0.1	1.2	Silver Spoon		
K-22-0824	306/-57	642.46	642.73	0.24	1,131	0	0	Silver Spoon		
K-22-0824	306/-57	667.69	667.97	0.21	120	0.9	0.2	Silver Spoon		

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Drillhole	Azi/Dip	Sample From (m)	Sample To (m)	True Width (m)	Ag g/t	Zn %	Pb %	Prospect
K-22-0824	306/-57	678.88	679.16	0.21	178.29	0.3	0.1	Silver Spoon
K-22-0824	306/-57	684.18	685.71	1.22	109.72	0.5	0.4	Silver Spoon
K-22-0824	306/-57	696.01	696.56	0.46	54.86	0.2	0.1	Silver Spoon
K-22-0826	285/-68	722.8	728.01	2.96	37.71	0.3	0.2	Silver Spoon

Intercepts reported by Hecla are determined using a >30g/t Ag threshold and may include up to 2 m of internal waste.

The 2022 program included drilling at Coral Wigwam comprising 17 holes for 5,700 m with a further 5 holes for 3,203 m at Hector-Calumet. Drilling was completed by contractor Boart Longyear using HQ sized core with operations being largely continuous from May to November 2022, which spanned the change of ownership from Alexco to Hecla. Significant intercepts recovered from the Coral Wigwam and Hector-Calumet drilling during 2022 are shown in Table 7-6.

Table STYLEREF 1 \s 7- - Significant Intercepts from Coral Wigwam and Hector-Calumet 2022 Drilling (Hecla, 2023a).

Drillhole	Azi/Dip	Sample From (m)	Sample To (m)	True Width (m)	Ag g/t	Zn %	Pb %	Prospect
K-22-0806	297/-57	156.45	156.76	0.21	205.7	0	0.2	Coral Wigwam
K-22-0809	310/-90	126.61	126.74	0.06	92.6	2	1.2	Coral Wigwam
K-22-0809	310/-90	144.44	144.96	0.24	257.1	0	0.1	Coral Wigwam
K-22-0820	295/-59	328.79	329.61	0.67	137.1	0.1	0.2	Coral Wigwam
K-22-0820	295/-59	438.88	439.61	0.58	37.7	0	0	Coral Wigwam
K-22-0825	275/-73	463.42	467.44	2.23	3,480	0.1	0.1	Coral Wigwam
K-22-0828	305/-67	380.73	383.01	1.52	168	0.4	0.3	Coral Wigwam
K-22-0828	305/-67	463.78	465.09	0.98	99.4	0.1	0	Coral Wigwam
K-22-0829	342/-67	354.36	363.84	7.5	171.43	0.5	1.1	Hector-Calumet
K-22-0832	331/-70	507.19	507.4	0.15	65.14	0	1.5	Hector-Calumet
K-22-0834	312/-65	281.36	286.15	3.6	363.43	2	1.5	Hector-Calumet
K-22-0834	312/-65	537.09	537.97	0.7	754.29	6.4	2.3	Hector-Calumet
K-22-0834	312/-65	560.01	561.35	1.07	168	2.7	2.2	Hector-Calumet
K-22-0836	300/-66	542.12	542.39	0.21	72	0.6	0.6	Hector-Calumet
K-22-0837	293/-75	369.11	373.65	3.35	360	4	1.1	Hector-Calumet
K-22-0837	293/-75	413.8	414.86	0.76	41.14	0.2	0.3	Hector-Calumet

Further drilling was completed at Coral Wigwam in August 2023 with the completion of three holes for 1,111 m which included one abandoned drillhole.



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As part of the 2023 Bermingham exploration drilling program, Boart Longyear completed 6 holes for 1,856 m evaluating a mineralized extension of the historical Ruby Mine.

The plunging intersection between two vein structures was interpreted as the ore control for mineralization at the historic Ruby Mine and became a drilling target for further investigation. Drilling indicated that the structural architecture was complex preventing a clear understanding of the mineralization controls (Figure 7-4).



Figure STYLEREF 1 \s 7- - Plan View of the Bermingham Area (Hecla, 2023b).

As part of the same 2023 exploration program, drilling was planned for the Chance Vein at the Hector-Calumet deposit. Previous drilling intersected a narrow-mineralized interval that warranted a follow-up. Four holes for 2,056 m were completed on this program before the rig was relocated to other exploration target areas.

Three vein structures project into this area between Bermingham Main and Townsite veins which comprise the Ruby, Ruby Splay, and Bear Veins. Additional drilling is required to provide details of vein orientations and mineralization controls as the planar veins do not appear to be continuous through the area. This target area warrants further drilling as it is a short distance from the planned underground infrastructure.



7.4 GEOCHEMISTRY

Historic soil geochemical surveys conducted over the area by UKHM demonstrated widespread lead-zinc anomalies near the Bermingham deposit but did not effectively outline the details of the mineralized vein-fault structures. Soil surveys were also not effective for exploration near the Flame and Moth deposit due to the irregular Pleistocene glaciofluvial cover and the shallow depth of permafrost.

7.5 GEOPHYSICS

In 2006, a wide-spaced district-scale aerial magnetic and electromagnetic geophysical survey and air photography was undertaken. Diamond drilling of prospects ranked highly as having the potential to return mineable silver resources also commenced that year with work focusing on the Bellekeno, Silver King, and Lucky Queen areas.

In late 2018, Alexco undertook a detailed aerial RESOLVE EM-Magnetic geophysical survey over Galena Hill, later extended to cover Keno Hill in 2020. The survey provided detailed structural information that in addition to the district geologic mapping defines a general 1 km periodicity of largedisplacement northeast oriented transvers vein-faults that hosts mineralization assisting with the definition of drill targets. This structural understanding has substantially increased the success rate of intersecting mineralization with exploration drilling.

7.6 HISTORICAL DRILLING

7.6.1 BELLEKENO DEPOSIT

Historical percussion and core drilling for the Bellekeno area extended from 1975 to 1996, and although recovered data has been compiled, some sections are most likely incomplete.

Between 1975 and 1996, UKHM drilled four surface, and two underground percussion programs. These drill holes were logged, sampled, and assayed at four, and five-foot intervals (1.22 m and 1.52 m), respectively. Originally, percussion drilling and sampling were undertaken to mitigate the loss of vein material observed in coring programs. However, this type of drilling is considered to provide low-quality data, with recirculation of water and rock material and the nature of chip logging and was not used for resource estimation.

Core drilling programs between 1986 and 1996 were from underground and totaled 4,944 m in 60 drill holes completed by UKHM. Holes were drilled with BQ and NQ tools but generally resulted in moderate to poor recovery in areas where foliation and stratigraphy were subparallel to the core angle, or heavily fractured or friable material was encountered. Drill holes were generally designed to test for the





downward extension of the 99 Zone, with smaller programs for the Southwest and East zones, as illustrated in Figure 7-5.

Figure STYLEREF 1 \s 7- - Bellekeno Mine Long Section Looking Northwest, 1986 - 1996 UKHM Core Drill Holes (SRK, 2013).

Archived drilling data and procedures were reviewed by G. David Keller, P.Geo., of SRK as part of the updated PEA technical report issued by Wardrop in 2009. As part of this review, Mr. Keller discussed the drill core sampling procedures with UKHM staff active during the mining operations at Bellekeno. The drilling procedures were deemed reasonable based upon the limited information available (Wardrop, 2009), and thus considered reliable for geologic interpretation and resource calculations.

7.6.2 LUCKY QUEEN DEPOSIT

Historical drilling information is available for the Lucky Queen area from the 1950s through the 1980s. In 1957, UKHM drilled two surface core drill holes (Lucky Queen 2 and Lucky Queen 4) that intercepted the main Lucky Queen structure below the existing 300-level workings; however, core recovery was very poor. For example, across a 50.90 m interval (from a depth of 156.06 m to 206.96 m in drill hole Lucky Queen 4), recorded recovery averaged only 22% in the approximate vicinity of the vein because of the fractured and friable nature of vein material. No assays exist for these drill holes because vein material was either not intercepted or was not recovered and, thus, assaying was likely deemed unnecessary. In addition, survey control for these drill holes is sparse. For the above reasons, the historical surface core drilling data was not used in the Lucky Queen resource estimate.

Between 1985 and 1987, UKHM drilled underground percussion test drill holes from the Lucky Queen 500 level adit that were sampled and assayed at 4 ft (1.2 m) intervals. Percussion drilling was not considered



to reliably present an accurate location for samples and recovery data was not obtained by UKHM. On this basis, historic assays were not used in any resource estimate. The test drill holes did however provide useful geological information and were used to help constrain the geometry of the main Lucky Queen structure and associated splay structures during wireframe construction.

Shallow, rotary percussion surface drill holes were also drilled in the Lucky Queen area in the 1970's through 1980 totaling approximately 20,400 m in 507 drill holes. As with the underground rotary percussion drill holes, these data were not deemed reliable for Mineral Resource estimation although the data was used in select geostatistics (variography) and in the construction of mineralization and geological models, where applicable.

7.6.3 FLAME AND MOTH DEPOSIT

Historical drilling at Flame and Moth was dominantly shallow surface percussion overburden drill holes with 133 drill holes totaling 4,044 m drilled on an average azimuth of 320°. Nine core drill holes totaling 731 m were drilled from the surface and 13 drill holes totaling 193 m were drilled from the shallow underground workings. Core recovery was generally poor, particularly in mineralized zones which were the only intervals assayed.

Due to recovery issues for the historical core drill holes, lack of careful sampling techniques, and the open-hole nature of the percussion drilling, drilling data from these programs were not deemed reliable for use in the Mineral Resource estimation, although the data were used in the construction of geological models where applicable.

7.6.4 ONEK DEPOSIT

Historical core drilling at the Onek deposit was limited to 10 short-length horizontal underground drill holes drilled at varying azimuths with absent downhole survey data. Drill recovery was generally poor, particularly in mineralized zones, and core assays were restricted to well-mineralized zones.

Shallow, open-hole, surface percussion drilling was also undertaken in the Onek area, mainly in the historic open pit area, during the 1970s, with a total of approximately 13,000 m completed in 319 holes.

Due to recovery issues for the core holes, lack of careful sampling techniques, and the open-hole nature of the test/percussion, drilling data from these programs were deemed unreliable for use in the resource calculation. The data was used in select geostatistical analyses (variography) and in the construction of mineralization/geologic models, where applicable.



7.6.5 BERMINGHAM DEPOSIT

Historical core drilling at Bermingham is limited to 16 core drill holes dating from 1969 located in the resource estimation area. The holes were drilled at an average azimuth of 323° and were not surveyed downhole. The average hole length was approximately 80 m with several holes ranging up to 146 m. Drill recovery was generally poor, particularly in mineralized zones, and core assays were restricted to well-mineralized zones.

A small portion of the 874 shallow, open-hole, surface percussion drill holes completed historically in the Bermingham area were focused on the present resource area, first as vertical holes in a grid pattern on approximately 30 m centers, followed later by a definition drilling program of inclined holes along strike of the vein to define an open pit target.

Due to recovery issues for the core holes, lack of careful sampling techniques, and the open-hole nature of the percussion drilling, drilling data from these programs were deemed unreliable for use in the resource calculation. The data were used in the construction of mineralization/geologic models, where applicable.

7.7 DRILL HOLE LOGGING

Standard logging and sampling conventions are used to capture information from the diamond drill core. Between 2006 and 2010 core was logged in detail using paper forms with the resulting data entered into a commercial computerized logging program either by the logging geologist or a technician. Since that time, all core logging data has been directly digitally entered into a SQL-based database with data including comments captured in separate tables including:

- Lithology: rock type, including significant fault or mineralized vein-faults, and textural modifiers.
- Structure: type of structure and measurements relative to the core axis.
- Mineralization to identify type and intensity of oxidation, metamorphic, hydrothermal, or disseminated phases, and abundance of veining.
- Alteration.
- Stratigraphy: units consistent with the surface mapping.
- Geotechnical: percentage recovery and rock quality determination and fracture intensity.
- Additionally, more detailed geotechnical data has been recorded from the Flame and Moth and Bermingham drilling.



Alexco systematically measured the core bulk density of mineralized material as well as basic rock types. Bulk density was measured using a balance and recording the weight of core pieces in air and water. The core weighed in water was not covered by wax or plastic film.

Pulp bulk density (PBD) measurements were obtained by pycnometry on select assay intervals of mineralized zones for Alexco drilling by ALS Laboratories (ALS) and AGAT Laboratories (AGAT).

7.8 QP OPINION

The Mining Plus geology QP notes that the drilling, logging, and drill core meet industry standards, and are sufficient to support Mineral Resource Estimation and makes the following comments:

- The most recent drilling campaign (between September 2022 and October 2023) incorporated drilling procedures inherited from Alexco, complemented by minor improvements introduced by Hecla. These practices have followed industry standards and are considered suitable for incorporation into resource estimation. However, the older drilling preceding Alexco typically has issues with core or chip quality, limiting their utility primarily to exploration purposes.
- The data spacing and distribution are sufficient to establish the degree of geological and grade continuity appropriate for mineral resource estimation.
- It has been detected that the logs before 2010 present a different approach for the description of the lithological code of the structure, although this difference is not considered significant for interpretation purposes, it is suggested to review the logs before 2010 to have a consistent logging.
- A constant monitoring of the Pulp bulk density with the Paraffin method should be carried out to rule out relevant biases and must be included in the procedures.
- Improve the procedures of face sampling and improve the quality of the onsite assaying to support the use of face samples in the in long-term model grade estimation processes.
- QP does not know of any drilling, sampling, or recovery factors related that would materially impact the accuracy and reliability of results that are included in the database used for Mineral Resource Estimation.



8. SAMPLE PREPARATION, ANALYSES AND SECURITY

The data supporting geological interpretations, mineral resource estimation, conclusions, and recommendations in this technical report primarily rely on core samples dating from 2006 to the present, which have been carried out by Alexco (2006-2021) and Hecla (2022-2023). In addition, Alexco conducted reverse circulation drilling, mainly in early exploration areas; however, none of the reverse circulation drilling data has been included in the resource estimate.

Sample preparation methods, analytical techniques, quality control, and security measures throughout the chain of custody were implemented by Alexco from 2006 to 2021. Hecla has since adopted these procedures with slight improvements.

Historical drilling data for Lucky Queen, Flame and Moth, Onek, and Bermingham deposits are not considered reliable and, consequently, were not utilized in the Mineral Resource estimation.

Underground face sampling has been carried out in Onek, Bellekeno, Lucky Queen, Bermingham, and Flame and Moth; however, in the resource estimation process, face samples have been excluded, except for Bellekeno, where they were considered in the estimation conducted by SRK Consulting Inc. (SRK) in 2013. To mitigate potential bias during resource estimation, factoring has been applied to those face samples. As of the present, no substantial changes have occurred in Bellekeno, and therefore, SRK's resource model has not required any update.

8.1 SAMPLING AND PREPARATION PROCEDURES

8.1.1 HISTORIC DRILL SAMPLING

Available documentation describing the historical (pre-Alexco and Hecla) sampling procedures and methods is limited and has been outlined below.

A 1965 UKHM document outlined the sampling procedures for a newly purchased percussion drill. It was found that in most cases the frozen ground gave sufficient support for the drill hole without additional casing. In a few cases where the ground was not frozen, the casing was advanced with the drill bit.

Drill cuttings were collected using a locally designed cone-shaped deflector with a catch pan shaped to fit around the casing. During drilling operations, cuttings were blown upwards between the drill rod and the casing, where they hit the deflector and were caught by the catch pan. Drilling runs were 5 ft (1.5 m) in length and provided 10 lb to 15 lb of sample material.

At the end of each shift, several hundred grams were split from each sample in the geochemical laboratory; the remainder of the sample material was screened to -14 mesh. Constituents of the fine and coarse fractions were identified separately.



There is no information about quality control measures employed prior to sending samples to an analytical or testing laboratory. As part of the security measures taken for Alexco to ensure the validity and integrity of samples carried out by UKHM, different projects were carried out that are described below.

All accessible core drill hole logs were transcribed onto standardized spreadsheets as close to verbatim as possible. Original logs were scanned, and file names and numbers were recorded into the new spreadsheets. These initial spreadsheets were inspected by geologists for consistency. The next step was to "normalize" the original transcribed data to match the current nomenclature; data verification was ongoing. Collar information, as well as survey, assay, and recovery data, were then verified by a person other than the original data entry person. The final step involved the amalgamation of separate spreadsheets into one global database.

Bellekeno underwent three phases of core drilling: 1986, 1994–1996, and 2006–2013. Alexco's access to mine workings in 2009 allowed the resurveying of the 1986 and 1994–1996 historical (UKHM) drill hole collars in UTM coordinates, thereby assuring all collar locations were recorded in a common datum.

In instances where 2009 underground drilling and historical drilling were twinned, the positioning of the 2009 composite locations was honored, as historical down-hole surveying was irregularly spaced or not done at all.

In instances where surface drilling and underground drilling had conflicting contact locations, 2009 underground drilling was honored. This was the case in the Southwest zone with surface drill hole K-07-0101. The vein intercept in this drill hole is 376 m downhole. Within 15 to 20 m on each side are two Alexco underground drill holes of 15 m length of similar grade and thickness. In this case, the grade from K-07-0101 was used in the estimation but the vein position was assumed to be defined by the adjacent underground drill holes.

Drilling programs under the supervision of UKHM were given careful scrutiny prior to being incorporated into the Alexco resource estimation. Historic data was evaluated and checked by processing paper drilling logs into electronic formats, resurveying underground drill hole collars, and twinning historical vein pierce points. Early programs were deemed reasonably complete and accurate for the purpose of resource and geologic modeling.

Two phases of underground core drilling occurred at the Bellekeno mine under UKHM management, 1986 and 1994-1996. During this time, most of the drilling operated off the local Treadwell grid system. For verification purposes, Alexco resurveyed the collar positions of the core and percussion drill holes in 2009 in the areas where the mine rehabilitation had been completed. The collar data was then verified against the UTM NAD 83 Zone 8 map projection coordinates. Only minor discrepancies were found in the underground percussion drilling. Although the collar positions were updated, these drill holes were not included in the resource evaluation.

As part of the due diligence for the 2009 updated Preliminary Economic Assessment (PEA) conducted by Wardrop (2009), the twinning of the core drill hole vein pierce points was conducted. Twinned intercepts



were commonly within 0.5 m to 1.5 m of the original pierce point. In most cases, the intercepts of both drill holes were commonly useable for interpretations. However, in instances where the two pierce points were significantly different, the 2009 underground drilling was given precedence. Surface drill holes were assumed to have more deviation because of the greater down-hole depth, and irregularly spaced or incomplete down-hole survey data.

Historical drilling data for Lucky Queen, Flame and Moth, Onek, and Bermingham deposits are not deemed reliable and, therefore, were not considered for Mineral Resource estimation.

8.1.2 HISTORICAL REVERSE CIRCULATION SAMPLING

A document by Watts, Griffiths, and McQuat (WGM, 1994) outlined sampling procedures for the reverse circulation drilling carried out prior to the Hecla acquisition. Two samples were collected for each 5 ft (1.5 m) interval. One sample was sent to the laboratory while the other sample remained at the drill site for reference. The samples were collected in porous plastic bags and were dried prior to analysis. The document stresses cleanliness during the sampling procedure to avoid contamination.

8.1.3 CORE DRILL SAMPLING (2006 – 2023)

The sampling protocol adopted by Hecla during its ownership period from 2022 remained relatively unchanged from the surface and underground drill programs conducted by Alexco between 2006 and 2021.

Core logging and sampling were completed by Hecla staff, where a logging geologist marked the sample intervals and cutting orientation normal to veins on the core. After logging, the core was digitally photographed. Where possible, the surface core was sawn in half lengthwise using a diamond saw, whereas the broken core was manually split in half. One half of the core was returned to the core box for storage at the site while the other was placed in a thick-walled plastic bag for shipment.

At the Bellekeno project during operational periods some core was whole core sampled, and recently at Bermingham some underground resource definition drilling was whole core sampled to obtain an increased sample mass in the high-grade silver mineralization. No further on-site processing was undertaken.

Samples are a maximum of 2 m long within unmineralized major rock types but are broken at lithological contacts and significant mineralization changes. Intervals with no recovery due to core loss are recorded separately. Sample intervals within mineralized zones range from 0.10 m to 1.0 m, based on consistency of mineralization. In initial work at the prospects, drill holes were sampled top to bottom; however, once a considerable body of geochemical data was available and the nature and distribution of the



mineralization better understood, some intervals of barren material were not sampled particularly in close proximity to adjacent drill holes that had been sampled continuously.

Some minor modification in the sample shipment procedure has occurred over time, primarily in response to changing laboratory locations and the logistics surrounding available commercial transport. In all cases, approximately four to five individual samples are placed in polyfiber bags for shipment.

In 2006, samples were sent to Whitehorse, Yukon by Kluane Transport then by Manitoulin Transport to the ALS Chemex facility in North Vancouver, British Columbia for preparation and analysis. Beginning in 2007, each shipping bag was sealed with a numbered security tag, before being placed on pallets and shrink-wrapped for shipping.

In 2007/2008, samples were transported to the Canadian Freightways facility in Whitehorse, Yukon by Alexco personnel. Canadian Freightways then trucked the samples to the ALS Chemex facility in Terrace, British Columbia for preparation. Pulverized subsample splits were then sent to the ALS Chemex facility in North Vancouver, British Columbia for analysis.

In 2009, samples were transported to the Eco Tech Labs preparation facility in Whitehorse, Yukon by Alexco personnel. Pulverized subsample splits were then sent to the Eco Tech facility in Kamloops, British Columbia for analysis.

In 2010, samples were shipped via Manitoulin Transport to Whitehorse, Yukon where they were couriered to the preparation facilities of either AGAT or ALS Minerals in Whitehorse. The pulverized subsample splits were then sent to the AGAT facility in Mississauga, Ontario, or the ALS facility in North Vancouver, British Columbia, for analysis.

Between 2011 and 2013, samples were shipped via Manitoulin Transport to Whitehorse, Yukon where they were delivered directly to the preparation facilities of ALS Minerals in Whitehorse. The pulverized subsample splits were then sent under seal by the laboratory to the ALS facility in North Vancouver, British Columbia, for analysis.

From 2014 to 2021, samples have been shipped in sealed wooden boxes containing approximately 100 samples, directly by company representatives to the ALS Minerals sample preparation facility in Whitehorse and the assay pulp is transported under seal by the laboratory to the North Vancouver analytical facility.

Since 2021 shipping of samples is conducted in batches of 20, inclusive of QA/QC samples. These samples are placed in pre-numbered rice bags, sealed using a cable tie, and their contents are recorded on a batch sample sheet. These samples are then transported to the ALS Minerals sample preparation facility in Whitehorse and the assay pulp is transported under seal by the laboratory to the North Vancouver analytical facility.



8.1.4 UNDERGROUND SAMPLING

Neither the historical underground face samples nor those conducted by Alexco and Hecla have been incorporated into the estimation process. This decision stems from the observed potential positive bias in the underground samples compared with core samples. Possible contributing factors include the utilization of a non-certified on-site laboratory or the physical properties of higher-grade zones, which may introduce oversampling. Only at Bellekeno were the underground samples included in the estimate, as this was subjected to a more thorough review by Alexco as part of the 2009 updated PEA. The estimated Mineral Resources conducted by SRK in 2013 applied factoring to the face samples to mitigate potential bias during resource estimation. To date, no substantial changes have occurred at Bellekeno, and therefore, SRK's resource model has not required updating.

For Onek and Lucky Queen, these samples were utilized in constructing the geological model and variographic modeling. No historical chip data were available for the Flame and Moth and Bermingham deposits.

There is limited information about the historical sampling procedures, and their respective quality control, as part of the validations carried out by Alexco and independent consultants in previous studies. Historic data verification procedures are outlined below.

The verification procedure consisted of cross-checking the assay values in the database to the values on the original scanned historic assay plan maps. The sample interval points, and respective silver assays were imported from the database and overlain on the original maps. All points were visually inspected to ensure that chip sample lines fell within the boundaries of the drift outlines. Then all assay intervals in the database were checked to ensure they matched with what was originally written on the maps.

Historical chip samples were commonly analyzed for silver, lead, and zinc only. Chip samples were generally taken as cuts across the vein and into the hanging wall and footwall rocks. An undated UKHM document outlines underground chip sample procedures as well. In addition to the above information, emphasis is put on clean faces to prevent sample contamination from previous blasting activities. Samples were to be taken within a 1.5 ft (0.5 m) wide area across the rock face. In addition to separate samples per rock type, this undated document requires separate samples for a change in structure. The sample location was to be measured from the nearest survey station; the resulting distance measurement was used to plot the samples and assay results on level plans. More detailed information was listed regarding the direction in which samples were to be taken for various kinds of underground openings.

The underground face samples by Alexco and Hecla were collected regularly, occurring at each heading advance with a frequency ranging from 1.5 m to 3 m, depending on the length of the mining advance. This involved using a hammer and chisel with the channel chip sampling method. The samples were collected between the hanging wall and footwall contacts of mineralized zones, with common lengths being 1.0 and 1.5 meters. Prior to mapping and sampling, all faces are washed and cleaned of loose material. Sample intervals are painted on the face and numbered consecutively from the left rib to the



right rib. Standard reference materials are added to the sample stream and duplicate assays are performed in regular intervals by the mine laboratory.

8.2 LABORATORIES PROCEDURES

Details regarding the laboratory procedures for historical samples are unavailable. All descriptions in the section below pertain to samples conducted by Alexco and Hecla up to the current date.

Laboratory procedures have been consistent for the 2006–2021 Alexco programs and have been implemented by Hecla. Sample preparation consists of initial fine crushing of the sample to more than 70% passing 2 mm with the crusher cleaned with "barren material" after every sample. A nominal 250 g split of this material is then pulverized to greater than 85% passing 75 microns for analyses with the pulverizer cleaned with "barren material" after every sample. Duplicate samples are prepared at the preparation facility when noted by collecting a second 250 g split from the crushed material.

Samples are analyzed for gold by fire assay and atomic absorption spectrometry on 30 g subsamples and for a suite of 27 to 48 elements by four acid digestion and either inductively coupled plasma atomic emission spectroscopy (ICP-AES) or induced coupled plasma mass spectroscopy (ICP-MS) (on 0.5 g subsamples). Elements exceeding the concentration limits of ICP-AES or ICP-MS are re-assayed by single element four acid digestion and atomic emission spectroscopy. Silver results exceeding ICP-AES limits are re-assayed by fire assay and gravimetric finish on 30 g subsamples. Lead and zinc results exceeding concentration limits are analyzed by volumetric titration.

Crushed reject material and residue assay pulps are annually returned to the Elsa exploration facilities for storage.

The samples have been analyzed mainly by ALS Minerals (approximately 82% of total samples), ALS Minerals, Eco Tech, and AGAT are all accredited to ISO 17025 by the Standards Council of Canada for several specific test procedures, including fire assay for gold and silver with atomic absorption and gravimetric finish; multi-element inductively coupled plasma optical emission spectroscopy; and atomic absorption assays for silver, copper, lead, and zinc. ALS Minerals laboratories also participate in international proficiency tests, such as those managed by CANMET and Geostats.

ALS Minerals, Eco Tech, and AGAT operate as independent certified laboratories around the world or locally, there is no relationship between the laboratories and Hecla, or previous owners, and all procedures and analytical assays have been carried out independently and objectively.



8.3 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURE (QA/QC)

Alexco implemented quality control procedures for all Keno Hill Silver District drilling campaigns since 2006, and these protocols have been consistently upheld during the recent drilling campaigns conducted by Hecla between 2022 and 2023. Each 20-sample batch sent for assaying includes three control samples: a commercial standard reference material (SRM), a coarse blank, and a field duplicate. The location of control samples in the sample stream is defined by the logging geologist (standard reference material or SRM, blank, and duplicate). Control samples are inserted when the core is sawn or when the whole core is sampled. The quality control program developed by Alexco and Hecla is considered mature and overseen by appropriately qualified geologists. The data collected by Hecla on the Project was acquired using adequate quality control procedures that generally meet or exceed industry best practices for an exploration property at the resource delineation stage.

Throughout various drilling campaigns, the outcomes of quality controls have been monitored, and any associated issues have been thoroughly investigated to facilitate continuous improvement. These findings have been documented in a quality control database, along with graphical representations of quality control results for different periods.

Table 8-1 summarizes the insertion rate of control samples per deposit for all samples in Keno Hill, and Table 8-2 summarizes the insertion rate of control samples per year only for Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek.

Deposit	Blank	Coarse Duplicate	Pulp Duplicate	SRM	Primary Samples	Total Samples	% QAQC
Bellekeno	914	885	1,207	1,114	12,761	16,881	24%
Bermingham	762	757	152	764	14,830	17,265	14%
Flame and Moth	425	426	178	440	7,109	8,578	17%
Lucky Queen	196	191	272	207	3,170	4,036	21%
Onek	306	290	437	338	4,875	6,246	22%
Subtotal	2,603	2,549	2,246	2,863	42,745	53,006	19%
Subtotal QAQC%	5%	4%	4%	5%	81%	100%	
Other	1,216	1,215	1,015	1,375	25,179	30,000	16%

Table STYLEREF 1 \s 8- - Control Sample Insertion Percentage by Deposit for Keno Hill (2006 - 2023).

Table STYLEREF 1 \s 8- - Control Sample Insertion Percentage by Year for Bellekeno, Lucky Queen, Flame and Moth, Onek, and Bermingham.

Year	Blank	Coarse Duplicate	Pulp Duplicate	SRM	Primary Samples	Total Samples	% QAQC
2006	172	161	217	216	2,749	3,515	22%
2007	409	392	496	426	6,603	8,326	21%

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Year	Blank	Coarse Duplicate	Pulp Duplicate	SRM	Primary Samples	Total Samples	% QAQC
2008	202	190	264	209	3,447	4,312	20%
2009	250	236	498	250	3,903	5,137	24%
2010	242	243	428	270	4,047	5,230	23%
2011	235	231	343	264	3,821	4,894	22%
2012	329	334	-	458	5,477	6,598	17%
2013	66	67	-	87	1,018	1,238	18%
2014	120	119	-	114	1,928	2,281	15%
2015	39	39	-	40	661	779	15%
2016	117	119	-	116	1,994	2,346	15%
2017	63	65	-	63	1,096	1,287	15%
2018	75	72	-	71	1,272	1,490	15%
2019	25	25	-	25	407	482	16%
2020	28	28	-	28	479	563	15%
2021	121	121	-	120	2,039	2,401	15%
2022	27	28	-	28	463	546	15%
2023	83	79	-	78	1,341	1,581	15%
Total	2,603	2,549	2,246	2,863	42,745	53,006	19%

8.3.1 STANDARD REFERENCE MATERIALS

All Standard Reference Material has been pulverized and inserted as a 50 g to 100 g sample. Throughout the drilling sampling carried out by Alexco, the process originally used one of 16 different standard reference materials purchased from WCM Sales Limited of Burnaby, British Columbia: nine polymetallic copper, lead, zinc, and silver reference materials (PB 111, PB 112, PB 113, PB 116, PB 129, PB 131, PB 137, PB141 and PB 145) and twelve silver reference materials (PM 1107, PM 1108, PM 1116, PM 1117, PM 1123, PM 1127, PM 1128, PM 1129, PM 1130, PM 1132, PM1133 and PM 1141) for inclusion in each 20-sample batch (Table 8-3). Hecla has since added one additional polymetallic copper, lead, zinc, and silver reference material (MP-1b) (Table 8-3).

Table STYLEREF 1 \s 8- - Commercial Standard Reference Material Used for Drilling Programs for the Keno Hill.

SRM	Control inserted	Cu (%)	SD	Pb (%)	SD	Zn (Z)	SD	Ag (g/t)	SD	Ag (oz/t)	SD	Au (g/t)	SD
MP-1b	3	3.07	0.09	2.09	0.07	16.67	0.22	47.00	3.50				
PB 111	76	0.69	0.01	2.12	0.04	0.45	0.02	195.00	5.72				
PB 112	79	0.85	0.01	0.92	0.02	1.27	0.03	222.00	2.00				
PB 113	183	0.47	0.01	1.11	0.02	1.40	0.05	22.00	1.00				
PB116	100	0.43	0.01	1.40	0.06	0.85	0.02	22.00	1.00				
PB 129	261	0.28	0.01	1.24	0.02	2.00	0.06	23.00	1.70				

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SRM	Control inserted	Cu (%)	SD	Pb (%)	SD	Zn (Z)	SD	Ag (g/t)	SD	Ag (oz/t)	SD	Au (g/t)	SD
PB 131	442	0.47	0.01	1.04	0.04	1.89	0.06	262.00	11.00				
PB137	385	0.21	0.01	2.62	0.09	2.69	0.12	111.00	2.00	-	-	-	-
PB141	-	1.02	0.01	6.68	0.15	3.78	0.14	173.00	3.00	-	-	-	-
PB145	75	0.19	0.01	1.34	0.05	1.58	0.04	62.00	2.80				
PM1107	416	-	-	-	-	-	-	1194.00	34.00	34.80	1.00	-	-
PM1108	117	-	-	-	-	-	-	658.00	10.00	19.20	0.30	-	-
PM1116	158	-	-	-	-	-	-	769.00	23.00	22.40	0.70	-	-
PM1117	314	-	-	-	-	-	-	386.00	16.00	11.30	0.50	-	-
PM1123	384	0.31	0.01	-	-	-	-	31.00	1.29	-	-	1.42	0.05
PM1127	12							1580.00	36.00				
PM1128	225	-	-	-	-	-	-	592.00	12.00	17.30	0.40	-	-
PM1129	53							34.00	1.70				
PM1130	56							101.00	3.00				
PM1132	-	-	-	-	-	-	-	2287.00	54.33	66.69	1.58	-	-
PM1133	282	-	-	-	-	-	-	757.00	19.00	22.10	0.50	-	-
PM1141	81	1.09	0.05					19	1.29			0.55	0.02

In 2012, Alexco started using a series of certified standard reference materials sourced from the Bellekeno deposit: polymetallic standards (Table 8-4), that were certified by Smee & Associates Consulting Ltd. (Bellekeno-C, Bellekeno-M, Bellekeno-S, Bellekeno-R and Bellekeno-W) that were initially tested as internal laboratory standards at the onsite Bellekeno assay laboratory along with CDN Resource Laboratories Ltd. Standards (ME-4, ME-5). The Bellekeno-derived standards are now commercially available identified as the KHP series below (Table 8-4) and continue to be used routinely with the range of WCM standards.

Table STYLEREF 1 \s 8- - Standard Reference Material Used by Hecla Developed from the Bellekeno Deposit.

SRM	Control inserted	Pb (%)	SD	Zn (%)	SD	Ag (g/t)	SD	Ag (oz/t)	SD
KHP-C	34	14.62	0.58	12.32	0.23	1,162.00	23.50	-	-
KHP-M	84	14.02	0.63	7.85	0.20	971.00	19.00	-	-
KHP-R	11	36.19	2.33	5.08	0.13	2,224.00	47.00	-	-
KHP-S	73	12.47	0.38	13.17	0.41	1,094.00	20.00	-	-
KHP-W	199	3.06	0.06	1.79	0.05	270.00	10.00	-	-
ME-4	23	4.25	0.12	1.10	0.03	402.00	12.50	-	-
ME-5	5	2.13	0.06	0.58	0.01	206.10	6.55	-	-

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Figure 8-1, Figure 8-2, and Figure 8-3 show the results for silver across three certified standard reference materials since 2006 encompassing the latest period for all deposits, to see the trend along different periods. These stand as illustrative examples of the SRM data stored in the database. No significant biases are noted in the standards with minor errors associated with the standard coding issues.



Figure STYLEREF 1 \s 8- - Combined Control Chart for Standard PB 137 Showing Results for Silver at Keno Hill Deposits.

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Figure STYLEREF 1 \s 8- - Combined Control Chart for Standard PB 145 Showing Results for Silver at Keno Hill Deposits.



Figure STYLEREF 1 \s 8- - Combined Control Chart for Standard PB 145 Showing Results for silver at Keno Hill Deposits.

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8.3.2 COARSE BLANK SAMPLES

Since 2006, the assessment of coarse blanks has been implemented to gauge the potential contamination risk within the laboratory during the sample comminution process. The coarse blank is commercially purchased "landscape rock," either dolomite or basalt with approximately 0.35 kg to 1.5 kg of this material inserted. Table 8-5 provides a summary of the compiled coarse blank results for Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek. Additionally, Figure 8-4 illustrates the compiled silver results organized by drill campaign and certificate.

To assess sample contamination, a criterion of 5 times the detection limit has been employed. Notably, there are various detection limits, particularly for lead and zinc, and a threshold of 10 ppm has been adopted for both, based on observations from the database. No significant contamination issues were detected for gold, silver, and lead; however, inconsistencies above 10% (failures) have been noted for zinc, with the majority falling below 0.05 %; consequently, zinc is not deemed a pertinent contamination concern.

Table STYLEREF 1 \s 8- - Compiled Results from Blank Sample Analysis for Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek.

Element	Total	Min	Max	D. Limit	Failures	% Failures
Au (g/t)	3,717	0.002	5,555	0.01	39	1%
Ag (g/t)	3,734	0	1,000	0.5	94	3%
Pb (ppm)	3,735	0.0005	2,770	10	160	4%
Zn (ppm)	3,737	0.0005	2,770	10	591	16%

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Figure STYLEREF 1 \s 8- - Compiled Blank Control Samples of Silver for Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek.

8.3.3 COARSE DUPLICATES

The objective of the coarse duplicates is to estimate the precision during the comminution process. For precision control, an empty sample bag is inserted at the location of the duplicate, which is subsequently collected during sample preparation at the laboratory prep facility. The duplicate consists of a coarse reject split from the preceding sample.

Precision has been evaluated with the hyperbolic method, with a relative acceptance error of 20% for coarse duplicates. Table 8-6 provides a summary of the compiled coarse duplicate results for Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek. Additionally, Figure 8-5 illustrates the compiled silver results. There have been no observed issues with precision during the laboratory sample comminution stage.

Table STYLEREF 1 \s 8- - Compiled Results from Coarse Duplicate Analysis for Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek.

Element	Detection Limit	Total Samples	Number Failures	Failure Rate
Au (g/t)	0.002	2487	83	3.3%
Ag (g/t)	0.05	2522	33	1.3%
Pb (%)	0.0001	2522	41	1.6%
Zn (%)	0.0003	2522	22	0.9%

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Figure STYLEREF 1 \s 8- - Compiled Coarse Duplicate Control Samples of Silver for Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek.

8.3.1 PULP DUPLICATES

Between 2006 and 2011 duplicate pulps were included in the QA/QC controls. The objective of the pulp duplicates is to estimate the precision during the pulverization process. Similar to the coarse duplicates, an empty sample bag was inserted at the location of the duplicate, the duplicate was formed through a split of the pulp from the preceding sample.

Precision has been evaluated with the hyperbolic method, with a relative acceptance error of 10% for pulp duplicates. Table 8-7 provides a summary of the compiled pulp duplicate results for Bellekeno, Bermingham, Flame and Moth, Lucky Queen, and Onek. Additionally, Figure 8-6 illustrates the compiled silver results. Inconsistencies beyond the accepted range (10%) exist; however, these have been primarily



attributed to over-limit values that have not undergone reanalysis; hence, no significant precision issues have been acknowledged.

Table STYLEREF 1 \s 8 C	Compiled Results from	Pulp Duplicate Analysis for	Bellekeno, Bermingham,	Flame and Moth, Lucky Queen and Onek.
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Element	Detection Limit	Total samples	Number Failures	Failure Rate
Au (g/t)	0.002	1044	133	12.7%
Ag (g/t)	0.1	947	150	15.8%
Pb (%)	0.0001	941	157	16.7%
Zn (%)	0.0005	956	116	12.1%



Figure STYLEREF 1 \s 8- - Compiled Pulp Duplicate Control Samples of Silver for Bellekeno, Bermingham, Flame and Moth, Lucky Queen and Onek.

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8.3.2 UMPIRE LABORATORY DUPLICATES

As part of the Keno Hill Mine due diligence in 2022, Hecla conducted a sample analysis using the external laboratory services of Bureau Veritas (BV) in Canada as a secondary laboratory. This involved an interlaboratory test, also referred to as an umpire laboratory, to independently validate the precision and accuracy of the chemical analyses conducted by the primary laboratory (ALS).

The analysis covered various drilling campaigns spanning the years 2008 to 2021, with a primary focus on the Bermingham area. Additionally, there were minor analyses conducted in the Flame and Moth, as well as Lucky Queen areas.

Table 8-8 provides a summary of the umpire laboratory duplicate results. The comparison reveals no noteworthy distinctions between the primary and secondary laboratories, thereby affirming the results obtained by Alexco. It should be noted that the difference observed in the lead results is a consequence of a limited number of analyses.

Grade Variable	Laboratory	Total samples	Mean	Mean % diff.	
$\Delta \sigma (\sigma t)$	ALS	268	2,388.2	1.0%	
Ag (g/t)	BV	268 2,357.4		-1.0%	
Db (0()	ALS	271	6.11	7.0%	
PD (%)	BV	271	6.55	7.0%	
7. (0/)	ALS	271	3.61	2.0%	
211 (%)	BV	271	3.67	2.0%	

Table STYLEREF 1 \s 8- - Umpire Lab Duplicates Analysis for Bermingham, Flame and Moth, and Lucky Queen (Hecla, 2022c).

8.4 SAMPLE SHIPMENT AND SECURITY

Some minor modification in the sample shipment procedure has occurred over time, primarily in response to changing laboratory locations and the logistics surrounding available commercial transport. In all cases, approximately four to five individual samples are placed in polyfiber bags for shipment.

In 2006, samples were sent to Whitehorse, Yukon by Kluane Transport then by Manitoulin Transport to the ALS Chemex facility in North Vancouver, British Columbia for preparation and analysis. Beginning in 2007, each shipping bag was sealed with a numbered security tag, before being placed on pallets and shrink-wrapped for shipping.

In 2007/2008, samples were transported to the Canadian Freightways facility in Whitehorse, Yukon by Alexco personnel. Canadian Freightways then trucked the samples to the ALS Chemex facility in Terrace,



British Columbia for preparation. Pulverized subsample splits were then sent to the ALS Chemex facility in North Vancouver, British Columbia for analysis.

In 2009, samples were transported to the Eco Tech Labs preparation facility in Whitehorse, Yukon by Alexco personnel. Pulverized subsample splits were then sent to the Eco Tech facility in Kamloops, British Columbia for analysis.

In 2010, samples were shipped via Manitoulin Transport to Whitehorse, Yukon where they were couriered to the preparation facilities of either AGAT or ALS Minerals in Whitehorse. The pulverized subsample splits were then sent to the AGAT facility in Mississauga, Ontario, or the ALS facility in North Vancouver, British Columbia, for analysis.

Between 2011 and 2013, samples were shipped via Manitoulin Transport to Whitehorse, Yukon where they were delivered directly to the preparation facilities of ALS Minerals in Whitehorse. The pulverized subsample splits were then sent under seal by the laboratory to the ALS facility in North Vancouver, British Columbia, for analysis.

Between 2014 and 2021, Alexco samples have been shipped in sealed wooden boxes containing approximately 100 samples. Since 2021, approximately 20 samples have been placed into a labeled rice bag and shipped directly to the ALS Minerals sample preparation facility in Whitehorse with the assay pulp transported under seal by the laboratory to the North Vancouver analytical facility.

8.5 SPECIFIC GRAVITY MEASUREMENTS

At Keno Hill, specific gravity measurements are systematically acquired for both mineralized and non-mineralized material through on-site procedures using a water immersion method. The process initially involves determining a correction factor. This is achieved by submerging an empty tray into the water, setting the balance to zero, and subsequently removing the tray from the water. The resulting scale reading, following complete drainage of water from the tray, serves as the designated correction factor. Following this, both dry and wet weights for each sample are recorded, accomplished by positioning a scale above a water-filled bucket. Prior to measurements, a correction factor is meticulously determined.

After every 20 samples, a reference standard of known specific gravity is inserted as a quality control standard. A selection of four standards is used in rotation.

8.6 QP OPINION

It is the opinion of the Mining Plus geology QP, that the Alexco and Hecla drilling and sampling procedures used at Keno Hill are reasonable and adequate for the purposes of estimation of Mineral Resources. The Mining Plus geology QP does not know of any drilling, sampling, or recovery factors related to the Alexco



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and Hecla drilling that would materially impact the accuracy and reliability of results that are included in the database used for Mineral Resource estimation.



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9. DATA VERIFICATION

9.1 SITE VISITS

The Mining Plus geology QP conducted a site visit to the Keno Hill Mine. In total, the Mining Plus geology QP spent two and a half days at the site between October 23 and 28, 2023. Time on site was spent verifying the nature and extent of all exploratory work completed by Hecla. This included field-checking of key drill collar coordinates and visiting geology exposures at mineralized outcrops and underground development and production headings. The verification process also involved confirming mineralized and non-mineralized core intercepts, reviewing standard operating procedures, and undertaking a review of mineral resource estimation processes. Additionally, inspections of both surface and underground drill rigs were undertaken during this site visit. Hecla provided a representative with information related to these activities during the site visit.

9.2 DRILLING DATABASE

The Mining Plus geology QP reviewed Keno Hill's drill hole database (source in Excel files) executed between 2006 and 2023 by Alexco and Hecla. The drilling database review focused on detecting potential errors in holes used in the Mineral Resource Estimate as follows:

- Search for duplicate collar ID.
- Search for duplicate sample numbers.
- Search for maximum grades.
- Search for maximum sample length.
- Review collar location against the surface (underground and superficial).
- Results of the QA/QC program.
- Cross-check the assay result with the lab certificate (approximately 10% of the samples).

Minor inconsistencies were detected in the database, these inconsistencies are not regarded as relevant for the estimation process, with the majority being minor. Inconsistencies were noted in the Onek database, and to a lesser extent Bellekeno and Lucky Queen when compared to their certificates. It has been concluded that the discrepancies between the database and the certificate may be due to other certificates in some cases or incorrect assignments that must be investigated as the reason for the difference is not conclusive. However, correlation comparisons show random variation and most of them have minimal differences. The inconsistencies for Bermingham, and Flame and Moth are less than 1%.



9.3 VERIFICATION OF ANALYTICAL QUALITY CONTROL

Mining Plus completed an independent review of the Quality Control and Quality Assurance (QA/QC) measures and procedures that Hecla has in place to assess the performance of external assay analysis. A compilation of quality control records for drilling relevant to the Bellekeno, Flame and Moth, Bermingham, Lucky Queen, and Onek deposits was prepared based on drilling records provided by Hecla from its corporate database. The data file was sorted into the various types of quality control samples including Blanks, Reference Standards, and Duplicate Samples from both coarse residue and duplicate assays as provided by the laboratory.

Hecla uses a GeoSpark[®] Software (SQL-based) relational database to store all drilling-related records with drilling records selected as required from the database using appropriate queries and filters.

The company has access to a range of certified reference standards from commercial organizations with some of these prepared from in-situ Bellekeno mineralization which further improves their application in the testing of assay quality control.

Mining Plus considers that the number and percentage of quality control samples included with each sample batch is an appropriate number for analytical quality assessment.

The balance of additional quality control samples added to each batch of drilling samples is considered appropriate for testing different parts of the laboratory analysis process and confirms the veracity of element results.

The Mining Plus geology QP notes the following regarding the QA/QC results of the drilling campaign 2006- 2023:

- Overall, the results of the QA/QC program carried out between 2006-2023 are acceptable, where no significant contamination is observed, with acceptable precision and accuracy without evidence of bias, and are suitable for use in estimating resources.
- QA/QC failures are not adequately investigated and documented; instead, they undergo reanalysis, and if the failure persists, the sampling batch is reanalyzed. However, it is essential to investigate the origin of the error to implement timely corrective measures. Similarly, pulp duplication has been discontinued in the QA/QC process since 2011.
- Incorporating field duplicates, pulp duplicates, and umpire check samples is essential within the QA/QC protocol to assess the
 precision of samples at various stages of sampling and comminution.
- Fine blank controls must be included to evaluate contamination during the analysis stage.



9.3.1 PREVIOUS REVIEWERS OF QA/QC

From 2010 to 2021, Gilles Arseneau, Ph.D., P. Geo. of SRK Canada, acted as the QP in various previous studies, including the preparation of the 2021 Alexco Technical Report (NI 43-101 Technical Report on Updated Mineral Resource and Reserve Estimate of the Keno Hill Silver District). Throughout this period, Dr. Arseneau conducted diverse reviews of databases and quality control. The results of these reviews are summarized in Sections 9.3.1.1-9.3.1.3.

9.3.1.1 Lucky Queen

In the 2021 Alexco Technical Report, Gilles Arseneau, Ph.D., P. Geo. of SRK Canada, reviewed and verified Lucky Queen drill hole data and quality control assay data from 2006 to 2010. Dr. Arseneau considered the data reliable for resource estimation purposes. The analysis included aggregation of assay results for external quality control samples and duplicate assay pairs. Blank samples exhibited reasonably good performance, with no systematic failures noted for silver, lead, or zinc. However, 6% of gold assay blanks returned a grade higher than 0.01 g/t Au. Commercial standard reference samples and duplicate analyses also showed satisfactory results, supporting the reliability of the analytical data for mineral resource estimation.

9.3.1.2 Onek

In November 2010, June 2011, and August 2014, Dr. Arseneau conducted audits of analytical and quality control data for the Onek deposit. Dr. Arseneau conducted routine verifications to ensure the reliability of the electronic drillhole database, matching assay values against laboratory certificates. While minor issues were resolved, the overall review suggested that silver, gold, lead, and zinc grades could be reasonably reproduced, making the final assay results reliable for resource estimation. After the review, Dr. Arseneau was of the opinion that the Onek drilling database is sufficiently reliable for resource estimation.

9.3.1.3 Bermingham

In 2018, the QP for the 2021 Alexco Technical Report, Gilles Arseneau, Ph.D., P.Geo. of SRK Canada, completed an audit of the Alexco analytical and quality control data acquired during the sampling of the Bermingham deposit; this audit consisted of routine verifications to ascertain the reliability of the electronic drill hole database provided by Alexco. All assays in the current database were verified against independently sourced sample certificates from ALS Chemex, Echo-Tech, and AGAT laboratories. The silver, lead, zinc, and gold values in the assay table were found to match the laboratory certificates with a



few exceptions where samples had been re-assayed, and the database had not been updated with the re-assay certificate number. Alexco corrected this and the sample values were found to match the re-assay certificates. After the review, Dr. Arseneau was of the opinion that the drilling database was sufficiently reliable for resource estimation.

There are no details about the revision done for Flame and Moth and Bellekeno.

9.4 QP OPINION

After evaluating the QA/QC performance for the reporting period of 2022-2023 and examining the QA/QC database along with Dr. Arseneau's previous conclusions in 2021, The Mining Plus geology QP is content with the findings. She is confident that the chemical assays of gold, silver, lead, or zinc do not present any notable issues of accuracy, precision, or contamination. Consequently, their incorporation in resource estimation is considered acceptable.



10. MINERAL PROCESSING AND METALLURGICAL TESTING

10.1 INITIAL CHARACTERIZATION AND SCOPING STUDIES

The metallurgical response of Keno Hill mineralization is well understood through test work and operational experience. Previous test work on the varied mineralization at the property can be traced back prior to 1996 until 2017 as indicated from the multiple studies by Rescan (1996), Wardrop (2009), SRK (2013/2014), and RPA (2017). The Bellekeno deposit was widely investigated between 1996 and 2009 with the test results compiled to form the basis for the design and construction of Keno Hill District Mill in 2010. From 2011 to 2013, samples from deposits of Lucky Queen and Flame and Moth were tested to assess their flotation performance. Since 2018, additional metallurgical test work has been conducted on samples from these deposits and from the Bermingham mineralization area to support the mine plan. Table 10-1 lists the test work assessed herein.

Year	Laboratory/ Simulation Report	Samples Domain	Hardness	Mineralogy	Rougher/ Cleaner Flotation	Locked Cycle Flotation	Other Tests
1996	PRA	Blended BK/SK (85%/15%)	~				✓
2008	SGS – Lead, Zinc and Silver Flotation Testing on Bellekeno Samples	ВК	~	~			
2009	Inspectorate (PRA)	BK, East/Southwest Zones of BK, OK	~	✓			~
2011	Inspectorate (PRA)*	LQ and OK			✓		
2013	Inspectorate (PRA)*	F&M			✓		
2013	Starkey & Associates (S&A) – Bellekeno Grinding Circuit Comminution Throughput Analysis Report	Grinding circuit survey of Keno Hill District Mill	~				
2018	SGS – The Flotation of Samples from the Bermingham Deposit	BM		~	√	~	
2018	SGS – The Comminution and Flotation of Samples from the Lucky Queen and Flame and Moth Deposits	LQ, F&M (combined Christal and Lightning Zones), F&M (Christal Zone), F&M (Lightning Zone), BM-F&M (Christal Zone), and BM-F&M (Lightning Zone)	~		✓	~	
2019	SGS - The Flotation of Samples from the Bermingham and Christal Zone Deposits	Blended F&M (Christal Zone)/BM (70%/30%)			~	✓	
2019	SGS – The Flotation of Samples from the Bermingham and Christal Zone Deposits (Appendix B)	F&M and LQ		~			

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Table STYLEREF 1 \s 10- – Metallurgical Test Work Programs – 1996 to 2019.

*Results provided to Tetra Tech in Excel sheet as a compilation of results.



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Abbreviations as follows: BK – Bellekeno, LQ – Lucky Queen, F&M – Flame and Moth, OK – Onek, BM – Bermingham, SK – Silver King.

The Flame and Moth metallurgical sampling programs from Lightning Zone and Christal Zone are representative of their respective geological rock type domain. The samples used for composites were collected from exploration drilling programs. The samples for each of the composites were spatially distributed throughout each of the deposits and contained head grades consistent with typical ranges observed in the exploration programs.

The initial metallurgical composites for Bermingham and Lucky Queen were each prepared from samples from exploration drill holes throughout the deposit representing high-grade domains. These were used for testing completed prior to 2018, including both batch and locked cycle testing as reported in the PEA (RPA, 2017).

In 2018, two drill holes were completed in each of the two zones of Flame and Moth (four holes totaling 60 m of drilling) specifically to provide fresh unoxidized material for metallurgical testing on composites representative of each of the Lightning and Christal zones. These composites were then combined with Bermingham composites to test the locked cycle metallurgical response to the flowsheet. Two Bermingham composites were used: the master composite in 2017 from previous test work and a second new composite in 2018 with a lower head grade which would be more typical LOM metals content in order to evaluate expected conditions and evaluate fluctuations in plant feed. The Bermingham, Flame and Moth, and Lucky Queen metallurgical testing results to date have contained similar head grades and have behaved metallurgically similar within each respective deposit.

The Flame and Moth composites were prepared from samples collected from the drilled intervals shown in Figure 10-1.



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Figure STYLEREF 1 \s 10- - Source Metallurgical Samples from Flame and Moth (Alexco, 2021b).

The assays of each of the composites are shown in Table 10-2.

Table STYLEREF 1 \s 10- - Flame and Moth Composites for Metallurgical Testing (Alexco, 2021b).

Sample	Pb (%)	Zn (%)	Ag (g/t)	Au (g/t)
Lightning Zone Composite	3.16	5.24	749	0.53
Christal Zone Composite	3.56	5.21	857	0.98

The Bermingham Master Composite and New Bermingham Composite were prepared from samples collected from the drilled intervals shown in Figure 10-2.



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Figure STYLEREF 1 \s 10- - Source of Metallurgical Samples from Bermingham (Alexco, 2021b).

The assayed characteristics of each of the two composites are shown in Table 10-3.

Table STYLEREF 1	\s 10- – Berminaham	Composites for Metallur	aical Testina (Alexco. 2021b).
TODIC OTTELLIET 1	10 20 Derringram	composites joi metamai	great resting (riterice) 20225/

Sample	Pb (%)	Zn (%)	Ag (g/t)	Au (g/t)
Master Composite	6.09	1.77	3,308	0.37
New Composite	3.57	2.95	1,712	-

No new composites were prepared for either the Bellekeno or Lucky Queen test work since the 2017 Preliminary Economic Assessment (RPA, 2017).

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10.1.1 COMMINUTION DATA LUCKY QUEEN AND FLAME AND MOTH DEPOSITS

In 2018 Bond Ball Mill Work Index (BWi) testing was performed on the Lightning Zone and Christal Zone composites within the Flame and Moth deposit, and the results are summarized in Table 10-4 and Figure 10-3.

Sample Name	Mesh of Grind	F80 (μm)	P80 (μm)	Gram per Revolution	Work Index (kWh/t)	Hardness Percentile	Category	Feed Passing (%)	Bulk Density
Lightning Zone Comp	100	2,058	121	2.57	10.4	13	Soft	18.1	2,357
Christal Zone Comp	100	2,048	125	2.59	10.5	13	Soft	12.9	2,674

Table STYLEREF 1 \s 10- - Summary Results of BWi Testing (SGS, 2018b).

The BWi values obtained were consistent at 10.4 and 10.5 kWh/t, respectively, characterizing the composites as soft.



Figure STYLEREF 1 \s 10- - Alexco BWI Results against SGS Database (SGS, 2018b).



10.2 METALLURGICAL LABORATORY TEST-WORK PROGRAM

Values for the initial Bond Rod Mill Work Index (RWi), Bond Ball Mill Work Index (BWi), and Bond Abrasion Index (Ai) were determined for Bellekeno samples during the 1996 and 2009 test programs. The measured RWi on the single Bellekeno composite sample was 8.7 kWh/t, while BWi values on four samples ranged from 7.9 kWh/t to 9.5 kWh/t. This indicated that the Bellekeno samples can be categorized as soft materials with low variability. The abrasion index (AI) was measured on a single Bellekeno sample with a value of 0.438 g, which was considered moderately abrasive.

In 2013 a benchmark survey on the grinding circuit of Keno Hill District Mill was conducted by Starkey & Associates (S&A) to assess the circuit operation to debottleneck the grinding circuit throughput limitation. Stream samples from the ball mill discharge, pump sump, and ball mill screen oversize and undersize were taken and tested to determine their RWi and BWi values. The RWi was found to be 12.4 kWh/t and the BWi was found to be 10.2 kWh/t. Both results are significantly higher than previous test results from 1996 to 2009. S&A then modeled the grinding circuit operation based on these results, which are summarized in Section 14 of this report.

The specific gravity values for the head samples were determined in 1996 by Inspectorate America Corporation (PRA), which was 3.57 for the Bellekeno sample and 2.81 for the SK sample. PRA completed an additional specific gravity test with the flotation concentrates samples, which was reported to be 6.49 for silver-lead concentrate and 3.95 for zinc concentrate. The 2018 measurement by SGS showed a range between 2.78 and 4.36 for Lightning Zone drill samples and 2.75 and 4.71 for Christal Zone drill samples.

Table STYLEREF 1 \s 10- - Grindability Test Results (Alexco, 2021b).

Test Program	Sample	Bond Ball Mill Work Index (kWh/t)	Bond Rod Mill Work Index (kWh/t)	Abrasion Index (g)	Specific Gravity
1006 DPA	Bellekeno Comp	9.3 **			3.57
1990 PKA	Silver King Comp	10.3**			2.81
2007 SGS	Bellekeno Comp	9.5*			
	Bellekeno Master Comp	-	8.7	0.438	
2008/2009 PRA	Bellekeno East Zone Comp	7.9*			
	Bellekeno SW Zone Comp	8.2*			
2013	Grinding circuit survey of Keno Hill District Mill	10.2	12.4		
2018 505	Christal Zone Composite	10.5**			2.75-4.71
2018 303	Lightning Zone Composite	10.4**			2.78-4.36

* At a closing mesh size of 106 μm.

** at a closing mesh size of 149 μm.

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10.3 MINERALOGICAL ANALYSIS

Mineralogical investigations were conducted in several test programs on different samples. A recent comparison of the results from the Bellekeno, Lucky Queen, Flame and Moth, and Bermingham deposits was made by the previous operator, Alexco, in 2018.

10.3.1 MINERALOGY ANALYSIS ON BELLEKENO SAMPLES

Both SGS and PRA studied the mineralogy characteristics of the Bellekeno mineralization samples in the 2007 and 2009 test programs. In 2007, SGS completed a Quantitative Evaluation of Materials by Scanning Electron Microscopy (QEMSCAN[™]) analysis that indicated that galena and sphalerite were the principal lead and zinc minerals, respectively. Pyrite accounted for less than 4% of the mass, while trace sulfide minerals included chalcopyrite, bornite, chalcocite, tetrahedrite, and arsenopyrite.

Both the SGS and PRA studies reported on the general coarse texture for the galena and sphalerite minerals, specifically, with the SGS data indicating liberation at a relatively coarse size. At an 80% passing (P80) grind size of 170 μ m, 96% of the sphalerite and 95% of the galena particles analyzed were present as liberated phases.

PRA's 2009 tests included a microscopic examination of the composite samples from the Bellekeno Southwest zone and the Bellekeno East zone. The results confirmed galena and sphalerite as the main economic minerals. The Southwest zone composite contained more galena, while the East zone contained predominantly sphalerite. Proustite-pyrargyrite was identified as the only specific silver mineral and was present as small inclusions in galena. Tennantite-tetrahedrite and sphalerite were identified as being additional silver carriers. Native gold was also found as fine inclusions of less than 5 µm in chalcopyrite from the Southwest zone composite sample. In addition, a part of the Bellekeno East zone sample showed the presence of secondary minerals including limonite, covellite, and a minor portion of colloform pyrite that can decompose to sulfide. The PRA study also confirmed the texture of the galena and sphalerite minerals was coarse in general.

10.3.2 MINERALOGY ANALYSIS ON FLAME AND MOTH AND LUCKY QUEEN SAMPLES

In 2017 SGS conducted QEMSCAN examinations on the Flame and Moth and Lucky Queen samples. The mineral distributions are shown in Figure 10-4 for both samples. The minerals of interest contained in the samples included galena at about 3.4% for the Flame and Moth sample and 5.3% for the Lucky Queen sample, sphalerite at 13.0% for the Flame and Moth sample and 1.9% for the Lucky Queen sample, while silver minerals were present at 0.19% for the Flame and Moth sample and 0.22% for the Lucky Queen sample. The major gangue minerals included quartz, Fe-Mn oxides, and pyrite/arsenopyrite for both



samples. The Flame and Moth sample contained a much higher pyrite content of 14.5% as compared with the Lucky Queen sample, which had a pyrite content of 1.6%. Similarly, arsenopyrite in the Flame and Moth sample was about 4.4%, which is higher than that of the Lucky Queen sample at a level of 0.2%. About 2.2% and 4.5% sericite/muscovite were identified in the Flame and Moth sample and Lucky Queen sample, respectively. Other gangue minerals such as K-feldspars, dolomite, and rutile were low in content, with each type less than 1%.



Figure STYLEREF 1 \s 10- – Mineral Abundance of Flame and Moth and Lucky Queen Samples (SGS, 2019).

The liberation and exposure information of galena, sphalerite, pyrite, and silver minerals are summarized in Table 10-6. As compared with the Lucky Queen sample, the Flame and Moth sample showed a lower content of the free and liberated galena, as well as a smaller portion of the exposed rate. In addition, galena in the Flame and Moth sample had a greater association with sphalerite and complex mineralogy, which means more than two mineral types in the grain.



	Lucky Queen Sample					Flame and Moth Sample						
Minerals*	Association			Exposure		Association			Exposure			
	Free (%)	Liberated (%)	Sphalerite (%)	Complex (%)	100%	20%	Free (%)	Liberated (%)	Sphalerite (%)	Complex (%)	100%	20%
Galena	82.3	10.6	0.5	2.1	87.0	98.7	47.0	19.7	6.2	15.1	53.5	86.3
Sphalerite	84.1	5.0	n/a	3.0	86.0	97.7	61.3	17.5	n/a	10.6	68.9	95.1
Pyrite	58.5	17.3	0.0	14.9	59.3	85.7	71.9	18.4	0.9	5.8	79.7	98.0
Silver Minerals	45.9	10.7	6.7	2.29	53.1	90.7	34.1	13.8	4.2	30.7	45.6	75.3

Table STYLEREF 1 \s 10- - Mineral Liberation and Exposure of Flame and Moth and Lucky Queen Samples (Alexco, 2021b).

 $^{*}Combination of +150 \mu m and -150 \mu m fractions$

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10.3.3 MINERALOGY ANALYSIS ON BERMINGHAM SAMPLES

In 2018 SGS conducted a QEMSCAN analysis on the Bermingham Master Composite ground to 80% passing 250 µm and screened at 150 µm. Similar observations were made from both the fractions of +150 µm and -150 µm showing that lead was present predominantly as galena and zinc as sphalerite. Silver minerals were also identified from the analyses and examined as a group without specifying the individual silver mineral. The minerals of interest contained in the sample included 6.9% galena, 3.0% sphalerite, and 0.67% silver minerals. The major gangue minerals included 51.2% quartz, 22.3% Fe-Mn oxides, and 8.5% sericite/muscovite, with minor gangue minerals composed of 3.4% pyrite and 1.1% chlorite. Other gangue minerals such as K-feldspars, dolomite, and rutile were low in content with each type less than 1%. Figure 10-5 shows the mineral abundance of the Bermingham sample tested.



Figure STYLEREF 1 \s 10- - Modal Mineral Abundance of Bermingham Master Composite (SGS, 2018a).

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The liberation and exposure information of galena, sphalerite, pyrite, and silver minerals are summarized in Table 10-7. At a grind size of approximately 80% passing 250 µm, high values of free/liberated galena and sphalerite were observed with high exposure percentages, namely 86% and 95%, respectively, were fully liberated. About 82% of pyrite was found free or liberated and with a low association with galena and sphalerite. Fully exposed pyrite accounts for 75% of the total, with 95% of the pyrite is greater than 20% exposed. Free and liberated silver mineral grains accounted for 65% of the total, while 13% of the silver minerals were found associated with galena, and another 13% of silver minerals were present in complex mineral assemblages. Fully exposed silver mineral grains accounted for 64% of the total and 91% of the silver grains were greater than 20% exposed.

Table STYLEREF 1 \s 10-	- Mineral Liberation	and Exposure of E	Bermingham Maste	r Composite (Alexco, 202	1b).
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8 din I-*	Free	Liberated	Complex	Exposu	ire
Minerals*	(%)	(%)	(%)	100%	20%
Galena	80.5	11.4	4.2	86.0	97.7
Sphalerite	87.5	9.44	1.49	94.8	98.9
Pyrite	64.1	17.9	9.33	74.5	95.2
Silver Minerals	48.3	16.4	12.8	63.9	91.1

*Combination of + 150 μm and – 150 μm fractions

10.3.4 MINERALOGY ANALYSIS COMPARISON AMONG BELLEKENO, LUCKY QUEEN, FLAME AND MOTH, AND BERMINGHAM SAMPLES

Alexco compared the mineralogical analyses of the samples collected from the Bellekeno, Lucky Queen, Flame and Moth, and Bermingham deposits for the purpose of explaining the inferior metallurgical performance observed on the Flame and Moth samples using QEMSCAN. The conclusions from the QEMSCAN comparison indicated that the Flame and Moth sample had a smaller portion of exposed galena and a greater association of sphalerite and pyrite complex mineralogy. This observation was in line with a much higher ratio of zinc to lead in the Flame and Moth sample as compared with the other deposit samples. The petrographic comparison further indicated that Flame and Moth samples presented a less coarse size of galena, which was more closely intergrown with sphalerite.

10.4 METALLURGICAL RESULTS

10.4.1 FLOTATION TEST WORK OVERVIEW

Rougher, cleaner, and Locked Cycle Flotation Tests (LCT) were initially performed on samples representing the Bellekeno deposit to develop the original process flowsheet used in historical operations. To



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recommission the mill, similar flotation tests following the same processing philosophy were carried out on individual and blended samples from Lucky Queen, Flame and Moth, and Bermingham deposits. More extensive locked cycle testing was completed on these samples to provide additional data as the basis for the 2021 Prefeasibility Study (Alexco, 2021b). The locked cycle testing on the composites is outlined in Table 10-8.

Locked Cycle Test	Sample	Year
LCT1 – 2017	Bermingham Master Composite	2017
LCT2 – 2017	Bermingham Master Composite	2017
LCT1 - 2018	Christal Zone Composite	2018
LCT2 – 2018	Lightning Zone Composite	2018
LCT3 – 2018	30% Bermingham Master Composite – 70% Christal Zone Composite Blend	2018
LCT4 – 2018	30% Bermingham Master Composite - 70% Lightning Zone Composite Blend	2018

Table STYLEREF 1 \s 10- - Locked Cycle Testing Summary (2016-2019) (Alexco, 2021b).

10.4.2 BELLEKENO SAMPLES

The batch flotation test work program for Bellekeno samples was completed between 2007 and 2009 and included rougher flotation tests to assess the impacts of primary grind size, reagent schedule, and other test conditions, open cycle cleaner flotation tests to investigate the quality of the cleaner concentrates produced at various conditions, as well as bench-scale locked cycle flotation tests. The major conclusions are summarized as follows:

- Lead and zinc recoveries in the rougher flotation tests were not sensitive to the primary grind size in a P80 size range between 79 μm to 174 μm.
- Regarding the lead rougher concentrate prior to the cleaner flotation stages could improve the zinc rejection in the lead cleaner flotation stage. While for the zinc rougher concentrate regrind tests, only a slight or no improvement on the upgrading of the zinc rougher concentrate was observed.

The locked cycle flotation tests on Bellekeno samples are described in detail in the 2009 Preliminary Economic Assessment report by Wardrop (Wardrop, 2009). Of the five tests, the optimum results were obtained from the LCT1 test reported by PRA in 2008/2009, which was based on the common sequential lead and zinc flotation circuits with a regrinding stage for each circuit. The results are provided in Table 10-9. The anticipated mill recoveries for Bellekeno are based on this test work and the actual results during the previous operation. All five locked cycle tests produced qualified lead and zinc concentrates. High recoveries of silver, lead, and zinc were obtained in the 1996 PRA test and 2008/2009 PRA -LCT1 and LCT 2 tests. SGS test work produced lower recoveries of silver and zinc that may be related to the regrind



size and the lack of zinc rougher concentrate regrind. The LCT 3 test program by PRA also produced a low silver recovery that can be attributed to the low silver head grade of the tested sample.

10.4.3 LUCKY QUEEN SAMPLES

The batch flotation tests on Lucky Queen samples were completed in 2013 and 2018. The 2013 tests were performed by the Inspectorate using an open circuit cleaner sequential flotation method with no regrinding stages. The test work results were the best of the four deposits. On average, the lead concentrate contained 68% Pb and 33,960 Ag at a silver recovery of 89% and lead recovery of 91%. The zinc recovery was 73% at a concentrate grade of 59% zinc. Table 10-10 shows the cleaner flotation test results.

The 2018 flotation tests by SGS included five cleaner flotation tests with no regrinding stages. Good silver-lead cleaner concentrates were produced, which contained 15,893 g/t to 18,963 g/t Ag, 50.8% to 58.2% Pb. The zinc cleaner concentrate showed a lower grade, ranging from 30.6% to 41.5% Zn, which may be improved by regrinding the zinc rougher concentrates since the primary grind size was around 90 μ m, which was much coarser as compared with other samples reground to 20 μ m in cleaner tests. No locked cycle flotation tests have been performed on Lucky Queens samples.

10.4.4 FLAME AND MOTH SAMPLES AND BLENDED COMPOSITES (BERMINGHAM WITH FLAME AND MOTH)

The initial batch flotation test on Flame and Moth samples was completed in 2013 by inspectorate Labs and then subsequently was optimized in 2018 in the SGS test work. The 2018 batch cleaner flotation test results are listed in Table 10-11, together with the optimum batch cleaner flotation test results. These results suggest that Flame and Moth material could be sensitive to regrinding. This agrees with the mineralogy observations on Flame and Moth samples, which showed a smaller portion of exposed galena with a greater association of sphalerite and pyrite complex mineralogy.

The locked cycle flotation tests on Flame and Moth samples from each of the zones were performed by SGS between 2018 and 2019. SGS conducted five locked cycle flotation tests: one Christal Zone composite sample, one Lightning Zone composite sample, one Bermingham – Flame and Moth (Lightning Zone) blended sample, and two Bermingham – Flame and Moth blended samples (30% Bermingham to 70% Lightning or Christal Zone).

The basic flowsheet used in the locked cycle flotation tests is shown in Figure 10-6. The ground feed samples had a particle size of P80 between 107 μ m to 132 μ m, which were first treated in a two-stage silver-lead rougher flotation. Then, the silver-lead rougher concentrate was reground to approximately 80% passing 23 μ m to 31 μ m, prior to the three-stage cleaner flotation circuit to produce a final



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silver-lead cleaner concentrate. ZnSO4 was used in the lead circuit to depress sphalerite and 3418A was used as the lead collector. The silver-lead rougher tailings, first cleaner tailings, and second cleaner tailings from the lead circuit were combined and sent to the zinc circuit, which included a two-stage zinc rougher flotation, followed by a regrinding to approximately 80% passing 25 μ m to 35 μ m and a two-stage zinc cleaner flotation. CuSO4 was used to activate the previously depressed sphalerite and SIPX was used as the zinc circuit collector.



Figure STYLEREF 1 \s 10- - Locked Cycle Flotation Tests Flowsheet on Flame and Moth and Blended Samples (SGS, 2018b).

The test results are listed in Table 10-12. All the five locked cycle tests generated high-grade silver-lead concentrates containing 10,853 g/t to 23,191 g/t Ag and 47.6% to 53.3% Pb. The corresponding recoveries ranged from 85.2% to 96.1% for silver and 77.8% to 92.7% for lead.

The blended samples (Flame and Moth plus Bermingham) produced better silver-lead concentrates with higher recoveries than composite samples for Flame and Moth alone. These tests on the blended mill feed are considered more representative for future mill operation as the expected mill production is based on blended material of Flame and Moth with Bermingham or Lucky Queen deposit.

The zinc concentrates produced from all the locked cycle tests ranged from 49.8% to 54.2% Zn with recoveries ranging from 73.6% to 88.5%. All samples produced similar zinc concentrate grades and recoveries. The blended feed samples (i.e., Bermingham plus Flame and Moth) samples produced similar-grade zinc concentrates and recoveries as compared with individual mine composite samples. Zinc



contents recovered to the silver-lead concentrates were between 5.9% to 12.8% grading at 4.8% to 9.1% Zn, while lead contents reported to zinc concentrates ranged from 1.4% to 4.6% grading at 0.9% to 1.9% Pb. Gold recovery to the lead concentrate was 36.2% to 41.6% with a grade from 2.2 g/t to 3.9 g/t Au.

10.4.5 BERMINGHAM SAMPLES

The batch flotation test work on Bermingham samples was completed between 2017 and 2019 by SGS on one master composite sample. The 2017 open cycle cleaner flotation tests are plotted in Figure 10-7, which shows that although high-grade lead concentrate can be produced, the grade of zinc concentrates was found to be low.



Figure STYLEREF 1 \s 10- - Open Cycle Cleaner Flotation Test Results on Bermingham Master Composite Samples (SGS, 2018a).

In the 2019 optimization batch flotation tests, SGS included two regrinding stages on both lead and zinc rougher concentrates. As shown in Table 10-13, satisfactory results were obtained - the lead concentrate was grading at over 32,000 g/t silver and 60% lead; the zinc concentrate was grading at 58.4% zinc.

Two locked cycle flotation tests were completed on the Bermingham Master Composite sample by SGS in 2017. The flowsheet used in the test is shown in Figure 10-8. The feed samples were ground to particle size P80, approximately 150 μ m, which was followed by a silver-lead rougher flotation. The silver-lead rougher concentrate reported to the three-stage cleaner flotation circuit to produce a final silver-lead cleaner concentrate. The lead second cleaner tailings and third cleaner tailings were returned to the previous circuit to further recover silver and lead. ZnSO₄ was used in the silver-lead circuit to depress sphalerite and 3418A was used as the lead collector. The silver-lead rougher tailings and first cleaner tailings fed the lead circuit composed of a zinc rougher flotation and a two-stage zinc cleaner flotation. CuSO₄ was used in the zinc circuit to activate the previously depressed sphalerite and SIPX was used as the zinc circuit collector.





Figure STYLEREF 1 \s 10- - Locked Cycle Flotation Tests Flowsheet on Bermingham Master Composite Samples (SGS, 2018a).

The test results are listed in Table 10-14 with LCT 1 test, high-grade silver-lead concentrates were generated containing 35,972 g/t Ag and 58.4% Pb at the corresponding recoveries of 95.9% for silver and 86.7% for lead. The zinc concentrate was graded at 48.3% Zn at a recovery of 60.0%. The LCT2 test was performed with a modified reagent scheme, including a higher dosage of 3418 A to increase lead recovery, more CuSO4, and a higher pH level to improve lead recovery. The resulted silver-lead concentrates contained 31,597 g/t Ag and 56.7% Pb with the corresponding recoveries of 97.5% for silver and 95.3% for lead. The zinc concentrates were graded as 52.8% Zn at a recovery of 63.6%. The flotation performance of lead and zinc were improved with the LCT2 test.



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	-										1		,				
					Le	ad Clear	er Conc	entrate				Zi	nc Clean	er Conce	entrate		
Test No.	H	ead Grade	;	Mass		Grade		F	Recovery		Mass		Grade		F	Recovery	
	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)
PRA 1996	1,022	12.73	4.51	15.6	6,253	77.6	0.88	95.7	95.3	3.1	8.2	233	2.56	52.1	1.9	1.6	94.3
SGS 2007	1,227	12.2	11.6	16.4	5,864	72.5	5.37	78.4	97.6	7.6	14.9	750	0.45	56.0	9.1	0.6	71.7
PRA 2008/2009 – LCT1	933.1	13.1	11.2	18.0	4,874	72.0	2.2	94.0	98.8	3.6	17.1	200.7	0.4	61.5	3.7	0.5	94.4
PRA 2008/2009 – LCT2	963.5	13.8	10.5	18.8	4,878	72.0	3.1	95.2	98.2	5.6	18.2	157.9	0.3	53.1	3.0	0.4	92.2
PRA 2008/2009 – LCT3	270.2	1.9	17.0	3.2	5,705	53.1	5.0	68.3	89.6	1.0	28.1	254.8	0.5	59.1	26.5	7.0	97.6

Table STYLEREF 1 \s 10- - Locked Cycle Flotation Test Results on Bellekeno Samples (Alexco, 2021b).

Table STYLEREF 1 \s 10- - Open Cycle Cleaner Flotation Tests on Lucky Queen Test Samples (Alexco, 2021b).

					Le	ad Rougl	ner Conc	entrate				Le	ad Clean	er Conc	entrate		
Test No.	Calc	Head Gra	des	Mass		Grade		1	Recovery		Mass		Grade		I	Recovery	
	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)
F9	2,322	4.5	3.4	11.4	20,144	39.1	5.2	99.1	98.5	17.3	6.6	33,084	65.9	3.0	93.3	95.1	5.7
F10	4,965	9.7	4.8	20.0	24,637	48.0	5.0	99.1	98.5	21.0	12.1	34,837	70.5	1.9	84.6	87.3	4.8

	llee	l Diataiku	Han		Zi	nc Rougi	her Conc	entrate				Zi	nc Clean	er Conce	entrate		
Test No.	пеас	i Distribu	tion	Mass		Grade		1	Recovery	/	Mass		Grade		F	Recovery	,
	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)
F9	100	100	100	8.3	160	0.3	33.2	0.6	0.5	80.3	4.3	215	0.2	58.8	0.4	0.2	73.6
F10	100	100	100	12.3	233	0.7	30.3	0.6	0.9	78.2	5.9	301	0.7	58.9	0.4	0.4	72.5

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						Lead Rou	igher Con	centrate					Lead Clea	aner Conc	entrate		
Test No.	н	ead Grade	2	Mass		Grade			Recovery		Mass		Grade			Recovery	
	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)
Flame and Moth-F8	751	2.3	7.2	16.0	4,159	12.8	9.26	88.8	88.7	20.7	3.3	16,963	53.1	5.0	73.9	75.1	2.3
Lightning Zone-F1	646	3.3	5.3	12.4	4,725	21.0	10.5	90.7	80.2	24.3	4.3	12,645	53.6	7.4	83.7	70.5	5.9
Lightning Zone-F2	671	3.3	5.6	16.0	3,855	17.4	10.4	92.0	85.3	29.8	5.1	11,228	49.4	8.4	85.2	76.9	7.6
Lightning Zone-F3	679	3.1	5.5	16.9	3,643	16.1	11.2	90.7	89.1	34.3	3.5	15.110	58.3	4.5	77.1	66.0	2.8
Christal Zone-F1	786	3.4	5.2	16.7	4,468	19.6	7.0	95.0	96.2	22.7	2.4	11,685	50.1	5.0	91.3	90.6	5.9

Table STYLEREF 1 \s 10- – Open Cycle Cleaner Flotation Test Results on Flame and Moth Samples (Alexco, 2021b).

						Zinc Rou	igher Con	centrate					Zinc Clea	aner Conc	entrate		
Test No.	неас	a Distribut	aon	Mass		Grade			Recovery		Mass		Grade			Recovery	
	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)
Flame and Moth-F8	100	100	100	18.8	273	0.6	29.5	6.8	4.6	77.3	8.7	384	0.5	54.0	4.4	1.8	65.2
Lightning Zone-F1	100	100	100	17.2	310	1.3	22.3	8.2	6.8	71.9	6.3	417	1.0	50.8	4.1	2.0	60.1
Lightning Zone-F2	100	100	100	19.8	239	0.9	19.1	7.1	5.7	67.8	6.9	380	0.9	51.2	3.9	1.9	63.2
Lightning Zone-F3	100	100	100	20.4	201	0.7	17.2	6.0	4.9	63.5	6.4	358	0.8	51.0	3.4	1.7	59.4
Christal Zone-F1	100	100	100	20.6	130	0.3	19.2	3.4	1.8	76.5	7.2	242	0.3	52.1	2.2	0.6	72.2

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Table STYLEREF 1 \s 10- – Locked Cycle Flotation Test Results on Flame and Moth and Blended Flame and Moth with Bermingham (Alexco, 2021b).

							Lead	Clean	ier Cor	ncentra	te					Zir	nc Cleai	ner Con	centra	te		
_	-	lead (Grade		Ma ss		Grade	!			Reco	very		Ma ss		Gr	ade			Reco	very	
Test No.	Ag (g/t)	Р b (%)	Z n (%)	Au (g/ t)	%	Ag (g/t)	Pb (%)	Z n (%)	Au (g /t)	Ag (g/ t)	Pb (%)	Zn (%)	Au (g/ t)	%	Ag (g /t)	РЬ(%)	Zn (%)	Au (g/ t)	Ag (g/ t)	Р b (%)	Zn (%)	Au (g /t)
LCT1 ¹	811	3. 7	5. 4	I	6.3	12,04 9	52. 1	5. 0	5. 5	91. 9	89. 4	5.9	36. 2	8.4	34 4	0. 9	54. 2	0.3 3	3.4	2. 1	83. 8	2. 9
LCT2 ²	645	3. 3	5. 7	-	5.4	10,85 3	47. 6	9. 1	-	85. 2	77. 8	8.7	-	8.6	51 5	1. 8	49. 8	-	6.4	4. 6	75. 5	-
LCT3 ³	1,59 6	4. 5	4. 3	0.7 1	8.1	19,27 0	51. 6	4. 8	3. 4	96. 1	92. 7	9.1	36. 8	6.8	44 3	1. 0	53. 5	0.4 4	1.9	1. 4	84. 7	4. 0
LCT4 ⁴	1,76 9	4. 3	4. 4	0.3 7	7.2	23,19 1	51. 7	7. 8	2. 2	94. 2	86. 5	12. 8	41. 6	6.5	56 4	1. 9	49. 8	0.2 6	2.0 7	2. 8	73. 6	4. 4
LCT5 ⁵	1,11 5	3. 7	4. 6	0.6 6	6.3	16,26 6	53. 3	5. 2	3. 9	92. 3	90. 7	7.1	37. 5	7.7	52 4	1. 0	53	0.6 5	3.6	2. 0	88. 5	7. 6

Notes

1) LCT1 - Christal Zone Composite.

2) LCT2 - Lightning Zone Composite.

3) LCT3 - Bermingham Master Composite-Christal Zone Blend.

4) LCT4 - Bermingham Master Composite-Lightning Zone Blend.

5) LCT5 - New Bermingham Composite-Christal Zone Blend.

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						-					-						
						Lead Rou	igher Con	centrate					Lead Cle	aner Cono	entrate		i i i i i i i i i i i i i i i i i i i
Test No.	Calc	Head Gra	des	Mass		Grade			Recovery		Mass		Grade			Recovery	
	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)
Bermingham - F1	1,712	3.57	2.95	19.5	8,393	17.6	5.34	95.5	96.1	35.3	4.7	32,484	60.5	4.1	88.5	79.1	6.6
		d Distrikur				Zinc Rou	igher Con	centrate				32,484 60.5 4.1 Zinc Cleaner C			entrate		
Test No.	Неа	a Distribu	aon	Mass		Grade			Recovery		Mass		Grade			Recovery	
	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	%	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)
BM-F1	100	100	100	12.9	508	0.66	14.4	3.8	2.4	63.3	2.7	1,405	0.63	58.4	2.2	0.5	52.9

Table STYLEREF 1 \s 10- - Open Cycle Cleaner Flotation Test Results on Bermingham Sample (SGS, 2019).

Table STYLEREF 1 \s 10- - Locked Cycle Flotation Test Results on Bermingham Samples (Alexco, 2021b).

						Lead	Cleane	er Con	centrat	e			Zinc	Clean	er Cono	entrat	e	
		Head	d Grad	le	Ma ss	G	rade		R	ecover	y	Ma ss	G	irade		R	ecove	ry
Test No.	Sample	Ag (g/t)	P b (%)	Z n (%)	%	Ag (g/t)	Pb (%)	Z n (%)	Ag (g/ t)	Pb (%)	Zn (%)	%	Ag (g/t)	P b (%)	Zn (%)	Ag (g /t)	P b (%)	Zn (%)
LCT1	Bermingham Master Composite	3,44 6	6. 2	1. 8	9.2	35,97 2	58. 4	3. 8	95. 9	86. 7	19. 4	2.3	1,32 4	3. 0	48. 3	0. 9	1. 1	60. 0
LCT2	Bermingham Master Composite	3,57 4	6. 6	1. 9	11. 0	31,59 7	56. 7	4. 1	97. 5	95. 3	24. 0	2.3	1,28 3	2. 4	52. 8	0. 8	0. 8	63. 6

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10.4.6 MISCELLANEOUS TEST WORK

The 1996 and 2008/2009 test programs by PRA included a series of miscellaneous tests, namely settling tests, filtration tests, and an analysis of flotation tailings. A summary of the previous test work by PRA is presented in this report. Details can be found in the 2009 PEA report by Wardrop (Wardrop, 2009).

The latest test work was done in 2023 on the Bear zone in Bermingham deposit by Blue Coast flotation.

Settling tests were performed on samples of both Bellekeno lead and zinc concentrates and the tailings. Two flocculants, Percol 156 and Percol 351, were tested in the two test programs. An average unit thickener area of 0.02 m²/tpd was identified for the mill design criteria. Vacuum filtration tests were performed in the 2008/2009 testing on samples of lead and zinc concentrates without any issues reported.

Whole rock assay and inductively coupled plasma (ICP) analysis were performed by PRA in 2008 on bulk tailings samples to determine the chemical characteristics. The main components identified were silicon and iron. The tailings water was also assayed by the ICP scan. Acid-based accounting tests were performed on low and high-sulfide tailings samples to determine their acid-generating potential. The results indicated that the bulk tailings (low sulfide) were not likely acid-generating; however, the zinc cleaner scavenger tailings may pose some acid-generation potential.

10.5 METALLURGICAL PERFORMANCE PREDICTION

From the mineralogy comparison, the deposits of Bellekeno, Bermingham, and Lucky Queen can be considered high-grade and coarse-grained in nature, while the deposit of Flame and Moth was found less coarse-grained with a greater association of sphalerite and pyrite complex. The blending of Flame and Moth deposit with other deposits could produce a good flotation response which has been illustrated in the locked cycle flotation tests on the blended samples. In addition, the optimized lead rougher recovery of the four individual deposits tends to range from 89% to 98%. This indicates that a well cleaner flotation performance can be expected. As a result, the overall flotation recovery for this Project can be estimated by using both the open circuit flotation test results and the locked cycle test data which can also provide confirmation or validity for the former data.

Specifically, metal recoveries of silver, lead, and zinc were projected based on the optimized test results obtained from the locked cycle and open cycle flotation test programs on the representative samples under the LOM mine plan reported herein, while test data from the potentially oxidized samples, the samples with higher head grades than the LOM's estimates, or the samples collected from locations beyond the planned mine areas were not included in this projection. Metal recoveries from the batch open cleaner flotation tests were adjusted according to locked cycle results to reflect the middling recirculation and regrinding effects on overall metallurgical performances.



The metal recoveries with varied head grades on the selected samples are plotted in Figure 10-9. The red dots represent the data from the locked cycle tests, while the green dots represent the data from the batch open cleaner flotation tests. The trendline was developed from both the locked cycle test data and the batch open cleaner test data.



Figure STYLEREF 1 \s 10- – Metal Recoveries at Head Grades for Recovery Projection (Alexco, 2019a).

In general, a reasonable relationship can be observed between silver head grades and silver recoveries. For lead recovery to lead concentrates, a weak dependence on the feed grade was observed. This may be caused by various test conditions used by different laboratories. However, when considering the locked cycle test data only, which were drawn from SGS tests, the lead grade-recovery relationship appears to be better. With zinc recovery to zinc concentrates, the dependence on feed grade is also weak as part of zinc reporting to lead concentrates. Variability locked cycle tests are therefore recommended to verify the observed trends using blended samples according to the LOM production plan.

A regression analysis was used to model the metal recoveries with varied head grades Table 10-15 summarizes the projected metal recoveries for all the deposits included in this Project. When the feed grades are beyond the ranges specified in the table, constant metal recovery is recommended in the projection. A Zn to Pb concentrate recovery formula was not generated; instead, a constant recovery



value of silver, lead, and zinc were applied to the mine schedule and calculated the recovered amount of silver, lead, and zinc concentrate.

Silver Conc	entrate		Z	inc Concentrate
	Concent	rate Re	ecoveries	
Ag	92.0%		Ag	4.0%
Pb	88.0%		Pb	5.2%
Zn	4.0%		Zn	68.0%
	Conce	ntrate	Grades	
Ag	15,550 gpt		Ag	741 gpt
Pb	45.0%		Pb	3.3%
Zn	2.5%		Zn	47.0%

Table STYLEREF 1 \s 10- - Silver and Zinc Concentrate Recoveries and Grades (Hecla, 2024).

Note: Assumed values were provided by Keno Hill monthly operation data 2023 and Cost Model 2023 for the 11year mine plan.

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11. MINERAL RESOURCE ESTIMATES

11.1 SUMMARY

The Keno Hill Silver District 2023 Mineral Resource Estimate consists of five discrete estimates from the following areas: Bellekeno, Lucky Queen, Flame and Moth, Onek, and Bermingham.

The Mineral Resource Models for Bellekeno, Lucky Queen, and Onek were developed in earlier studies under the supervision or review of different Qualified Persons (QP's). These deposits have maintained their original state, with no modifications made, as no new information or geological interpretation is prompting an update. The creation of these models and their contributions are outlined below.

- The Mineral Resource model for Bellekeno is the fourth Mineral Resource evaluation prepared for the Bellekeno deposit in accordance with SEC definitions. The Mineral Resource model and estimation work was prepared by Alexco personnel under the supervision of a third-party consulting geologist. It considers 424 drillholes drilled by Alexco during the 2006–2013 period along with chip sampling during the mining period of 2009–2013. It also includes historic drilling and chip samples. In 2021, resource model for the Bellekeno deposit was reviewed by Mr. Cliff Revering, P.Eng., of SRK and found to be completed to a standard acceptable to SRK and in accordance with NI 43-101.
- The Mineral Resource model for the Lucky Queen deposit was prepared by SRK and published in an independent technical report on September 8, 2011. The author of the report was Dr. Gilles Arseneau, Ph.D., P.Geo. The report is titled "Technical Report on the Lucky Queen Deposit, Lucky Queen Property, Keno Hill District, Yukon".
- The Mineral Resource estimate for the Onek deposit was prepared by SRK and published in an independent technical report on September 8, 2011. The author of the report was Dr. Arseneau. The report is titled "Technical Report on the Onek Deposit, Onek Property, Keno Hill District, Yukon." The Onek Mineral Resource has been updated in this report to include the results of additional drilling carried out in 2012 and 2013.

The Mining Plus geology QP conducted a review of the Mineral Resource models for the Lucky Queen and Onek deposits. The assessment confirmed that the models were completed to a standard deemed acceptable by Mining Plus and in accordance with SEC definitions. Additionally, the assessment brought to light opportunities for improvement in future updates.

Furthermore, the Mining Plus geology QP assessed the Bellekeno model, where several inconsistencies between the block model and raw data were detected and have not been sufficiently resolved. Primary inconsistencies arise from incomplete or unclear data within the original files, impeding proper traceability and exact replication. Additionally, certain domains exhibit an apparent overestimation of zinc, and the smallest domain displays an overestimation of silver. Density calculations are derived from



the grades of silver, lead and zinc, posing a potential for overestimation in some domains. The reasons behind this overestimation are unclear and necessitate further investigation.

Bellekeno's resource contribution represents only 4% of global silver ounces. Any potential issues with this deposit are considered insignificant, leading to the downgrade from indicated to inferred resources. Unclassified blocks remain unclassified. Nevertheless, it is advised to undertake a new resource estimate for Bellekeno, taking into consideration the noted discrepancies.

All information in this section pertaining to Bellekeno, Lucky Queen, and Onek is extracted from previous studies.

In October 2023, Hecla developed the Mineral Resource model for the Flame and Moth deposit, followed by the completion of the Mineral Resource model for the Bermingham deposit in November 2023. the Mining Plus geology QP conducted a thorough examination of both models, confirming their suitability for reporting Mineral Resources in compliance with Mining Plus standards and SEC definitions.

The Mineral Resource statement for the Keno Hill Project presented in Table 11-1 considered potentially mineable through optimized underground mining methods. All Mineral Resources declared in this report are reported inside an underground shapes optimization with an economic cut -off of CAD 185/tonne.

Category	Deposit	Mass (,000 t)	Ag (g/t)	Pb (%)	Zn (%)	Au (g/t)	Contained Silver (,000 oz)
Indicated	Bellekeno	-	-	-	-	-	-
	Lucky Queen	135	340	0.72	0.70	0.07	1,472
	Flame and Moth	1,629	256	0.87	3.37	0.21	13,389
	Onek	901	150	1.00	8.38	0.41	4,349
	Bermingham	1,421	322	0.92	0.81	0.06	14,716
	Total Indicated	4,086	258	0.91	3.49	0.20	33,926
Inferred	Bellekeno	372	229	0.75	3.98	-	2,735
	Lucky Queen	212	312	0.74	0.58	0.05	2,123
	Flame and Moth	184	207	0.32	3.04	0.15	1,220
	Onek	234	96	0.74	5.68	0.28	721
	Bermingham	1,571	495	1.42	0.77	0.10	24,991
	Total Inferred	2,573	384	1.13	1.83	0.10	31,791

Table STYLEREF 1 \s 11- - Summary of Mineral Resources - December 31, 2023 - Hecla Yukon - Keno Hill Mine.

Notes:

1. Classification of the Mineral Resource is in accordance with the S-K 1300 classification system.

2. Mineral Resources were estimated by Hecla and reviewed and accepted by Mining Plus.

3. Mineral Resources are reported in-situ and are exclusive of Mineral Reserves.

4. Mineral Resources are 100% attributable to Hecla.

5. Totals may not represent the sum of the parts due to rounding.

6. Mineral Resources were estimated using an NSR cut-off value of CAD 185/tonne and a minimum mining width of 1.5 m.

7. The Mineral Resource estimates for the Bermingham and Flame and Moth mines have an effective date of December 31, 2023

8. The Mineral Resource estimates for the Lucky Queen and Onek deposits have an effective date of January 3, 2017.


9. The Mineral Resource estimate for the Bellekeno deposit is based on an internal Mineral Resource estimate completed by Alexco Resource Corp. and externally audited by Mining Plus. This Mineral Resource estimate has been depleted to reflect all mine production from Bellekeno to the end of December 2021. Bellekeno deposit has an effective date of December 31, 2023.

11.2 KEY ASSUMPTIONS, PARAMETERS, AND METHODS

11.2.1 DRILLHOLE DATABASE

11.2.1.1 Database for the Bellekeno Deposit

The Bellekeno database includes all samples taken during both historic and more recent sampling campaigns, up to and including samples collected in November 2013. This data includes surface and underground drilling, underground face, and wall (chip) samples, both recent and historical. A summary of the data in the database is listed in Table 11-2 and samples from within the defined geological solids used for Mineral Resource Estimation are listed in Table 11-3.

Table STYLEREF 1 \s 11- - Bellekeno Deposit Sample Database (Alexco, 2021b).

Sample Type	Count	Number of Samples	Length (m)
Chip	2,739	10,217	9,277
Core (Surface)	65	8,541	15,274
Core (Underground)	379	8,128	10,607
Total	3,183	26,886	35,603

Table STYLEREF 1 \s 11- - Bellekeno Deposit Samples used for Mineral Resource Estimation (Alexco, 2021b).

Sample Type	Count	Number of Samples	Length (m)
Chip	1,856	4,926	4,006
Core (Surface)	38	217	185
Core (Underground)	310	1,914	1,352
Total	2,204	7,057	5,543

The Mineral Resource database was inspected for inconsistencies in naming conventions, duplicate entries, lengths, and distance values. A few assays marked as below detection limit, zeros, and missing or non-sampled intervals were investigated and adjusted prior to further analysis. Drillhole assays below detection limits were allocated a value one-half the lower detection limit at 0.05 ppm. Non-sampled chip intervals were given a value of 0.01 ppm and flagged. All drillhole missing sample intervals were due to non-recovered core in poor ground conditions and were incorporated as "missing samples" in the compositing stage.



11.2.1.2 Database for the Lucky Queen Deposit

The Lucky Queen dataset used in Mineral Resource Estimation was exported from the SQL database by scripted routine to CSV files, which were imported into MineSight. The following drill hole files were generated: collar, survey, drill hole assay, chip sample assay, geology, and geotechnical.

The Lucky Queen database comprises descriptive information and assay values both from historical underground sampling and from exploration drilling carried out by Alexco from 2006 through 2010. The database was provided to SRK as an Excel format spreadsheet with a total of 558 records encompassing 47 core drill holes and 511 historical underground channel samples (Table 11-4). From the drilling results, Alexco identified a total of 106 core drill hole intervals as primary vein intercepts and 26 intervals as secondary splay intercepts, based on a combination of geological logging and assay grades.

Table STYLEREF 1 \s 11- - Lucky Queen Deposit Sample Database (Alexco, 2021b).

Sample Type	Count	Ag (ppm)	Au (ppm)	Pb (ppm)	Zn (ppm)	Vein Width (m)
Historical Chip	511	2,175	NA	50,661	39,216	1
Alexco Core Vein	106	1,426	0	36,523	21,222	1
Alexco Core Splays	26	1,128	0	18,340	6,905	1
Alexco Core other	3,012	4	0	322	378	2

The Mineral Resource database was imported into a GEMS format Access database and validated by checking for:

- Inconsistencies in naming conventions or analytical units.
- Duplicate entries.
- Overlapping intervals.
- Length or distance values less than or equal to zero.
- Blank or zero-value assay results.
- Out-of-sequence intervals.
- Intervals or distances greater than the reported drill hole length.
- Inappropriate collar locations.
- Missing interval and coordinate fields.



Two trivial terminal interval survey distances were noted and corrected; no other significant validation errors were noted in the supplied database. Assay intervals marked as below detection limit were assigned a nominal grade of 0.001 ppm prior to importing into GEMS.

11.2.1.3 Database for the Flame and Moth Deposit

The drilling source data used for the Flame and Moth Resource estimate comprised an ODBC database directly linked to the database (GeoSpark[®] Software) within the Flame and Moth Leapfrog project. The database was trimmed down with the use of queries within Leapfrog to use only diamond drillhole information for interval selection and estimation purposes. The final database contained 156 drillholes (Alexco and Hecla holes) totaling 38,565.48 m, of which 138 holes contained mineralized domain intervals. For the Mineral Resource update, 54 new holes recently drilled by Hecla (19 for 1,957.50 m) and Alexco (35 for 2,633.30 m) have been included.

The assay table contained 7,109 sample intervals comprising an aggregate length of 7,948.2 m. Of these, 1,777 samples with a combined length of 1,301.78 m are located within the interpreted mineralized domains.

In addition, there are 194 intervals within mineralized domains of core loss totaling 162.49 m that are labeled as "NR" for No Recovery, with no associated assay data. These intervals are mostly found in the Lightning Zone, with the majority occurring in the stringer mineralization (SM) domain. The oblique view presented below (Figure 11-1) shows the distribution of NR samples in the Lightning Zone in relation to the mineralized domains and current mine as-builts. An oblique image showing the high density of NR intervals found around the as-builts is seen in Figure 11-2.





Figure STYLEREF 1 \s 11- – Oblique View of Flame and Moth Lightning Zone Wireframe (Pink), Mine As-built (Blue), Drillhole Traces (Grey), and NR Samples (Black) (Hecla, 2023e).





Figure STYLEREF 1 \s 11- - Oblique View of Flame and Moth Lightning Zone Wireframe (Pink), Mine As-built (Blue), Drillhole Traces (Grey), and NR Samples (Black) (Hecla, 2023e).

Mining Plus reviewed the source data for the Flame and Moth mineral resource estimate and noted the distribution of "NR" intervals. While these were considered unlikely to present a material problem, it was recommended that these zones continue to be monitored in future, particularly where they occur within mineralized zones.

11.2.1.4 Database for the Onek Deposit

The Onek data was exported from the SQL database by scripted routine to CSV files, which were imported into MineSight. The following drill hole files were generated: collar, survey, drill hole assay, chip sample assay, geology, and geotechnical.

The Onek database comprises descriptive information and assay values both from historical underground sampling and from exploration drilling carried out by Alexco from 2007 through 2013. The database was provided to SRK as a Microsoft Excel format spreadsheet and contains a total of 1,567 records encompassing 92 core drill holes and 1,302 historical underground channel samples, 10 historical drill holes, 29 percussion holes and 134 test holes (Table 11-5). From the drilling results, Alexco has identified



a total of 106 core drill hole intervals as primary vein intercepts and 26 intervals as secondary splay intercepts, based on a combination of geological logging and assay grades.

Table STYLEREF 1 \s 11- - Onek Deposit Sample Database Average Assay Values Inside Veins (Alexco, 2021b).

Long section	Count	Sample Inside Veins	Ag (g/t)	Au (g/t)	Pb (ppm)	Zn (ppm)
Historical Chip	1,302	1,156	275	NA	23,283	111,645
Alexco Drilling	92	633	215	1	17,134	112,434
Historical Drilling	10	8	NA	NA	6	3,250
Percussion Test Holes	29	72	NA	NA	NA	29,014
Test Holes	134	97	NA	NA	3,277	32,439
Total	1,567	1,966				

The Mineral Resource database was imported into a GEMS format Access database and validated by checking for:

- Inconsistencies in naming conventions or analytical units.
- Duplicate entries.
- Overlapping intervals.
- Length or distance values less than or equal to zero.
- Blank or zero-value assay results.
- Out-of-sequence intervals.
- Intervals or distances greater than the reported drill hole length.
- Inappropriate collar locations.
- Missing interval and coordinate fields.

A few minor inconsistencies were noted and corrected, and no other significant validation errors were noted in the supplied database. Assay intervals marked as below the detection limit were assigned a nominal grade of 0.001 ppm prior to importing into GEMS.

11.2.1.5 Database for the Bermingham Deposit

The database used for resource estimation in Leapfrog Edge software was an ODBC link directly to the GeoSpark[®] Software database. The database was trimmed down with the use of queries within Leapfrog



to use only DDH information for interval selection and estimation purposes. A total of 351 drill holes totalling 104,729.3 m were used in the estimation process, with 263 holes containing mineralized domain intervals. The assay table contained 12,680 samples comprising 12,178.26 m of length. Of these, 2,208 samples with a combined length of 1,432.49 m fell within the mineralized domains. For the Mineral Resource update, 148 new holes recently drilled by Hecla (73 holes for 12,702.93 metres) and Alexco (75 holes for 26,162.18 m) have been included.

The database contained a set of No Recovery (NR) samples, encompassing 125 intervals with a total length of 85.41 m within the mineralization interpretation. These specific intervals have been designated as 'OMIT' in Leapfrog, implying a lack of available data in the software. Consequently, the software operates under the assumption that no data was present, leading to an extrapolation of composited values without any adjustment for potential variations (based on the presumption that missing data is equivalent to available data). An illustrative example for drillhole K-21-0787 is depicted in Figure 11-3.



Figure STYLEREF 1 \s 11- – Assay and Composite for Drillhole K-21-0787 in the Arctic Zone.

11.2.2 INTERPRETATION AND MODELLING

11.2.2.1 Mineralization Domaining for the Bellekeno Deposit

Three-dimensional wireframe solids were constructed by Alexco to accurately represent the geometry of the Bellekeno deposit vein structures. The modeled structures exhibit mineralization primarily in the form of sulfides; a weathering surface has not been incorporated during the modeling or estimation process. These wireframes were further reviewed and validated by the QP before Mineral Resource estimation.

Wireframes were constructed for three portions of the Bellekeno deposit: the Southwest (SW) Vein, 99 Vein, and the East Vein and Splay (Figure 11-4, Figure 11-5). The wireframes were constructed using Mintec's MineSight 3D software by Alexco in 2013. All points of construction on the veins are from Alexco's core drilling and mapping of underground exposure during mining. Individual points were constructed on the hanging wall and footwall of each drill hole vein/structure intercept. These points



were chosen based on the fault/vein structure where, in most cases, the hanging wall and footwall contacts were clear, and the mineralization was contained within a well-defined structure.



Figure STYLEREF 1 \s 11- - Bellekeno Deposit Long Section, Wireframes, Looking North-Northwest (Alexco, 2021b).



Figure STYLEREF 1 \s 11- - Bellekeno Deposit Long Section, Wireframes, looking South-Southeast (Alexco, 2021b).

11.2.2.2 Mineralization Domaining for the Lucky Queen Deposit

Three-dimensional wireframe solids were constructed by Alexco to accurately represent the geometry of the Lucky Queen deposit vein structures. The modeled structures exhibit mineralization primarily in the form of sulfides; a weathering surface has not been incorporated during the modeling or estimation process. These wireframes were further reviewed and validated by the QP 2011 before Mineral Resource Estimation.



At Lucky Queen, the majority of high-grade, silver-bearing vein material is confined between relatively intact rock of the hanging wall and footwall and is manifested as vein mineral and highly deformed fault rock in varying proportions. High silver values are only rarely found outside the main structure as stringer zones or splays. The coincidence of high-grade mineralization within identifiable structural limits made it sensible to base the wireframe interpretation on structural and geological controls, and contacts were chosen accordingly. In addition to Alexco drill hole data, historical drill hole data and geological mapping conducted by UKHM were used to constrain the geometry of the main Lucky Queen structure and associated splay structures, where applicable.

Historical drift and stope mapping were considered to be accurate and representative. Field verification of the mapping could not be performed by geologists because the underground workings were inaccessible. However, historical maps of other mines in Keno Hill have been verified and found to be generally accurate in their representation of geology. Historical maps were scanned, geo-referenced, and imported into MineSight. The images were then draped onto drift solids at the appropriate elevation. This mapping was used to tag hanging wall and footwall contacts on the wireframe.

The main Lucky Queen mineralized body occupies a central part of the primary wireframe and the most important constraints delineating it are the lower-grade drill intercepts that occupy locations above, below, and to the northeast. Beyond these drill holes, the wireframe is cut off (approximately) along the deepest extents of the 200 and 300-level historic workings. Fault 3 and Fault 5 terminate the wireframe to the northeast and at shallow elevations, respectively. The earlier Lucky Queen workings included extensive stoping. As a result, it was decided to exclude the entire area containing the 50, 100, 200, and 300 level workings from the wireframe solid. Those areas of the 500 level workings that intersect the wireframes were also removed from the wireframe solid (Figure 11-6).



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11.2.2.3 Mineralization Domaining for the Flame and Moth Deposit

The mineralization wireframes for Flame and Moth were updated by Ben Chambers using Leapfrog Geo 2023.2 software. A combination of drill hole lithology intervals and underground geologic maps were utilized to accurately adjust wireframes with control points in mined areas based on this information. The Interval Selection tool was then used to select intervals from which the vein shapes were established. Updated mineralization wireframes reflect the more detailed geological information collected underground as geological mapping became more prevalent. Deeper insight into the geology and mineralization behavior has resulted in domains of continuous veining and wider zones of stringer mineralization. The modeled structures exhibit mineralization primarily in the form of sulfides. Therefore, a weathering surface has not been incorporated during the modeling or estimation process.

The QP reviewed the validated wireframes before resource estimation and concluded that the wireframes for the Flame and Moth deposit were fair representations of the mineralized veins and acceptable for resource estimation.

The Flame Vein strikes between 025° and 027° and dips between 62° and 66° to the southeast. The Flame and Moth Vein is offset along the Mill Fault and two wireframes have been constructed to reflect this geological feature. The Flame Vein in the hanging wall of the Mill Fault was termed the Lightning Zone while the portion in the footwall of the Mill Fault was termed the Christal Zone (Figure 11-7).



Figure STYLEREF 1 \s 11- - Vein Wireframes and Location of Surface Drilling at Flame and Moth used in Resource Estimation, Section Looking North-Northwest.

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During a technical review of the Flame and Moth wireframes, Mining Plus noted that some high-grade mineralization interpretations did not capture the higher-grade drilling assays. This was not seen to be a significant problem where these assays were subsequently captured with the stringer mineralization domain.

11.2.2.4 Mineralization Domaining for the Onek Deposit

Three-dimensional wireframe solids for the Onek deposit were constructed by Alexco to accurately represent the geometry of Onek vein structures. The previous QP reviewed and validated the wireframes before resource estimation. The QP concluded that the wireframes of the Onek deposit were fair representations of the mineralized veins and acceptable for resource estimation.

Wireframes for three separate veins were constructed for Onek: Vein 1, Vein 2, and Vein 1FW. Vein 1 is the dominant vein-fault structure at Onek, extending over 600 m in length and up to 260 m in depth (Figure 11-8). The vein is interpreted to extend through all drilling done to date and to encompass the drifts, stopes, and raises of the historical workings. The vein-fault thickness varies from approximately 7.5 m to less than 1 m but, on the whole, is fairly thick and persistent. Drilling to the southwest intersected reduced grade and will act as a constraint to the strike extent of the mineralization. On the northeastern end of the deposit, underground mapping on the 400 level showed the vein narrowing and splitting into two, with the likely more dominant structure curving to the southeast and ending with sporadic mineralization in a possible cross fault.

Vein 2 forms an anastomosing structure in the hanging wall of Vein 1, with repeated convergence and divergence from the Vein 1 structure, as seen in the drill holes and underground level plan mapping. Vein 2 thickness was reduced and less consistent than Vein 1 and the mineralization had much less continuity. This was regarded as a secondary structure in the Onek deposit. Vein 2 also bends sharply to the east at the northeastern end of the deposit where intercepts in the drill holes are much more sporadic. Several small weakly mineralized vein intercepts were noted in the hanging wall of Vein 2, but the continuity of mineralization could not be established, and they are not modeled at this time (Figure 11-9).

Two drill holes, K-08-0149 and K-10-0244, were drilled from separate collar locations but passed within 0.5 m of each other within the Vein 2 shape. As the location of Vein 2 in the hole K-08-0149 could not be reconciled with the Vein 2 location in hole K-10-0244 without significant deviation in the wireframe, and since the K-10-0244 intercept had better survey control and was less oblique to the vein surface, the K-08V-0149 Vein 2 intercept was excluded from the wireframe.

A third vein, Vein 1FW, was identified in several drill holes at the southwestern end of the deposit, likely splaying sharply off Vein 1, and was modeled for resource estimation.





Figure STYLEREF 1 \s 11- - Long Section of Onek Wireframes Looking South (SRK, 2014).

Several weakly mineralized vein fault intercepts were identified in drill holes in the footwall to Vein 1 in the central portion of the deposit, in the vicinity of the historical workings. The continuity of these intercepts could not be established with the information available, and these veins are regarded as small splays off the main Vein 1 structure. These intercepts were not modeled for resource purposes at this time.

Each of the vein shapes were wireframed independently, with a hanging wall surface and a footwall surface constructed using the drill hole intercepts, the shapes of the veins mapped in the levels and raises, and surface pit mapping. Where there was less information available, a contour tool was used to interpolate the vein shape and width every 10 m in elevation and to smooth the vein surface. The vein shapes were extended to approximately 50 m beyond known drilling and given a nominal vein thickness. Veins 2 and 1FW were clipped against the Vein 1 shape. Veins 1 and 1FW were also clipped against the topographic surface that was based on casing depth in nearby diamond drill holes and interpreted overburden depths in proximal historic overburden (rotary) holes.





Figure STYLEREF 1 \s 11- - Long Section of Onek Wireframes Looking North (SRK, 2014).

Historical drift and stope mapping were considered to be accurate and representative. Field verification of the mapping could not be performed by geologists because of the current inaccessibility of the underground workings, however; historical maps of other mines in the Keno Hill district have been verified and found to be generally accurate in their representation of the geology. Historical maps were scanned, geo-referenced and imported into MineSight. The images were then draped onto drift solids at the appropriate elevation. This mapping was used to tag hanging wall and footwall contacts on the wireframe. Historical (UKHM) chip sample data were not used to define wireframe contacts or wireframe width.

11.2.2.5 Mineralization Domaining for the Bermingham Deposit

The 4 main vein systems within the Bermingham deposit are known as the Bermingham Main Vein, Bear Vein, Footwall Vein and West Dipper Veins. Three of these vein systems (i.e., Bermingham Main, Bear and Footwall Veins) have a strike orientation of approximately 40° to the northeast and dip to the southeast at approximately 55° to 75°. The West Dipper Veins have a strike orientation between 20° to 40° to the northeast and dip approximately 57° to the northwest. The veins are segregated (and offset) by cross-cutting fault structures into five distinct mineralized zones known as the Etta, Arctic, Bear and Northeast (NE) and Deep Northeast (DNE) zones (Figure 11-10 to Figure 11-12).

The potentially economic mineralization occurs within structural corridors characterized by a damaged zone surrounding the mineralization. The overall structural corridors were initially interpreted by Alexco



using geology and an approximate silver grade threshold of 100 g/t; the interpretation of mineralized vein domains within the structural corridors was based on the presence of discrete and continuous sulfide veins.

The mineralization wireframes for the Bermingham deposit were created using a combination of underground geologic maps and intervals selected from drillholes. Detailed hanging wall and footwall points were placed using geological maps draped within Leapfrog Geo for the Bear Zone. This interpretation was extrapolated to the surrounding drillholes. Arctic, Etta, and NE/DNE zones wireframes were created using the drillhole interval selection tool within Leapfrog Geo. Improvements to the modelling included splitting veins into multiple domains, comprised of vein mineralization and stringer mineralization. The Arctic Zone consists of six distinct domains, with Bear incorporating 13 wireframes, DNE featuring six, Etta comprising four, and NE containing two vein wireframes. This was done to reflect the high variability of mineralogy within the vein fault structures.

The QP reviewed the wireframes relative to the drill hole data supplied by Hecla and concluded the interpretation of the mineralized veins was a reasonable representation of the mineralization system and were of sufficient quality to use for Mineral Resource Estimation.





Figure STYLEREF 1 \s 11- - Bermingham Geological Model (Plan View).





Figure STYLEREF 1 \s 11- - Bermingham Geological Model (3D Oblique View Looking North-East).

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Figure STYLEREF 1 \s 11- - Cross-cutting Faults (Plan View).

11.2.3 BULK DENSITY DATA

11.2.3.1 Bulk Density for the Bellekeno Deposit

Bulk density samples were collected during assay analysis for 1,450 of the core drillhole samples that were coded within the wireframe veins. Pulp bulk density measurements were made by pycnometer at ALS Chemex in Vancouver. An 'All Metal %' value was calculated for each of the silver, lead and zinc values corresponding to these:

All Metal %=[Agppm+Pbppm+Znppm10,000]

The All Metal % result for each of the samples was then plotted against the density values (Figure 11-13) to determine the polynomial regression formula:

Density=0.0002(All Metal%)2+0.0263All Metal%+2.9812

Of the comparisons plotted, six were capped at density = 7.0, three were removed during initial sample checks, and two were removed as outliers (Table 11-6).





Figure STYLEREF 1 \s 11- - Bulk Density vs. All Metal (%) for Bellekeno (Alexco, 2021b).

Table STYLEREF 1 \s 11- - Bellekeno Bulk Density Measurements (Alexco, 2021b).

. .	Bulk Density Measured on Core						
Count	Minimum	Maximum	Average	Median			
1,445	2.44	7.00	3.40	3.11			

The QP acknowledges that pulp measurements will typically result in slightly higher density values of approximately 3% – 5% when compared to measurements taken on core samples as demonstrated on other deposits within the Keno Hill project area. Additional core bulk density measurements should be collected for the Bellekeno deposit to assess the relationship between pulp and core density measurements specific to the Bellekeno deposit. The potential discrepancy in density estimation related to the use of pulp measurements is not considered to be material.

11.2.3.2 Bulk Density for the Lucky Queen Deposit

The bulk density data for Lucky Queen included a total of 191 bulk density measurements (Table 11-7) on core samples. Bulk density was measured by Alexco using a laboratory scale and recording the mass of core pieces in air and in water. The core was not covered by wax or plastic film prior to immersion.



	Minimum	Maximum	Average	Median
191	1.24	6.81	2.74	2.60

Regression analysis of the bulk density measurements shows a moderately strong correlation between the lead assay results and the reported bulk density, with a correlation coefficient of 0.62 (Figure 11-14). Therefore, a linear correlation was used to assign a bulk density value to each block based on the following relationship:

Bulk density=Pb ppmx 0.00006+2.617



Specific Gravity Versus Lead

Figure STYLEREF 1 \s 11- - Scatter Plot of Lead Assay Results and Bulk Density Measurements for Lucky Queen (SRK, 2011a).

11.2.3.3 Bulk Density for the Flame and Moth Deposit

The Flame and Moth dataset contained a total of 1,018 bulk density measurements on core samples and 4,189 pulp density measurements. In total, 380 core bulk density and 1,119 pulp density samples existed in the mineralized domains (Table 11-8).



Bulk density was measured on core samples by Hecla using a laboratory scale and recording the mass of core pieces in air and water. Core was not covered by plastic film or wax prior to immersion. Pulp bulk density estimates were conducted by pycnometry at ALS in North Vancouver. A linear regression between core and pulp bulk density measurements has been used to adjust the pulp density values by a factor of 0.957, as shown in Figure 11-15.

For estimates of block SG values, a combination of core bulk density and adjusted pulp density values was used.

Domain	Туре	Count	Mean	Min	Max
Christel SNA	Pulp	27	3.23	2.69	4.20
Christal Sivi	Core	10	2.80	2.10	3.20
Christel \/NA	Pulp	239	3.86	2.53	5.63
Christal Vivi	Core	98	3.79	2.60	5.90
Lightning 10	Pulp	77	3.27	2.76	4.91
	Core	25	3.25	2.60	4.30
	Pulp	188	3.52	2.65	5.71
	Core	83	3.40	2.20	5.20
Liekteine (2	Pulp	77	3.48	2.73	4.82
	Core	36	3.42	1.90	4.30
Lightning CM	Pulp	511	2.98	2.18	4.77
Lightining Sivi	Core	128	3.09	1.60	4.40
Tatal	Pulp	1,119	3.32	2.18	5.71
lotai	Core	380	3.37	1.60	5.90

Table STYLEREF 1 \s 11- - Flame and Moth Bulk Density Data within Mineralized Domains (Alexco, 2021b).

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Figure STYLEREF 1 \s 11- - Pulp Versus Core SG Values (RPA, 2017).

While Mining Plus supported the current regime for applying bulk density values to the block model, it recommended the application of the predicted bulk density using Pb and Zn assays followed by assigning an average density if required. This process sequence may support improved local variation in the model. It was also suggested that additional bulk density determinations be conducted in mining areas to provide further confirmation.

11.2.3.4 Bulk Density for the Onek Deposit

The data supplied by Alexco for Onek included a total of 626 bulk density measurements on core samples and 1,549 pulp density measurements. Of the density measurement from core, 182 were from the mineralized veins and of the 1,549 pulp density measurements, 521 were from inside the mineralized veins (Table 11-9).



Vein	Туре	Count	Minimum	Maximum	Average	Median
Voin 1	Pulp	385	2.54	4.92	3.44	3.47
Veni 1	Vein 1 Core	140	2.47	7.32	2.67	3.45
Pulp	Pulp	12	2.25	4.08	3.25	3.22
Vein IFW	Core	1	3.75	3.75	3.75	3.75
Voin 2	Pulp	124	2.59	4.90	3.17	2.96
veniz	Core	41	2.55	5.07	3.28	3.21
	Pulp	521	2.25	4.92	3.37	3.35
An samples	Core	182	2.47	7.32	3.36	3.42

Table STYLEREF 1 \s 11- - Onek Bulk Density Measurements (Alexco, 2021b).

Bulk density was measured on core samples by Alexco using a laboratory scale and recording the mass of drill hole core pieces in air and water. The drill hole core was not covered by wax or plastic film prior to immersion. Pulp bulk density measurements were measured by pycnometer at ALS Chemex in Vancouver.

A linear regression of the core versus pulp bulk density measurements for samples was calculated, where:

Core Bulk Density=0.8532*Pulp Bulk Density+0.408

The QP evaluated the bulk density data to investigate any relationship between SG and metal content. Figure 11-16 shows the correlation between the bulk density of samples collected from the Onek Veins plotted against lead, zinc, and iron content. The figure indicates a strong positive correlation between bulk density and metal content. For this reason, SRK decided to weight the composites against density as well as length for the resource estimation.





Figure STYLEREF 1 \s 11- - Correlation Between Bulk Density and Metal Content for Onek Veins (RPA, 2017).

There are 633 assay intervals within the veins at Onek containing 703 bulk density measurements. Of the 633 assay intervals, 91 intervals have no density measurements leaving 542 intervals with density measurements and 161 of these intervals contain bulk density measurements from both core and pulp.

For the estimation of bulk density into the block model the QP used core measurements if both core and pulp measurements were present, pulp measurements where core measurements were missing, and calculated bulk density based on the metal content where both core and pulp measurements were absent.

The QP acknowledges that pulp measurements are slightly higher than core density measurements where both sample types are present and that using pulp measurement without correction could lead to a slight (3% to 5%) over estimation of the bulk density (Figure 11-17). However, the QP is of the opinion that the difference is minimal and not material.





Figure STYLEREF 1 *s* 11- *Comparison of Core and Pulp Density Measurements for Onek (RPA, 2017).*

11.2.3.5 Bulk Density for the Bermingham Deposit

The Bermingham dataset contains a total of 448 bulk density measurements on core samples and 5,441 pulp density measurements. Of these, 86 bulk density and 1,196 pulp density samples lie within the mineralized domains. Density measurements by zone are summarized in Table 11-10 below.

Bulk density was measured on core samples by Hecla using a laboratory scale and recording the mass of core pieces in air and in water. Core was not covered by plastic film or wax prior to immersion. Pulp bulk density measurements were measured by pycnometry at ALS in North Vancouver. A two-step procedure was developed to infill the missing density values. First an average value by lithology was assigned to those samples missing density measurement. Then a regression formula that considered the Pb% + Zn% was used to calculate a density value that would overwrite these average values. The formula used is as follows:

Predicted Core Density=0.0372*Pb%+Zn%+3.0036*0.9852

All non-vein blocks were coded with background SG values depending on lithology.



FM_sm_1Core0.BR_sm_1Pulp203.09BR_sm_1Pulp42.84BM_sm_1Pulp212.84BM_sm_1Pulp212.84BM_VFPulp792.98FW_VFPulp792.98FW_VFPulp3.043.02BR_VFCore44.50FW_VFPulp5.43.26BR_VFCore0.BM_sm_1Core0.BM_sm_1Core0.BM_Sm_1Pulp3.43.04BM_Sm_1Pulp3.43.04BM_Sm_1Pulp3.43.04BM_Sm_1Core0.BR_SM_FCore43.88BM_SM_1Pulp3.43.07BR_SM_1Pulp3.43.07BR_SM_1Pulp1.82.99BR_VFPulp1.82.92BR_VFPulp1.82.92BR_VFPulp1.63.23FW_SM_1Core12.28FW_SM_1Pulp1.32.89BR_SVFPulp1.32.89BR_SVFPulp3.13.04WD_SMCore13.08WD_SMPulp3.13.281WD_SMPulp3.13.281WD_SMPulp3.13.281WD_SMPulp3.13.281WD_SMPu	Zone	Domain	Туре	Count	Mean
Pain_ain_a Pulp 20 3.09 BR_sm_1 Core 0 BM_sm_1 Pulp 4 2.84 BM_sm_1 Pulp 2.1 2.88 BM_VF Pulp 7.9 2.98 BM_VF Core 10 3.52 BM_VF Core 4 4.50 FW_VF Core 4 4.50 FW_VF Core 4 4.50 FW_VF Core 4 3.04 BM_Sm_1 Core 0 BR_Sm_1 Pulp 3 3.04 BM_Sm_1 Pulp 3 3.04 BM_W_F Core 0 BM_Sm_1 Pulp 3 3.04 <		EM cm 1	Core	0	-
BR_sm_1 Core 0 BM_sm_1 Rup Core 2 2.94 BM_sm_1 Core 10 3.52 BM_VF Pulp 79 2.98 PW_VF Core 10 3.52 FW_VF Core 4 4.50 BM_VF Core 3 2.76 BR_VF Core 3 2.94 BM_Sm_1 Core 3 3.04 BM_Sm_1 Pulp 35 2.94 Pulp 34 3.04 3.04 BM_Sm_1 Pulp 34 3.04 BM_Sm_1 Pulp 34 3.04 BM_WF Core 0 - BR_Sm_1 Pulp 34 3.07 BR_Sm_1 Pulp 18 2.99 BR_Sm_1 Pulp 18 2.91 BR_Sm_1 Pulp 13 2.81 PW_Sm_1 Core 4 3.02 <td></td> <td>FIVI_SITI_1</td> <td>Pulp</td> <td>20</td> <td>3.09</td>		FIVI_SITI_1	Pulp	20	3.09
Br_sm_1 Pulp 4 2.84 BM_sm_1 Core 2 2.94 Pulp 2.1 2.88 BM_VF Pulp 7.9 2.98 BM_VF Pulp 7.9 2.98 FW_VF Pulp 7.9 2.98 FW_VF Pulp 7.9 2.98 BM_Sm_1 Pulp 5.4 3.26 BR_VF Core 3 2.76 BR_VF Core 3 2.76 BM_Sm_1 Gore 3 3.26 BM_Sm_1 Core 3 3.26 BM_Sm_1 Pulp 35 2.94 BM_Sm_1 BM_Sm_1 Bulp 3.07 BM_Sm_1 BM_Sm_1 Pulp 34 3.07 BM_Sm_1 BM_Sm_1 Core 4 3.58 BM_VF Pulp 18 2.99 BR_Sm_1 Core 8 2.92 BR_VF Core 0 .		DD and 1	Core	0	-
$\beam + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + $		BK_SM_I	Pulp	4	2.84
Arctic $Pulp$ 21 2.88 BM_VF $Core$ 10 3.52 PM_VF $Pulp$ 79 2.98 FW_VF $Pulp$ 79 2.98 PW_VF $Pulp$ 54 3.26 BR_VF $Core$ 3 2.76 BM_Sm_1 $Pulp$ 35 2.94 $Pulp$ 35 2.94 BM_Sm_1 $Pulp$ 35 2.94 BM_Sm_1 $Pulp$ 35 3.04 BM_Sm_1 $Pulp$ 3 3.04 BM_Sm_1 $Pulp$ 34 3.07 BM_Sm_1 $Pulp$ 34 3.07 BR_Sm_1 $Pulp$ 18 2.99 BR_Sm_1 $Core$ 0 . BR_Sm_1 $Pulp$ 108 3.23 BR_Sm_1 $Pulp$ 108 3.23 PW_Sm_1 $Core$ 1 2.75 FW_Sm_1 $Pulp$	Arctic	214	Core	2	2.94
$\begin{tabular}{ c c c c } \hline R \ & \ & \ & \ & \ & \ & \ & \ & \ & \$		BIM_Sm_1	Pulp	21	2.88
$ BM_VF = Pulp 79 2.98 PUVF = Core 4 4.50 PUp 54 3.26 Pulp 54 3.26 BR_VF = Pulp 35 2.94 Pulp 35 2.94 Pulp 35 2.94 Pulp 35 2.94 Pulp 35 3.04 Pulp 33 3.04 BM_sm_1 = Pulp 34 3.07 BM_VF = 0.0 Pulp 34 3.07 BM_VF = 0.0 Pulp 34 3.07 BM_Sm_1 = 0.0 Pulp 34 3.07 BM_Sm_1 = 0.0 BR_sm_1 = 0.0 BR_sm_1 = 0.0 BR_sm_1 = 0.0 BR_sm_1 = 0.0 BR_VF = 0.0 BR_VF = 0.0 BR_VF = 0.0 BR_HW_Sm = 0.0 BR_HW_Sm = 0.0 BR_HW_Sm = 0.0 BR_HW_Sm = 0.0 BR_FW_Sm_1 = 0.0 BR_FW_Sm_1 = 0.0 Pulp = 0.13 - 2.89 FW_Sm_1 = 0.0 Pulp = 0.13 - 2.89 FW_VF = 0.0 Pulp = 0.13 - 2.89 FW_VF = 0.0 Pulp = 0.14 - 3.06 Pulp - 0.14 - 3.0$	Arctic		Core	10	3.52
$ \begin{split} & \begin{array}{c c c c c c } & & \begin{array}{c c c c c } & & \begin{array}{c c c c } & & & \begin{array}{c c c c } & & & \\ \hline FW_VF & & \hline FW_VF & \\ \hline Pulp & 54 & & 3.26 & \\ \hline Pulp & 35 & & 2.94 & \\ \hline Pulp & 35 & & 2.94 & \\ \hline Pulp & 35 & & 2.94 & \\ \hline Pulp & 35 & & 2.94 & \\ \hline Pulp & 35 & & 2.94 & \\ \hline Pulp & 3 & & 3.04 & \\ \hline & & \begin{array}{c c c } & & \\ \hline & & \\$		BIVI_VF	Pulp	79	2.98
$\beam 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 $			Core	4	4.50
$ Herap R_{PVF} = Herap Gaussian Set of the s$		FVV_VF	Pulp	54	3.26
BL_VF Pulp 35 2.94 BM_sm_1 $Core$ 0 . $Pulp$ 3 3.04 BM_sm_1 $Pulp$ 3 3.04 BM_VF $Pulp$ 3 3.04 BM_VF $Pulp$ 3 3.04 BR_sm_1 $Pulp$ 34 3.07 BR_sm_1 $Pulp$ 34 3.07 BR_sm_1 $Pulp$ 34 3.07 BR_sm_1 $Pulp$ 18 2.99 BR_Sm_1 $Pulp$ 18 2.99 BR_SWF $Core$ 8 2.92 BR_SWF $Pulp$ 108 3.23 BR_SWF $Pulp$ 108 3.23 FW_sm_1 $Pulp$ 64 2.86 FW_VF $Pulp$ 13 2.89 FW_VF $Pulp$ 13 2.81 WD_Sm $Core$ 1 2.66 WD_Sm_Pulp 34 2.81 <td></td> <td></td> <td>Core</td> <td>3</td> <td>2.76</td>			Core	3	2.76
$Bear \begin{tabular}{ c c c c } BM_sm_1 & Core & 0 & - \\ \hline Pulp & 3 & 3.04 \\ \hline Pulp & 3 & 3.04 \\ \hline BM_VF & Core & 4 & 3.58 \\ \hline Pulp & 34 & 3.07 \\ \hline Pulp & 34 & 3.07 \\ \hline Pulp & 18 & 2.99 \\ \hline BR_sm_1 & Core & 0 & - \\ \hline Pulp & 18 & 2.99 \\ \hline BR_VF & Core & 8 & 2.92 \\ \hline Pulp & 108 & 3.23 \\ \hline BR_HW_sm & Core & 0 & - \\ \hline Pulp & 108 & 3.23 \\ \hline BR_HW_sm_1 & Core & 0 & - \\ \hline Pulp & 64 & 2.86 \\ \hline FW_sm_1 & Pulp & 64 & 2.86 \\ \hline FW_sm_1 & Core & 1 & 2.75 \\ \hline Pulp & 13 & 2.89 \\ \hline FW_VF & Core & 4 & 3.72 \\ \hline Pulp & 13 & 2.89 \\ \hline FW_VF & Core & 1 & 2.99 \\ \hline BR_sVF & Core & 1 & 2.99 \\ \hline BR_sVF & Core & 1 & 2.99 \\ \hline BR_sVF & Core & 1 & 2.99 \\ \hline WD2_sm & Core & 0 & - \\ \hline WD2_VF & Core & 0 & - \\ \hline WD_Sm & Core & 0 & - \\ \hline Pulp & 9 & 2.96 \\ \hline WDVF & Core & 0 & - \\ \hline Pulp & 7 & 2.95 \\ \hline WDVF & Core & 2 & 3.41 \\ \hline \end{tabular}$		BK_VF	Pulp	35	2.94
$\begin{split} & BM_Sm_1 & Pulp & 3 & 3.04 \\ & & & \\ BM_VF & Pulp & 34 & 3.07 \\ \hline & & & \\ Pulp & 18 & 2.99 \\ \hline & & & \\ BR_sm_1 & Pulp & 18 & 2.92 \\ \hline & & & \\ BR_VF & Pulp & 108 & 3.23 \\ \hline & & & \\ BR_HW_sm & Core & 0 & - \\ \hline & & Pulp & 64 & 2.86 \\ \hline & & & \\ PW_sm_1 & Pulp & 64 & 2.86 \\ \hline & & & \\ PW_sm_1 & Pulp & 64 & 2.86 \\ \hline & & & \\ FW_sm_1 & Pulp & 13 & 2.89 \\ \hline & & \\ FW_sm_1 & Pulp & 13 & 2.89 \\ \hline & & \\ FW_VF & Core & 4 & 3.72 \\ \hline & Pulp & 13 & 2.89 \\ \hline & & \\ FW_VF & Core & 1 & 2.99 \\ \hline & & \\ Pulp & 21 & 3.08 \\ \hline & & \\ WD_sm & Core & 0 & - \\ \hline & & \\ Pulp & 3 & 2.81 \\ \hline & & \\ WD_sm & Core & 0 & - \\ \hline & & \\ Pulp & 9 & 2.96 \\ \hline & & \\ WD_VF & Core & 0 & - \\ \hline & & \\ Pulp & 7 & 2.95 \\ \hline & & \\ WDVF & Core & 2 & 3.41 \\ \end{split}$		514 4	Core	0	-
$\begin{split} & & \\ & $		BIM_SM_1	Pulp	3	3.04
$\begin{array}{ c c c c c } & BM_{\mbox{\scale}} & \hline Pulp & 34 & 3.07 \\ \hline Pulp & 34 & 3.07 \\ \hline \\ BR_{\mbox{\scale}} & Core & 0 & - \\ \hline Pulp & 18 & 2.99 \\ \hline \\ BR_{\mbox{\scale}} & Core & 8 & 2.92 \\ \hline \\ Pulp & 108 & 3.23 \\ \hline \\ BR_{\mbox{\scale}} & \hline \\ Pulp & 108 & 3.23 \\ \hline \\ BR_{\mbox{\scale}} & \hline \\ BR_{\mbox{\scale}} & \hline \\ Pulp & 64 & 2.86 \\ \hline \\ Pulp & 64 & 2.86 \\ \hline \\ Pulp & 64 & 2.86 \\ \hline \\ Pulp & 13 & 2.89 \\ \hline \\ FW_{\mbox{\scale}} & \hline \\ FW_{\scale$			Core	4	3.58
$egin{array}{ c c c } BR_{m}n^{1} & \hline Core & 0 & - \ Pulp & 18 & 2.99 \ BR_VF & \hline Core & 8 & 2.92 \ Pulp & 108 & 3.23 \ BR_HW_sm & \hline Core & 0 & - \ BR_HW_sm & \hline Core & 0 & - \ Pulp & 64 & 2.86 \ Pulp & 64 & 2.86 \ Pulp & 64 & 2.86 \ Pulp & 13 & 2.89 \ FW_sm_1 & \hline Pulp & 13 & 2.89 \ FW_VF & \hline Pulp & 13 & 2.89 \ FW_VF & \hline Pulp & 13 & 2.89 \ BR_S_VF & \hline Pulp & 44 & 3.06 \ Pulp & 44 & 3.06 \ Pulp & 44 & 3.06 \ Pulp & 21 & 3.08 \ BR_S_VF & \hline Pulp & 21 & 3.08 \ Pulp & 3 & 2.81 \ Pulp & 3 & 2.81 \ Pulp & 9 & 2.96 \ Pulp & 9 & 2.96 \ Pulp & 9 & 2.96 \ Pulp & 9 & 2.95 \ Pulp & 7 & 7 & 2.95 \ Pulp & 7 & 7 & 7 & 7 \ Pulp & 7 & 7 & 7 & 7 \ Pulp & 7 & 7 & 7 & 7 \ Pulp & 7 & 7 & 7 & 7 \$		BIVI_VF	Pulp	34	3.07
$\begin{array}{ c c c c c } & & & & & & & & & & & & & & & & & & &$		BR_sm_1	Core	0	-
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			Pulp	18	2.99
$\begin{array}{ c c c c c } & BR_VF & \hline Pulp & 108 & 3.23 \\ \hline & BR_HW_sm & \hline Core & 0 & - \\ \hline & Pulp & 64 & 2.86 \\ \hline & Pulp & 64 & 2.86 \\ \hline & Pulp & 13 & 2.89 \\ \hline & FW_sm_1 & \hline & Pulp & 13 & 2.89 \\ \hline & FW_VF & \hline & Core & 4 & 3.72 \\ \hline & Pulp & 44 & 3.06 \\ \hline & BR_s_VF & \hline & Pulp & 44 & 3.06 \\ \hline & BR_s_VF & \hline & Pulp & 21 & 3.08 \\ \hline & WD2_sm & \hline & Core & 1 & 2.99 \\ \hline & WD2_sm & \hline & Core & 1 & 2.66 \\ \hline & Pulp & 3 & 2.81 \\ \hline & WD2_VF & \hline & Pulp & 3 & 2.81 \\ \hline & WD_VF & \hline & Core & 0 & - \\ \hline & WD_VF & \hline & Core & 0 & - \\ \hline & WD_VF & \hline & Core & 0 & - \\ \hline & WD_Sm & \hline & Pulp & 7 & 2.95 \\ \hline & WD VF & Core & 2 & 3.41 \\ \hline \end{array}$		BR_VF	Core	8	2.92
$ \begin{split} & BR_{I}HW_{SM} & \hline Core & 0 & - \\ \hline & Pulp & 64 & 2.86 \\ \hline & Pulp & 64 & 2.86 \\ \hline & FW_{S}m_{1} & Pulp & 13 & 2.89 \\ \hline & FW_{S}m_{1} & Pulp & 13 & 2.89 \\ \hline & FW_{V}F & \hline & Pulp & 44 & 3.06 \\ \hline & BR_{S}VF & \hline & Pulp & 44 & 3.06 \\ \hline & BR_{S}VF & \hline & Pulp & 21 & 3.08 \\ \hline & WD2_{S}m & \hline & Core & 1 & 2.99 \\ \hline & WD2_{S}m & \hline & Core & 1 & 2.66 \\ \hline & Pulp & 3 & 2.81 \\ \hline & WD2_{V}F & \hline & Core & 0 & - \\ \hline & Pulp & 9 & 2.96 \\ \hline & WD_{S}m & \hline & Core & 0 & - \\ \hline & Pulp & 7 & 2.95 \\ \hline & WD VF & Core & 2 & 3.41 \\ \end{split}$			Pulp	108	3.23
$\begin{array}{ c c c c c c } & & & & & & & & & & & & & & & & & & &$		BR_HW_sm	Core	0	-
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			Pulp	64	2.86
Bear FW_SM_1 Pulp 13 2.89 FW_VF Core 4 3.72 Pulp 44 3.06 BR_S_VF Core 1 2.99 BR_S_VF Pulp 21 3.08 $WD2_sm$ Core 1 2.66 $WD2_VF$ Pulp 3 2.81 $WD2_VF$ Core 0 - WD_sm Core 0 - WD_sm Core 0 - $WDVF$ Core 2.95 3.41		5)4/ errs 1	Core	1	2.75
$\frac{\text{FW}_{VF}}{\text{FW}_{VF}} \frac{\text{Core}}{\text{Pulp}} \frac{4}{44} \frac{3.72}{3.06}$ $\frac{\text{BR}_{s}_{VF}}{\text{Pulp}} \frac{\text{Core}}{1} \frac{1}{2.99}$ $\frac{\text{Core}}{\text{Pulp}} \frac{1}{21} \frac{3.08}{3.08}$ $\frac{\text{WD2}_{sm}}{\text{WD2}_{sm}} \frac{\text{Core}}{1} \frac{1}{2.66}$ $\frac{\text{WD2}_{VF}}{\text{Pulp}} \frac{\text{Core}}{9} \frac{0}{-1}$ $\frac{\text{WD2}_{VF}}{\text{Pulp}} \frac{\text{Core}}{9} \frac{0}{-1}$ $\frac{\text{WD}_{sm}}{\text{Pulp}} \frac{\text{Core}}{7} \frac{0}{-1}$ $\frac{\text{WD}_{sm}}{\text{Pulp}} \frac{1}{7} \frac{2.95}{2.95}$ $\frac{\text{WD}_{VF}}{1} \frac{\text{Core}}{2} \frac{1}{3.41}$	Bear	FW_SM_1	Pulp	13	2.89
$\frac{FW_VF}{Pulp} = \frac{44}{3.06}$ $\frac{BR_S_VF}{Pulp} = \frac{Core}{1} = \frac{2.99}{3.08}$ $\frac{WD2_sm}{Pulp} = \frac{Core}{1} = \frac{2.66}{2.81}$ $\frac{WD2_VF}{Pulp} = \frac{Core}{0} = \frac{0}{-1}$ $\frac{WD2_VF}{Pulp} = \frac{Core}{0} = \frac{0}{-1}$ $\frac{WD_sm}{Pulp} = \frac{Core}{0} = \frac{0}{-1}$ $\frac{WD_sm}{Pulp} = \frac{7}{2.95}$ $\frac{WD_VF}{Core} = 2 = 3.41$			Core	4	3.72
$\frac{\mbox{BR}_s_VF}{\mbox{BR}_s_VF} & \begin{tabular}{ c c c } \hline Core & 1 & 2.99 \\ \hline \mbox{Pulp} & 21 & 3.08 \\ \hline \mbox{WD2}_sm & \end{tabular} \\ \hline \mbox{WD2}_sm & \end{tabular} \\ \hline \mbox{WD2}_VF & \end{tabular} \\ \hline \mbox{WD2}_VF & \end{tabular} \\ \hline \mbox{WD2}_VF & \end{tabular} \\ \hline \mbox{WD}_sm & \end{tabular} \\ \hline \mbox{WD}_sm & \end{tabular} \\ \hline \mbox{WD}_sm & \end{tabular} \\ \hline \mbox{WD}_VF & \end{tabular} \\ \hline \mbox{WD}_VF & \end{tabular} \\ \hline \mbox{WD}_VF & \end{tabular} \\ \hline \end{tabular} \\ \hline \end{tabular} \\ \hline \mbox{WD}_VF & \end{tabular} \\ \hline \e$		FVV_VF	Pulp	44	3.06
$\frac{BR_{S}VF}{WD2_{S}m} = \frac{Pulp}{21} = \frac{3.08}{2.66}$ $\frac{WD2_{S}m}{Pulp} = \frac{3}{2.81}$ $\frac{WD2_{V}F}{Pulp} = \frac{0}{9} = \frac{2.96}{2.96}$ $\frac{WD_{S}m}{Pulp} = \frac{7}{2.95}$ $WD VF = Core = 2 = 3.41$			Core	1	2.99
$\frac{Core}{Pulp} = \frac{1}{3} = \frac{2.66}{2.81}$ $\frac{WD2_VF}{Pulp} = \frac{Core}{0} = \frac{0}{-1}$ $\frac{WD_2_VF}{Pulp} = \frac{9}{2.96}$ $\frac{WD_sm}{Pulp} = \frac{7}{7} = \frac{2.95}{2.95}$ $WD VF = Core = 2 = 3.41$		BR_S_VF	Pulp	21	3.08
WD2_sm Pulp 3 2.81 WD2_VF Core 0 - Pulp 9 2.96 WD_sm Core 0 - WD VF Core 0 - WD VF Core 2 3.41		14/22	Core	1	2.66
$\frac{\text{Core}}{\text{Pulp}} = \frac{0}{9} - \frac{2.96}{2.96}$ $\frac{\text{WD}_{\text{sm}}}{\text{Pulp}} = \frac{1}{7} - \frac{1}{2.95}$ $\frac{\text{WD VF}}{1} = \frac{1}{7} - \frac{1}{2.95}$		WD2_sm	Pulp	3	2.81
WD2_VF Pulp 9 2.96 WD_sm Core 0 - WD_VF Pulp 7 2.95 WD VF Core 2 3.41		14/00 V/5	Core	0	-
WD_sm Core 0 - Pulp 7 2.95 WD VF Core 2 3.41		WD2_VF	Pulp	9	2.96
WD_sm Pulp 7 2.95 WD VF Core 2 3.41		14/5	Core	0	-
WD VF Core 2 3.41		WD_sm	Pulp	7	2.95
		WD VF	Core	2	3.41

Table STYLEREF 1 \s 11- – Bermingham Bulk Density Measurements (Hecla, 2023f).

DEFINE | PLAN | OPERATE

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Zone	Domain	Туре	Count	Mean
		Pulp	31	2.93
		Core	0	-
	WDS_VF	Pulp	10	-
	DM arm 1	Core	0	-
	BIVI_SIII_1	Pulp	15	2.94
		Core	9	2.95
	BIVI_VF	Pulp	114	2.98
North East	EW/ cm 1	Core	5	2.97
	FVV_SIII_1	Pulp	123	2.86
		Core	8	3.11
	FVV_VF	Pulp	224	3.16
	BM2_VF	Core	6	3.21
		Pulp	23	2.86
		Core	2	2.65
	BK_VF	Pulp	38	2.94
	BM cm	Core	0	-
	DIVI_SIII	Pulp	18	2.94
		Core	5	3.17
Etta	BIVI_VF	Pulp	33	3.10
Ella	EW/ cm 1	Core	3	2.68
	FW_3III_1	Pulp	8	2.80
		Core	8	3.01
	FVV_VF	Pulp	22	3.04
All Zones		Core	86	3.22
All Zones	All Domains	Pulp	1,196	3.02

11.2.4 COMPOSITING

11.2.4.1 Compositing for the Bellekeno Deposit

Alexco identified a total of 7,057 sample intervals as vein intercepts. Using Hexagon MinePlan Drillhole Manager software, samples were composited to 1.5 m lengths within the defined vein intervals. A histogram of sample lengths for the mineralized zones can be seen in Figure 11-18.

A total of 3,815 composites were derived for the Bellekeno deposit: 2,334 for SW Vein, 1,214 for 99 Vein, and 267 for East Vein. Any composite lengths that were less than 0.75 m were attached to the previous composite length. One percent of total composited lengths remained below 0.35 m and were removed.



A reduced length-weighting factor was applied to all samples less than 1.5 m, and a maximum length-factor of 1.0 was applied to any lengths greater than 1.5 m.



Figure STYLEREF 1 \s 11- - Histogram of Sample Lengths for the Mineralized Zones for Bellekeno Deposit (Alexco, 2021b).

11.2.4.2 Compositing for the Lucky Queen Deposit

Alexco identified a total of 106 core drill hole assay intervals as primary vein intercepts and 26 intervals as secondary splay intercepts. These assay intervals were imported into GEMS, and assays were then composited to one-meter length-weighted intervals within the defined vein wireframes. Terminal composites with a length of less than 50 cm were merged with the preceding composite in order to avoid a short sample bias during estimation. Missing sample intervals were assigned a nominal value of 0.001 during compositing.

11.2.4.3 Compositing for the Flame and Moth Deposit

In the Flame and Moth estimate, raw assays were flagged using the interpreted wireframes and allocated ZONE and VEIN alphanumeric fields. A 1.0 m sample length was selected as the appropriate composite length based on the analysis of sample length versus grade as shown in Figure 11-19. Assays were



composited in 1 m intervals within the mineralized zones and any residual composite length shorter than 0.5 m was distributed equally amongst composites within that domain based on the original sampling lengths. This process resulted in all of the original intervals being composited for use in the estimate and was considered the best method for resource estimation.



Figure STYLEREF 1 \s 11- - Flame and Moth Compositing Summary - Length.

The NR samples have been set to be omitted for the purposes of the estimate. This process is the Leapfrog software equivalent of the intervals being set to Null values, and for subsequent processes being assumed that they are the statistical equivalent(s) of the nearest actual samples. While this assumes there are sufficient real values adjacent to the omitted samples, this is standard practice for the purposes of statistical analysis and estimation.

11.2.4.4 Compositing for the Onek Deposit

Alexco identified a total of 633 diamond drill hole assay intervals as vein intercepts. These assay intervals were imported into GEMS, and assays were then composited to one-meter length and density-weighted intervals within the defined vein wireframes. A histogram of sample lengths within the mineralized zones can be seen in Figure 11-20.



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Figure STYLEREF 1 \s 11- – Histogram of Sample Lengths within Onek Veins (RPA, 2017).

11.2.4.5 Compositing for the Bermingham Deposit

A target composite interval length of 1 m was selected for Bermingham based on the average raw assay sample length being 1.37 m, and approximately 38 % of mineralized assay samples consisting of sample lengths of less than 1 m (Figure 11-21). Wireframes of the mineralized veins were used to constrain assay data compositing with any residual composite lengths shorter than 0.5 m added to the previous interval within that domain. Intervals with missing sample data recorded as "NR" due to core loss were ignored during data compositing.





Figure STYLEREF 1 \s 11- – Histogram of Sample Lengths for the Mineralized Zones for Bermingham Deposit.

11.2.5 OUTLIER ANALYSIS AND CAPPING

11.2.5.1 Outlier Analysis and Capping for the Bellekeno Deposit

Grade capping analysis was conducted on the domain-coded composited assay data to limit the influence of extreme assay values during estimation. The assay composites were examined using histograms and cumulative frequency plots for each commodity in each vein. A summary table of the selected capping thresholds and corresponding impacts on average grade and metal loss is provided in Table 11-11. This capping threshold value was selected to minimize changes in the sample distribution. Composites were capped prior to estimation.

It should be noted that the East Main and East Splay veins were assessed as one data population due to the limited number of data in both veins.



Vein	Commodity	Maximum Value	Cap Value	Number Capped	Average Grade (Uncapped)	Average Grade (Capped)	Lost Metal*
	Ag (g/t)	9,832	4,500	21	852	839	1.5%
Southwest Vein	Pb %	83.51	65	25	10.73	10.65	0.7%
	Zn %	46.67	33	26	6.87	6.82	0.8%
	Ag (g/t)	19,450	7,600	6	1,118	1,103	1.3%
99 Vein	Pb %	73.36	55	13	7.08	6.98	1.4%
	Zn %	45.22	20	23	3.53	3.41	3.3%
	Ag (g/t)	4,790	2,000	9	282	247	12.4%
East Vein (Main and Splay)	Pb %	38.40	15	6	1.48	1.22	17.4%
	Zn %	49.16	20	11	3.37	2.94	12.9%

Table STYLEREF 1 \s 11- - Composite Capping Levels for the Bellekeno Deposit (Alexco, 2021b).

* Lost metal is (Average - Average Capped)/Average*100 where Average is the average grade for the assays before capping and Average Capped is the average grade of the assays after capping.

11.2.5.2 Outlier Analysis and Capping for the Lucky Queen Deposit

Grade capping analysis was conducted on the domain-coded and composited data to limit the influence of extreme assay values during estimation. The combined composite sample population for the main Lucky Queen vein and splay was examined using histograms, probability graphs, and capping plots. Capping threshold values were selected to minimize changes in the sample distribution, and sample values were capped to these values prior to compositing and estimation (Table 11-12). For lead, the capping threshold was set to the percentile used for grade capping of silver to maintain the observed correlation between these two elements.

Table STYLEREF 1 \s 11- - Composite Capping Levels for Lucky Queen (Alexco, 2021b).

Commodity	Maximum Value	Cap Value	Mean	Mean Capped	Number Capped	Lost Metal*
Ag (g/t)	13,998	6,300	960	834	2	13.1%
Au (g/t)	3.00	2.00	0.16	0.15	1	10.0%
Pb (ppm)	303,963	148,000	20,831	18,461	2	11.4%
Zn (ppm)	210,100	70,000	13,944	10,143	3	27.2%

* Lost metal is (Average - Average Capped)/Average*100 where Average is the average grade for the assays before capping and Average Capped is the average grade of the assays after capping.

11.2.5.3 Outlier Analysis and Capping for the Flame and Moth Deposit

Within the assay population, outliers were evaluated by Hecla and capping levels were established for some veins which revealed some skewed behavior between the global mean and local estimates relative to a Nearest Neighbor (NN) derived estimate. In response to this, the traditional capping of samples was



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dismissed in favor of a distance-based clamping (value clipping in Leapfrog) of Ag values during estimates. This method was only applied to elevated silver assays and the capping was not used for estimation of other metals.

Applied distances as a percentage of the search pass and grade thresholds are outlined in Table 11-13.

Zone	Domain	Search Pass	Method of Outlier Restriction in Leapfrog	Distance %	Threshold
Lightning	v0	1	Clamp	25	2,000
Lightning	v0	2	Clamp	12.5	2,000
Lightning	v1	1	Clamp	25	2,000
Lightning	v1	2	Clamp	12.5	2,000
Christal	vm	1	Clamp	25	2,750
Christal	vm	2	Clamp	12.5	2,750

Table STYLEREF 1 \s 11- - Outlier Restriction in the Flame and Moth Deposit for Ag (Hecla, 2023e).

Mining Plus noted that the Flame and Moth deposit is known to include elevated grade values and additional care is advised when applying any cuts to the population to avoid substantially reducing the contained metal content. A more appropriate method may be to apply a top cut, in addition to a capping threshold.

Mining Plus considered that to avoid severely cutting the amount if metal, it recommended a combination of the cut at 3,000 g/t and a cap at 1,525 with a range determined by either geological mapping or an indicative range calculated by the variograms first (short range) structure.

11.2.5.4 Outlier Analysis and Capping for the Onek Deposit

Before compositing, grade capping analysis was conducted on the domain-coded sample assay data to limit the influence of extreme assay values during estimation. The assays from Vein 1 and Vein 1FW and, separately, the assays from Vein 2 were examined using histograms, and cumulative frequency plots. Capping threshold values were selected to minimize changes in the sample distribution, and sample values were capped to these values prior to compositing and estimation (Table 11-14).



Table STYLEREF 1 \s 11- - Sample Capping Levels for Onek (Alexco, 2021b).

Vein	Commodity	Maximum Value	Cap Value	Number Capped	Average Grade (Uncapped)	Average Grade (Capped)	Lost Metal*
	Ag (g/t)	3,440	3,000	2	210	208	0.7%
	Au (g/t)	10.20	5	4	0.65	0.63	4.8%
Vein 1 and Vein 1 FW	Pb %	48.36	35	2	1.61	1.57	2.5%
	Zn %	55.92	35	56	13.36	12.46	7.3%
Vein 2	Ag (g/t)	4,080	3,000	4	238	221.00	7.8%
	Au (g/t)	3.10	2	1	0.33	0.32	2.3%
	Pb %	46.13	25	4	2.08	1.90	16.3%
	Zn %	40.45	20	4	4.48	4.22	6.1%

* Lost metal is (Average - Average Capped)/Average*100 where Average is the average grade for the assays before capping and Average Capped is the average grade of the assays after capping.

11.2.5.5 Outlier Analysis and Capping for the Bermingham Deposit

Grade capping analysis was conducted on raw sample data to limit the influence of extreme assay values during estimation. The raw samples from the Bermingham veins were examined by reviewing probability plots and evaluating the samples for each domain. Table 11-15 to Table 11-18 illustrate total samples, capping value for each metal and number of samples capped.

Table STYLEREF 1 \s 11- - Sample Capping Levels for Bermingham Arctic Zone (Hecla, 2023f).

Zone	Domain	Metal (ppm)	Total Nr of Samples	Capping Value	Nr of Samples Capped	Percentile
		Ag	47	193	6	87%
	DM arm 1	Au	40	0.23	1	98%
	BIVI_SIII_1	Pb	47	14,800	1	98%
		Zn	47	38,900	2	96%
		Ag	162	none	-	-
		Au	156	none	-	-
	BIVI_VF	Pb	162	106,500	12	93%
Arctic		Zn	162	127,000	7	96%
		Ag	11	none	-	-
	DD	Au	11	0.08	1	91%
	BK_SM_1	Pb	11	15,500	1	91%
		Zn	11	8,810	2	82%
		Ag	53	1,745	2	96%
	BR_VF	Au	47	none	-	-
		Pb	53	none	-	-

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Zone	Domain	Metal (ppm)	Total Nr of Samples	Capping Value	Nr of Samples Capped	Percentile
		Zn	53	none	-	-
		Ag	28	350	1	96%
	EW/ cm 1	Au	28	0.13	2	93%
	FW_SM_1	Pb	28	10,500	2	93%
		Zn	28	9,910	2	93%
1		Ag	94	5,190	8	91%
		Au	94	0.76	3	97%
	FW_VF	Pb	94	none	-	-
		Zn	94	120,500	3	97%

Table STYLEREF 1 \s 11- - Sample Capping Levels for Bermingham Bear Zone (Hecla, 2023f).

Zone	Domain	Metal (ppm)	Total Nr of Samples	Capping Value	Nr of Samples Capped	Percentile
		Ag	4	none	-	-
	D14 and 1	Au	4	none	-	-
	BIM_SM_1	Pb	4	none	-	-
		Zn	4	none	-	-
		Ag	86	none	-	-
		Au	86	1.64	1	99%
	BIVI_VF	Pb	86	55,700	7	92%
		Zn	86	none	-	-
	BR_HW_sm	Ag	125	928	5	96%
		Au	120	0.08	22	82%
		Pb	125	18,300	7	94%
Bear		Zn	125	23,000	8	94%
	BR_s_VF	Ag	39	11,183	2	95%
		Au	39	1.30	4	90%
		Pb	39	477,800	2	95%
		Zn	39	139,000	1	97%
		Ag	24	4,200	1	96%
	55 4	Au	24	0.08	9	63%
	BR_Sm_1	Pb	24	15,500	11	54%
		Zn	24	139,000	1	96%
		Ag	267	11,857	16	94%
	BR_VF	Au	261	1.35	12	95%
		Pb	267	none	-	-

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Zone	Domain	Metal (ppm)	Total Nr of Samples	Capping Value	Nr of Samples Capped	Percentile
		Zn	267	175,500	2	99%
		Ag	23	none	-	-
	E \\	Au	23	0.34	1	96%
	FVV_SM_1	Pb	23	37,200	1	96%
		Zn	23	none	-	-
		Ag	103	11,406.50	1	99%
		Au	103	none	-	-
	FVV_VF	Pb	103	314,200	3	97%
		Zn	103	243,000	2	98%
		Ag	5	none	-	-
	WD2 cm	Au	5	none	-	-
	wbz_sm	Pb	5	none	-	-
		Zn	5	none	-	-
		Ag	16	none	-	-
		Au	16	none	-	-
	WD2_VF	Pb	16	none	-	-
		Zn	16	none	-	-
		Ag	11	none	-	-
	WD cm	Au	11	none	-	-
	wD_sm	Pb	11	none	-	-
		Zn	11	68,000	1	91%
		Ag	47	none		
		Au	47	none	-	-
	WD_VF	Pb	47	82,400	3	94%
		Zn	47	145,500	2	96%
		Ag	13	none	-	-
		Au	13	none	-	-
	VVDS_VF	Pb	13	none	-	-
		Zn	13	none	-	-

Table STYLEREF 1 \s 11- - Sample Capping Levels for Bermingham North-East Zone (Hecla, 2023f).

Zone	Domain	Metal (ppm)	Total Nr of Samples	Capping Value	Nr of Samples Capped	Percentile
NE BM2_VF		Ag	59	none	-	-
	BM2_VF	Au	59	none	-	-
		Pb	59	108,000	3	95%

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Zone	Domain	Metal (ppm)	Total Nr of Samples	Capping Value	Nr of Samples Capped	Percentile
		Zn	59	121,000	3	95%
		Ag	17	133	4	76%
	PM cm 1	Au	17	0.29	3	82%
	DIVI_SIII_1	Pb	17	23,300	1	94%
		Zn	17	33,200	2	88%
		Ag	199	7,430	7	96%
		Au	199	none	-	-
	DIVI_VF	Pb	199	222,100	11	94%
		Zn	199	116,500	8	96%
		Ag	176	385	7	96%
	E\\/ amp 1	Au	176	0.34	2	99%
	FWV_SIII_1	Pb	176	34,200	1	99%
		Zn	176	39,600	7	96%
		Ag	376	16,367	8	98%
		Au	376	2.18	7	98%
	FVV_VF	Pb	376	397,300	11	97%
		Zn	376	203,000	3	99%
		Ag	55	5,890	2	96%
		Au	55	0.59	2	96%
	BK_VF	Pb	55	none	-	-
		Zn	55	94,300	3	95%

Table STYLEREF 1 \s 11- - Sample Capping Levels for Bermingham Etta Zone (Hecla, 2023f).

Zone	Domain	Metal (ppm)	Total Nr of Samples	Capping Value	Nr of Samples Capped	Percentile
		Ag	22	none	-	-
	DNA are 1	Au	22	none	-	-
	BIVI_SIII_1	Pb	22	none	-	-
		Zn	22	none	-	-
	BM_VF	Ag	63	none	-	-
Etta		Au	63	none	-	-
		Pb	63	none	-	-
		Zn	63	none	-	-
		Ag	18	none	-	-
	FW_sm_1	Au	18	none	-	-
		Pb	18	none	-	_

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Zone	Domain	Metal (ppm)	Total Nr of Samples	Capping Value	Nr of Samples Capped	Percentile
		Zn	18	none	-	-
		Ag	47	1,235	6	87%
		Au	47	0.22	4	ed Percentile 87% 91% 91% 91%
	FVV_VF	Pb	47	71,400	4	91%
		Zn	47	62,200	4	91%

STATISTICAL ANALYSIS AND VARIOGRAPHY 11.2.6

11.2.6.1 Statistical Analysis and Variography for the Bellekeno Deposit

Examination of the drill hole and chip assay sample data determined that there was a bias in the chip sample dataset as seen in Figure 11-22. To correct for this bias, a weight of 0.7 was applied to all chip data, while drillhole data remained at 1.0. Summary statistics for the final composite data set used for Mineral Resource estimation are provided in Table 11-19.



Figure STYLEREF 1 \s 11- - Quantile-Quantile Plot of Silver Values in Drillhole vs. Chip Samples Coded to Bellekeno Veins (SRK, 2021).



Vein	Statistic	Ag (g/t)	Pb (%)	Zn (%)
	Number of Samples	2,334	2,334	2,334
	Average before weight applied	839	10.65	6.84
0444	Average after weight applied	559	7.11	4.61
SW Vein	Minimum	0	0	0
	Maximum	4,500	65	33
	Coefficient of Variation	1.30	1.50	1.10
	Number of Samples	1,214	1,214	1,214
	Average before weight applied	1,103	6.98	3.41
	Average after weight applied	750	4.84	2.48
99 Vein	Minimum	0	0	0.00
	Maximum	7,600	55	20
	Coefficient of Variation	1.90	1.80	1.40
	Number of Samples	267	267	267
	Average before weight applied	247	1.22	2.94
F 114 1	Average after weight applied	210	1.05	2.41
East Vein	Minimum	0	0	44.00
	Maximum	2,000	15	20
	Coefficient of Variation	2.00	2.70	1.90

Table STYLEREF 1 \s 11- - Summary Statistics for Bellekeno Composited and Weighted Data (Alexco, 2021b).

Continuity analysis (i.e., variogram analysis) for the Bellekeno data was analyzed by zone and variogram parameters are summarized in Table 11-20. Each element was assessed using a normal score variogram that was back transformed prior to estimation.

Table STYLEREF 1 \s 11- - Summary of Variography for Bellekeno (Alexco, 2021b).

14-1	86-4-1		Sill		MinePlan Rotations			Ranges a1, a2			
vein	Ivietai	Nugget C ₀	C ₁ , C ₂	around Z	around X	around Y	X-Rot	Y-Rot	Z-Rot		
	4-	0.12	0.28				15	10	5		
	Ag	0.13	0.59				45	30	10		
C14/	Ph	0.17	0.38	165°	-22°	66°	10	5	5		
SVV	PD	0.17	0.45	-105	-55	00	10 5 5 40 25 10		10		
	7	0.11	0.61				5	5	5		
	Zn	0.11	0.28				60	40	10		
99	Ag	0.13	0.55	-155°	-44°	76°	7	5	5		

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	0.0-1-1		Sill		MinePlan Rotations			Ranges a1, a2	
vein	Ivietal	Nugget C ₀	C ₁ , C ₂	around Z	around X	around Y	X-Rot	Y-Rot	Z-Rot
			0.32				30	25	10
_	Dh	0.14	0.48				5	5	4
	PD	0.14	0.38				30	25	10
	7.5	0.13	0.52				15	15	5
	Zn		0.35				100	30	10
	A =	0.17	0.39				15	10	5
	Ag		0.45	Ī		618	45	30	10
Fast	Dh	0.20	0.54	1708			10	5	5
East	PD	0.20	0.26	-172	-40	10	40	25	10
	Zn	0.17	0.19				5	5	5
	ZN	0.17	0.65	ſ			60	40	10

11.2.6.1.1 Southwest Zone Variograms

Figure 11-23 to Figure 11-25 present the results for the SW zone normal score variograms for silver, lead and zinc.

In general, it is noted that reasonable variograms are obtained in normal score for silver, lead, and zinc, with a directional range of approximately 45 m to 60 m in the plane of the vein.





Figure STYLEREF 1 \s 11- - Normal Score Variograms for Capped Silver, Southwest Zone (Alexco, 2021b).

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Figure STYLEREF 1 \s 11- - Normal Score Variograms for Capped Zinc, Southwest Zone (Alexco, 2021b).

11.2.6.1.2 The 99 Zone Variograms

Figure 11-26 to Figure 11-28 present results for the SW zone normal score variograms for silver, lead, and zinc.

In general, it is noted that reasonable variograms were obtained in log space for silver, lead, and zinc, with a directional range of approximately 40 m to 70 m in the plane of the vein.





Figure STYLEREF 1 \s 11- - Normal Score Variograms for Capped Silver, 99 Zone (Alexco, 2021b).

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Figure STYLEREF 1 \s 11- - Normal Score Variograms for Capped Lead, 99 Zone (Alexco, 2021b).

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Figure STYLEREF 1 \s 11- - Normal Score Variograms for Capped Zinc, 99 Zone (Alexco, 2021b).

11.2.6.1.3 The East Vein Variograms

In general, robust variograms could not be obtained for the East Vein due to limited data. Therefore, directional ranges were set at approximately 45 m to 60 m within the plane of the vein based on variogram parameters determined from the Southwest Zone.

11.2.6.2 Statistical Analysis and Variography for the Lucky Queen Deposit

Examination of the distribution of drill hole and chip assay sample populations suggests that drill hole assay data differ significantly from the chip assay data (Figure 11-29). The chip sample data were, therefore, used for continuity analysis, but were not used for Mineral Resource estimation.





QQ Plot Chip Ag Assays vs. DDH Vein Ag Assays

Figure STYLEREF 1 \s 11- - Q-Q Plot of Chip and Drill Hole Silver Assay Sample Data (SRK, 2011a).

Summary statistics were compiled for the composite data, both for the defined Lucky Queen Vein and for a secondary splay identified by Alexco (Table 11-21). A total of 66 composites were derived for the Lucky Queen Vein, and 15 composites for the secondary splay. An additional five composites averaging 1,591 g/t Ag have been identified by Alexco but were not assigned to the primary Lucky Queen Vein or the secondary splay. Correlation analysis between elements indicates a positive correlation between silver and lead, with a correlation coefficient of 0.62.

Туре	Statistic	Ag (g/t)	Au (g/t)	Pb (ppm)	Zn (ppm)
	Number of Samples	81	81	81	81
	Average	814	0.14	17,909	12,080
Total Compositos	Minimum	0.2	0.001	2,327	44
iotal composites	Maximum	13,998	3	303,963	210,100
	Standard Deviation	1,929	0.38	42,651	31
	Coefficient of Variation	2.4	2.8	2.4	2.6
	Number of Samples	66	66	66	66
Voin Compositos	Average	960	0.161	20,831	13,944
vein composites	Minimum	0.6	0.001	32	44
	Maximum	13,998	3	303,963	210,010

Table STYLEREF 1 \s 11- - Composite Data Summary Statistics for the Lucky Queen Deposit (Alexco, 2021b).

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Туре	Statistic	Ag (g/t)	Au (g/t)	Pb (ppm)	Zn (ppm)
	Standard Deviation	2,098	0.412	46,265	34,315
	Coefficient of Variation	2.2	2.6	2.20	2.50
	Number of Samples	15	1.5	15	15
	Average	174	0.022	5,054	3,877
Color Compositos	Minimum	0.2	0.001	23	116
splay composites	Maximum	2,125	0.155	60,714	27,195
	Standard Deviation	547	0.04	15,496	7,862
	Coefficient of Variation	3.20	1.80	3.1	2.0

Three-dimensional continuity analysis was conducted on the composite data and underground chip sample data for the Lucky Queen Vein. Downhole and directional un-transformed and normal-scores transformed and normalized experimental semi-variograms were examined for silver, with the horizontal and across-strike directions aligned with the modelled vein orientation (Table 11-22).

Rotation was defined by the GEMS ZYZ convention within the rotated block model coordinate space. Due to the spatial distribution of the data, only a strike experimental semi-variogram could be satisfactorily modelled, and the range of the resulting normal-scores experimental semi-variogram was used to define sample selection requirements and classification criteria.

Table STYLEREF 1 \s 11- – Modelled Semi-Variogram for Silver (Alexco, 2021b).

Direction	Experimental Semi- Variogram	Range
Nugget	0.2	
Sill 1	0.2	12
Sill 2	0.6	100

11.2.6.3 Statistical Analysis and Variography for the Flame and Moth Deposit

After detailed statistical interrogation of the database indicating possible grade bias and due to potential overestimation when utilizing chip samples in the MRE, a conservative approach was adopted where all chip samples were excluded from the grade estimation pending further review.

Variograms were created using 1 m composites of the drilling data to determine search distance and directions for the vein domains in Christal and Lightning Zones. The high variability of the stringer mineralization made the construction of variograms for those domains difficult. For mineralized stringer zones, indicator shells were created at different threshold values, and the dimensions of these shells were used to influence search range and max value clamping range for the stringer estimators. Block grades



Metal Domain Count Length Mean SD с٧ Min LQ Median υQ Max Christal_SM 71 69.50 90.10 129.00 1.43 0.05 19.90 41.80 98.70 702.30 Christal VM 222 217.80 674.10 739.50 1.10 3.35 183.60 415.10 891.90 5,469.90 Lightning_v0 71 538.70 63.30 862.60 1.60 3.11 121.00 321.20 665.60 6,804.20 Ag (g/t) 71.80 277.50 734.00 3.558.70 Lightning_v1 204 199.70 514.20 625.50 1.22 0.11 Lightning_v2 84 72 70 595 00 786.20 1 32 1 20 93.50 284.00 905.80 4 556 50 Lightning SM 794 785.10 160.80 487.40 3.03 0.05 6.90 25.80 133.00 6,380.00 Christal SM 71 69.50 0.09 0.16 1.75 0.00 0.01 0.03 0.10 0.87 Christal_VM 222 217.80 0.58 0.59 1.01 0.00 0.18 0.38 0.80 3.61 Lightning_v0 63 57.70 0.47 0.58 1.24 0.00 0.08 0.32 0.57 2.66 Au (g/t) Lightning v1 181 177.00 0.38 0.44 1.15 0.00 0.09 0.25 0.52 2.53 Lightning_v2 73 0.32 0.33 1.02 0.00 0.13 0.22 0.42 2.00 63.90 Lightning_SM 0.08 0.00 0.02 0.07 4.20 653 644.90 0.26 3.09 0.00 71 Christal_SM 69.50 2,081 2,460 1.18 7.00 671 1,392 2,209 12,777 Christal_VM 3,851 25,705 463,882 222 217.80 29,450 57,907 1.97 61.60 9,212 Lightning_v0 71 24.360 29,117 1.20 195.00 4.456 12,550 30.300 144.930 63.30 Pb (ppm) Lightning_v1 204 199.70 14.198 24,117 1.70 34.00 1.950 6.228 16,673 174.542 Lightning_v2 84 72.70 13,708 19,308 1.41 7.34 1,907 7,518 16,598 120,494 247,700 Lightning_SM 794 785.10 5,928 14,680 2.48 0.05 178 1,008 6,740 Christal SM 71 12 929 13,896 1.08 25.00 3,373 9,154 16,623 67 450 69 50 Christal VM 222 217.80 42,549 37,123 0.87 168.00 12,550 35,569 60,576 192,915 Lightning v0 71 63.30 78,977 77,294 0.98 925.00 18,517 49,120 118,328 299,000 Zn (ppm) 109,600 Lightning_v1 804 199.70 67,019 61,838 0.92 31.00 11,590 53,694 281,000 Lightning_v2 84 56,250 57,492 8,058 85,918 331,086 72.70 1.02 21.92 42,441 Lightning_SM 794 785.10 18,342 27,879 1.52 17.00 904 5,630 27,015 286,112

for all metals were estimated using the ID² method. Table 11-23 shows the separate summary statistics for each element.

Table STYLEREF 1	\s 11	- Flame and	Moth	Composite Sur	mmary	Statistics ('Hecla,	2023e).

During its review, Mining Plus noted that Hecla elected to exclude face sample data from the estimate due to potential bias in the population. Communication with site personnel did not fully define the nature of the bias however possible reasons included the use of a non-certified on-site laboratory for assay determination, or the physical properties of the higher-grade zones resulting in potential oversampling.

While Mining Plus accepts that face samples have been excluded from the MRE, it recommends that a review be conducted into the sampling and assaying processes and to outline the source of any potential bias. Face samples may provide reliable data at uniform boundaries and at set locations and regular patterns within the mining development. This population may provide important statistical information on close spaced sample behavior and determine local grade variability and continuity.



11.2.6.4 Statistical Analysis and Variography for the Onek Deposit

Examination of the distribution of the drill hole and chip assay sample populations suggests that the drill hole assay data differs significantly from the chip assay data. Therefore, the chip sample data were not used for Mineral Resource estimation.

Summary statistics were compiled for the composite data for the Onek veins (Table 11-24). A total of 351 composites were derived for Vein 1, 16 composites for Vein 1FW and 147 composites for Vein 2. Any composites lengths less than 0.5 m in length were linked to the previous composite to ensure equal weighting of all composites and to verify that all composites were between 0.5 m and 1.5 m in length. Correlation analysis between elements indicates a strong correlation between Ag and Pb, with a correlation coefficient of 0.83.

Туре	Statistic	Ag (g/t)	Ag Cap (g/t)	Au (g/t)	Au Cap (g/t)	Pb (%)	Pb Cap (%)	Zn (%)	Zn Cap (%)
	Number of Samples	514	514	514	514	514	514	514	514
Total Composites	Average	181	175	0.51	0.49	1.4	1.26	9.5	8.93
	Minimum	0.64	0.64	0	0	0	0	0	0
	Maximum	3,410	3,000	7.68	4.89	46.13	27.94	50	35
	Standard Deviation	408	369	0.7	0.58	4.26	3.42	10.94	9.59
	Coefficient of Variation	2.25	2.11	1.37	1.18	3.04	2.71	1.15	1.07
	Number of Samples	351	351	351	351	351	351	351	351
	Average	166	165	0.6	0.58	1.11	1.08	12.18	11.41
	Minimum	0	0	0	0	0	0	0	0
Vein 1 Composites	Maximum	2,776	2,428	7.68	4.89	26.96	21.35	50	35
	Standard Deviation	309	299	0.77	0.63	2.92	2.75	11.92	10.36
	Coefficient of Variation	1.86	1.81	1.28	1.09	2.63	2.55	0.98	0.91
	Number of Samples	16	16	16	16	16	16	16	16
	Average	135	135	0.3	0.3	2.32	2.32	4.11	3.78
	Minimum	0.64	0	0	0	0	0	0	0
Vein 1FW Composites	Maximum	1,400	1,400	1.91	1.91	27.94	27.94	28.66	23.46
	Standard Deviation	364	364	0.59	0.59	7.15	7.15	7.29	6.14
	Coefficient of Variation	2.70	2.70	1.97	1.97	3.08	3.08	1.77	1.62
	Number of Samples	147	147	147	147	147	147	147	147
Vein 2 Composites	Average	222	201	0.31	0.3	1.99	1.57	3.7	3.56
	Minimum	0	0	0	0	0	0	0	0

Table STYLEREF 1 \s 11- - Composite Data Summary Statistics for Onek (Alexco, 2021b).

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Туре	Statistic	Ag (g/t)	Ag Cap (g/t)	Au (g/t)	Au Cap (g/t)	Pb (%)	Pb Cap (%)	Zn (%)	Zn Cap (%)
	Maximum	3,410	3,000	1.77	1.65	46.13	25	30.14	24.1
	Standard Deviation	583	499	0.41	0.39	6.12	4.16	4.51	3.93
	Coefficient of Variation	2.63	2.48	1.32	1.30	3.08	2.65	1.22	1.10

Experimental correlograms and correlogram models were generated for silver, lead, zinc, and gold from combined composite grade data for Vein 1 and Vein 1FW and from composite grade data for Vein 2. The nugget effect was established from downhole correlograms. Directional and downhole correlograms were examined for silver, lead, zinc, and gold. Apart from zinc, modeled directions of spatial continuity were aligned with strike and dip directions of modeled vein orientations. For zinc, the major direction of continuity was modelled as a shallow dipping south-west trending structure. Nugget effect and across-structure continuity was established from downhole correlograms. Rotation was defined by the GEMS ZYZ convention within the rotated block model coordinate space. The continuity ellipsoids for silver, lead, zinc, and gold were displayed as search ellipsoids in GEMS to validate the ellipsoid orientations. The correlogram models used for grade estimation within Vein1 and Vein 1FW are shown in Figure 11-30 and Figure 11-31 and Vein 2 (Figure 11-32) and are summarized in Table 11-25.





Figure STYLEREF 1 \s 11- - Modelled Directional and Downhole Correlograms for Vein 1 and Vein 1 FW (RPA, 2017).

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Figure STYLEREF 1 \s 11- – Modelled Directional and Downhole Correlograms for Vein 1 and Vein 1 FW (RPA, 2017).

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Figure STYLEREF 1 \s 11- - Modelled Omnidirectional Correlograms for Vein 2 (RPA, 2017).

Metal	Zone	Nugget C ₀	Sill C	Gen	ncom Rotations (RRR	Range a			
				Around Z	Around Y	Around Z	X-Rot	Y-Rot	Z-Rot
Cilver	Vein 1 and Vein 1FW	0.20	0.80	-45.00	65	0	60	30	11
Silver	Vein 2	0.20	0.80	-45	65	0	25	25	10
	Vein 1 and Vein 1FW	0.20	0.80	-45	65	0	60	40	8
Lead	Vein 2	0.20	0.80	-45	65	0	25	25	10
	Vein 1 and Vein 1FW	0.15	0.85	-45	65	-70	60	40	8
Zinc	Vein 2	0.30	0.70	-45	65	0	80	80	7
<u> </u>	Vein 1 and Vein 1F	0.30	0.70	-45	65	0	70	50	10
GUIU	Vein 2	0.30	0.70	-45	65	0	30	30	10

Table STYLEREF 1 \s 11- – Modelled Correlograms for Onek Veins (Alexco, 2021b).

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11.2.6.5 Statistical Analysis and Variography for the Bermingham Deposit

Variograms were created using 1m composites of the drill data to determine search directions and initial search ranges for each domain. Variograms were created for the primary vein systems: Bear, Bermingham Main and Footwall for Ag, Au, Pb, Zn. Stringer mineralization zones utilized the values from the dominant vein mineralization associated with those domains, as sample counts were low. Variograms for the West Dipper system could not be generated due to limited data and search directions for West Dipper were based on the orientations of the domains. Table 11-26 to Table 11-29 below summarize the composite statistics for Arctic, Bear, Etta and North East Zones.

Zone	Domain	Metal	Count	Length	Mean	SD	cv	Min	LQ	Median	UQ	Max
		Ag	98	92.01	874	832	0.95	0.10	243	575	1,314	3,720
		Au	95	89.61	0.21	0.26	1.22	0.01	0.06	0.13	0.24	1.24
	BM_AF	Pb	98	92.01	20,255	23,142	1.14	3.93	3,221	12,802	27,960	109,500
		Zn	98	92.01	22,753	25,177	1.11	17.02	5,850	15,673	27,346	127,000
		Ag	62	58.91	1,392	1,342	0.96	8.13	457	957	1,994	5,190
Aratia		Au	62	58.91	0.22	0.17	0.78	0.05	0.10	0.18	0.29	0.73
Arctic	FVV_VF	Pb	62	58.91	49,201	68,725	1.40	37.50	5,520	26,345	57,681	305,200
		Zn	62	58.91	20,901	27,715	1.33	117.92	1,738	9,140	24,820	120,500
		Ag	41	37.07	437	484	1.11	2.60	54	260	560	1,745
		Au	38	34.34	0.07	0.07	0.89	0.01	0.04	0.05	0.10	0.28
	BK_VF	Pb	41	37.07	12,719	19,252	1.51	42.00	1,152	5,175	13,357	91,314
	_	Zn	41	37.07	7,273	7,822	1.08	522.05	2,210	3,657	10,400	32,500

Table STYLEREF 1 \s 11- - Bermingham Composite Summary Statistics for the Arctic Zone (Hecla, 2023f).

Table STYLEREF 1 \s 11- – Bermingham Composite Summary Statistics for the Bear Zone (Hecla, 2023f).

Zone	Domain	Metal	Count	Length	Mean	SD	cv	Min	LQ	Median	UQ	Max
		Ag	58	49.36	1,067	2,202	2.06	0	74	300	842	12,003
		Au	58	49.36	0.21	0.25	1.15	0.01	0.05	0.11	0.26	1.64
	BIVI_VF	Pb	58	49.36	13,204	15,477	1.17	9	1,846	3,270	23,661	60,404
		Zn	58	49.36	13,896	21,065	1.52	123	1,830	5,800	18,031	180,500
		Ag	137	123.48	1,931	3,049	1.58	2	82	573	2,318	11,857
		Au	134	122.2	224.00	0.32	1.42	0.01	0.03	0.11	0.20	1.35
Bear	BK_VF	Pb	137	123.48	41,166	69,328	1.68	20	2,180	10,572	41,400	3,782
		Zn	137	123.48	17,179	24,123	1.40	26	1,448	7,347	22,464	134,121
		Ag	73	69.87	1,566	2,017	1.29	13	313	792	1,744	9,350
		Au	73	69.87	0.21	0.24	1.13	0.01	0.05	0.13	0.27	1.33
	FVV_VF	Pb	73	69.87	35,535	43,624	1.23	218	4,410	16,750	44,684	180,626
		Zn	73	69.87	27,818	40,531	1.46	97	2,550	10,489	33,141	216,000

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Zone	Domain	Metal	Count	Length	Mean	SD	cv	Min	LQ	Median	UQ	Max
		Ag	22	20.52	2,395	2,633	1.10	5	535	1,007	3,668	7,558
		Au	22	20.52	0.28	0.30	1.06	0.01	0.07	0.15	0.43	0.90
	BR_S_VF	Pb	22	20.52	8,909	103,279	1.16	153	10,673	16,322	154,060	286,915
		Zn	22	20.52	20,655	28,520	1.38	288	4,387	10,031	26,600	115,915
		Ag	12	12.74	641	455	0.71	20	292	504	1,012	1,370
		Au	12	12.74	0.11	0.05	0.41	0.01	0.10	0.12	0.14	0.18
	VVD2_VF	Pb	12	12.74	34,356	24,720	0.72	581	2,237	28,644	44,415	103,000
		Zn	12	12.74	15,759	10,195	0.65	1,309	9,470	15,539	21,726	32,925
		Ag	27	24.66	1,057	990	0.94	1	169	1,070	1,701	4,850
		Au	27	24.66	0.11	0.09	0.81	0.01	0.03	0.09	0.16	0.37
	WD_VI	Pb	27	24.66	18,397	17,739	0.96	26	1,009	15,185	31,000	52,644
		Zn	27	24.66	17,734	25,449	1.44	92	4,250	7,793	19,513	107,980
		Ag	8	7.8	3,451	2,943	0.85	454	799	3,523	4,891	9,386
		Au	8	7.8	0.39	0.30	0.77	0.05	0.06	0.38	0.72	0.84
		Pb	8	7.8	168,084	177,957	1.06	1,150	4,033	184,100	352,849	411,364
		Zn	8	7.8	60,700	56,681	0.93	4,721	13,250	36,467	120,778	127,317

Table STYLEREF 1 \s 11- - Bermingham Composite Summary Statistics for the Etta Zone (Hecla, 2023f).

Zone	Domain	Metal	Count	Length	Mean	SD	cv	Min	LQ	Median	UQ	Max
		Ag	36	36.58	877	967	1.10	86	149	573	1,272	4,583
		Au	36	36.58	0.10	0.10	0.95	0.01	0.05	0.07	0.13	0.53
	BIVI_VF	Pb	36	36.58	35,882	37,050	1.03	365	365	20,015	55,277	144,464
5 44-		Zn	36	36.58	28,358	24,209	0.85	2,826	2,826	16,000	39,052	89,808
Etta		Ag	27	26.92	489	311	0.64	1.00	1.00	464	757	1,235
		Au	27	26.92	0.07	0.05	0.71	0.01	0.01	0.06	0.12	0.22
	FVV_VF	Pb	27	26.92	15,342	16,288	1.06	55	55	7,932	23,867	71,400
		Zn	27	26.92	22,402	15,706	0.70	22	22	22,858	33,104	57,126

Table STYLEREF 1 \s 11- - Bermingham Composite Summary Statistics for the North East Zone (Hecla, 2023f).

Zone	Domain	Metal	Count	Length	Mean	SD	cv	Min	LQ	Median	UQ	Max
		Ag	143	129.17	714	1,286	1.80	2.41	45	236	694	7,430
		Au	143	129.17	0.19	0.25	1.33	0.01	0.05	0.08	0.24	1.43
	BIVI_VF	Pb	143	129.17	21,119	34,217	1.62	18	1,338	5,938	24,498	222,100
North Fost		Zn	143	129.17	14,864	22,919	1.54	18	1,378	6,725	16,050	190,500
NorthEast		Ag	230	221.33	1,500	2,215	1.48	0.05	168	678	1,770	12,868
		Au	230	221.33	0.25	0.31	1.27	0.01	0.05	0.14	0.32	1.69
	FVV_VF	Pb	230	221.33	48,220	76,665	1.59	12	3,575	19,900	56,394	487,700
		Zn	230	221.33	18,270	31,075	1.70	9.00	677	4,120	19,613	169,820

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Zone	Domain	Metal	Count	Length	Mean	SD	cv	Min	LQ	Median	UQ	Max
		Ag	46	40.89	454	935	2.06	4.50	34	149	266	5,877
	2042.145	Au	46	40.89	0.10	0.12	1.14	0.01	0.03	0.06	0.14	0.58
	BIMI2_AF	Pb	46	40.89	12,313	20,384	1.66	75	1,725	5,140	12,780	108,000
		Zn	46	40.89	17,052	21,380	1.25	72	1,444	5,310	31,758	91,300
		Ag	38	36.36	935	1,256	1.34	4.50	83	380	1,329	5,010
		Au	38	36.36	0.13	0.13	1.02	0.01	0.03	0.10	0.17	0.51
	DK_VF	Pb	38	36.36	18,615	27,128	1.46	191	1,002	6,590	23,017	106,340
		Zn	38	36.36	19,073	19,955	1.05	140	2,599	9,910	34,633	66,315

11.2.7 BLOCK MODEL AND GRADE ESTIMATION

11.2.7.1 Block model and Grade Estimation for the Bellekeno Deposit

A rotated block model was constructed to cover the entire extent of the mineralized veins. The block model included separate sub models for silver, lead, and zinc grade estimates, as well as bulk density, classification criteria, validation estimates, and a calculated block value. A sub-block model was used to calculate volume and tonnage values based on the vein wireframes, classification criteria, and mined out shapes. The geometrical parameters of the block model are summarized in Table 11-30.

Table STYLEREF 1 \s 11- – Block Model Location and Setup, MinePlan Convention (Alexco, 2021b).

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block model origin (NAD 83 Zone 8N)	486,200	7,085,400	600
Block dimensions (meters)	5	3	5
Number of blocks	400	100	160
Rotation (degrees)		307.50° (clockwise)

Grades were interpolated into blocks using an Ordinary Kriging estimation method. Search ellipses were set up to parallel the strike and dip of the veins. For silver, lead, and zinc, a two-pass series of expanding search ellipsoids were used for sample selection and estimation.

Weighted capped composite data used for the estimation was restricted to samples located in the respective veins. Additional zinc threshold search restrictions were applied to all three vein zones. Individual block grades were used to calculate an NSR block model. Estimation criteria for each vein zone are summarized in Table 11-31.



Vei		CoorebDoor	ſ	Range			Numl Comp	per of osites	Max.	High Grade Restriction			
n	Metal	SearchPass	Principal Azimuth	Principal Dip	Intermed Azimuth	X-Rot	Y-Rot	Z-Rot	Min	Max	hole	Grade	3D Search
		1				45	30	10	4	6	2	-	-
	Ag	2				113	75	25	2	6	2	-	-
C)A/	Ph	1	-164°	-22°	66°	40	25	10	4	6	2	-	-
500	FU	2	-104	-33	00	100	63	25	2	6	2	-	-
	7.5	1				60	40	10	4	6	2	10.0%	30m
	20	2				150	75	25	2	6	2	10.0%	30m
	٨٩	1				30	25	10	4	6	2	-	-
	Ag	2				75	63	25	2	6	2	-	-
00	Dh	1	1650	4.4°	76°	30	25	10	4	6	2	-	-
33	PU	2	-155	-44	70	75	63	25	2	6	2	-	-
	75	1				100	30	10	4	6	2	10.5%	50m
	211	2				250	75	25	2	6	2	10.5%	50m
	٨٩	1				45	30	10	4	6	2	-	-
	Ag	2				113	75	25	2	6	2	-	-
Fact	Dh	1	170°	16°	C1°	45	25	10	4	6	2	-	-
Edsi	FU	2	-1/2	-40	10	100	63	25	2	6	2	-	-
	7n	1				60	40	10	4	6	2	10.5%	60m
	211	2				150	100	25	2	6	2	10.5%	60m

Table STYLEREF 1 \s 11- - Search Ellipse Parameters for the Bellekeno Deposit (Alexco, 2021b).

11.2.7.2 Block Model and Grade Estimation for the Lucky Queen Deposit

A rotated block model was constructed to cover the entire extent of the mineralized veins as defined by Alexco. The block model included separate sub models for silver, lead, zinc, and gold grade estimates, as well as estimated bulk density, classification criteria, validation estimates, and a calculated block value. A block percentage model was used to accurately determine volume and tonnage values based on the reviewed and validated vein wireframes supplied by Alexco. The geometrical parameters of the block model are summarized in Table 11-32.

Table STYLEREF 1 \s 11- - Block model Location and Setup for the Lucky Queen Deposit (Alexco, 2021b).

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block model origin (NAD 83 Zone 8N)	486,900	7,091,300	1,200
Block dimensions (meters)	10	10	10
Number of blocks	70	100	50
Rotation (degrees)		-50° (counter-clockwise)	

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An ID² was used for the estimation of block grades. A two-pass series of expanding search ellipsoids with varying minimum sample requirements was used for sample selection and estimation, with the primary and secondary axes of the search ellipsoid defined by the silver semi-variogram range. Composite data used during estimation were restricted to samples located in their respective domain. Individual composite grades were then used to calculate a block model. For the second pass, estimation results were also iteratively queried to ensure that all potential Mineral Resources within the defined domains were estimated.

During the first pass, four to 12 composites from two or more drill holes within a search ellipsoid corresponding to 50% of the semi-variogram range were required for the estimation. All blocks estimated during the first pass were classified as Indicated (Table 11-33).

During the second pass, the search ellipse was expanded to ensure that all blocks within the defined vein and splay models were estimated. Between four to 12 composites from one or more drill holes were used for estimation. All blocks estimated during the second pass were classified as Inferred. All splay resources were also classified as Inferred due to the small number of total samples for this domain.

Table STYLEREF 1 \s 11- – Search Ellipse Parameters for the Lucky Queen Deposit (Alexco, 2021b).

Estimator	Courte Door	Count Ture	Rot	tation	Se	arch Ellipse S	ize	Number of	Composites	Mary Complex was half
Estimator	Search Pass	Search Type	z	Y	X (m)	Y (m)	Z (m)	Min.	Max.	iviax. Samples per hole
ID ²	1	Ellipse	0°	50°	50	50	10	4	12	3
ID ²	2	Ellipse	0°	50°	300	300	60	4	12	0

11.2.7.3 Block Model and Grade Estimation for the Flame and Moth Deposit

A rotated block model was constructed to include the extent of the mineralized veins as defined by Hecla, and included estimations for silver, lead, gold, zinc and specific gravity. Block model dimensions and parameters are found below in Table 11-34. A series of calculations have been applied for the conversion of grams per tonne to ounce per ton or percent. This was done after the estimation with an additional set of calculations to determine the NSR value for each block.

Table STYLEREF 1 \s 11- – Block Model location and Setup for the Flame and Moth Deposit (Hecla, 2023e).

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block Model Origin	483,424	7,086,073	420
Parent Block Dimension (m)	3	5	5
Number of Blocks	101	215	110
Sub-Block Dimension	0.375	0.625	0.625



· · · · · · · · · · · · · · · · · · ·	2000008 (//)	Northing (1)	Elevation (2)
AZ Rotation		30° clockwise	

The resource estimation methodology consisted of assays being composited to 1 m intervals with all composites <0.5 m being distributed equally among the other composites in the domain. Ag, Pb, Au and Zn were estimated using ID². Outlier composite grades were utilized with distance threshold clamping in the estimates where necessary to limit their influence. Where used, the distance for clamping was 25% of the total search range for pass 1. Specific gravity data (combination of core bulk density and adjusted pulp density values) was estimated by ID² and any unestimated blocks were assigned an average specific gravity of 3.52 for the mineralization zones, and 2.74 in the waste model outside the mineralized zones.

The selection parameters, search radii, and directions of search axes for Christal and Lightning was determined by variogram models, indicator shells, and visual inspection of the mineralized domain and associated data. Minimum and maximum samples, number of samples per drillhole, clamping values and distance thresholds were finalized by conducting many test resource estimates for each domain and reviewing global means and local estimates compared to composite grades.

In the Lightning and Christal Zones, the Ag, Au, Pb, Zn, and Cu metal grade estimation involved two passes. Pass two accounted for twice the search distance compared to the first pass. A percentage of the search pass distance was selected to restrict the search radius of the high-grade assays (Table 11-35 and Table 11-36).

		Search	Elli	psoid Direc	tions	E	llipsoid Range	es	N	o. of Samp	les		Outlier Restrictio	ns
Domain	Metal	Pass	Dip	Dip Azi	Pitch	Major	Semi- Maj	Minor	Min	Max	Max per DH	Method	Distance %	Threshold
	4.4	1	64	112	49	120	60	20	3	3	3	Clamp	25	2,000
	Ag	2	64	112	49	240	120	20	1	3	3	Clamp	12.5	2,000
	Dh	1	64	112	49	120	60	20	3	3	3	-	-	-
vO	PD	2	64	112	49	240	120	20	1	3	3	-	-	-
vo	7n	1	64	112	49	120	60	10	3	3	3	-	-	-
	211	2	64	112	49	240	120	20	1	3	3	-	-	-
	A	1	64	112	49	120	60	20	3	3	3	-	-	-
	Au	2	64	112	49	240	120	20	1	3	3	-	-	-
		1	64	112	49	120	60	10	3	3	3	Clamp	25	2,000
1	Ag	2	64	112	49	240	120	20	1	3	3	Clamp	12.5	2,000
VI	Dh	1	64	112	49	120	60	10	3	3	3	-	-	-
	۳D	2	64	112	49	240	120	20	1	3	3	-	-	-

Table STYLEREF 1 \s 11- - Search Ellipse Parameters for the Lightning Zone in the Flame and Moth Deposit (Hecla, 2023e).

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		Search	Elli	ipsoid Direc	tions	E	llipsoid Range	es	N	lo. of Samp	les		Outlier Restrictio	ns
Domain	Metal	Pass	Dip	Dip Azi	Pitch	Major	Semi- Maj	Minor	Min	Max	Max per DH	Method	Distance %	Threshold
	70	1	64	112	49	120	60	10	3	3	3	-	-	-
	211	2	64	112	49	240	120	20	1	3	3	-	-	-
	A.,	1	64	112	49	120	60	10	3	3	3	-	-	-
	Au	2	64	112	49	240	120	20	1	3	3	-	-	-
	٨σ	1	64	112	49	120	60	10	3	3	3	-	-	-
	Ag	2	64	112	49	240	120	20	1	3	3	-	-	-
	Dh	1	64	112	49	120	60	10	3	3	3	-	-	-
	PD	2	64	112	49	240	120	20	1	3	3	-	-	-
٧Z	7n	1	64	112	49	120	60	30	3	3	3	-	-	-
	Zn	2	64	112	49	240	120	30	1	3	3	-	-	-
	A	1	64	112	49	120	60	20	3	3	3	-	-	-
	Au	2	64	112	49	240	120	20	1	3	3	-	-	-
	٨α	1	61	118	25	90	70	10	3	6	6	-	-	-
	Ag	2	61	118	25	180	140	20	1	6	6	-	-	-
	Dh	1	61	118	25	90	70	10	3	6	6	-	-	-
	PD	2	61	118	25	135	105	15	1	6	6	-	-	-
sm –	7.5	1	61	118	25	90	70	20	3	6	6	-	-	-
	۷	2	61	118	25	180	140	20	1	6	6	-	-	-
	A	1	61	118	25	90	70	10	3	3	3	-	-	-
	AU	2	61	118	25	180	140	20	1	3	3	-	-	-

Table STYLEREF 1 \s 11- - Search Parameters for the Christal Zone in the Flame and Moth Deposit (Hecla, 2023e).

		Search	Elli	ipsoid Direc	ctions	E	llipsoid Rang	es	N	Io. of Samp	les	Outlier Restrictions		
Domain	Metal	Pass	Dip	Dip Azi	Pitch	Major	Semi- Maj	Minor	Min	Max	Max per DH	Method	Distance %	Threshold
	٨٩	1	67	114	141	64	31	10	3	3	3	Clamp	25	2,750
	Ag	2	67	114	141	146	70	20	1	3	3	Clamp	13	2,750
	Dh	1	67	114	141	64	31	10	3	2	2	-	-	-
	PD	2	67	114	141	146	70	20	1	2	2	-	-	-
Vm	75	1	67	114	141	64	31	20	3	3	3	-	-	-
	211	2	67	114	141	130	62	20	1	3	3	-	-	-
	A.,	1	67	115	10	62	45	20	3	3	3	-	-	-
	Au	2	67	115	10	124	90	20	1	3	3	-	-	-
sm	Ag	1	67	114	141	64	31	5	3	3	3	-	-	-

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Domain		Search	Elli	ipsoid Direc	tions	E	llipsoid Rang	es	N	lo. of Samp	les		Outlier Restrictio	ons
Domain	Metal	Pass	Dip	Dip Azi	Pitch	Major	Semi- Maj	Minor	Min	Max	Max per DH	Method	Distance %	Threshold
		2	67	114	141	130	62	10	1	3	3	-	-	-
	Pb	1	67	114	141	64	31	20	1	3	3	-	-	-
		2	67	114	141	130	62	20	3	3	3	-	-	-
	Zn	1	67	114	141	64	31	20	3	3	3	-	-	-
		2	67	114	141	130	62	20	1	3	3	-	-	-
	Au	1	67	115	10	130	62	10	3	3	3	-	-	-
		2	67	115	10	64	31	5	1	3	3	-	-	-

Mining Plus noted that Hecla applied similar ranges and min/max sample numbers to many of the vein estimates while the Christal and Lightning Zones have discrete rotations and ranges. The 2015 estimate and investigation by Mining Plus indicated that the range was shorter than used for the current 2023 estimate. The implementation of a large search range means that estimates quickly reach the maximum number of samples. It was noted that the search pass was not recorded in the model fields and the ratio of estimates from pass 1 and pass 2 could not be confirmed.

Mining Plus recommends the use of 3 search passes during estimation where each pass is typically set at the range of half, one and twice the variogram range accompanied by a decreasing number of samples for each subsequent search pass. This process control supports the use of increased data in the well-drilled sections of the mineralization while stepping out to less informed areas.

11.2.7.4 Block Model and Grade Estimation for the Onek Deposit

A rotated block model was constructed to cover the entire extent of the mineralized veins as defined by Alexco. The block model includes separate sub-models for silver, lead, zinc, and gold grade estimates, as well as estimated specific gravity, classification criteria, validation estimates and a calculated block dollar value. A block percentage model was used to accurately determine volume and tonnage values based on the supplied Alexco vein wireframes and the percentage contained within the underground workings removed from the vein percentage to account for the mined-out volume. The geometrical parameters of the block model are summarized in Table 11-37.

Table	STYLEREF	1 \s 11	- Onek Blo	ock model	Location	and Setup	(Alexco.	2021b).
							1	

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block model origin (NAD 83 Zone 8N)	485,350	7,087,200	1,120
Block dimensions (meters)	3	5	5
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Description	Easting (X)	Northing (Y)	Elevation (Z)
Number of blocks	80	150	80
Rotation (degrees)		50° (clockwise)	

Ordinary Kriging of capped composite values was used for the estimation of block grades. Because of the strong correlation between density and contained metal, all grades were weighted against density and a grade times density model was prepared for silver, lead, zinc, and gold. Interpolation was carried out in two passes with expanding search ellipsoids with the primary and secondary axes of the search ellipsoid defined by the correlogram ranges. For Vein 1 and Vein 1F a third pass was used for sample selection and estimation of silver. Correlogram and search parameters derived for Vein 1 were applied to Vein 1 FW with varying minimum and maximum number of samples required for estimation.

Composite data used for estimation was restricted to samples located in the respective veins. Individual block grades were used to calculate a dollar equivalent value for each block. Estimation criteria for Vein 1, Vein 1F, and Vein 2 are summarized in Table 11-39, and Table 11-40, respectively.

	- ·· ·				Rotation	ı	Search Ellipse Size			Number of	Composites	Max. Samples
Commodity	Estimator	Search Pass	Search Type	х	Y	z	X (m)	Y (m)	Z (m)	Min.	Max.	per hole
	ОК	1	Ellipse	5°	65°	90°	60	30	11	5	10	3
Ag	ОК	2	Ellipse	5°	65°	90°	90	45	33	5	10	3
	ОК	3	Ellipse	5°	65°	90°	30	30	33	1	10	-
	ОК	1	Ellipse	5°	65°	0°	60	40	8	4	10	3
PD	ОК	2	Ellipse	5°	65°	0°	90	60	32	4	10	3
_	ОК	1	Ellipse	5°	65°	0°	60	40	8	4	10	3
Zn	ОК	2	Ellipse	5°	65°	0°	90	60	32	4	10	3
Au	ОК	1	Ellipse	5°	65°	0°	70	50	10	5	10	3
	ОК	2	Ellipse	5°	65°	0°	105	75	30	5	10	3

Table STYLEREF 1 \s 11- - Search Ellipse Parameters for Onek Vein 1 (Alexco, 2021b).

Table STYLEREF 1 \s 11- - Search Ellipse Parameters for Onek Vein 1F (Alexco, 2021b).

Common dista	F-thread an	Search Pass	Search Type	Rotation			Sea	arch Ellipse S	Size	Number of	Max. Samples	
Commodity	Estimator	Search Pass	Search Type	х	Y	z	X (m)	Y (m)	Z (m)	Min.	Max.	per hole
	ОК	1	Ellipse	5°	65°	90°	60	30	11	3	10	2
Ag	ОК	2	Ellipse	5°	65°	90°	90	45	33	3	10	2
	ОК	3	Ellipse	5°	65°	90°	30	30	33	1	10	-
Pb	ОК	1	Ellipse	5°	65°	0°	60	40	8	3	10	2

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		Search Pass	~ I =		Rotatio	ı	Se	arch Ellipse	Size	Number of	Composites	Max. Samples
Commodity	Estimator	Search Pass	Search Type	х	Y	Z	X (m)	Y (m)	Z (m)	Min.	Max.	per hole
	ОК	2	Ellipse	5°	65°	0°	90	60	32	3	10	2
_	ОК	1	Ellipse	5°	65°	0°	60	40	8	3	10	2
Zn	ОК	2	Ellipse	5°	65°	0°	90	60	32	3	10	2
	ОК	1	Ellipse	5°	65°	0°	70	50	10	3	10	2
Au	ОК	2	Ellipse	5°	65°	0°	105	75	30	3	10	2

Table STYLEREF 1 \s 11- - Search Ellipse Parameters for Onek Vein 2 (Alexco, 2021b).

Common distan	F-timeter.	Council Door	Counch Truco		Rotation		Se	arch Ellipse S	Size	Number of	Composites	Max. Samples
Commodity	Estimator	Search Pass	Search Type	x	Y	z	X (m)	Y (m)	Z (m)	Min.	Max.	per hole
	ОК	1	Ellipse	5°	65°	0°	25	25	10	4	10	3
Ag	ОК	2	Ellipse	5°	65°	0°	75	75	30	4	10	3
2	ОК	1	Ellipse	5°	65°	0°	25	25	10	4	10	2
PD	ОК	2	Ellipse	5°	65°	0°	75	75	30	4	10	2
7-	ОК	1	Ellipse	5°	65°	0°	80	80	7	4	10	2
Zn	ОК	2	Ellipse	5°	65°	0°	120	120	21	4	10	2
	ОК	1	Ellipse	5°	65°	0°	30	30	10	4	10	2
Au	ОК	2	Ellipse	5°	65°	0°	75	75	30	4	10	2

11.2.7.5 Block Model and Grade Estimation for the Bermingham Deposit

The block model covers the entire extent of the mineralized domains and includes estimations for Ag, Au, Pb, Zn and SG. Based on the variability of the data, a parent block size of 2.5 m x 5 m x 5 m was tested to increase the resolution within the block model, provide more accurate local estimates, and to support the variety of mining methods that could be employed at Bermingham (Table 11-41).

Table STYLEREF 1 \s 11- - Bermingham Block Model Location and Setup (Hecla, 2023f).

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block model origin (NAD 83 Zone 8N)	479,402	7,087,573	1,442
Block dimensions (metres)	2.5	5	5
Number of blocks	487	130	155
Sub-block Dimensions	0.3125	0.3125	0.3125
Rotation (degrees)		135°	

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Resource estimation methodology consisted of:

- Raw samples were capped before compositing where necessary.
- Assays composited to 1m intervals.
- All composites shorter than 0.5m were added to the previous interval within each wireframe.
- Ag, Au, Pb, Zn, and SG were estimated using ID².
- Clamping occurred on some veins in the North East Zone (Table 11-46).

The selection parameters, search radii, and directions of search axes were determined by variogram analysis and visual inspection of each domain and their associated data. Minimum and maximum samples, maximum samples per drillhole and clamping values were finalized by conducting many test resource estimates and reviewing global means and visually inspecting local estimates compared to composite grades. Estimation parameters are summarized in Table 11-42 to Table 11-45.

_				Sea	rch Ellipse S	Size		Rotation		Number of	Composites	
Zone	Domain	Search Pass	Metal	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min.	Max.	Max. Samples per Hole
		1	A -	120	90	10	55	138	54	3	16	3
		2	Ag	160	120	20	55	138	54	1	16	3
		1	A	90	66	10	55	130	113	3	16	3
		2	Au	120	88	20	55	130	113	1	16	3
	BM_sm_1	1	Dh	97	69	10	55	130	54	3	16	3
		2	PD	125	88	20	55	130	54	1	16	3
		1	_	120	97	10	55	130	56	3	16	3
		2	Zn	160	125	20	55	130	56	1	16	3
		1		120	90	10	55.2	138	54	3	16	3
		2	Ag	160	120	20	55.2	138	54	1	16	3
		1	Au	90	66	10	55	130	112	3	16	3
Arctic	204.145	2		120	88	20	55	130	112	1	16	3
	RIM_AF	1		97	69	10	55	130	54	3	16	3
		2	PD	125	88	20	55	130	54	1	16	3
		1	_	120	97	10	55	130	56	3	16	3
		2	Zn	160	125	20	55	130	56	1	16	3
		1		75	45	10	69.4	129	68	3	16	3
		2	Ag	100	60	20	69.4	129	68	1	16	3
	55 4	1		96	75	10	70	129	23	3	16	3
	BK_SM_1	2	Au	128	100	20	70	129	23	1	16	3
		1	2	150	105	10	70.3	129	105	3	16	3
		2	РЪ	200	140	20	70.3	129	105	1	16	3

Table STYLEREF 1 \s 11- - Search Ellipse Parameters for the Bermingham Arctic Zone (Hecla, 2023f).

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Zone Domain			Sea	arch Ellipse S	iize		Rotation		Number of	Composites		
Zone	Domain	Search Pass	wietai	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min.	Max.	wax. Samples per Hole
		1	75	95	90	10	70.3	129	112	3	16	3
		2	20	130	120	20	70.3	129	112	1	16	3
		1	٨σ	75	45	10	69.4	129	68	3	16	3
		2	Ag	100	60	20	69.4	129	68	1	16	3
		1	A	96	75	10	70.3	129	23	3	16	3
		2	Au	128	100	20	70.3	129	23	1	16	3
	BR_VF	1	Dh	150	105	10	70.3	129	105	3	16	3
		2	PD	200	140	20	70.3	129	105	1	16	3
		1	7	95	90	10	70.3	129	112	3	16	3
		2	Zn	130	120	20	70.3	129	112	1	16	3
		1	A -	60	60	10	77.5	132	66	3	16	3
		2	Ag	80	80	20	77.5	132	66	1	16	3
		1	A	75	60	10	77	139	58	3	16	3
	5) M/	2	Au	100	80	20	77	139	58	1	16	3
	FW_SM_1	1	Dh	90	77.5	10	0	0	90	3	16	3
		2	PD	120	100	20	0	0	90	1	16	3
		1	-	96	72	10	77	132	111	3	16	3
		2	۷n	128	96	20	77	132	111	1	16	3
		1		60	60	10	77.5	132	66	3	16	3
		2	Ag	80	80	20	77.5	132	66	1	16	3
		1		75	60	10	77	140	58	3	16	3
		2	Au	100	80	20	77	140	58	1	16	3
	FVV_VF	1	DI-	90	77.5	10	77	132	52	3	16	3
		2	מץ	120	100	20	77	132	52	1	16	3
		1	7	96	72	10	77	132	111	3	16	3
		2	۷n	128	96	20	77	132	111	1	16	3

Table STYLEREF 1 \s 11- - Search Ellipse Parameters for the Bermingham Bear Zone (Hecla, 2023f).

7	Demain	Council Door	N antal	Sea	rch Ellipse Si	ize		Rotation		Number of	Composites	Man Complex yes Hele
Zone	Domain	Search Pass	ivietai	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min.	Max.	iviax. Samples per Hole
		1	٨σ	45.75	22.5	5	55.5	118	134	3	16	3
		2	Ag	61	30	7.5	55.5	118	134	1	16	3
		1	A	52.5	39	5	55.5	118	74	3	16	3
Bear	BM_sm_1	2	Au	70	52	7.5	55.5	118	75	3	16	3
		1	Dh	70	52	7.5	55.5	118	76	1	16	3
		2	PD	52.5	39	5	55.5	118	77	3	16	3
		1	Zn	52.5	39	5	55.5	118	78	3	16	3

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_	pne Domain S			Sea	irch Ellipse Si	ze		Rotation		Number of	Composites	
Zone	Domain	Search Pass	Metal	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min.	Max.	Max. Samples per Hole
		2		70	52	7.5	55.5	118	79	3	16	3
		1		90	45	10	55.5	118	135	3	16	3
		2	Ag	122	60	20	55.5	119	135	1	16	3
		1		70	52	10	55.5	118	74	3	16	3
		2	Au	105	78	20	55.5	118	74	1	16	3
	BW_AF	1	ā	120	60	10	55.5	118	112	3	16	3
		2	PD	160	82	20	55.5	118	112	1	16	3
		1	,	76	71	10	55.5	118	68	3	16	3
		2	Zn	106	92	20	55.5	118	68	1	16	3
		1		54	32	10	78.7	111	170	3	16	3
		2	Ag	81	48	30	78.7	111	170	1	16	3
		1		54	32	10	78.7	111	170	3	16	3
		2	Au	81	48	30	78.7	111	170	1	16	3
	BR_HW_SM	1		54	32	10	78.7	111	170	3	16	3
		2	Pb	81	48	30	78.7	111	170	1	16	3
		1		54	32	10	78.7	111	170	3	16	3
		2	Zn	81	48	30	78.7	111	170	1	16	3
		1		20	18	10	61.7	124	122	3	15	2
		2	Ag	50	36	15	61.7	124	122	3	10	2
		3	-	75	54	15	61.7	124	122	1	6	2
		1		25	18	10	61.7	124	122	3	15	2
		2	Au	50	36	15	61.7	124	122	3	10	2
		3		75	54	15	61.7	124	122	1	6	2
	BR_S_VF	1		25	18	10	61.7	124	122	3	16	2
		2	Pb	50	36	15	61.7	124	122	1	16	2
		3		75	54	15	61.7	124	122	1	6	2
		1		25	18	10	61.7	124	122	3	15	2
		2	Zn	50	36	15	61.7	124	122	3	10	2
		3		75	54	15	61.7	124	122	1	6	2
		1		51.38	44.25	5	62.6	126	92	3	16	3
		2	Ag	58.2	59	7.5	62.6	126	92	1	16	3
		1		52.5	39.9	5	62.6	126	92	3	16	3
		2	Au	69.6	53.2	7.5	62.6	126	92	3	16	3
	BR_sm_1	1		69.6	53.2	7.5	62.6	126	92	1	16	3
		2	Pb	52.2	39.9	5	62.6	126	92	3	16	3
		- 1		52.2	39.9	5	62.6	126	92	3	16	3
		2	Zn	69.6	53.2	7.5	62.6	126	92	1	16	3
	BR_VF	1	Ag	105	90	10	-			3	16	3

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_	Zone Domain			Sea	rch Ellipse Si	ze		Rotation		Number of	Composites	
Zone	Domain	Search Pass	Metal	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min.	Max.	Max. Samples per Hole
		2		140	120	20				1	16	3
		1	A	105	78	10	62.6	126	92	3	16	3
		2	Au	140	106	20	62.6	126	92	1	16	3
		1	5	80	66	10				3	16	3
		2	PD	160	132	20				1	16	3
		1	7	105	102	10				3	16	2
		2	Zn	140	136	20				1	16	2
		1		58	56	10	72.6	140	154	3	16	3
		2	Ag	87	82	20	72.6	140	154	1	16	3
	514 4	1		72	45	10	73	140	67	3	16	3
	FW_SM_1	2	Au	96	60	20	73	140	67	2	16	3
		1	Pb	72	64	10	73	140	126	3	16	3
		1	Zn	92	67.5	10	73	140	18	3	16	2
		1		87	84	10	62	140	154	3	16	3
		2	Ag	116	112	20	62	140	154	1	16	1
		1		72	45	10	62	140	67	3	16	3
	FW_VF	2	Au	96	60	20	62	140	67	1	16	3
		1	5	72	64	10	62	140	126	3	16	3
		2	РЬ	72	64	10	62	140	126	1	16	3
		1	-	91	72	10	62	140	18	3	16	3
		2	Zn	122	90	20	62	140	18	1	16	3
		1		25	18	10	55.3	270	165	3	16	3
		2	Ag	50	36	15	55.3	271	165	1	16	3
		3		75	54	15	55.3	272	165	1	6	2
		1		25	18	10	55.3	273	165	3	15	2
		2	Au	50	36	15	55.3	274	165	3	10	2
	11/2	3		75	54	15	55.3	274	165	1	6	2
	WD_sm	1		25	18	10	55.3	274	165	3	15	2
		2	Pb	50	36	15	55.3	274	165	3	10	2
		3		75	54	15	55.3	274	165	1	6	2
		1		25	18	10	55.3	274	165	3	15	2
		2	Zn	50	36	15	55.3	274	165	3	10	2
		3		75	54	15	55.3	274	165	1	6	2
		1		25	18	10	55.3	274	165	3	15	2
		2	Ag	50	36	15	55.3	274	165	3	10	2
	WD_VF	3		75	54	15	55.3	274	165	1	6	2
		1		25	18	10	55.3	274	165	3	15	2
		2	Au	50	36	15	55.3	274	165	3	10	2

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-				Sea	rch Ellipse Si	ze		Rotation		Number of	Composites	Mary Complex yes Usis
Zone	Domain	Search Pass	Metal	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min.	Max.	Max. Samples per Hole
		3		75	54	15	55.3	274	165	1	6	2
		1		25	18	10	55.3	274	165	3	15	2
		2	Pb	50	36	15	55.3	274	165	3	10	2
		3		75	54	15	55.3	274	165	1	6	2
		1		25	18	10	55.3	274	165	3	15	2
		2	Zn	50	36	15	55.3	274	165	3	10	2
		3		75	54	15	55.3	274	165	1	6	2
		1		25	18	10	37.7	306	3	3	15	2
		2	Ag	50	36	15	37.7	306	3	3	10	2
	Zone Domain	3		75	54	15	37.7	306	3	1	6	2
		1		25	15	10	37.7	306	3	3	15	2
		2	Au	50	36	15	37.7	306	3	3	10	2
	W/D2 cm	3		75	54	15	37.7	306	3	1	6	2
	WD2_5III	1		25	18	10	37.7	306	3	3	15	2
		2	Pb	50	36	15	37.7	306	3	3	10	2
		3		75	54	15	37.7	306	3	1	6	2
		1		25	18	10	37.7	306	3	3	15	2
		2	Zn	50	36	15	37.7	306	3	3	10	2
		3		75	54	15	37.7	306	3	1	6	2
		1		25	18	10	37.7	306	3	3	15	2
		2	Ag	50	36	15	37.7	306	3	3	10	2
		3		75	54	15	37.7	306	3	1	6	2
		1		25	18	10	37.7	306	3	3	15	2
		2	Au	50	36	115	37.7	306	3	3	10	2
		3		75	54	15	37.7	306	3	1	6	2
	WD2_VF	1		25	18	10	37.7	306	3	3	15	2
		2	Pb	50	36	15	37.7	306	3	3	10	2
		3		75	54	15	37.7	306	3	1	6	2
		1		25	18	10	37.7	306	3	3	15	2
		2	Zn	50	36	15	37.7	306	3	3	10	2
		3		75	54	15	37.7	306	3	1	6	2
		1		25	18	10	55.3	270	165	3	15	2
		2	Ag	50	36	15	55.3	270	165	3	10	2
		3		75	54	15	55.3	270	165	1	6	2
	WDs_VF	1		25	18	10	55.3	270	165	3	15	2
		2	Au	50	36	15	55.3	270	165	3	10	2
		3		75	54	15	55.3	270	165	1	6	2
		1	Pb	25	18	10	55.3	270	165	3	15	2

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Zone	- ·			Sea	arch Ellipse S	ize		Rotation		Number of	Composites	May Complex ner Hole
Zone	Domain	Search Pass	Ivietal	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min.	Max.	Max. samples per Hole
		2		50	36	15	55.3	270	165	3	10	2
		3		75	54	15	55.3	270	165	1	6	2
		1		25	18	10	55.3	270	165	3	15	2
		2	Zn	50	36	15	55.3	270	165	3	10	2
		3		75	54	15	55.3	270	165	1	6	2

Zone	Domain	Search Bacc	Motal	Sea	rch Ellipse S	ize		Rotation		Number of	Composites	May Complet nor Hole
2011e	Domain	Search Pass	Ivietai	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min	Max	wax samples per nole
		1	٨٩	110	60	10	45.6	125	44	3	16	3
		2	Ag	150	80	20	45.6	125	44	1	16	3
		1	Au	120	60	10	45.6	125	17	3	16	3
	PM cm 1	2	Au	160	80	20	45.6	125	17	1	16	3
	BIVI_SIII_1	1	Ph	105	66	10	46.4	125	18	3	16	3
		2	FU	140	88	20	46.4	125	18	1	16	3
		1	75	105	90	10	0	0	90	3	16	3
		2	20	140	120	20	0	0	90	1	16	3
		1	٨٩	110	60	10	45.6	125	44	3	16	3
		2	Ag	150	80	20	45.6	125	44	1	16	3
		1	<u></u>	120	60	10	45.6	125	17	3	16	3
		2	Au	160	80	20	45.6	125	17	1	16	3
North East	BIVI_VF	1	Dh	105	66	10	46.4	125	18	3	16	3
		2	FU	140	88	20	46.4	125	18	1	16	3
		1	75	105	90	10	46.4	125	90	3	16	3
		2	20	140	120	20	46.4	125	90	1	16	3
		1	٨٩	110	60	10	44.5	135	90	3	16	3
		2	Ag	150	80	20	44.5	135	90	1	10	2
		1	A 11	120	60	10	44.5	135	90	3	16	3
		2	Au	160	80	20	44.5	135	90	1	10	2
	BM2_VF	1		105	67	10	44.5	135	90	3	16	3
		2	Pb	130	90	20	44.5	135	90	1	10	2
		3		75	54	10	44.5	135	90	3	6	2
		1	75	105	90	10	44.5	135	90	1	16	3
		2	211	140	120	20	44.5	135	90	3	10	2

Table STYLEREF 1 \s 11- - Search Ellipse Parameters for the Bermingham North East Zone (Hecla, 2023f).

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Zone	Demain	Consult Door	B.dtl	Sear	ch Ellipse S	ize		Rotation		Number of	Composites	Mary Consultant and Units
Zone	Domain	Search Pass	wietai	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min	Max	wax Samples per Hole
		1	٨	69	42	10	74.9	117	139	3	16	3
		2	Ag	103.5	63	15	74.9	117	139	1	17	3
		1	A 11	69	42	10	74.9	117	139	3	18	3
		2	Au	103.5	63	15	74.9	117	139	1	19	3
	BK_VF	1	Dh	69	42	10	74.9	117	139	3	20	3
		2	PD	103.5	63	15	74.9	117	139	1	21	3
		1	7.5	69	42	10	74.9	117	139	3	22	3
		2	Zn	103.5	63	15	74.9	117	139	1	23	3
		1	4.4	75	45	10	75	131	104	3	24	3
		2	Ag	100	60	20	75	131	104	1	25	3
	EW/ cm 1	1	A	78	75	10	77	128	14	3	26	3
		2	Au	110	100	20	77	128	14	1	27	3
	FVV_SM_1	1	Dh	120	75	10	77	128	18	3	28	3
		2	PD	160	100	20	77	128	18	3	29	3
		1	7.5	105	45	10	0	0	90	3	30	3
		2	20	105	60	20	0	0	90	1	31	3
		1	4.4	75	45	10	74.6	131	104	3	32	3
		2	Ag	100	60	20	74.6	131	104	1	33	3
		1	A 11	78	75	10	77	128	14	3	34	3
		2	Au	110	100	20	77	128	14	1	35	3
	FVV_VF	1	Dh	120	75	10	77	128	18	3	36	3
		2	PD	160	100	20	77	128	18	1	37	3
		1	75	105	45	10	77	128	19	3	38	3
		2	211	140	60	20	77	128	19	1	39	3

Table STYLEREF 1 \s 11- - Search Ellipse Parameters for the Bermingham Etta Zone (Hecla, 2023f).

_				Sea	arch Ellipse S	Size		Rotation		Number	of Composites	
Zone	Domain	Search Pass	Metal	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min.	Max.	Max. Samples per Hole
		1	٨٩	100	50	10	63.6	122	126	3	16	3
		2	Ag	150	75	15	63.6	122	126	1	16	3
		1	A	104	52	10	63.6	122	126	3	16	3
Etta	BM_sm_1	2	Au	150	75	15	63.6	122	126	1	16	3
		1		104	52	10	63.6	122	126	3	16	3
		2	PD	150	75	15	63.6	122	126	1	16	3
		1	Zn	100	50	10	63.6	122	126	3	16	3

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Zone Domain	Court Door	Deres 1	Sea	arch Ellipse	Size		Rotation		Number	of Composites		
Zone	Domain	Search Pass	Ivietai	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Min.	Max.	wax. Samples per Hole
		2		150	75	15	63.6	122	126	1	16	3
		1	٨σ	104	52	10	63.6	122	126	3	16	3
		2	Ag	150	75	15	63.6	122	126	1	8	3
		1	A.,	104	52	10	63.6	122	126	3	16	3
		2	Au	150	75	15	63.6	122	126	1	16	3
	BIVI_VF	1	Dh	104	52	10	63.6	122	126	3	16	3
		2	PD	150	75	15	63.6	122	126	1	16	3
		1	70	104	52	10	63.6	122	126	3	16	3
		2	211	150	75	15	63.6	122	126	1	8	3
		1		110	61	10	74.8	133	124	3	16	3
		2	Ag	165	94.5	15	74.8	133	124	1	17	3
		1	A	110	61	10	74.8	133	124	3	18	3
	EW/ cm 1	2	Au	165	91.5	15	74.8	133	124	1	19	3
	FVV_SIII_1	1	Ph	110	61	10	74.8	133	124	3	20	3
		2	PD	165	91.5	15	74.8	133	124	1	21	3
		1	70	110	61	10	74.8	133	124	3	22	3
		2	211	165	94.5	15	74.8	133	124	1	23	3
		1	4.7	110	61	10	74.8	133	124	3	24	3
		2	Ag	165	91.5	15	74.8	133	124	1	25	3
		1	A.,	110	61	10	74.8	133	124	3	26	3
		2	Au	165	91.5	15	74.8	133	124	1	27	3
	· ••_•	1	Ph	110	61	10	74.8	133	124	3	28	3
		2	rυ	165	91.5	15	74.8	133	124	1	29	3
		1	70	110	61	10	74.8	133	124	3	30	3
		2	211	165	91.5	15	74.8	133	124	1	31	3

Table STYLEREF 1 \s 11- - Outlier Restriction Method Applied at Bermingham North East Zone (Hecla, 2023f).

_	- ·			Se	arch Ellipse S	ize		Rotation			Outlier Restriction	on
Zone	Domain	Search Pass	Metal	X (m)	Y (m)	Z (m)	Dip	Dip Azi	Pitch	Method	Distance	Threshold
North East		7.5	1	105	90	10	46.4	125	90	Discard	25	71800
	BIVI_VF	211	2	140	120	20	46.4	125	90	Discard	12.5	71800

Mining Plus noted that the 2015 version of the Flame and Moth MRE was interpolated using Ordinary Kriging (OK) while this 2023 estimate for elements Ag, Au, Pb and Zn used Inverse Distance Squared (ID²). The report for the 2015 MRE of Flame and Moth reports rotations and ranges of correlograms that were determined for each zone (rather than individual vein). Sills and ranges determined were around 20%



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nugget, with ranges of 70 and 100 in the X direction for Ag and Pb, along with 5% nugget, with ranges of 40 and 80 for Zn.

11.2.8 BLOCK MODEL VALIDATION

11.2.8.1 Block Model Validation for the Bellekeno Deposit

Multiple model validation techniques run on the Bellekeno resource model included running an ID^2 and NN estimate on the same block size and parameters as the OK estimate. The difference in estimation results between the OK versus ID^2 , and OK versus NN techniques was largely with ±5 to 10%, as shown in Table 11-47 and Table 11-48.

Table STYLEREF 1 \s 11- - Comparison Statistics for Ordinary Kriging Estimate versus Inverse Distance Squared Estimate (Alexco, 2021b).

Vein	Commodity	OK Mean *	ID ² Mean *	% Difference*
	Silver (g/t)	333	323	3%
SW	Lead (%)	3.71	3.5	6%
	Zinc (%)	3.64	4.06	-12%
	Silver (g/t)	662	643	3%
99	Lead (%)	4.16	4.06	2%
	Zinc (%)	2.72	2.63	3%
	Silver (g/t)	190	233	-22%
East	Lead (%)	1.26	1.33	-6%
	Zinc (%)	2.74	3.48	-27%

* Mean values for this comparison were generated using Snowden Supervisor software. Values are compared by number of blocks populated, not volume estimated.

** % Difference is (Ordinary Kriging Mean – Inverse Distance Squared Mean)/ Ordinary Kriging Mean * 100.

Table STYLEREF 1 \s 11- - Comparison Statistics for Ordinary Kriging Estimate versus Nearest Neighbor Estimate (Alexco, 2021b).

Vein	Commodity	OK Mean *	NN Mean *	% Difference**
SW	Silver (g/t)	333	307	8%
	Lead (%)	3.71	3.53	5%
	Zinc (%)	3.64	3.26	10%
99	Silver (g/t)	662	658	0%
	Lead (%)	4.16	4.1	1%
	Zinc (%)	2.72	2.69	1%
East	Silver (g/t)	190	193	-1%
	Lead (%)	1.26	1.44	-14%

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Veili	Commodity	OK Mean *	NN Mean *	% Difference**	
	Zinc (%)	2.74	2.69	2%	

* Mean values for this comparison were generated using Snowden Supervisor software. Values are compared by number of blocks populated, not volume estimated.

** % Difference is (Ordinary Kriging Mean – Nearest Neighbor Mean)/ Ordinary Kriging Mean * 100.

A second de-clustered Nearest Neighbor block model, with a block size of 1.5 m x 1.5 m x 1.5 m, was generated for each vein and commodity using the same search orientation as the Ordinary Kriging model. Visual and numerical comparisons were run for each vein and each of silver, lead, and zinc, and results comparing the mean values are displayed in Table 11-49.

Table STYLEREF 1 \s 11- - Comparison Statistics for Ordinary Kriging Estimate versus De-clustered Nearest Neighbor Estimate (Alexco, 2021b).

Vein	Commodity	OK Mean *	NN Mean *	% Difference**
	Silver (g/t)	350	365	-4%
SW	Lead (%)	3.99	4.18	-5%
	Zinc (%)	4.06	4.11	-1%
	Silver (g/t)	689	717	-4%
99	Lead (%)	4.5	4.8	-7%
	Zinc (%)	3.42	3.55	-4%
	Silver (g/t)	205	206	0%
East	Lead (%)	1.46	1.54	-5%
	Zinc (%)	3.83	3.59	6%

* Means for this comparison were generated using Hexagon Mining's Reserves tool and differ slightly from the mean values generated using Snowden Supervisor software. Mean values displayed here are compared on a volumetric basis between each other, and with the vein solids used to generate each estimate. These values are a better representation of the final grades.

** % Difference is (Ordinary Kriging Mean – De-clustered Nearest Neighbor Mean)/ Ordinary Kriging Mean * 100.

11.2.8.2 Block Model Validation for the Lucky Queen Deposit

The block model was validated visually by the inspection of successive section lines to confirm that the block model correctly reflects the distribution of high-grade and low-grade samples.

Trend analysis for the Lucky Queen Mineral Resource estimate demonstrated a minimal global bias and slight smoothing of the ID² estimates as compared to a NN estimates, and correctly reflected grade trends along the strike of the deposit (Figure 11-33). An additional validation check was completed by comparing the undiluted ID² estimates to undiluted NN estimates generated using the same search criteria and tabulated at a zero cut-off (Table 11-50). The observed difference between two models' average block estimates is a function of the sharp grade drop immediately adjacent to the high-grade core of the vein.





Figure STYLEREF 1 \s 11- - Swath Plots Comparison of ID2 and NN Estimation (SRK, 2011a).

Table	STYLEREF .	1 \s	11- – Luckv	Queen	Nearest	Neiahbor	Block I	Model	Validation	(Alexco.	2021b)
											/

Variable	Inverse Distance Block Average	Nearest Neighbor Block Average
Ag (g/t)	545	452
Au (g/t)	0.14	0.15
Pb (%)	1.22	1.14
Zn (%)	0.82	0.70

11.2.8.3 Block Model Validation for the Flame and Moth Deposit

The Flame and Moth 2023 mineral estimate was validated by the following methods:

- Comparison of estimated ID grades against a NN estimation for each of the metals and domains (Table 11-51).
- A visual inspection of the local block grades and the composites used for the estimates.
- Swath plots for a global validation between ID² and NN estimates.

For model validation, Mining Plus produced swath plots to validate its internal processes. Observations revealed a consistent correlation between block grades and input composite grades, with a tendency for the composite grades to be lower than the block grades. The applied capping has resulted in higher grade zones displaying lower than anticipated grades in the block model, as seen in Figure 11-34, Figure 11-35



and Figure 11-36. It is therefore recommended that reconciliations in these zones be monitored to apply adjustments to the capping process should significant variations be observed.

Mining Plus concluded that there were no obvious issues with model block estimation in the 2023 estimate.

Zone	Dom	Metal	Block Count	Volume	Mean	NM Mean	%Diff.	SD	CV
Lightning	sm	Ag	1,154,814	653,283	88	101	·12%	168	1.90
Lightning	sm	Pb	1,154,814	653,283	3,081	3,206	-4%	5,417	1.76
Lightning	sm	Zn	1,154,814	653,283	10,326	10,609	-3%	13,377	1.30
Lightning	sm	Au	1,154,814	653,283	0.060	0.070	-13%	0.097	1.51
Lightning	v0	Ag	122,066	39,832	329	347	-5%	337	1.02
Lightning	v0	Pb	122,066	39,832	15,664	14,403	9%	15,298	0.98
Lightning	v0	Zn	122,066	39,832	46,963	46,663	1%	45,751	0.97
Lightning	v0	Au	122,066	39,832	0.291	0.308	-6%	0.261	0.90
Lightning	vl	Ag	655,283	263,772	373	373	0%	312	0.83
Lightning	vl	Pb	655,283	263,772	9,361	9,245	1%	11,685	1.25
Lightning	vl	Zn	655,283	263,772	56,577	54,868	3%	41,831	0.74
Lightning	vl	Au	655,283	263,772	0.321	0.330	-3%	0.231	0.72
Lightning	v2	Ag	173,119	39,685	603	640	-6%	391	0.65
Lightning	v2	Pb	173,119	39,685	15,322	18,007	-15%	11,323	0.74
Lightning	v2	Zn	173,119	39,685	55,149	62,636	-12%	31,074	0.56
Lightning	v2	Au	173,119	39,685	0.347	0.354	-2%	0.221	0.64
Christal	SM	Ag	157,217	68,491	58	64	-9%	63	1.08
Christal	SM	Pb	157,217	68,491	1,618	1,914	-15%	1,360	0.84
Christal	SM	Zn	157,217	68,491	12,225	11,247	9%	9,044	0.74
Christal	SM	Au	157,217	68,491	0.059	0.059	0%	0.073	1.24
Christal	VM	Ag	393,408	169,284	547	522	5%	424	0.77
Christal	VM	Pb	393,408	169,284	22,784	22,448	1%	28,533	1.25
Christal	VM	Zn	393,408	169,284	38,552	40,183	-4%	23,517	0.61
Christal	VM	Au	393,408	169,284	0.482	0.487	-1%	0.375	0.78

Table STYLEREF 1 \s 11- - Flame and Moth Deposit Nearest Neighbor Block Model Validation (Hecla, 2023e).

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Figure STYLEREF 1 \s 11- – Swath Plot Global Ag Comparison for Flame and Moth of ID2 (Red) and NN Estimation (Blue) in X Direction.

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Figure STYLEREF 1 \s 11- - Swath Plot Global Ag Comparison for Flame and Moth of ID2 (Red) and NN Estimation (Blue) in Y Direction.

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Figure STYLEREF 1 \s 11- - Swath Plot Global Ag Comparison for Flame and Moth of ID2 (Red) and NN Estimation (Blue) in Z Direction.

11.2.8.4 Block Model Validation for the Onek Deposit

The block model was validated visually by the inspection of successive section lines to confirm that the block model correctly reflects the distribution of high-grade and low-grade samples. An ID^2 estimate was prepared for the blocks using the same search criteria and compared against the OK estimate. Analysis of OK versus ID^2 estimates at various cut-off values for the Onek deposit demonstrates a slight smoothing of the OK estimate compared to the ID^2 estimate for the indicated resource (Figure 11-37). For the inferred resource, the OK estimate for silver shows less smoothing than the ID^2 estimate.





Figure STYLEREF 1 \s 11- - Comparison of OK and ID2 Estimation for Onek (RPA, 2017).

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11.2.8.5 Block Model Validation for the Bermingham Deposit

The 2023 Bermingham mineral resource estimate was validated by the following methods:

- Comparison of ID, KR, and NN estimates for each metal and domain summarized in Table 11-52 to Table 11-54 below.
- Visual inspection of local estimates compared to composites in both plan and cross section for each metal and domain. .
- Swath plots for a global validation between ID² and NN estimates (Figure 11-38 Figure 11-40).

Table STYLEREF 1 \s 11- - Bermingham Nearest Neighbor Block Model Validation for the Arctic Zone (Hecla, 2023f).

Zone	Domain	Metal	Block Count	Volume	Mean	NN Mean	% Difference	SD	cv
		Ag	489,565	104,821	973.1	954.4	2%	358	0.44
	204.1/5	Au	489,565	104,821	0.235	0.25	-6%	0.202	0.95
	BIVI_VF	Pb	489,565	104,821	19,393	27,741	-11%	9601	0.5
		Zn	489,565	104,821	21,613	23,137	-7%	10,880	0.5
		Ag	322,297	71,904	1,099	1,161	-5%	703	0.64
Austis	514/ 1/5	Au	322,297	71,904	0.206	0.218	-5%	0.095	0.46
Arctic	FVV_VF	Pb	322,297	71,904	44,792	40,772	10%	40,354	1.15
		Zn	322,297	71,904	15,810	15,901	-1%	13,928	0.88
		Ag	201,447	40,738	419.2	563.9	10%	284	0.68
		Au	201,447	40,738	0.078	0.081	-4%	0.043	0.67
	BR_VF	Pb	201,447	40,738	10,156	9,857	3%	7,756	0.76
		Zn	201,447	40,738	9,902	10,993	-10%	4,492	0.56

Table STYLEREF 1 \s 11- - Bermingham Nearest Neighbor Block Model Validation for the Bear Zone (Hecla, 2023f).

Zone	Domain	Metal	Block Count	Volume	Mean	NN Mean	% Difference	SD	cv
		Ag	127,061	31,212	1,315	1,281	3%	1,123	0.85
		Au	127,061	31,212	0.246	0.271	-9%	0.145	0.59
	BM_AF	Pb	127,061	31,212	15,447	16,440	-6%	9,835	0.64
		Zn	127,061	31,212	20,063	23,807	-13%	22,110	1.10
		Ag	267,551	47,254	1,450	1,424	2%	1,446	1.00
		Au	267,551	47,254	0.196	0.182	7%	0.169	0.86
Bear	BR_VF	Pb	267,551	47,254	32,585	40,510	-20%	35,745	1.10
		Zn	267,551	47,254	12,103	11,325	7%	10,515	0.87
		Ag	22,916	5,738	265	240	10%	162	0.61
	EW(cm 1	Au	22,916	5,738	0.094	0.093	1%	0.08	0.85
	FW_511_1	Pb	22,916	5,738	6,771	6,586	3%	3,447	0.51
-		Zn	22,916	5,738	8,758	9,817	-11%	4,976	0.57
	FW_VF	Ag	190,214	43,292	1,422	1,521	-6%	1,034	0.73

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Zone	Domain	Metal	Block Count	Volume	Mean	NN Mean	% Difference	SD	cv
		Au	190,214	43,292	0.244	0.244	0%	0.177	0.72
		Pb	190,214	43,292	33,647	36,637	-8%	21,577	0.64
		Zn	190,214	43,292	28,022	26,083	7%	23,802	0.85
		Ag	30,136	6,312	2,388	2,362	1%	1,217	0.51
		Au	30,136	6,312	0.282	0.309	-9%	0.145	0.52
	BR_3_VF	Pb	30,136	6,312	70,669	78,176	-10%	47,894	0.68
		Zn	30,136	6,312	16,410	15,852	4%	14,376	0.88
		Ag	10,266	2,553	649	586	11%	248	0.38
		Au	10,266	2,553	0.117	0.110	6%	0.027	0.23
	VVD2_VF	Pb	10,266	2,553	35,877	32,987	9%	9,839	0.27
		Zn	10,266	2,553	24,727	23,122	7%	6,039	0.34
		Ag	17,140	2,850	1,289	1,191	8%	450	0.45
		Au	17,140	2,850	0.172	0.234	-26%	0.055	0.50
	VVD_VF	Pb	17,140	2,850	16,165	16,393	-1%	6,822	0.42
		Zn	17,140	2,850	17,332	17,419	-1%	10,593	0.61
		Ag	62,146	13,213	174	159	10%	96	0.55
		Au	62,146	13,213	0.051	0.053	-3%	0.016	0.31
	BK_HW_SM	Pb	62,146	13,213	5,368	4,702	14%	2,348	0.44
		Zn	62,146	13,213	7,910	7,325	8%	4,131	0.50

Table STYLEREF 1 \s 1153 – Bermingham Nearest Neighbor Block Model Validation for the North East Zone (Hecla, 2023f).

Zone	Domain	Metal	Block Count	Volume	Mean	NN Mean	% Difference	SD	cv
BM_VF		Ag	363,844	73,196	998	1,096	-9%	908	0.91
		Au	363,844	73,196	0.303	0.314	-3%	0.183	0.74
	BIVI_VF	Pb	363,844	73,196	28,639	30,652	-7%	27,653	0.97
		Zn	363,844	73,196	14,831	14,056	6%	20,553	1.07
		Ag	663,761	178,040	1,387	1,326	5%	945	0.68
	BR_VF	Au	663,761	178,040	0.235	0.222	6%	0.131	0.56
North East		BR_VF	Pb	663,761	178,040	48,066	42,493	13%	44,265
		Zn	663,761	178,040	17,852	17,599	1%	18,098	1.01
		Ag	169,919	30,923	498	552	-10%	488	1.13
	544 4	Au	169,919	30,923	0.12	0.126	-5%	0.058	0.56
	FW_sm_1	Pb	169,919	30,923	15,153	14,964	1%	10,182	0.67
		Zn	169,919	30,923	19,850	17,702	12%	13,350	0.67

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Zone	Domain	Metal	Block Count	Volume	Mean	NN Mean	% Difference	SD	cv
		Ag	27,190	5,797	82	89	-8%	37	0.44
BM V		Au	27,190	5,797	0	0	-4%	0.006	0.31
	BM_VF	Pb	27,190	5,797	3,562	3,449	3%	1,673	0.47
		Zn	27,190	5,797	11,975	12,574	-5%	4,470	0.37
		Ag	152,943	34,321	966	998	-3%	484	0.50
		Au	152,943	34,321	0	0	-9%	0.05	0.44
	BR_VF	Pb	152,943	34,321	42,488	39,464	8%	17,294	0.41
5.1		Zn	152,943	34,321	29,661	29,093	2%	11,183	0.38
Еπа		Ag	39,577	9,303	109	126	-14%	93	0.86
	514/ and 1	Au	39,577	9,303	0	0	5%	0.016	0.28
	FW_SM_1	Pb	39,577	9,303	2,548	2,838	-10%	2,662	1.04
		Zn	39,577	9,303	4,349	4,313	1%	1,105	0.25
		Ag	261,717	67,252	507	505	0%	171	0.34
		Au	261,717	67,252	0	0	4%	0.038	0.49
	Fvv_sm_1	Pb	261,717	67,252	14,789	14,330	3%	10,264	0.65
		Zn	261,717	67,252	22,084	21,160	4%	7,744	0.35

Table STYLEREF 1 \s 11- - Bermingham Nearest Neighbor Block Model Validation for the Etta Zone (Hecla, 2023f).

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Figure STYLEREF 1 \s 11- - Swath Plot Global Ag Comparison for Bermingham of ID2 (Red) and NN Estimation (Blue) in X Direction.

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Figure STYLEREF 1 \s 11- - Swath Plot Global Ag Comparison for Bermingham of ID2 (Red) and NN Estimation (Blue) in Y Direction.

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Figure STYLEREF 1 \s 11- - Swath Plot Global Ag Comparison for Bermingham of ID2 (Red) and NN Estimation (Blue) in Z Direction.

11.3 MINERAL RESOURCE CLASSIFICATION

Industry best practice in Mineral Resource classification suggests that resource classification should consider both the confidence in the geological continuity of the mineralized structures, the quality and quantity of exploration data supporting the estimates, and the geostatistical confidence in the tonnage and grade estimates. Appropriate classification criteria should aim at integrating these concepts to delineate regular areas at similar resource classification.

All block models and all associated data were reviewed by the Mining Plus geology QP. The QP is satisfied that geological modelling honors the current geological information and knowledge. The location of the samples and the assay data are sufficiently reliable to support resource evaluation. Likewise, in the review of resource classification, any uncertainties related to the data, models, or estimation processes have been considered.

During the review process carried out by Mining Plus, it was noted that most blocks classified as Indicated utilize a drill spacing of approximately 25 m x 25 m across all deposits. However, variations in approaches of classification were identified, primarily attributable to different authors. Importantly, no significant discrepancies were observed except for Bellekeno, as is explained in the section below. Mining Plus



recommends maintaining the 25-meter threshold for Indicated classification, emphasizing the importance of consistent classification criteria across deposits whenever feasible.

Generally, when evaluating mineralization with strong geological continuity, investigated at an adequate drill spacing with reliable sampling information, the QP considers that blocks estimated during the first estimation run considering full variogram ranges can be classified in the Indicated category in accordance with the SEC definitions. For those blocks, the QP considers that the level of confidence is sufficient to allow appropriate application of technical and economic parameters to support mine planning and to allow evaluation of the economic viability of the deposit.

Conversely, blocks estimated during the second and third passes considering search neighborhoods set larger than the variogram ranges should be appropriately classified in the Inferred category due to insufficient confidence in the estimate. This allows for meaningful application of technical and economic parameters or to enable an evaluation of economic viability.

The Mineral Resources were estimated in conformity with the SEC S-K 1300 regulations, and all Mineral Resource Estimates presented in this updated technical report have been classified within the meaning of the SEC definitions by independent QP's.

Mineral Resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent resource estimates. Mineral Resources may also be affected by subsequent assessments of mining, environmental, processing, permitting, taxation, socio economic, and other factors.

11.3.1 MINERAL RESOURCE CLASSIFICATION FOR THE BELLEKENO DEPOSIT

Block model quantity estimates, grade estimates, and resource classification for the Bellekeno deposit were prepared by Alexco Resource Corp.

The initial Mineral Resource Classification for this block model in 2022 categorized blocks as Indicated Mineral Resources if at least four drill holes within 50 m, and a kriging variance less than 0.5 was obtained. Blocks were classified as Inferred Mineral Resources if at least two drill holes within 100 m, and a kriging variance less than 0.85 was obtained. Due to the limited data in the East Vein, no Indicated Mineral Resource existed for the East Vein. All other blocks remained unclassified.

Upon review by the Mining Plus geology QP, several inconsistencies between the block model and raw data were detected and have not been sufficiently resolved. Incomplete or unclear data did not allow for exact replication; additionally, certain domains exhibited an apparent overestimation of zinc (domain 991 and 481) and silver (smallest domain 481). Density calculations are derived from the grades of silver, lead and zinc, posing a potential for overestimation in these domains. Reasons behind this overestimation remain unclear and necessitate further investigation. It is important to highlight that the resource contribution at Bellekeno constitutes a small percentage (4%) of silver ounces in comparison to the global



resources, and any potential issues associated with this deposit are not deemed material. This has resulted in the downgrade of all indicated to inferred resources. The existing inferred resource has not changed status and unclassified blocks remain unclassified. Nevertheless, it is advised to undertake a new resource estimate, taking into consideration the noted discrepancies.

All blocks estimated in the first estimation run were classified as Inferred Mineral Resources along with all blocks from subsequent estimation runs for this report.

11.3.2 MINERAL RESOURCE CLASSIFICATION FOR THE LUCKY QUEEN DEPOSIT

Block model quantity estimates, grade estimates, and resource classification for the Lucky Queen deposit were prepared by F. H. Brown, CPG, PrSciNat, under the supervision of Dr. Gilles Arseneau, P.Geo. The Mining Plus geology QP reviewed the block model and all associated data.

The Mining Plus geology QP considers that the quality of the exploration data (confidence in the location and reliability of assaying results) is good and, therefore, is not a factor that would impact resource classification. The confidence in the underlying data sets supports the classification of Indicated and Inferred Mineral Resources. There is insufficient information to confirm both the geological and grade continuity with the current level of sampling to support a Measured Mineral Resource classification.

All blocks estimated in the first estimation run were classified as Indicated Mineral Resources and all blocks estimated using the second estimation run were classified as Inferred Mineral Resources.

11.3.3 MINERAL RESOURCE CLASSIFICATION FOR THE FLAME AND MOTH DEPOSIT

Block model quantity estimates, grade estimates, and resource classifications for the Flame and Moth deposit were prepared by Ben Chambers, Resource Geologist, Hecla. The block model and all associated data was reviewed by the Mining Plus geology QP.

Block classification hinged on proximity to drillholes and available sample data. The majority of Indicated category blocks drew data from two drill holes, ensuring an approximate drill spacing of 25 m x 25 m. and a minimum of 6 samples for estimation. After this initial review, hand drawn outlines were created to clean up any artifacts and remove instances of "spots" within the model. These outlines were extruded through the mineralized domains and used to classify the material.

Mining Plus remains in agreement with the applied classification and further recommends that the 25 m threshold for Indicated is maintained.



The removal of the closer spaced samples in the already mined area remains a concern. The samples obtained from these mining areas, in conjunction with completed geology mapping may permit sufficient control to classify some of the resource estimate as Measured.

11.3.4 MINERAL RESOURCE CLASSIFICATION FOR THE ONEK DEPOSIT

Block model quantity estimates, grade estimates, and resource classification for the Onek project were prepared by Dr. Gilles Arseneau, P.Geo, who is an independent QP. The block model and all associated data was reviewed by the Mining Plus geology QP.

The Mining Plus geology QP considers that the quality of the exploration data (confidence in the location and reliability of assaying results) is good and therefore is not a factor that would impact resource classification. The classification of Indicated and Inferred Mineral Resources was applied to the Onek deposit based on a full review that included the examination of drill spacing, visual comparison and distance to nearest drillhole. There is insufficient information to confirm both the geological and grade continuity with the current level of sampling to support a Measured Mineral Resource classification.

Blocks were classified as Indicated Mineral Resources if at least two drill holes and five composites were found within a 60 m by 30 m search ellipse. All other interpolated blocks were classified as Inferred Mineral Resource. Similar to previous deposits, block classification relied on the proximity to drillhole data and available sample information. The majority of Indicated classified blocks use approximately 25 x 25 m spacing drilling.

11.3.5 MINERAL RESOURCE CLASSIFICATION FOR THE BERMINGHAM DEPOSIT

Block model quantity estimates, grade estimates, and resource classification for the Bermingham deposit were prepared by Ben Chambers, Resource Geologist, Hecla. The block model and all associated data was reviewed by Mining Plus geology QP.

The Mining Plus geology QP assesses that the exploration data's quality, reflecting both confidence in the spatial accuracy and reliability of assaying results, is deemed satisfactory and, consequently, does not constitute a determinant affecting the resource classification. The classification methodology applied to the Bermingham deposit relied on computing the average distance to drillholes utilized in the estimate. Final delineations were formulated by considering the density of drilling information and the level of confidence in the geologic interpretation.

Material exhibiting the highest confidence level is categorized as Indicated, with the initial selection determined during the first pass. Subsequent adjustments to boundaries are made based on proximity to drilling sites and the associated geological confidence.



11.4 DEPLETION

All five block models for the deposits within the Keno Hill Project were depleted using underground void wireframes. Depletion at the Bellekeno deposit was completed and inclusive to the end of 2021 with no additional mining having taken place since. Challenges encountered during the depletion process included topographical triangulation issues and uncertainties in recent MRE updates, both of which complicated the depletion process. The depletion was facilitated with the aid of a bubble wireframe, incorporating a 5.0 m buffer around the underground voids.

The Lucky Queen and Onek Mines experienced complete depletion of mineral production by the conclusion of 2017. Post-2017 mining endeavors in these mines were primarily focused on rehabilitation efforts. Flame and Moth and Bermingham, both undergoing active mining, were depleted as of the conclusion of September 2023 and end of December 2023, respectively. Updated underground drift and stope voids were used for this process.

Figure 11-41 shows the underground workings along with the wireframe used during the depletion process at Bellekeno.

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Figure STYLEREF 1 \s 11- - Bellekeno Mine Long Section, Underground Working Wireframes, Looking North-Northwest.

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11.5 BASIS FOR ESTABLISHING THE PROSPECTS OF ECONOMIC EXTRACTION FOR MINERAL RESOURCES

An optimization was carried out at SMU using Surpac software to determine the extent of the mineral resource with "reasonable prospects for eventual economic extraction" in all five of the deposits using the cut and fill method to satisfy the requirement in accordance with industry standards.

Mining Plus performed a resource optimization in accordance with the economic parameters and stope dimensions detailed in Table 11-55 using an NSR cut-off of CAD \$185/tonne. All the Mineral Resources are reported inside the optimized underground shell.

The NSR cut-off of CAD \$185/tonne is derived from past studies focusing on mining and mill process costs. Hecla's current assessment suggests that, based on their updated cost analysis, the NSR cut-off should be around CAD \$200/tonne. Hecla's comparisons of reported resources at the two cut-off levels indicate no significant differences. Mining Plus has independently reviewed the results and concluded that the difference in cut-off values is not deemed material.

In the resource optimization process for Bellekeno, Lucky, and Onek, a modification was sub-cells in the block model. This adjustment aimed to transition from a block model with regular cell size and a percentage representation of the mineral zone to a block model with sub cells. Mining Plus conducted a thorough examination of the outcomes of the model with sub cells and identified a discrepancy in the Onek model. Despite this inaccuracy, it is deemed non-material for the reported resources due to location and quantity. Mining Plus strongly recommends the need to update these models in a consistent, traceable, and practical manner for operational purposes.

Parameter	Bellekeno, Onek, Lucky Queen	Flame and Moth, Bermingham	Unit
Silver price	21	21	USD per oz
Gold price	1,750	1,750	USD per oz
Lead price	1.15	1.15	USD per lb
Zinc price	1.35	1.35	USD per lb
Exchange rate	1.3	1.3	CAD/USD
NSR cut-off value	185	185	CAD per tonne mined
Minimum mining width	1.5	1.5	metres
Process recovery silver	93	96	%
Process recovery gold	25	25	%
Process recovery lead	93	93.24	%
Process recovery zinc	72	72	%

Table STYLEREF 1 \s 11- - Assumptions Considered for Preparing the 2023 Mineral Resource Estimates at Keno Hill.

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11.6 MINERAL RESOURCE STATEMENT

The Mineral Resources have been estimated in compliance with the Securities and Exchange Commission requirements (SEC, 2018) and are reported in accordance with S-K 1300 regulations. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.

In the opinion of the QP, the resource evaluations reported herein are a reasonable representation of the global polymetallic Mineral Resources in the Bellekeno, Lucky Queen, Flame and Moth, Onek, and Bermingham deposits given the current level of sampling.

As noted by Mining Plus, there has been no substantial alteration in Indicated resources on a global scale, notwithstanding the degradation of Indicated resources from Bellekeno to Inferred and the depletion of Flame and Moth and Bermingham. Nevertheless, there has been a notable upswing in Inferred resources, amounting to a 30% increase. While it is important to acknowledge that the previous models are not directly comparable, these significant changes primarily stem from five factors:

- New drilling primarily at Flame and Moth and Bermingham.
- New vein interpretations at Flame and Moth and Bermingham deposits.
- New metal prices that are generally higher, according to long-term updated prices.
- For the reporting of Mineral Resources, optimized underground shells were generated utilizing a cut-off of CAD \$185/tonne with a minimum mining width of 1.50 m, and all the Resources were subsequently reported within these specific underground shells; in comparison to previous resources that were reporting on an NSR cut-off.
- Depletion at Flame and Moth and Bermingham with the mining production.

11.7 MINERAL RESOURCE UNCERTAINTY DISCUSSION

Possible risk factors together with the rationale for the approach taken or mitigating factors established to reduce any risk are described below:

a) Data: Although no material inconsistencies have been detected, the flagging of NR (No record or NULL) assay data is noted and has been left as NULLs in the estimation process. This is standard practice; however, it was noted that many are located within low grade zones (zones for Christal and Lightning in Flame and Moth) so it may not have a significant impact on the resources. At Flame and Moth, it was noted that the NR intervals constituted around 15% of the total sampled length of some domains and monitoring of these zones is recommended.

The examination of various drilling databases revealed some minor inconsistencies that should be appropriately addressed in future efforts. Among these, the most crucial issues included the lack of consistency in logging information prior to 2010 and discrepancies observed between the



entered assay data and the laboratory certificates, particularly notable in the Onek database, and to a lesser extent at Bellekeno and Lucky Queen. While the discrepancies identified in the database review are minor, conducting a more comprehensive audit is imperative to address these inconsistencies and ascertain whether any other issues exist that may not have been uncovered in Mining Plus's initial review.

Density determination was conducted using the pycnometer applied to the pulp. This method is widely employed in most cases for density calculations through regression functions with metal content. It is important to note that, to eliminate biases associated with the pycnometer, a comparison was made with density obtained through the Archimedes method. While no significant bias was detected, Mining Plus suggests that the Archimedes method may require improved measurement accuracy, particularly in porous or vuggy areas. To address this, it is recommended to compare the Archimedes method using a paraffin coating or to engage an external laboratory in these areas to ensure the absence of any density biases.

b) Geologic Model: This aspect is considered critical as different models can be interpreted under different criteria or perspectives, being the main risk associated with any project. The applied interpretation and modelling criteria seem to vary from deposit to deposit. The interpretations are apparently based on a combination of geology and economic cut-off and a lack of accurate snapping was observed in some deposits. These problems may not have a significant global impact on the resource but there could be some impact at a local scale. It is advisable to have clear and consistent modeling criteria for any future updates.

Some logging inconsistencies have been detected for holes prior to 2010 that can, in some cases, generate a misinterpretation. It is therefore suggested to review the logging carried out in the estimation domains for future estimates.

- c) Classification Criteria: Classification appears to have been applied to a reasonable standard, with most blocks within 25 m of source data being assigned Indicated status. However, it was noted that the classification scheme for many deposits is around 50-m distance for the Indicated classification, which is typically wider than what would normally be applied. Furthermore, the classification criteria include uncertainty in the data and estimate due to discrepancies found in the revision made by Mining Plus as in the case of Bellekeno.
- d) Grade Capping: The implementation of capping has been applied on a case-by-case basis and as needed. Overall, most estimation domains exhibit a low coefficient of variation (CV). For Flame and Moth, a clamp method was employed to limit high-grade values. Whilst this results in lower than anticipated grades in high grade zones, this method shows improved results compared to traditional capping methods. Mining Plus holds the opinion that there are no notable concerns regarding the outcomes of capping; nevertheless, it is recommended that a consistent capping method be applied uniformly across all five deposits and the domains with high CV are reviewed to detect subpopulations.



Mining Plus advises against methods of raw data capping, as it may result in potentially higher loss of metal compared to capping on the composite. The recommended approach is to consider capping after the compositing process, where the influence of high grades is mitigated.

- e) Interpolation of the Grades: Block model grade interpolation was completed with different estimation techniques to accommodate local and global biases, which currently remain within the acceptable range. No material issue was detected with the exception of the Bellekeno deposit, which was subsequently downgraded from Indicated classification to Inferred. However, it was noted that different estimation approaches have been applied to each deposit due to differing authors. Future estimates should establish consistent estimation criteria as far as practicable, which includes capping methods, density estimates, and classification criteria among others. The implementation of mining reconciliation is currently ongoing, and a comprehensive review is underway to grasp all the components involved and comprehend potential differences. Mining Plus emphasizes that, in accordance with best practices, mining reconciliation stands out as a tool with the potential for achieving superior results in validation. It plays a crucial role in enhancing an understanding regarding the certainty of Mineral Resources and anticipating future improvements.
- f) Processing and Mining Costs: Mining Plus has assumed no risk for the processing and mining costs applied to the NSR economic cutoff for reporting the Mineral Resource estimates. These costs have been reportedly based on previous studies. However, verification with current Hecla costs (mining and processing cost) showed no significant differences in the reported resources.
- g) Metal Price Assumption: The assumptions are deemed reasonable for reporting Mineral Resources considering long-term prices over the last decade. Nonetheless, it is essential to acknowledge that these parameters could be influenced by significant shifts in the market economy.

It is the opinion of the Mining Plus geology QP that the Mineral Resource models presented in this report are representative of the informing data and that the data is of sufficient quality and quantity to support the Mineral Resource estimate to the Classifications applied.

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12. MINERAL RESERVE ESTIMATES

This section describes the methodology and parameters used to estimate the Mineral Reserves for the Keno Hill Mine.

Mineral Reserves are those parts of Mineral Resources, which, after the application of all modifying factors, result in an estimated tonnage and grade that is the basis of an economically viable project. Mineral Reserves are inclusive of diluting material that will be mined in conjunction with the economically mineralized rock and delivered to the treatment plant or equivalent facility. The term "Mineral Reserve" need not necessarily signify that extraction facilities are in place or operative, or that all governmental approvals have been received. It does signify that there are reasonable expectations of such approvals.

The current Mineral Reserve Estimate, as prepared by Hecla and reviewed and accepted by Mining Plus, is effective as of December 31, 2023, considers all information used in the Mineral Resource Estimate presented in Section 11.1, and is summarized in Table 12-1.

Only Measured and Indicated Mineral Resources were converted to Mineral Reserves. Any Inferred Mineral Resources included within the Mineral Reserve designs are carried at zero grade.

Table STYLEREF 1 \s 12- - Summary of Mineral Reserves - December 31, 2023 - Hecla Yukon - Keno Hill Mine.

Deposit	Class	Volume (m ³)	Mass (t)	Ag (g/t)	Pb (%)	Zn (%)	Au (g/t)	Ag (oz)
Lucky Queen	Proven							
	Probable	37,055	103,365	948	2.03	1.06	0.09	3,151,253
	Proven							
Flame and Moth	Probable	136,334	455,244	764	2.86	5.83	0.48	11,184,405
Dorminghom	Proven							
Bermingnam	Probable	438,155	1,318,748	961	2.85	1.51	0.15	40,732,370
Total	Proven							
	Probable	611,544	1,877,357	912	2.81	2.53	0.22	55,068,028

Notes:

1. Classification of Mineral Reserves is in accordance with the S-K 1300 classification system.

2. Mineral Reserves were estimated by Hecla and reviewed and accepted by Mining Plus.

3. The point of reference for the Mineral Reserves is defined at the point where the ore is delivered to the processing plant.

4. Mineral Reserves are 100% attributable to Hecla.

5. Mineral Reserves are estimated at an NSR cut-off value of CAD 350/tonne.

6. The NSR values reflect the discrete metallurgical responses for the Mineral Reserve blocks.

7. Mineral Reserves are estimated using metallurgical recoveries of 92.0% Ag, 25% Au, 4.0% Zn and 88% Pb for the silver lead concentrate and 5.24% Ag, 0% Au, 68% Zn and 4.0% Pb for the Zinc concentrate.

8. Mineral Reserves are estimated using long-term silver price of USD 17.00/oz, lead price of USD 0.90/lb, zinc price of USD 1.15/lb and a CAD: USD exchange rate of 1.30.

9. A minimum mining width of 3.5 m was used for all assets.

10. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.



The Mineral Reserve metal prices were established mid-year 2023 based on the following:

- Hecla's historic price decks for year-end 2022 Mineral Reserves and Resources, 2024 Long-Range Plans and 2023 budgets.
- Bloomberg Historical prices from June 26, 2023.
- Future prices from Consensus Economics from June 26, 2023.
- Wood Mackenzie Short Term Outlook reports for July 2023.
- Year-end 2022 Mineral Reserve metal price for selected peer and other companies.

Mining Plus's QP is of the opinion that the Mineral Reserve prices for silver and gold are moderately conservative when compared against third-party economics firm's long-term consensus pricing. The zinc and lead price are near the mean when compared against third-party economics firm's long-term consensus pricing.

Detailed information on mining, processing, and other relevant factors are contained in the following sections and combined to demonstrate that the Keno Hill Mine is economically viable.

12.1 MINERAL RESERVE ESTIMATE METHODOLOGY

Mechanized cut and fill (MCF) mining method is used in this Mineral Reserve Estimate and detailed in Section 13.3.1.

Production designs are created based on the geometries relevant to the cut and fill mining method which are discussed in Section 13.3.1. Mineral Reserve Estimates are based on the Mineral Resource 3D block models. Mineable shapes are created based on individual zones and lens geometries around the production locations that meet the NSR cut-off threshold, while also ensuring that adverse pillar geometries are not created that could become unstable, and that mining does not cease near a problematic structure. Production locations outside the Mineral Reserve outlines are not included in Mineral Reserves. Once designs are completed, access ramps and other supporting infrastructure are designed to facilitate production mining.

The production design wireframes are evaluated against the sub-blocked model to generate tonnes and grades for each location.

Internal portions of the mineralized zones that did not meet the NSR cut-off grade value are treated as waste. This mineralized material could be included in the mineable shapes and the Mineral Reserves by applying a marginal cut-off grade as the material will have to be mined to gain access to other areas of the Mineral Reserve. The Mining Plus mining QP recommends that the material be evaluated for inclusion in the Mineral Reserves for any future updates.



12.2 NET SMELTER RETURN AND CUT-OFF GRADE

The primary saleable metal of Keno Hill is silver with lead and zinc as significant byproducts. Gold is also present and recovered to the concentrate, however, it is not payable under the current smelter contract and does not contribute to the NSR value. As is typical of polymetallic deposits, the cut-off grade (COG) for Mineral Reserves is calculated and expressed in terms of Net Smelter Return (NSR) value per tonne. The NSR is calculated on a unit metal value basis using representative smelter contract terms, freight costs, and forecast metal prices. Metal prices and metallurgical recoveries used to calculate NSR are summarized in Table 12-2 and Table 12-3.

Product	Unit	Price
Silver (Ag)	USD/oz	17.00
Lead (Pb)	USD/lb	0.90
Zinc (Zn)	USD/lb	1.15
Exchange Rate	CAD/USD	1.30

Note: Hecla 2023 End of Year Reserve Pricing (Gold (Au) excluded)

Table STYLEREF 1 \s 12- - Representative NSR Parameters.

NSR Assumptions	Unit	Ag-Pb Concentrate	Zn Concentrate
Recovery			
Ag	%	92.0	5.24
Au	%	25.0	0.0
Zn	%	4.0	68.0
РЬ	%	88.0	4.0
Concentrate Grade			
Ag	g/t	19,268.8	1997.0
Au	g/t	0.7	0.0
Zn	%	1.2	47.0
Pb	%	45.0	6.4
Moisture Content	%	10	10
Payability	•		•
Minimum Deductible Ag	grams/DMT of concentrate	50	93
Minimum Deductible Pb/Zn	%	3	8

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NSR Assumptions	Unit	Ag-Pb Concentrate	Zn Concentrate
Payable Ag after Deductions	%	95	70
Payable Pb/Zn after Deductions	%	95	85
Charges			
Total charge (concentrate treatment, freight, refining)	USD/WMT of Concentrate	382.31	522.31

Note: preliminary recoveries, concentrate grades, payment terms and charges available at the time of mine planning, used for the design only.

The COG value used for mineable shapes evaluation is CAD 350.00/tonne. This COG reflects the property-wide operating costs distributed on a pertonne basis. The Keno Hill operating costs used as the basis for cut-off grade calculations are presented in Table 12-4.

Table STYLEREF 1 \s 12- - Keno Hill Mine Cut-off Values by Cost Area

Description	Mining	Mill	G&A	Total
Operating Costs (CAD/t)	180	62	108	350

Mining Plus independently verified the Mineral Reserve NSR estimation methodology. Variances were noted in the application of the metal prices between the NSR build up for the Mineral Reserve Estimate and the prices used for economic evaluation. The economic evaluation is based on higher assumed metal prices supported by end of year 2023 long term metal price forecasts and consensus reporting.

12.3 DILUTION

Dilution refers to material below cutoff grade or value which must be mined because it cannot be selectively excluded from within the planned mining shapes at the time of excavation. This low-grade material is also typically referred to as internal dilution. Dilution is impossible to avoid due to the narrow geometry of the orebody.

In the cut and fill design stage, in many cases, the shapes of the planned excavation cannot be perfectly matched to the mineralized outlines. Areas outside of the mineralized outline, but inside the planned development are typically referred to as planned dilution and must be excavated for technical and operational reasons. In addition to the above-planned dilution, dilution can result from additional material that is mined as a result of uncontrolled, unplanned, or unforeseen reasons. This material is often referred to as overbreak, unplanned dilution, or external dilution.

Accurate reconciliation studies are required to estimate the tonnage and grade of the planned and unplanned dilution in an underground mine. The tonnage of the unplanned dilution can be measured by comparing the excavated volume of a given cut and fill shape to the planned or designed volume. The



grade of the planned and unplanned diluting materials can be estimated from the available sample information. The volume of the secondary dilution can be estimated by comparing the surveyed excavation shape of the backfilled development with the surveyed excavation shape of the newly blasted development. Internal dilution (planned dilution) is primarily a function of the geometry of the orebody and the minimum mining width.

In operating underground mines, an additional type of dilution can occur. This dilution occurs when blasting of new cut and fill development takes place adjacent to a previously excavated development containing backfill material. In these situations, a portion of the backfilled volume can become entrained with the newly blasted material. The grades of the backfill material are typically far below the breakeven cut-off grade or value, and this material contributes to the total dilution of the newly blasted material. Furthermore, the backfill can have very different chemical characteristics to the mineralized material and its inclusion in the process plant feed can have serious adverse consequences for the process plant. This dilution is referred to as secondary dilution.

The dilution percentage is defined as tonnes of dilution material (W) divided by tonnes of mineralized material (O) (Dilution % = W/O x 100).

12.3.1.1 Development Overbreak

Due to the challenging ground conditions in KHM, the expected overbreak for capital lateral development is 10%. This is comparable to what was achieved during the excavation of the Flame and Moth and Bermingham exploration declines.

12.3.1.2 MCF Dilution

The minimum mining width for the MCF method in all deposits is 3.5 m. The MCF development contains internal dilution within the proposed mining shape due to the narrow vein width. No external dilution has been allowed due to the highly selective nature of the chosen mining method.

The Mining Plus mining QP is of the opinion that the exclusion of unplanned dilution in the MCF production shapes is potentially optimistic. There is potential for unplanned dilution to be introduced through small scale variations in the vein location, floor or wall backfill material, overbreak, and rehandle dilution. Mining Plus recommends that a reconciliation program be established for the current production areas in Bermingham to better understand the potential impact of unplanned dilution and apply those findings to future Mineral Reserve updates.



12.4 RECOVERY

Mining recovery is the difference between the planned amount of ore and the actual amount of ore that is mucked and sent to the mill.

Due to the high-grade nature of the mineralization, all efforts will be made to ensure that recovery is maximized. A mining recovery of 100% has been applied to all planned production blocks due to the highly selective nature of the mining method. The Mining Plus mining QP considers this assumption to be reasonable and recommends close survey monitoring of the performance of the production areas to ensure that production asbuilts are able to fully recover the Mineral Reserve when compared to design.

12.5 RISK FACTORS THAT COULD MATERIALLY AFFECT THE MINERAL RESERVE ESTIMATE

In the opinion of the Mining Plus mining QP, the Mineral Reserves are subject to the type of risks that are common to underground polymetallic narrow vein mining operations and may be materially affect by the following risk factors:

- Changes in realized metal prices from what was assumed.
- Changes to the mining costs, processing and G&A costs used to calculate the cut-off grade.
- Changes in local interpretation of mineralization geometry or modelled continuity of mineralized zones.
- Changes to geotechnical or hydrogeological design assumptions resulting in schedule delays, increased dilution, or reduced recoveries.
- Changes to mining and metallurgical recoveries.
- Changes in the long-term assumptions relating to concentrate payability, marketability and penalty terms.
- Changes in the mining development or geotechnical conditions resulting in additional unplanned dilution.
- Changes to the current mining method where certain zones or lenses permit.
- Assumptions as to the continued ability to access site, retain mineral tenure, obtain required environmental, mining, and other regulatory permits, and maintain a social license to operate with relevant stakeholders.



13. MINING METHODS

The Keno Hill Mine (KHM) contains five separate deposits: Bellekeno, Lucky Queen, Flame and Moth, Onek, and Bermingham. The location of the deposits is shown in Figure 13-1; the mill, administration, and shop complexes are located near the Flame and Moth Deposit.

All deposits are characterized by high grades, narrow vein widths, and challenging ground conditions. Historical mining methods used in Keno Hill have included cut and fill, small-scale long-hole stoping, shrinkage stoping, and square set stoping.

This section focuses on three deposits: Lucky Queen, Flame and Moth, and Bermingham. Lucky Queen is in the advanced exploration stage and the Mineral Reserve is included in the Life of Mine Plan (LOM). Flame and Moth, and Bermingham are currently mined by mechanized underground mining methods of cut and fill (MCF) with cemented rock fill (CRF) and unconsolidated rock fill (URF) as required.

The operations at Bellekeno deposit were suspended in 2021 and is not currently planned to be reopened without further study.

Onek is a historic mine with remaining Mineral Resources but is not currently planned to be reopened without further study.





13.1 GEOTECHNICAL AND HYDROLOGICAL CONSIDERATIONS

Numerous geotechnical studies have been carried out on the KHM most recently by Jacobs Engineering (Jacobs, 2019).

13.1.1 GEOTECHNICAL DATABASE

Geotechnical data for this study was only available for the Flame and Moth and Bermingham deposits. Based on discussions with Hecla personnel, it is reasonable to assume that ground conditions previously encountered at the Bellekeno deposit will be comparable with those at the Lucky Queen. Therefore, operational experience gained during previous production mining at the Bellekeno deposit will be used to guide (but not directly influence) the development of geotechnical mine design parameters at the Lucky Queen deposit. However, prior to the execution stage, the geotechnical conditions of the Lucky Queen will need to be verified.

13.1.2 GEOTECHNICAL DOMAINS

To understand the ground conditions at the KHM, geotechnical domains were created for the Bermingham and Flame and Moth deposits. Preliminary geotechnical parameters were assessed using major lithology types as identified by Hecla geology personnel. The geotechnical domains are outlined below on which ground support designs have been based:

- Domain 1: Quartzite (waste development).
- Domain 2: Schist (waste development).
- Domain 3: Faults (waste and production development).
- Domain 4: Mineralization (production development).

13.1.3 STRUCTURAL CHARACTERIZATION

The Flame and Moth deposit is divided into the Lightning and Christal mining areas, which are separated by the Mill Fault. The Mill Fault offsets Christal in a southeast direction by approximately 120 meters relative to the Lightning mining area as shown in Figure 13-2.





Figure STYLEREF 1 \s 13- - Plan View of Flame and Moth Showing Fault Offset of Christal Relative to Lightning Mining Area.

The Bermingham deposit hosts five major faults as summarized in Table 13-1. Figure 13-3 shows a three-dimensional representation of the major faults relative to the Bermingham mine plan. The NE zone is located underneath the Ruby Fault while the Bear zone and Artic zone are located between the Ruby Fault and Cross Fault and Cross Fault and Mastiff Fault respectively. The Super Fault intercepts the upper part of the Artic zone but does not intercept the ore veins within the Bermingham deposit.

Fault ID	Strike	Dip (°)
Mastiff Fault	131	-52
Ruby B Fault	124	-68
Hanging Wall Fault	0	-60
Super Fault	133	-25
Cross Fault	114	-62

Table STYLEREF 1 \s 13- – Average Trend of Major Faults in the Bermingham Deposit.

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Figure STYLEREF 1 \s 13- – Longitudinal Section View (Looking South-East) of Bermingham.

13.1.4 ROCK QUALITY DESIGNATION (RQD)

A first-pass assessment of the rock mass in geotechnical domains was completed by considering the Rock Quality Designation (RQD) (after Deere, 1964). RQD is a fundamental input into several rock mass characterization schemes and is generally regarded as a reliable, basic indicator of ground conditions. The RQD is calculated as the ratio of the sum of the lengths of all core sticks greater than 10 cm in length, to the total length of the drill core run, expressed as a percentage.

A summary of RQD values for the Bermingham and Flame and Moth deposits and geotechnical domains is presented in Table 13-2. The descriptive statistics for each domain are described as 'Poor', except for the Fault domain of the Bermingham deposit ('Very Poor') and the Mineralization Domain of the Flame and Moth deposit ('Fair').



Deposit	Descriptive Statistics	Domain 1	Domain 2	Domain 3	Domain 4
	Mean	49%	43%	27%	51%
Elamo and Moth	Median	49%	42%	24%	57%
Flame and Moth	Std. Deviation	25%	25%	22%	26%
	Coefficient of Variation	51%	58%	80%	51%
Bermingham	Mean	36%	30%	22%	35%
	Median	33%	25%	17%	34%
	Std. Deviation	25%	23%	21%	22%
	Coefficient of Variation	69%	79%	94%	64%

Table STYLEREF 1 \s 13- – Summary of RQD Values for Flame and Moth and Bermingham Deposits by Geotechnical Domain.

It should be noted that over 90% of boreholes in the geotechnical database were drilled using conventional, double-tube drilling equipment. This approach may lead to excessive disturbance of the core ('mechanical' or handling breaks) which can be difficult to distinguish from naturally occurring joints when logging RQD. This can typically result in artificially low RQD values.

Based on a review of in-situ rock mass exposed in underground excavations, an under-representation of RQD values in double-tube core drilling was likely to be the case at the KHM. As such, the summary values in Table 13-2 may be 'worst case', however it is problematic to estimate likely upper bound values with confidence. It is recommended that all future geotechnical holes are drilled using the triple-tube system.

13.1.5 NGI Q AND GSI ROCK MASS CLASSIFICATION VALUES

Rock mass classification was conducted using the Norwegian Geotechnical Institute's tunneling quality index (the Q-system), as proposed by Barton et al. (1974), where Q is obtained from the following relationship: RQD (as described above), Joint Set Number (Jn), Joint Roughness (Jr), Joint Alteration (Ja), Joint Water Factor (Jw), and the Stress Reduction Factor (SRF):

Equation : Q Equation Barton et al. (1974).

(1)

Q values have been estimated using the methods outlined by Barton and Grimstad (1994), whereby:

- Use representative Q input values for each geotechnical domain; and
- Where logged recorded RQD values are ≤ 10% (including 0%), use a nominal value of 10% to evaluate Q.

To better understand the statistical variability and character within each data set, basic descriptive statistics and histograms were generated for each input value, within each geotechnical domain for the



Bermingham and Flame and Moth deposits. This information was used to identify representative values for each Q input value. In the case of J_w and SRF, site experience, assumed far-field stress conditions, and a typical depth of mining were applied, along with engineering judgment to derive input values. The NGI Q estimates for the Bermingham and Flame and Moth deposits and geotechnical domains are presented in Table 13-3. Table 13-4 provides a comparative summary of the Geological Strength Index (GSI) for the Keno Hill deposits with extrapolated NGI-Q values shown.

Table STYLEREF 1 \s 13- – Summary of NGI Q values for Flame and Moth and Bermingham Deposits by Geotechnical Domain.

Input Parameter	Quartzite (De	omain 1)	Schist (Domain 2)		Faults (Domain 3)		Ore Vein (Domain 4)	
RQD	Mean (drill core)	40.0	Mean (drill core)	25.0	Mean (drill core)	20.0	Mean (drill core)	50.0
Jn	2 Joint sets	4.0	2 Joint sets	4.0	2 Joint sets	4.0	2 Joint sets	4.0
Jr	Undulating, smooth	2.0	Undulating, smooth	2.0	Undulating, smooth	2.0	Undulating, smooth	2.0
Ja	Non-softening, fine	3.0	Non-softening, fine	3.0	Non-softening, medium	3.0	Non-softening, medium	3.0
wL	Dry (minor inflow)	1.0	Wet (drips/rain)	0.7	Wet (drips/rain)	0.7	Dry (minor inflow)	1.0
SRF	Low stress	2.5	Low stress	2.5	Low stress	2.5	Low stress	2.5
Q (Avg)	2.7		1	.3	0	.9	3	.3

Table STYLEREF 1 \s 13- - General Summary of Rock Mass Classification for Keno Hill.

	Densela		Q Value		
ROCK Mass Quality	Domain	Structure	Surface	Value	Extrapolation
Fair to Good	Domain 1 - Quartzite	Blocky Very Blocky	Rough Smooth	45 - 60	2.0 - 6.0
Poor to Fair	Domain 2 - Schist	Very Blocky Seamy	Smooth Weathered	30 - 45	0.3 - 2.0
Extremely Poor to Poor	Domain 3 - Faults	Disintegrated Foliated	Slickensided	20 - 30	0.05 - 0.3
Poor to Fair	Domain 4 - Mineralization	Very Blocky Seamy	Smooth Weathered	30 - 45	0.3 - 2.0

13.1.6 GROUND SUPPORT DESIGN

Ground support designs for Flame and Moth and Bermingham have been developed by Hecla personnel according to the following primary development types shown below in Table 13-5.

Table STYLEREF 1 \s 13- – Development Excavation Dimensions by Type and Stand-up Time.

Opening Development	Stand-up Time			Dimension (W x H, m)	
Main Ramp (MAR)	Permanent			4.5 x 4.5 (arched)	
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Level Access Drift (LVL)	Less than three years	4.5 x 4.5 (arched)
Cut and Fill (CF) Production Drift	Less than one year	3.5 ~ 7.0 x 3.5 (flat back with rounded corners)
Remuck (RMK)	Less than three years	5.0 x 5.5 (flat back with rounded corners)
Take Down Back (TDB) retreat Drift underneath Backfill	N/A	5.5 x 6.0
Raise	Permanent	2.8 x 2.8 or D = 3.0

Ground support classes have been established according to the accessed RQD of the rock mass for the development. Details for each ground support class are summarized below:

- Class I Regular ground with RQD > 40%.
- Class II Poor to fair ground with 25% < RQD < 40%.
- Class III Very poor ground with RQD < 25%.

A ground control management plan has been developed for each deposit that governs the ground support methodology. A minimum ground support standard using 1.8 m to 2.4 m long rock bolts for the back and walls has been recommended to prevent possible wedge failure or unconsolidated back and wall sloughing caused by blasting damage. Further refinement to the ground support standard is anticipated as data from underground development is collected and analyzed. Where abnormal ground conditions are encountered, the ground support protocols are to be reviewed for effectiveness and additional support recommendations as determined by a Geotechnical Engineer or designate.

Table 13-6 provides a summary of the Flame and Moth and Bermingham ground support standards. All ground support patterns employ 4" (0.10 m) square, 6-gauge welded wire mesh with the exception of the cut and fill drifts which employ 3" (0.07 m) square, 6-gauge welded wire mesh.

Туре	Ground Condition	Ground Support Standards (Bolt Spacing)				
Decline Ramp (permaner	Decline Ramp (permanent openings)					
Regular Ground	Back	2.4 m Coated Swellex (1.2 m x 1.2 m)				
WAR - I	(40 < RQD)	Wall	2.4 m Coated Swellex (1.2 m x 1.2 m), 2.0 m from sill			
MAR – II Poor to Fair (25 < RQD < 40)	Back	2.4 m Coated Swellex (1.2 m x 1.2 m), Spiling/Shotcrete as required				
	(25 < RQD < 40)	Wall	2.4 m Coated Swellex (1.2 m x 1.2 m) 2.0 m from sill, Spiling/Shotcrete as required			
		Back	2.4 m Coated Swellex (1.2 m x 1.2 m), Spiling as required			
MAR – III Very Poor Ground (RQD <	Very Poor Ground (RQD < 25)	Wall	2.4 m Coated Swellex (1.2 m x 1.2 m) 1.5m from sill, Spiling as required			
		Shotcrete	Plain, minimum 3.0" thickness with 1" pre-coat			
Level Access Drift (opening less than 3 years)						

Table STYLEREF 1 \s 13- - Flame and Moth and Bermingham Ground Support Standard (Hecla, 2023d and Hecla, 2022c)

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Туре	Ground Condition	Ground Support Standards (Bolt Spacing)	
LVL – I	Regular Ground (40 < RQD)	Back	2.4 m Coated Swellex (1.2 m x 1.2 m)
		Wall	2.4 m Coated Swellex (1.2 m x 1.2 m), 2.0 m from sill
LVL – II	Poor Ground (25 < RQD < 40)	Back	2.4 m Coated Swellex (1.2 m x 1.2 m), Spiling/ Shotcrete as required
		Wall	2.4 m Coated Swellex (1.2 m x 1.2 m) 2.0 m from sill, Spiling/Shotcrete as required
	Very Poor Ground (RQD < 25)	Back	2.4 m Coated Swellex (1.2 m x 1.2 m), Spiling/Shotcrete as required
		Wall	2.4 m Coated Swellex (1.2 m x 1.2 m) 1.5m from sill, Spiling/Shotcrete as required
		Shotcrete	Plain, minimum 3.0" thickness with 1" pre-coat
		Spiling	Face (3.0 m long with 1m tail pinned with strapping to back)
Cut and Fill Drift (opening less than 1 year)			
CF-I	Regular Ground (40 < RQD)	Back	1.8 m Swellex (1.2 m x 1.2 m Dice)
		Wall	1.8 m Swellex (1.2 m x 1.2 m Dice), 1.5m from sill
CF-II	Poor Ground (25 < RQD < 40)	Back	1.8 m Swellex (1.2 m x 1.2 m Dice)
		Wall	1.8 m Swellex (1.2 m x 1.2 m Dice), 1.5m from sill
CF-III	Very Poor Ground (RQD < 25)	Back	1.8 m Swellex (0.8m x 0.8m), 2" SC, Spilling as required
		Wall	1.8 m Swellex (0.8m x 0.8m), 2" SC, Spilling as required
		Shotcrete	Plain, minimum 3.0" thickness with 1" pre-coat
		Spiling	Face (3.0 m long with 1m tail pinned with strapping to back)
Wide Production Retreat Drift (3.0 .5 m ~ 7.0 m)			
CFW – I	Regular Ground (40 < RQD)	Back	CF-I + 3.0 .6 m Superswellex (2.0 m x 2.0 m)
		Wall	CF-1
CFW – II	Poor Ground (25 < RQD < 40)	Back	CF-II + 3.0 .6 m Superswellex (1.8 m x 1.8 m), 2" SC as required
		Wall	CF-II
Remuck			
RMK – I	Regular Ground (40 < RQD)	Back	2.4 m Coated Swellex (1.2 m x 1.2 m)
		Wall	2.4 m Coated Swellex (1.2 m x 1.2 m) 2.0 m from sill, Shotcrete as required
		Shotcrete	Plain, minimum 3.0 " thickness with 1" pre-coat
RMK - II	Poor Ground (25 < RQD < 40)	Back	2.4 m Coated Swellex (1.2 m x 1.2 m), Spiling/Shotcrete as required
		Wall	2.4 m Coated Swellex (1.2 m x 1.2 m) 2.0 m from sill, Spiling/Shotcrete as required
		Shotcrete	Plain, minimum 3.0" thickness with 1" pre-coat
RMK - III	Very Poor Ground (RQD < 25)	Back	2.4 m Coated Swellex (1.2 m x 1.2 m), Spiling/Shotcrete as required
		Wall	2.4 m Coated Swellex (1.2 m x 1.2 m) 2.0 m from sill, Spiling/Shotcrete as required
		Shotcrete	Plain, minimum 3.0" thickness with 1" pre-coat
		Spiling	Face (3.0 m long with 1m tail pinned with strapping to back)
Raise			
SR – I CR – I	Regular Ground (40 < RQD)	Face	1.5 m Swellex or Rebar (1.2 m x 1.2 m)
		Wall	1.5 m Swellex or Rebar (1.2 m x 1.2 m)
SR – II CR – II	Poor Ground (25 < RQD < 40)	Face	1.5 m Swellex or Rebar (0.8m x 0.8m), 2" SC as required
		Wall	1.5 m Swellex or Rebar (0.8m x 0.8m), 2" SC as required
Intersection			

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Туре	Ground Condition	Ground Support Standards (Bolt Spacing)				
IS – I	Regular Ground	Back	MAR/LVL-I + 3.0 .6 m Connectable (2.0 m x 2.0 m)			
	(40 < RQD)	Pillar	3.0 rows of strap with 2.4 m Swellex			

Intersections are recognized as posing a higher risk for ground instability and the site Ground Control Management Plans (GCMPs) provide the following guidance to minimize this risk:

- 4-way intersections should be avoided as much as possible.
- Intersections in very poor ground must be avoided and/or relocated.
- Over-excavation should be minimized.

13.1.7 PILLAR SIZING

Mechanized cut and fill mining at Keno Hill requires rib pillars to mine parallel veins and sill pillars between sublevels. Rib pillars for adjacent mining are nominally sized at 3m. Sill pillars between sublevels are also sized at no smaller than 3 m and nominally targeted to be 4m high. Previous evaluations of pillar sizing were done using the formula developed by Potvin et al. (1989), shown below:

Equation 2: Pillar Strength by Potvin et al. (1974).

Pillar Strength MPa= 0.42*UCS*W/H (2)

13.2 HYDROLOGICAL CONSIDERATIONS

The Lucky Queen and Bermingham mining zones are located above the valley floor. Consequently, this tends to limit the occurrence and effect of adverse hydrogeological conditions. However, the Flame and Moth deposit is located on a valley floor such that there is a possibility of higher water inflow to the workings. Preliminary investigations suggest that groundwater may be structurally compartmentalized in the deposit-scale Mill Fault. Additional hydrogeological studies are underway in 2024 that are expected to further improve the hydrogeological understanding and modelling at Bermingham.

13.3 MINE DESIGN

13.3.1 MINING METHOD

Keno Hill ore is mined with a mechanized cut and fill method (MCF). Where the ore width is wider than can be safely extracted in one cut, the ore will be mined in adjacent drifts. Lenses are predominantly



mined in a bottom-up sequence and filled with cemented rock fill (CRF) with a 3%-8% binder content. CRF is used to introduce temporary sill levels or to fill initial drifts when multiple adjacent drifts are required. Temporary sill levels form a sequence interrupting pillar which allows for multiple mining fronts to be active on one lens at a time. The remainder of the lifts will be backfilled with URF.

This mining method was chosen due to the narrow steeply dipping nature of the orebodies and to maximize safety and productivity. The various deposits require the use of mining methods that can adequately support the vein and that are flexible and selective while minimizing the direct mining costs.

The main factors driving the mining method selection process are:

- Ground conditions in the vein and along the vein contacts range from good to very poor.
- Ground conditions can vary substantially over short distances (five meters).
- Vein continuity is good; however, the veins geometry varies greatly between deposits.
- Metal content and distribution vary significantly both between deposits and the mining zones within each deposit.
- The footwall is often characterized by competent quartzite but can be weak in some areas.
- The hanging wall varies from competent quartzite to weak layers of quartz breccia with clay-filled shear bands, graphitic schists, or sericite schists.
- Geological contacts at the hanging wall and footwall can often be visually identified but can be faulted or fractured contacts with gouge and breccias.
- Mineralization contacts are less clearly defined and are based on a combination of structure, vein mineralogy, and metal grades.
- Vein systems can be locally water-bearing and require time to drain when they are first crosscut by development.
- Vein depths are shallow with a low-stress regime, high-stress issues are not a factor in mine planning, but lack of clamping forces contributes to the poor ground conditions.

In MCF method, an attack ramp is developed from the main ramp at a gradient of -15%. Upon reaching the orebody, an intersection is developed, and a lift is developed in both directions along strike, following the geological contact of the orebody. At the end of the lens, the void is backfilled using either with a Load Haul Dump (LHD) machine. The LHD utilizes a rammer-jammer plate (a dozer plate modified to be attached to an LHD to push waste tight to the back) to ensure that the backfill is placed tight to the back of the drift.



Once the level has been completely backfilled, the next lift above the previously mined lift is accessed by slashing down the back of the attack ramp and working off the muck pile/horizon. Figure 13-4 illustrates the sequence of activities with MCF mining.



Figure STYLEREF 1 \s 13- – Mechanized Cut and Fill Mining Method Layout.

MCF drift sizes for Flame and Moth and Bermingham deposits are on average 3.5 m H x 3.5 m W. MCF drift sizes for Lucky Queen deposit are on average 3.5 m H x 3.5 m W. For areas wider than development equipment capable of mining or supporting a second parallel drift will be mined beside the backfilled drift to fully extract the orebody width prior to accessing the lift above. In this situation, the first drift will be completely backfilled with cemented rock fill to ensure a stable wall to allow adjacent mining activity.

For the Bermingham, and Flame and Moth deposits, the lifts are sequenced bottom-up within each panel; however, to maximize productivity the panels are mined as access allows. As such, the final lift in a panel located under an adjacent panel will be mined underhand with the back being the 8% CRF used to fill the initial cut of the panel above.

13.3.2 MINE DESIGNS

13.3.2.1 Lucky Queen

The Lucky Queen is located approximately 10 km from the mill and has previously been the site of underground production by a previous operator. Approximately one km of old workings has been rehabilitated from the portal. The access drift is $3.0 \text{ m W} \times 3.6 \text{ m H}$ and production drifts will be sized at a minimum of $3.5 \text{ m W} \times 3.5 \text{ m H}$. These drifts are too small for some of the production and development



mining fleets used at the other mines. The Lucky Queen deposit is planned to be mined at the end of the LOM plan using contractor mining. Figure 13-5 shows a south-looking view of the existing and planned workings.



Figure STYLEREF 1 \s 13- – Lucky Queen Isometric View (Looking South).

Table 13-7 shows the annual production schedule for the Lucky Queen.



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Table STYLEREF 1 \s 13- - Lucky Queen Production Quantities.

Lucky Queen	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Total Tonnes	152,427										39,862	112,565
Ore Tonnes	103,365										18,000	85,365
Waste Tonnes	49,062										21,862	27,200
Backfill Tonnes	93,029										16,200	76,829
Ag (g/t)	948										948	948
Au (g/t)	0.09										0.09	0.09
Pb (%)	2.03										2.03	2.03
Zn (%)	1.06										1.06	1.06
Ag (Oz)	3,151,240										548,758	2,602,483
Au (Oz)	305										53	252
Pb (Ibs)	4,631,016										806,446	3,824,570
Zn (lb)	2,417,984										421,068	1,996,916
Development (m)	1,554										687	866

Notes:

1. Development is lateral and vertical meters.

2. Ore tonnes are all Probable Mineral Reserves as shown in Section 12 of this report.

3. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

4. Tonnages are diluted and recovered.

5. Tonnage and grade measurements are in metric units. Contained silver ounces are reported as a troy ounce.



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13.3.2.2 Flame and Moth

Flame and Moth is located adjacent to the existing mill and administration facilities. Access to the deposit is through an already-developed portal and a 460-meter-long ramp. Ore from the Flame and Moth is sourced from the Lightning and the Christal zones, which contain approximately 64% and 36% of total ore tonnes, respectively. Development in the Flame and Moth is sized 4.2 m W x 4.2 m H for the ramp and 3.5 m W x 3.5 m H for the operating development and cut and fill stopes.

Emergency egress and ventilation for the Flame and Moth are provided through a vent raise driven to the surface. Figure 13-6 shows a long section of the existing and planned workings.



Figure STYLEREF 1 \s 13- - Flame and Moth (Looking North-West).

Table 13-8 shows the annual production schedule for the Flame and Moth.



Flame and Moth	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Total Tonnes	771,785				127,499	124,124	125,087	118,862	115,923	113,977	46,312	
Ore Tonnes	455,243				56,485	73,244	73,244	72,657	65,784	71,477	42,352	
Waste Tonnes	330,990			14,448	71,014	50,880	51,842	46,205	50,140	42,500	3,960	
Backfill Tonnes	415,438				38,237	39,055	59,340	66,900	64,226	68,889	65,852	12,940
Ag (g/t)	764				704	745	832	844	783	663	765	
Au (g/t)	0.48				0.30	0.46	0.50	0.52	0.52	0.52	0.48	
Pb (%)	2.86				2.30	3.37	3.75	3.61	2.54	1.46	2.77	
Zn (%)	5.83				6.89	6.06	6.60	6.25	5.74	4.33	4.62	
Ag (Oz)	11,184,379				1,278,194	1,753,811	1,958,839	1,972,504	1,655,844	1,523,061	1,042,1 26	
Au (Oz)	6,958				542	1,077	1,181	1,213	1,097	1,195	653	
Pb (lbs)	28,720,473				2,866,083	5,448,197	6,058,163	5,778,154	3,679,267	2,307,671	2,582,9 38	
Zn (lb)	58,499,658				8,585,504	9,785,034	10,654,467	10,008,659	8,321,434	6,827,366	4,317,1 95	
Development (m)	8,126			293	1,727	1,228	1,265	1,073	1,224	1,197	120	

Table STYLEREF 1 \s 13- – Flame and Moth Production Quantities.

Notes:

1. Development is lateral and vertical meters.

2. Ore tonnes are all Probable Mineral Reserves as shown in Section 12 of this report.

3. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

4. Tonnages are diluted and recovered.

5. Tonnage and grade measurements are in metric units. Contained silver ounces are reported as a troy ounce.



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13.3.2.3 Bermingham

Bermingham deposit is located approximately 4 km from the mill underneath the historic Bermingham Pit. Access to the deposit is through the portal. Ore from the Bermingham is sourced from the Arctic, Bear, Etta, Northeast, and Bermingham Deep zones as shown in Figure 13-7. Development in the Bermingham is sized 4.2 m W x 4.2 m H for the ramp and an average of 3.5 m W by 3.5 m H for the operating development and MCF development. Emergency egress and ventilation are provided by a ventilation raise driven to the surface.



Figure STYLEREF 1 \s 13- - Bermingham Isometric View (Looking Southeast).

Ore, waste and backfill are handled by 22-tonne capacity haulage trucks underground. Trucks are loaded at remuck bays on the ramp systems and hauled directly to the surface ore pad. From the surface ore pad, all ore is loaded on 30-tonne articulated trucks to be transported to the mill.

Surface handling and backfill of Bermingham waste rock is based on geochemical characterization and approved waste rock characterization and management as required by the Water Licence QZ18-044.

Table 13-9 shows the production quantities and table for the Bermingham.



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Bermingham	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Total Tonnes	2,213,581	300,680	240,082	178,975	267,593	263,368	214,373	175,022	180,666	179,823	213,000	
Ore Tonnes	1,318,748	127,307	139,259	146,136	120,452	127,559	127,635	128,260	133,293	128,757	140,091	
Waste Tonnes	894,833	173,373	100,824	32,839	147,140	135,809	86,738	46,763	47,373	51,066	72,908	
Backfill Tonnes	1,303,633	91,542	149,323	162,242	95,065	108,115	106,088	135,187	147,296	140,847	166,308	1,620
Ag (g/t)	955	944	941	974	926	909	1,008	1,073	1,104	931	803	
Au (g/t)	0.14	0.10	0.11	0.13	0.12	0.15	0.18	0.20	0.19	0.15	0.12	
Pb (%)	2.80	2.11	2.05	2.00	2.18	3.52	2.96	3.33	4.17	3.39	2.92	
Zn (%)	1.50	1.34	1.58	1.99	1.51	1.59	1.46	1.62	1.27	1.23	1.44	
Ag (Oz)	40,732,395	3,863,236	4,215,044	4,575,038	3,587,951	3,727,827	4,136,539	4,424,784	4,730,605	3,853,141	3,618,230	
Au (Oz)	6,168	427	513	603	466	612	747	822	805	626	546	
Pb (lbs)	82,991,516	5,934,795	6,299,234	6,446,128	5,776,345	9,900,692	8,342,488	9,425,372	12,246,252	9,613,451	9,006,759	
Zn (lbs)	43,838,846	3,749,760	4,841,551	6,404,024	3,997,978	4,471,659	4,109,309	4,593,716	3,720,366	3,504,379	4,446,104	
Development (m)	22,825	4,219	2,730	996	3,351	3,302	2,248	1,300	1,254	1,340	2,084	

Table STYLEREF 1 \s 13- – Bermingham Production Quantities.

Notes:

1. Development is lateral and vertical meters.

2. Mill feed tonnes are all Probable Mineral Reserves as shown in Section 12 of this report.

3. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

4. Tonnages are diluted and recovered.

5. Tonnage and grade measurements are in metric units. Contained silver ounces are reported as a troy ounce.



13.4 BACKFILLING

Backfilling is cemented rock fill (CRF). All backfill material is hauled by the underground haul trucks and placed using LHDs. In areas where a tight seal between the backfill and the back is required, the LHD is equipped with a rammer-jammer plate to push the backfill tight to the back. CRF is mixed in the nearest remuck bay to the backfill area, which is driven at a slight negative grade (e.g., -2%). Cement is currently provided by a mobile cement batch plant and mixed with the waste rock by the LHD. Hecla is planning to build a surface backfill plant at Bermingham in 2024. The plant will be capable of supplying a cemented backfill product that blends waste rock and dewatered mill tailings. The cement content in the CRF ranges between 3% - 8%. The 8% binder CRF is limited to cuts which will form the back of an underhand stope — the initial cut of panels which are above others along the same vein. All other cut and fill excavations are planned to use uncemented waste rock (URF) or 3% binder CRF if there is an adjacent cut to be mined.

13.5 VENTILATION

A ventilation model was designed based on the mine plan for the Bermingham, Flame and Moth, and Lucky Queen deposits. Primary fans, auxiliary fans, and heating units are installed at Bermingham and Flame and Moth mines.

13.5.1 MINE AIR HEATING

Intake air is heated to a minimum of +2°C for all mines. This requires approximately 1.9 MW for Flame and Moth, 1.8 MW for Bermingham, and 1.0 MW for Lucky Queen in the coldest month of January. Direct-fire propane heaters are utilized for Flame and Moth and Bermingham mines. Once mining in Bermingham is completed, Lucky Queen will make use of the existing propane heater and fan inventory. Figure 13-8 displays the average temperature at the nearest weather station of Mayo, Yukon Territory, Canada.

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Figure STYLEREF 1 \s 13- – Monthly Average Temperature for Mayo, Yukon Territory (Alexco, 2021b).

13.5.2 VENTILATION MODELLING

A ventilation model for each deposit was developed based on the proposed designs for the three mines using Ventsim[®] software. This was used to determine operability and estimate the required primary fan duties required at different stages of the mine life. Key modeling considerations include:

- Expected diesel equipment fleets for each mine are based on the mine plan.
- Utilization of availability for equipment is based on the mine plan.
- Associated friction factors and resistances are based on excavation methodology and accepted industry design values.
- A leakage allowance of 20% of total airflow demand.
- Early development work in both the main and ventilation declines will have fans located well outside each portal, a minimum of 50 m away, to limit the possibility of recirculation.
- Airways will maintain an air velocity of at least 0.5 m/s to remove contaminants and maintain an appropriate temperature in the mine.
- Working areas will be limited to an air velocity of 4 m/s and travel ways to a maximum of 6 m/s to maintain a safe and healthy environment.



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13.5.2.1 Lucky Queen

The proposed layout for the Lucky Queen underground project will support a simple positive-pressure ventilation circuit. The primary fan located at the collar of a dedicated intake raise will cause air that has passed through a heating system to enter the mine. The air will then flow onto the ramp at the first available opportunity where it will be forced onto each level by an auxiliary fan, sweeping the face and returning to the ramp to repeat the process at the next working area. Ultimately, the air will be exhausted from the main portal. Figure 13-9 shows an isometric view of the ventilation circuit.



Figure STYLEREF 1 \s 13- - Lucky Queen Primary Airflow Schematic (Alexco, 2021b).

Peak fan power for the Lucky Queen is estimated to be 34.0 kW. Peak airflow requirements reach 41 m³/s in year 10 of the project schedule and remain constant for the life of mine.

During initial development, low-friction twin ducts will be used to push the air the distance to the face. The number of concurrent activities underground will be restricted until the ventilation raise has broken through to the surface and the main fans have been commissioned.

13.5.2.1 Flame and Moth

The proposed layout for the Flame and Moth underground project supports a relatively simple positive pressure ventilation circuit. A primary fan located on the surface forces the heated air down the intake raises to each respective ventilation drive that intercepts the intake raise on the working levels. Each



production level is ventilated using an auxiliary fan that draws fresh air from the intake raise and directs the air through ducting to the working area before it returns to the main ramp to exhaust out the portal. Each of these ventilation drive connections must be regulated to ensure only the desired volume is permitted to flow.

One primary surface intake raise supports the Lightning and Christal zones and the Christal Zone utilizes a dedicated ventilation drive to connect to the fresh air system. Figure 13-10 shows the basic primary airflow through the fully developed mine.



Figure STYLEREF 1 \s 13- – Flame and Moth Primary Airflow Schematic.

Peak fan power for the Lightning intake surface raise is estimated to be 218 kW with an airflow of 117 m³/s.



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13.5.2.2 Bermingham

The layout for the Bermingham underground project supports a relatively simple positive pressure ventilation circuit. Two fans located on the surface force heated air down the two intake raises to each respective ventilation drives that intercept the intake raise on the working levels. Each production level is ventilated using an auxiliary fan that draws fresh air from the intake raise and directs the air through ducting to the working area before if returns to the main ramp to exhaust out the portal. Each of these ventilation drive connections must be regulated to ensure only the desired volume is permitted to flow. Figure 13-11 shows the basic LOM primary airflow through the Bermingham.



Figure STYLEREF 1 \s 13- – Bermingham Primary Airflow Schematic.

Peak fan power for the Bermingham is estimated to be a combined 301 kW from the two fans. The larger fan has a projected flow of 111.9 m³/s with a power consumption of 233 kW and the second smaller fan has a projected flow of 67 m³/s with a power consumption of 84 kW.



13.6 MINE SERVICES

13.6.1 COMPRESSED AIR

Compressed air is supplied underground through 2" (51 mm) diameter HDPE pipes. At the Flame and Moth, the compressed air is supplied by a fixed air compressor associated with the mill. In the case of Bermingham, compressed air is supplied by an air compressor located underground.

13.6.2 DEWATERING

The Lucky Queen is located above the valley floor so total groundwater inflow is expected to be limited. Dewatering will still be required to remove service water from the underground. Bermingham and Flame and Moth are both expected to have higher groundwater flows. For the Flame and Moth, the maximum groundwater flow is expected to be 33 L/s. The Bermingham requires continual dewatering through the New Bermingham Portal, with discharge flows typically ranging between 3.0 and 10.0 L/s, a value of 11 L/s has been used for engineering purposes.

For all the mines, the dewatering strategy is to use electric submersible pumps or self-contained pump skids to collect water from sumps near the active mining areas and pump it in stages to the dirty water sump located on the ramp. Water is then pumped to the surface and directed to the water treatment plant installed near the portal. Water is treated to meet the effluent quality standards before being discharged to the ground.

13.6.3 POWER

All the mines are connected to the site and provincial power grid. Primary power transmission underground is 4,160 V to mobile power centers located in strategic locations underground where voltages are stepped down to 600 V for final distribution.

13.6.4 MAINTENANCE FACILITIES

For both Flame and Moth and Bermingham mines, the maintenance department has a fuel/lube truck, a mechanic's service truck, a tractor, and access to a scissor lift and a boom truck.

In addition to the mobile equipment, the mine maintenance department is responsible for the stationary equipment consisting of air compressors, main ventilation fans, propane air heaters, underground electrical distribution system, and main dewatering pumps.



Most of the mobile equipment maintenance is performed in a surface shop constructed near each of the mine portals.

13.7 MINING FLEET

All mobile equipment is diesel-powered rubber-tired equipment owned by Hecla.

Flame and Moth and Bermingham mines use equipment of similar size, whereas the Lucky Queen will utilize smaller-scale units. In order to avoid purchasing a new fleet of equipment for the Lucky Queen mine development and production, a contractor is expected to be engaged for these purposes.

Table 13-10 shows the underground equipment build-up by period and Table 13-11 shows the currently owned surface mobile equipment fleet which includes pickups and light equipment such as pumps, light plants, and miscellaneous equipment at the site.



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Туре	Units	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Bolter	4	5	5	5	6	6	6	6	6	6	6	6
1 boom Jumbo	2	2	2	2	2	2	2	2	2	2	2	2
2 boom Jumbo	3	3	3	3	3	3	3	3	3	3	3	3
3yd LHD	7	7	7	7	9	9	9	9	9	9	9	9
6yd LHD	2	2	2	2	2	2	2	2	2	2	2	2
Haul Truck	5	5	5	5	6	6	6	6	6	6	6	6
Shotcrete Sprayer	3	3	3	3	3	3	3	3	3	3	3	3
Concrete Transmixer	2	3	3	4	4	4	4	4	4	4	4	4
Total Production Units	28	30	30	31	35	35	35	35	35	35	35	35
Skid Steer	1	1	1	1	2	2	2	2	2	2	2	2
Dozer	2	2	2	2	2	2	2	2	2	2	2	2
Telehandler	5	5	5	5	5	5	5	5	5	5	5	5
Tractors	1	1	1	1	2	2	2	2	2	2	2	2
Scissor Deck	5	5	5	5	5	5	5	5	5	5	5	5
UTV	13	13	13	13	16	16	16	16	16	16	16	16
Total Utility Units	27	27	27	27	32	32	32	32	32	32	32	32
Total Units	55	57	57	58	67	67	67	67	67	67	67	67

Table STYLEREF 1 \s 13- – Underground Equipment Fleet.

DEFINE | PLAN | OPERATE

Туре	Units
Cement Truck	1
CAT Dozers	2
CAT Excavators	2
CAT Mini Excavator	1
CAT Electric Forklift	1
Generators (<100kW)	3
Cummins Generators (250-750 kW)	2
CAT Generators (100-350 kW)	2
CAT Grader	1
Volvo Haul Trucks	4
Light Vehicles	40
CAT Loaders	6
CAT Packer	1
Genie Scissor Deck	1
Skid Steer Loaders	5
Skandic Skidoo	2
Genie Telehandler	1
Trailers	7
Utility Vehicles	5
Miller Service Truck Welder	1
Water Trucks	2
Vacuum Trucks	2
Plow/Sander Truck	1
Hino Roll-off Truck	1
Gravel Truck	1
Kenworth Highway Truck	1

Table STYLEREF 1 \s 13- - Surface Equipment Fleet.

13.8 PERSONNEL

Hecla operates the mill as well as provides the technical services, management, and administration staff. All underground development and production are performed by Hecla. Table 13-12 shows the total estimated annual personnel for the Keno Hill Mine.



Category	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Management/Admin	26	26	26	26	24	24	24	24	24	24	24
Mine General	140					140	140		140		
Lucky Queen		140	140	140	140			140		140	70*
Flame and Moth		140	140	140							
Bermingham											
Mill Operations	47	47	47	47	44	44	44	44	44	44	44
Site Services	20	20	20	20	17	17	17	17	17	17	17
Site Environmental	5	5	5	5	4	4	4	4	4	4	4
Health and Safety	5	5	5	5	4	4	4	4	4	4	4
Total	243	243	243	243	233	233	233	233	233	233	93

Table STYLEREF 1 \s 13- - Estimated Annual Personnel Requirements for Keno Hill Mine.

*Contractor mining at Lucky Queen.

13.9 OPERATIONS

Operations are performed by Hecla personnel using the company's owned equipment 24 hours per day, 7 days per week with 4 crews rotating to site and staying at the Hecla Flat Creek camp. All mining activities are performed using mechanized methods; with the exception of bolting in small section headings where bolting is performed off of scissor lifts with stoper drills and jacklegs or using dedicated bolting platforms. All mucking is performed by diesel-powered load-haul dump units (LHDs) mucking to diesel-powered underground haul trucks. For the Lucky Queen and Bermingham mines ore is hauled to the portal and stockpiled on the surface where it is re-handled by Hecla's surface truck fleet and loaders. Due to the proximity of the mill to the Flame and Moth, the underground fleet hauls the ore directly to the mill ore pad. Waste is hauled to the nearest backfill site underground or, if there are none available, hauled to the surface and stockpiled.

13.10 PRODUCTION SCHEDULE

The overall production schedule is based on feeding a consistent 400 to 550 tpd to the centrally located mill. The operations were sequenced to maximize Net Present Value and to minimize the number of operations concurrently active whilst satisfying the mill throughput targets. All references to Ore in this section are exclusively the Probable Mineral Reserves outlined in Chapter 12.

Table 13-13 shows the total life of mine mill feed for the underground operations.



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Table STYLEREF 1 \s 13- - LOM Plant Feed Summary.

Deposit	Ore Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)
Lucky Queen	103,365	948	0.09	2.03	1.06
Flame and Moth	455,243	764	0.48	2.86	5.83
Bermingham	1,318,748	961	0.15	2.85	1.51
Total Plant Feed	1,877,356	912	0.22	2.81	2.53

Notes:

1. Rounding as required by reporting guidelines may result in apparent summation differences between tonnes, grade and contained metal content.

2. All Ore tonnes are Probable Mineral Reserves as shown in Section 12 of this report.

3. Tonnages are diluted and recovered.

4. Tonnage and grade measurements are in metric units.

Figure 13-12 shows the combined ore and waste tonnage profile over the project life. Figure 13-13 and Figure 13-14 show the LOM ore production by deposit along with the metal grade for silver and base metals respectively.



Figure STYLEREF 1 \s 13- Ore and Waste Tonnes – Combined Mines.



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Figure STYLEREF 1 \s 13- - Ore Tonnes vs. Base Metal Grade.

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13.11 RECOMMENDATIONS

The QP notes that the overall mine plan benefits from increased flexibility and working fronts as the mine matures and the capital development advances. In the initial years, there is an opportunity to further de-risk the overall LOM plan and better predict the operational performance of future mining zones by addressing the following items:

- Undertake a more detailed dilution and extraction study, including consideration of any existing reconciliation studies, to better quantify the extraction recovery, dilution, and other modifying factors that Hecla is currently applying to all production designs. Specifically, the final cut underneath a planned sill can be expected to have a higher dilution from CRF failure due to blasting cycles of the final lift and previous lift. Use the results of the above noted studies to determine the actions necessary to align mine production grades with the Mineral Reserve Estimates.
- Complete additional geotechnical assessments to determine the amenability of the orebody to more productive and less costly mining methods. There is an opportunity to trial stope mining methods in the Flame and Moth between 2024 and 2026 to refine the method and application without affecting the overall LOM plan.
- Complete additional optimization on the Mineral Reserve mine plan and de-risk the mine plan on a development basis by assessing the potential for slower than planned increases to efficiency and underground unit development operations. Complete additional scenario scheduling to better understand the risk and plan appropriately to meet the schedule.
- Continue evaluating the option of mining at Flame and Moth deposit earlier than planned as a large portion of the underground access has been completed and the mine is ready to produce ore with minimal development. This will assist with reducing the LOM plan risk by creating additional mining fronts with minimal upfront capital.
- Continue conducting definition diamond drilling throughout the remainder of the underground mining operation to convert Inferred to Indicated Mineral Resources and increase the understanding of the mineralization. Doing so may result in increased Mineral Reserves near planned capital and operational development and reduce the overall capital development intensity of the schedule.
- Complete hydrogeological studies to better understand the sources of water at Flame and Bermingham
- Review mining plans and other relevant Hecla operations to define definitive actions to attain the planned improvements in mining
 productivity, daily development advance and associated costs over the first four years.



14. PROCESSING AND RECOVERY METHODS

The Keno Hill is of a polymetallic silver-lead-zinc vein-type mineralization. Silver predominantly occurs in argentiferous galena and argentiferous tetrahedrite, and to a lesser content, as native silver, and the silver-bearing minerals polybasite, stephanite, and pyrargyrite. Lead occurs in galena and zinc in sphalerite in either an iron-rich or iron-poor variety. Other sulfides identified at the Property include pyrite, pyrrhotite, arsenopyrite, and chalcopyrite. Common gangue minerals include siderite, quartz, and calcite in decreasing order of abundance (RPA, 2017).

The Keno Hill District Mill is currently operating with a LOM average throughput of 500 tpd according to the approximately 11-year mine plan for this technical report. The initial mill throughput is 400 tpd and ramp up to 550 tpd in year 5. The existing District Mill feed is produced from the Bermingham at 400 tpd, then increased by 100 tpd from the Flame and Moth suppling 200 tpd during most of the LOM and followed by the processing of Lucky Queen ore near the end of the project life. Details on the mine plan and production schedule are found in Chapter 13.

The original process flowsheet has been modified accordingly to allow the increased feed capacity. The process modifications were based on additional metallurgical test work described in Section 10, the experience from previous operations, as well as mill modifications and upgrades. This section (Section 14) describes the major processing design criteria, the modified flowsheet including recent modifications and upgrades, a general process description, process unit operation description, and annual production estimates.

14.1 PROCESS UNIT OPERATION DESCRIPTION

The Keno Hill District Mill is based on a conventional sequential flotation process producing lead and zinc concentrates. The silver concentrates are high in silver which typically accounts for approximately 90% to 95% of the mill feed silver values since silver is strongly associated with lead minerals. Overall, silver represents 70% to 80% of the value of the ores in the District.

Ore is crushed and then processed in a conventional flotation mill producing two concentrates: a silver-lead concentrate (aka silver concentrate) and a zinc concentrate. Concentrates are thickened, filtered, and trucked off-site for sale. Tailings are also thickened, filtered, and stored in a dry stack tailing facility (DSTF) adjacent to the mill.

Process water is stored in the mill pond adjacent to the mill complex and recycled to the plant for varied applications. The primary makeup water source is from the Flame and Moth underground mine which is treated within the existing water treatment plant. Excess water is discharged to either of two nearby drainage basins, Christal Creek, or Lightning Creek once the permitted water quality is achieved.



14.2 PROCESS FLOWSHEET AND DESCRIPTION

14.2.1 SIMPLIFIED PROCESS FLOWSHEET

The simplified process flowsheet of the mill complex is shown in Figure 14-1. The mill complex consists of the following process sections and unit operations:

- Primary and secondary crushing circuits with a radial stacker belt conveyor to transport the crushed ore to the covered fine ore stockpile.
- Draw down a pocket reclaiming the crushed ore from the covered fine ore stockpile.
- Two-stage grinding in a closed circuit with hydro-cyclones to produce a grinding product P80 size of 120 μm.
- A grinding classification circuit to produce a cyclone overflow to feed the lead rougher and rougher scavenger flotation circuit to recover lead and silver minerals. The process to produce lead rougher and lead rougher scavenger flotation concentrates which are reground to a P80 size of 30 μm.
- The reground lead rougher and lead rougher scavenger flotation concentrates are upgraded in three stages of cleaner flotation producing the final silver-bearing silver concentrate.
- The zinc rougher and the zinc rougher scavenger flotation circuit is fed by the lead rougher scavenger tailings and the lead 1st cleaner tailings to produce the zinc rougher concentrates and the final zinc rougher scavenger tailings.
- The zinc rougher concentrate is to be reground to a P80 size of 30 μm followed by upgrading in three stages of cleaner flotation. The cleaner circuit generates the final zinc concentrate and the zinc 1st cleaner scavenger tailings.
- Thickening and pressure filtration of the silver concentrate and the zinc concentrate.
- Thickening and pressure filtration of each of the zinc rougher scavenger and zinc 1st cleaner scavenger tailings, which are then disposed of on the surface as dry stack tailings underground as cemented backfill once the Cemented Rock Fill (CRF) plant is operating.
- A reagent preparation section.
- Utility distribution for compressed air and water distribution.



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Figure STYLEREF 1 \s 14- – Simplified Process Flow Diagram of the Mill Complex (Alexco, 2021b).

14.2.2 RUN OF MINE ORE CRUSHING, ORE STORAGE, AND RECLAIM

The crushing system is operated up to 12 h/d at a process rate of 50 t/h. The Run of Mine (ROM) ore is crushed in a two-stage crushing circuit closed with a vibrating screen. The final crushed product size P_{80} is 12 mm. ROM ore from Bermingham is dumped onto a ROM ore stockpile and then into the primary jaw crusher. The hopper is equipped with a stationary grizzly with a 450 mm aperture opening to prevent oversized ore from entering the downstream jaw crusher.

The primary crushing products, joined by the secondary crushing discharge, feed the sizing screen to produce the final crushed product. The oversize product from the sizing screen feeds the secondary cone crusher. The crushed material is conveyed to a fine ore stockpile with 550 t live capacity. Crushed ore reclaim is achieved via a draw-down pocket located beneath the fine ore stockpile.

14.2.3 PRIMARY GRINDING CIRCUIT

Crushed ore is reclaimed from the stockpile onto the ball mill feed conveyor belt at a nominal rate of 18.1 t per operating hour (434 tpd). The primary grinding circuit is a two-stage ball milling process producing a ground material with a P_{80} size of 100 to 120 μ m. Ore from the ball mill discharges into the feed chute of the primary No.1 ball grinding mill which is a heavy-duty tire-driven type grinding mill 1,800 mm in diameter and 3,600 mm long, with an installed power of 150 kW. The primary mill slurry is discharged into a pump box and then pumped to join the secondary No.2 ball mill discharge.

The combined streams are pumped to the classifying cyclones. The cyclone underflow returns as feed to the secondary ball mill, while the cyclone overflow reports to the flotation circuit. Reagents (3418A and



zinc sulfide) are added to the ball mill feed to suppress zinc minerals during the lead mineral flotation stage.

The ball mill feed conveyor belt is sampled every shift to provide a head assay of the feed to the plant.

14.2.4 CLASSIFICATION

The primary and secondary ball mill discharges are combined in a common pump box and then feed a hydro-cyclone pack. Two cyclones are installed, each with a diameter of 250 mm. Operating in a mode of one running and one standby, the cyclone undersize material returns to the secondary grind ball mill by gravity, while the cyclone overflow with a P_{80} size between 100 and 120 µm gravity flows to the flotation circuit.

14.2.5 LEAD FLOTATION CIRCUIT

The lead flotation circuit produces a final silver concentrate through the stages of rougher flotation, rougher scavenger flotation, rougher scavenger concentrates regrinding, followed by three stages of cleaner flotation. Blower air is injected into each flotation cell mechanism. The reagents zinc sulfide, 3418A, SIPX, and MIBC are added to the circuit as required.

The flotation cells are existing units that were sized for the maximum laboratory-scale retention time for Bellekeno samples. Based on the locked cycle flotation test work completed by SGS, these cells are slightly oversized for the planned LOM mill feed which has lower lead head grades than the Bellekeno ore.

14.2.5.1 Lead Rougher and Rougher Scavenger Flotation

The cyclone overflow fraction from the primary grinding circuit is conditioned with the reagents 3418A and zinc sulfide in two agitated tanks. The pulp density is approximately 33% solids by weight. The residence time in the conditioning tanks is 5 minutes at the design volumetric flow rate.

The conditioned slurry then flows into the first of five 8 m^3 lead flotation tank cells with a total maximum residence time of 25 minutes based on test work. Should a shorter residence time be required, some of the cells can be taken off-line. Low-pressure blower air is injected into each cell mechanism to generate the froth for the flotation of lead and silver sulfide minerals.

The lead rougher concentrate from all the rougher cells and the lead rougher scavenger concentrate flow by gravity to a pump box and then feed the regrinding circuit. The lead rougher tailings report to the rougher scavenger flotation stage consisting of two 8 m³ tank cells with a total maximum residence time



of 10 minutes. The rougher scavenger flotation tailings flow into a standpipe and are pumped to the zinc flotation circuit.

14.2.5.2 Lead Rougher Concentrate Regrind

The regrinding step prior to the lead 1^{st} cleaner flotation further liberates silver and lead minerals from the gangue and other sulfide minerals to improve product quality and metal recovery. The lead rougher scavenger concentrates are pumped to a regrind ball mill which is 1,050 mm in diameter and 1,400 mm long powered by an 18-kW motor and is operated in a closed circuit with two 100 mm cyclones. One cyclone is in operation at any time and classifies the reground slurry. The regrind cyclone overflow flows to the lead 1^{st} cleaner flotation cells while the cyclone underflow returns to the regrind ball mill for further grinding. The particle size target of the regrinding circuit is a P_{so} size of about 30 µm.

14.2.5.3 Lead 1st Cleaner Flotation

The reground lead rougher scavenger concentrate and the lead 2nd cleaner flotation tailings are upgraded in the 1st cleaner flotation stage. The cleaner flotation feed gravitates from the lead regrind cyclone overflow into the feed box of the first of three 3 m³ 1st cleaner flotation cells where it is joined by the 2nd cleaner flotation tailings pumped from a standpipe. The 1st cleaner tailings report to the first conditioning tank of the zinc rougher flotation circuit, while the concentrate from the 1st cleaner stage feeds the 2nd cleaner flotation stage. The major equipment used in the 1st lead cleaner flotation circuit includes the following:

- Three 3 m³ conventional flotation cells.
- One 1,050 mm diameter and 1,400 mm long tire-driven regrind ball mill with 18 kW installed power.

The 1st cleaner flotation train has a total maximum residence time of 18 minutes. This residence time has been deemed adequate but can be reduced, if required, by taking flotation cells offline.

14.2.5.4 Lead 2nd Cleaner Flotation

The lead 1st cleaner concentrates and the lead 3rd cleaner flotation tailings are upgraded in the 2nd cleaner flotation stage. The 2nd cleaner tailings are recycled back to the 1st cleaner, while the 2nd cleaner flotation concentrate feeds the lead 3rd cleaner stage. The feed to the 2nd cleaner flotation circuit is the tailings from the 3rd cleaner flotation cell and the 1st cleaner concentrate. These cells are two 3 m³ cells. Blower air is injected into each cell mechanism. The 2nd cleaner flotation train has a total maximum residence



time of 15 minutes. This residence time has been deemed adequate but can be reduced, if required, by taking a flotation cell offline. The 2nd cleaner flotation concentrate flows into a standpipe which transfers the slurry to the 3rd cleaner flotation circuit.

14.2.5.5 Lead 3rd Cleaner Flotation

The lead 2nd cleaner concentrate is upgraded in the 3rd cleaner flotation stage. The 3rd cleaner tailings return by gravity to the 2nd lead cleaner flotation stage, while the concentrate is pumped to the silver concentrate thickener for dewatering.

The cleaner flotation feed is pumped from the 2^{nd} cleaner circuit into the feed box of the 3 m³ cleaner flotation cell. The 3^{rd} cleaner flotation cell has a residence time of 12 minutes. The 3^{rd} cleaner flotation concentrate flows into a standpipe, which transfers the slurry to the silver concentrate dewatering circuit. The 3^{rd} cleaner flotation tailings are recycled by gravity flow to the 2^{nd} cleaner flotation circuit.

14.2.6 ZINC FLOTATION CIRCUIT

The zinc flotation circuit processes the tailings generated from the lead flotation circuit through the stages of rougher flotation, rougher scavenger flotation, rougher concentrate regrinding, followed by three stages of zinc cleaner flotation. Three products are produced, namely the final zinc concentrate, the zinc rougher scavenger tailings, and zinc 1st cleaner scavenger tailings which are filtered and either stored in the dry stack tailings facility or used as backfill once the CRF plant is operating. Blower air is injected into each cell mechanism.

Reagents copper sulfide, SIPX, lime, and MIBC are added to the circuit as required. The flotation area is equipped with a dedicated spillage sump and pump for clean-up purposes. The flotation cells are existing units sized on the maximum laboratory-scale retention time for Bellekeno samples, which is more than the required residence time based on the locked cycle flotation tests.

14.2.6.1 Zinc Rougher Flotation

Prior to zinc flotation, the zinc rougher flotation feed materials, consisting of lead rougher scavenger tailings, lead 1st cleaner tailings, and the returned zinc rougher scavenger tailings, are conditioned with copper sulfide to activate the depressed zinc minerals, and lime to suppress pyrite if required. The zinc rougher flotation stage generates a zinc rougher concentrate, and rougher scavenger flotation tailings which are low in pyrite and feed the corresponding dewatering circuit.



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Two zinc flotation conditioning tanks are used in the operation. The conditioned slurry at a solids' density of 29% flows into the feed box of the first of four 8 m³ rougher flotation tank cells with a total residence time of 40 minutes. Test work has indicated that a maximum residence time of 30 minutes is adequate for the flotation of the zinc sulfide minerals. However, should a shorter residence time be required, some of the cells can be taken off-line.

The zinc rougher flotation concentrate is transferred to a pump box by gravity to feed the zinc rougher concentrate regrinding circuit. The zinc rougher flotation tailings flow by gravity into the zinc rougher scavenger flotation cell.

14.2.6.2 Zinc Rougher Concentrate Regrind

As for the silver concentrate regrinding, the zinc rougher regrinding further liberates lead and zinc minerals from gangue and other sulfide minerals to improve concentrate product quality and metal recovery. The zinc rougher concentrates are pumped to a regrind ball mill of 1,050 mm in diameter and 1,400 mm long powered by an 18-kW motor, which is operated in a closed circuit with two 100 mm cyclones in the classification circuit. In operation, one cyclone classifies reground slurries. The regrind cyclone overflow flows to the zinc 1st cleaner flotation cells while the cyclone underflow returns to the zinc regrind ball mill. The P₈₀ particle size target of the regrinding circuit is around 30 μ m.

14.2.6.3 Zinc 1st Cleaner Flotation and Zinc 1st Cleaner Scavenger Flotation

The zinc rougher flotation concentrate is further upgraded by three stages of cleaner flotation in a total of seven 3 m³ conventional flotation cells. The 1st cleaner scavenger flotation tailings have a high pyrite content, which is pumped to the No.2 dewatering circuit. The 2nd and 3rd cleaner tailings are recycled to the respective preceding cleaning stages by gravity flow. The zinc 3rd cleaner concentrate is the final product of zinc concentrate which is dewatered prior to shipping.

The feed box of the zinc 1st cleaner flotation feed receives three streams, namely:

- The zinc-regrinding cyclone overflows by gravity flow.
- The zinc 1st cleaner scavenger flotation concentrates by pumping.
- The zinc 2nd cleaner flotation tailings by gravity flow.

The 1st cleaner flotation train has three 3 m³ cells, which gives a total maximum residence time of 15 minutes. This residence time has been deemed adequate but can be reduced, if required, by taking flotation cells offline. The 1st cleaner flotation concentrate flows into a standpipe, which transfers the slurry to the zinc 2nd cleaner flotation circuit.



The zinc 1^{st} cleaner tailings report to a cleaner scavenger flotation cell which is one 3 m³ tank with a total maximum residence time of 9 minutes. The cleaner scavenger flotation tailings flow into a standpipe and are pumped to the feed box of the zinc 1^{st} zinc flotation circuit.

14.2.6.4 Zinc 2nd Cleaner Flotation

The zinc 1st cleaner flotation concentrate is further upgraded in the second cleaner flotation stage consisting of two 3 m³ conventional flotation cells.

The 2nd cleaner flotation feed is pumped from the zinc 1st cleaner flotation standpipe into the feed box of the first of two-zinc 2nd cleaner stage flotation cells. The zinc 2nd cleaner flotation train has a total maximum residence time of 15 minutes. This residence time has been deemed adequate but can be reduced, if required, by taking a flotation cell off-line. The 2nd cleaner flotation concentrate flows into a standpipe which transfers the slurry to the 3rd cleaner flotation circuit.

14.2.7 SILVER AND ZINC CONCENTRATES DEWATERING AND LOADOUT

14.2.7.1 Silver Concentrate

The final lead flotation concentrate is discharged to the lead 3rd cleaner concentrate standpipe and then pumped to the silver concentrate thickener. Flocculant is added as an aid in settling the solids. The thickener is a 3.05 m diameter high-rate unit fitted with an automated rake lifting mechanism and an auto-dilution system. It produces a thickener underflow density of 60% solids which are pumped to the silver concentrate filter feedstock tank. Thickener overflow solution flows into a lead process water collection tank and is pumped to the lead flotation circuit for re-use.

A 25 m^3 holding tank holds the thickener underflow silver concentrate prior to dewatering by using a pressure filter. The concentrate filter feed tank has a residence time of 10 hours to provide sufficient time for regular maintenance on the silver concentrate filter. The filter is a 1,000 mm by 1,000 mm pressure filter unit with 9 plates. The slurry is pumped into the filter chambers on a batch basis, and the solution is squeezed out by highpressure air. Then air is blown through to dry the cake to attain the required moisture level of 8%.

The filter cake is discharged periodically onto a stockpile. Samples are tested to determine the moisture content of the filter cake for metallurgical mass balance purposes. Filtrate from the filter is returned to the concentrate thickener. The dewatered silver concentrate is discharged to the covered silver concentrate stockpile, which has a storage capacity of seven days of silver concentrate production.

Filtrate from the pressure filter is pumped back to the thickener feed well as dilution water. The concentrate thickener overflow is distributed to the lead flotation circuit as process water. The silver



concentrate dewatering area is equipped with a spillage sump for clean-up and recycling. Spillage is returned to the silver concentrate thickener.

14.2.7.2 Zinc Concentrate

The final zinc flotation concentrate is discharged to the zinc 3rd cleaner concentrate standpipe and then pumped to the zinc concentrate thickener. Flocculant is added as an aid in settling the solids. The thickener is a 3.05 m diameter high-rate unit fitted with an automated rake lifting mechanism and an auto-dilution system. It produces a thickener underflow density of 60% solids, which are pumped to the zinc concentrate filter feedstock tank. The thickener overflow solution flows into a process water collection tank and is pumped to the zinc flotation circuit for re-use.

A 25 m³ holding tank holds the thickener underflow zinc concentrate prior to dewatering by a pressure filter. The concentrate filter feed tank has a residence time of 10 hours to provide sufficient time for regular maintenance of the zinc concentrate filter. The filter is a 1,000 mm by 1,000 mm pressure filter unit with 9 plates. The slurry is pumped into the filter chambers on a batch basis, and the solution is squeezed out by high-pressure air. Then air is blown through to dry the cake to attain the required moisture level of 8%.

The filter cake is discharged periodically onto a concentrate stockpile. Samples are tested for the moisture content of the filter cake and to determine the concentrate grade used for metallurgical mass balance. Filtrate from the filter is returned to the zinc concentrate thickener. The dewatered zinc concentrate discharges to the covered zinc concentrate stockpile which has a storage capacity of approximately seven days of zinc concentrate production.

Filtrate from the pressure filter is pumped back to the thickener feed well as dilution water. The concentrate thickener overflow is distributed to the zinc flotation circuit as process water. The zinc concentrate dewatering area is equipped with a dedicated spillage sump and pump for clean-up purposes. Spillage is returned to the zinc concentrate thickener.

14.2.7.3 Tailings Dewatering and Handling

The tailing's thickening area is equipped with one dedicated spillage sump and pump for clean-up purposes. The spillage is returned to one of the two tailings thickeners.

The zinc 1st cleaner scavenger tailings feed the No.2 tailings thickener where it is combined with a flocculant solution to aid the settling. The thickener is a 3.05 m in diameter high-rate type, allowing for the thickener underflow density of 58% solids to be produced ahead of the filtration stage. Thickener overflow solution flows via gravity into the water polishing/settling pond. Thickener underflow slurry is pumped to a tailings storage tank and then pumped to No.2 tailings filter presses for dewatering. The



filtrate solution from the filter press is collected in a filtrate standpipe and returned to the No.2 tailings thickener as dilution water.

Similarly, the zinc rougher scavenger tailings standpipe feeds the No. 1 tailings thickener, where it is combined with flocculant to aid settling. The thickener is 6.1 m diameter, and high-rate type, allowing for a thickener underflow density of 58% solids to be produced ahead of the filtration stage. Thickener overflow solution flows via gravity into the water polishing/settling pond. Thickener underflow slurry is pumped to a tailings storage tank and then pumped to the No. 1 tailings filter press for dewatering. Filtrate solution from the filter is collected into a filtrate standpipe and returned to the No. 1 thickener as dilution water.

Both tailings' filters discharge onto the filtered tailings belt conveyer. The tailings filter products have a greater than 88% solids content, which is suitable for disposal by truck from the stockpile to either the underground as cemented tailings backfill once the CRF plant is operating or the dry stack tailings facility.

The major equipment for tailings management includes:

- One 3,050 mm diameter tailings thickener (No.2 Tailings Thickener).
- One 6,100 mm diameter tailings thickener (No. 1 Tailings Thickener).
- One 1,250 mm by 1,250 mm pressure filter with 23 plates (No. 2 Tailings Filter Press).
- One 1,250 mm by 1,250 mm pressure filter with 23 plates (No. 1 Tailings Filter Press).

14.2.7.4 Reagent Handling and Storage

Most reagents are received in bulk in palletized bags, chemical containers, drums, or bulk bags. The covered and curbed reagent storage and preparation area is located adjacent to the flotation area. A forklift with a drum handler attachment is used for reagent handling, while the electric hoist servicing the reagent area lifts the reagents to the respective reagent mixing area located above the mixed reagent storage area. The reagent system includes unloading and storage facilities, mixing tanks, transfer pumps, and feeding equipment. Table 14-1 shows the reagents currently being specified for use in the process plant.

Table STYLEREF 1 \s 14- – Summary of Reagents.

Reagent	Preparation Method	Use
Flocculant	Received as powder in 25 kg bags; mixed to 0.3% storing strength; transferred to a storage tank and dosed directly to thickeners following further dilution to 0.03% dosing strength.	Flocculation of flotation tailings, and flotation lead and zinc concentrates, in thickeners.
Copper Sulfide	Received as powder in 25 kg bags; mixed to 10% strength; transferred to a storage tank. Dosed to the zinc flotation circuit.	Regulator for zinc sulfide minerals in the flotation process.



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Reagent	Preparation Method	Use
MIBC	Received as a liquid in 200 L drums; dosed undiluted to lead and zinc flotation circuits.	Promotion and stabilization of froth bubbles in flotation cells.
SIBX	Received as powder in 25 kg bags; mixed to 10% strength; transferred to a storage tank. Dosed to both lead and zinc flotation circuits.	Collector reagent for sulfide minerals into the froth phase of the flotation cells.
3418A	Received as a liquid in 200 L drums; dosed undiluted to lead flotation circuit.	Additional collector reagent for lead and silver sulfide minerals into the froth phase of the flotation cells.
Zinc Sulfide	Received as powder in 25 kg bags; mixed to 10% solution strength; transferred to a storage tank. Dosed to the primary grinding and lead flotation circuit, if required.	Regulator of lead sulfide minerals in the flotation process.
Lime	Received as powder in 1 t bags, mixed to 20% storing strength; transferred to a storage tank and dosed directly to the lead regrind and zinc flotation circuits.	pH control and pyrite depressant; added as required
Carbon Dioxide	Received in 240 L compressed gas cylinders. Dosed to lead process water.	pH control to prevent sphalerite activation in the lead flotation circuit.

Anti-scaling chemicals may be required to minimize scale build-up in the reclaim or recycle water lines. This reagent is delivered in liquid form and metered directly into the reclaim water tank.

14.2.8 MILL CHANGES

No major changes occurred to the mill complex as built in 2010 during its initial operation period. During the temporary shutdown in 2013, a series of corrective maintenance projects were completed in preparation for the restarting the mill. The major maintenance works completed at that time included rebuilding all the flotation cells and pumps. The grinding circuit was upgraded with the installation of a second ball mill among a cyclone cluster replacing a Derrick screen deck to be able to handle increased throughput. Lead and zinc rougher concentrate regrind circuits were installed including a ball mill and a classification stage for each of the concentrates. The final tailings press filter was replaced with a larger unit to increase capacity.

In 2018, a water treatment circuit was installed inside the existing mill building to treat water from Flame and Moth, the water treatment consists of a clarifier and reagent addition system (lime and flocculant) for treating the water prior to discharge or recycle into the mill process water tank.

14.2.8.1 Grinding Circuit

Three specific modifications have been completed to ensure mill throughput including:

- Replacement of the existing ball mill separation screen to classifying cyclones.
- Modification of the existing ball mill discharge.



• Addition of one ball mill to the grinding circuit in series with the existing ball mill in an open circuit configuration.

The modifications were based on both grinding test work and a review of the planned mill feed/throughput for the LOM. Starkey & Associates (S&A) of Oakville, Ontario, performed a grinding circuit throughput analysis in 2013. In the investigation, the Bond rod mill work index was found as 12.4 kWh/t; while the Bond ball mill work index was measured as 10.20 kWh/t. Both the working indices are noticeably higher than the 2009 design of 8.7 kWh/r (RWi) and 9.5 kWh/t (BWi).

The S&A assessment was expanded using International Metallurgical in 2018 and formed the basis for the changes to the mill equipment. International Metallurgical evaluated the conversion of the existing grate discharge of the primary ball mill to supplement the second ball mill installation. The assessment also included the replacement of the vibrating Derrick screen with two cyclones. Based on an overall Bond Work index of 11.0 kWh/t from previous operations and grindability testing (S&A, 2013), the two-stage ball mill grinding performance was estimated to reduce the feed size F80 of 6 mm to 80% passing 120 µm in the cyclone overflow.

The QP reviewed the planned grinding circuit, which was comprised of two identical overflow ball mills, each with a dimension of 1.8 m diameter x 3.6 m, and an installed power of 150 kW. Estimation of the feed size F80 at 10 mm and an overall BWi of 10.5 kWh/t, the two-stage ball mill grinding circuit will achieve 600 tpd. The particle size of the ground product will contain 80% passing 100 to 120 μ m.

14.2.8.2 Flotation Circuit

Two major modifications were completed in the flotation circuit based on the recent test results. The first modification was to divert the lead 1st cleaner scavenger tailings to feed the zinc rougher flotation circuit.

The second modification was to add two regrind ball mills to the current lead and zinc flotation circuit, one for each of the lead and zinc concentrates prior to the cleaning stage. This was based on an analysis of the metallurgical test work conducted from 2016 to 2019 on representative samples of both the Flame and Moth and Bermingham deposits, and composites thereof (Section 10). Regrinding of each of the lead and zinc rougher concentrates improved the grade of the final zinc concentrate and lowered the zinc reporting to silver concentrate. This was particularly beneficial for the Flame and Moth ore.

14.2.8.3 Dewatering Circuit

Plate and frame pressure filters were used for the dewatering of both the lead and zinc concentrates and the tailings' products. The circuit was modified to replace the smaller of the two existing filter presses (1,000 x 1,000 mm, 9 plates) with a larger filter press (1,250 x 1,250 mm, 23 plates) to mirror the size of the second filter press.



14.3 PROCESS DESIGN CRITERIA

The District Mill is designed for 400 tpd mill throughput, and the plant operates at 400 tpd for the first five years before ramping up to 550 tpd. The mill complex processes ore at a 75% availability for the crushing plant based on one 12-hour shift per day, and 92% availability for the grinding and flotation plant operating 24 hours per day.

The primary grinding is conducted in two stages with a target grind size P_{80} of 100 to 120 μ m. Concentrate regrind mills are added to each of the lead and zinc flotation circuits to further liberate lead and zinc minerals. The regrinding particle size P_{80} was designed as 30 μ m for the lead rougher concentrates and 30 μ m for the zinc concentrates. The key design criteria are shown in Table 14-3.

Descriptions	Unit	Values					
Daily Processing Rate	tpd	400 (ramping up to 550 tpd in year 5)					
Annual Operating Days	d/y	365					
Operating Schedule – Crushing		1 shift per day (12 h/shift)					
Operating Schedule – Grinding/Flotation		2 shifts per day (12 h/shift)					
Crushing Availability	%	75					
Grinding/Flotation Availability	%	92					
Head Grades, LOM Average							
Ag Grade	g/t	912					
Au Grade	g/t	0.22					
Pb Grade	%	2.81					
Zn Grade	%	2.53					
Bond Ball Mill Work Index	kWh/t	10.5					
Grinding							
Feed Particle Size P80	μm	12,000					
Product Particle Size P80	μm	100 to 120					
Regrinding							
Lead Rougher Concentrate Particle Size P80	μm	30					
Zinc Rougher Concentrate Particle Size P80	μm	30					
Flotation Stages		Pb Ro/3-stage cleaner flotation followed by Zn Ro/3-stage cleaner flotation					
Tailings Management							
Tailings		Surface Dry Stack, with portion of Flame and Moth tailings used for underground backfill					

Table STYLEREF 1 \s 14- – Modified Mill Design Criteria (Hecla, 2024).

DEFINE | PLAN

| OPERATE

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14.3.1 MILL DESIGN CRITERIA

The District Mill design criteria for the mill operations are summarized in Table 14-4.


Tahle	STYLEREE 1	\s 14 Mill	Desian Criteria
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Description	Unit	Value
Type of Ore Processed		
Silver/Lead/Zinc sulfide mineralization		
Bermingham/Lucky Queen/Flame and Moth Mines		
Ore Characteristics		
Specific Gravity	g/cm ³	3.46
Bulk Density	t/m³	2.1
Moisture Content	%	3-5
Operating Schedule		
Crusher Plant		
Shift/Day		1
Hours/Shift between 7:00 am and 7:00 pm only	h	12
Hours/Day	h	12
Grinding and Flotation Plant		
Shift/Day		2
Hours/Shift	h	12
Hours/Day	h	24
Days/Year	day	365
Plant Availability/Utilization		
Overall Plant Feed	mt/a	146,000
Overall Plant Feed	mt/d	250-400
Crusher Plant Availability	%	80
Grinding and Flotation Plant Availability	%	92
Crushing Process Rate	mt/h	63.8
Grinding/Flotation Process Rate	mt/h	18.5

The daily concentrate grade, metal recovery rates, and production rates are provided in Table 14-5.

Description	Unit	Value
	% Pb	2.76-2.86
Head Crades	% Zn	1.06-2.39
	g/t Au	0
	g/t Ag	885-963
Percevent (LOM)	Pb %	93.2
	Zn %	72
Recovery (LOM) including Ag & Zn Concentrates	Au %	0
Recovery (LOM) including Ag & Zn Concentrates	Ag %	96



Description	Unit	Value
	% Pb	45
	% Zn	1.84
	g/t Au	0
	g/t Ag	15,269
	% Pb	4.02
Zing Concentrate Crade (LONA)	% Zn	47
	g/t Au	0
	g/t Ag	997
Silver Concentrate Production (LOM)	wmt/a	11,000
Zinc Concentrate Production (LOM)	wmt/a	7,000

14.4 SUMMARY OF MASS AND WATER BALANCES

14.4.1 PLANT SERVICES

14.4.1.1 Air Supply

The air service systems supply the required air in the following areas.

- Flotation: low-pressure air for flotation cells is provided by air blowers.
- Filtering: high-pressure air for filter pressing and drying of concentrates and tailings is provided by a dedicated air compressor.
- Crushing: high-pressure air is provided for the baghouse filters in the crushing facility.
- Instrumentation: dried and oil-free instrument air comes from the plant air compressors and is stored in a dedicated air receiver.

Two 365 cfm compressors, each with 75 kW motors, supply the high-pressure air used in plant operations and instrumentation. The compressed air is filtered and then stored in dedicated air receivers. For instrumentation air, an additional drying stage is required. A low-pressure centrifugal blower is used to supply low-pressure air to the various flotation circuits.

14.4.1.2 Instrumentation and Process Control

The plant process control system consists of individual locally mounted control panels located near the main equipment. The mill control system includes an Allen Bradley PLC (programmable logic controller) that provides local and centralized start/stop control. Major process performance including throughput, mill power draw, and motor variable speeds are displayed on the centralized computer within the mill



operator control room. Alarm annunciation is local to the major equipment or located on the local control panel. The local control panels act as a marshaling point for monitoring and control of the nearby equipment and instrumentation. It also acts as a distribution point of power for instrumentation.

14.4.1.3 Quality Control

A metallurgical and assay laboratory conducts daily quality control and optimizes process performance. The assay laboratory is equipped with the necessary analytical instruments to provide all the routine assays for the mine samples, the geological samples, the process plant samples, and samples taken for environmental monitoring. The metallurgical laboratory undertakes all basic test work to monitor metallurgical performance and to improve the process flowsheet and efficiencies.

14.5 PRODUCTS AND RECOVERIES

According to the current LOM plan, three deposits are considered to provide the future mill feed, namely, the Flame and Moth (26% of the total mill feed), Bermingham (69%), and Lucky Queen (5%).

The concentrate grades and recoveries are based on the test work and recovery relationships presented in Section 10. As shown in Table 14-6, the overall LOM silver concentrate has an expected grade of 15,269 g/t Ag and 45% Pb. The zinc concentrate is expected to contain a grade of 47% Zn and 997 g/t Ag. Based on this distribution and metal projections given in Section 10, the LOM concentrate production is provided in Table 14-7.

The locked cycle testing completed in 2017 and 2018 was analyzed for penalty elements including: As, Bi, Sb, Hg, F, SiO₂, Mn, Fe, Cd, and Zn (in Pb). Based on initial smelter terms discussions, the silver concentrate only showed slightly elevated As, Bi, and Sb, while the zinc concentrate only showed slightly elevated As and Cd. No penalties were applied to the payable metals in this technical report based on the predicted metallurgical performance. Details of the annual and LOM total concentrate production and metal recoveries to concentrates are shown in Table 14-7 and Table 14-8.



Table STYLEREF 1 \s 14- - LOM Projected Concentrate Grades (Hecla, 2024).

	LOM					
Ag-Pb Concentrate						
Dry tonnes	103,199					
Ag g/t	15,269					
Pb %	45.0					
Zn Concentrate						
Dry tonnes	68,748					
Ag g/t	997					
Pb %	4.02					
Zn %	47.0					

Notes:

1. Based on the Probable Mineral Reserves presented in Section 12 and the mine plan presented in Section 13.

2. Grades are calculated weighted averages.



					-								
Products	Unit	Total or Average	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Mill Feed (total)	t	1,877,356	127,307	139,259	146,136	176,937	200,803	200,879	200,917	199,076	200,234	200,443	85,365
Mill Feed Head Grad	Mill Feed Head Grades												
Ag	g/t	912	944	941	974	855	849	944	990	998	835	808	948
Pb	%	2.81	2.11	2.05	2.00	2.22	3.47	3.25	3.43	3.63	2.70	2.81	2.03
Zn	%	2.53	1.34	1.58	1.99	3.23	3.22	3.33	3.30	2.74	2.34	2.08	1.06
Recoveries to Ag-Pb	Concentra	ates											
Ag	%	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0	92.0
Pb	%	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0	88.0
Zn	%	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Recoveries to Zn Con	centrates												
Ag	%	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Pb	%	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Zn	%	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0	68.0

Table STYLEREF 1 \s 14- - LOM Projected Concentrate Production (Hecla, 2024).

Notes:

1. Based on the Probable Mineral Reserves presented in Section 12 and the mine plan presented in Section 13.

2. Partial year of production is Year 11.

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Table STYLEREF 1 \s 14- - LOM Projected Concentrate Production - Metal Quantities Hecla, 2024).

Products	Unit	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Metals Recovered in Ag Pb Concentrate													
Ag	M oz	50.66	3.55	3.88	4.21	4.48	5.04	5.61	5.89	5.88	4.95	4.79	2.39
Pb	tonnes	46,440	2,369	2,514	2,573	3,450	6,127	5,748	6,069	6,357	4,758	4,948	1,527
Zn	tonnes	1,901	68	88	116	228	259	268	265	218	187	167	36
Metals Recover	ed in Zn Concen	trate											
Ag	M oz	2.20	0.15	0.17	0.18	0.19	0.22	0.24	0.26	0.26	0.22	0.21	0.10
Pb	tonnes	2,765	141	150	153	205	365	342	361	379	283	295	91
Zn	tonnes	32,311	1,157	1,493	1,975	3,881	4,397	4,554	4,504	3,714	3,187	2,833	616
Total Recovered Metals													
Ag	M oz	52.87	3.71	4.05	4.39	4.67	5.26	5.85	6.14	6.13	5.16	5.00	2.50
Pb	tonnes	49,205	2,510	2,664	2,726	3,655	6,492	6,090	6,430	6,735	5,042	5,243	1,618
Zn	tonnes	34,212	1,225	1,581	2,091	4,110	4,656	4,822	4,769	3,933	3,374	2,999	652

Notes:

1. Based on the Probable Mineral Reserves presented in Section 12 and the mine plan presented in Section 13.

2. Partial years of production is 11.

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14.6 RECOMMENDATIONS

The QP considers that there is an opportunity to improve the level of detail of the metallurgical predictions and particularly the concentrate production at a month-to-month operational level. Further locked cycle tests at the next stage of study are recommended for samples representing the Flame and Moth deposit and different blends according to the LOM production plan. There may be an opportunity to improve the concentrates grades with further testing, particularly of the zinc concentrate. Additional metallurgical testing at different head grades would also support the approach to capping recoveries, particularly for the comportment of lead to concentrates at lower head grade mill feed. In addition, further hardness tests are recommended on these samples to verify potential grindability variations for future mill feeds. It is also recommended that testing of the increased plant throughout above the 400 tpd be done in the first year of operation to identify potential bottlenecks and confirm requirements for mill modifications to achieve the 550 tpd throughput. Sedgman recommends that Hecla perform a series of debottlenecking exercises and productivity tests on the mill prior to and well in advance of the expected throughput increases. This will help to de-risk the production profile and ensure a smooth ramp up.



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15. INFRASTRUCTURE

15.1 ACCESS ROADS

15.1.1 OFF-SITE FACILITIES

The Keno Hill Mine is located in central Yukon, near the community of Keno City. Keno Hill is approximately 452 highway kilometers or approximately 5 hours by road north of Whitehorse via Yukon Highway 2 and Highway 11. Road access to the project is maintained year-round by the Yukon Government, Department of Highways. The site operations are supported by an existing office and administrative building located in Whitehorse.

The nearest airport with scheduled service is the Mayo Airport, located approximately 55 kilometers south of the site. Charter flights between Whitehorse and Mayo also utilize this airport.

15.1.2 AREA HAUL ROAD SYSTEM

The former operator, Alexco, has constructed a series of access and haul roads to route mine traffic around the Keno City community (Figure 15-1). All traffic between Elsa and the mill facility is routed along the Christal Lake Road and subsequently the Bellekeno haul road. The Bermingham traffic uses the Bermingham access road, Calumet Road, and a short section of the Duncan Creek Road (~3 km) between the mill and the Bermingham deposit.

Heavy truck traffic from Lucky Queen will be routed along the Keno City bypass road to/from the Bellekeno haul road. The bypass road is approximately 2.1 km long and six to nine meters wide as per Yukon Workers' Compensation Health and Safety Board regulations and the identified haul road type.





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Figure STYLEREF 1 \s 15- - Keno Hill Area Haul Road System.



15.2 ELECTRICAL POWER SUPPLY AND DISTRIBUTION

The Keno Hill Mine is supplied with electrical power from a hydroelectric plant near Mayo and a connection to the Yukon-wide electrical grid.

The Mayo hydro facility was expanded in 2011 which increased generation capacity from 5 megawatts to 15 megawatts. The power distribution grid was also upgraded from Pelly Crossing to Stewart Crossing during the same time. The power distribution line from Mayo to McQuesten was completed in early 2021 to replace the 65-year-old line and to add system protection equipment. There is ample power supply on the grid to operate in the future at 550 tpd.

A new 69 kV/4.16 kV 3 MVA substation was installed to deliver power to the mill facility, Flame and Moth, and associated infrastructure. The substation houses a primary 69 kilovolt – 600-volt step-down transformer and electrical distribution infrastructure. The substation is enclosed by a 28 by 15.5-meter security fence.

Hecla owns several substations in the area, including the Elsa substation, the Onek substation, and the Bellekeno 625 portal substation. Hecla also owns the transmission line connecting the latter two. Power for the Flame and Moth is now provided exclusively by the Yukon Energy Corporation (YEC) electrical distribution system.

Bermingham power is fed from the Ruby substation that has 69kV/4.16kV 3 MVA capacity. The main transmission line is via a surface teck cable that runs up the slope from the Ruby substation to the mine site (shown in Figure 15-6).

Power for the camp is supplied from the local grid that runs through Elsa to Keno City.

15.3 COMMUNICATIONS

Communications are via satellite with good bandwidth, optimized internet for the operations network, and cell phone coverage. Cell phone boosters are installed in many locations to provide enhanced coverage. Mobile VHF radios are carried by most personnel, and available in all surface and most underground vehicles, as well as base radios in all buildings at the site. A voice-over IP (VoIP) telephone network is also available.

15.4 ON-SITE INFRASTRUCTURE

The District Mill facility is a centrally located complex serving the Keno Hill Mine. The current facilities at the District Mill facility include mine and mill offices, male and female dry facilities, an assay lab, first aid



facilities, and the mill and DSTF complex (Figure 15-4). Flame and Moth mine portal is also located in this area.

Other existing infrastructure at the site includes:

- A network of public and private roads connecting the mines, process plants, and other facilities including the Silver Trail Highway.
- Administration, maintenance, and camp facilities near the town of Elsa.
- Mine workings and infrastructure including water treatment at the Bellekeno.
- Mine workings and minor surface buildings at the Lucky Queen.
- Portal and decline development at both Flame and Moth and Bermingham.
- Waste rock storage facility at the Lucky Queen, Bellekeno, and Bermingham.
- Crushing plant and flotation processing plant.
- DSTF adjacent to the process plant.
- Process and potable water sources.
- Electrical power available in the area from the Yukon Electrical Company Limited grid.

Mine surface and underground infrastructure are currently in serviceable condition and are in use.

The site layout for each property at Keno Hill is presented below as follows:

- Bellekeno Figure 15-2.
- Lucky Queen Figure 15-3.
- Flame and Moth and Mill District Figure 15-4.
- Onek Figure 15-5.
- Bermingham Figure 15-6.

The details on each site's infrastructure are provided in the sections below.





Figure STYLEREF 1 \s 15- – Bellekeno Site Layout.





Figure STYLEREF 1 \s 15- – Lucky Queen Site Layout.

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Figure STYLEREF 1 \s 15- – Flame and Moth Site Layout.





Figure STYLEREF 1 \s 15- – Onek Site Layout.





Figure STYLEREF 1 \s 15- – Bermingham Site Layout.



15.5 WATER MANAGEMENT

15.5.1 MINE WATER

15.5.1.1 BELLEKENO

The Bellekeno Mine dewatering pump was halted on October 15, 2021, at the completion of planned mining, and the mine workings have been allowed to flood. The mine was put into temporary closure on December 15, 2021.

Currently, mine water within the Bellekeno Mine has risen to the level where it is reporting to the water treatment plant (WTP) and treatment ponds. The Bellekeno 625 adit began producing water on March 22, 2023, with water reaching the treatment plant. Discharge from the treatment ponds to the environment began on May 16, 2023.

15.5.1.2 LUCKY QUEEN

The new workings at Lucky Queen will not intersect the historical workings and will be above the current groundwater table, as understood at present. However, the new workings will connect with the 500-level adit, and, therefore, any water from this new area will be allowed to mix with water from the historical area. The Water Licence will require an amendment to commence mining at Lucky Queen.

There have been no mining or development activities at Lucky Queen since 2014. The Lucky Queen 500 level drift is currently draining groundwater at a rate of approximately 1 L/s which is directed to an unlined settling pond located outside the portal. This water is predominantly clean groundwater that does not require treatment and meets direct effluent quality standards.

15.5.1.3 FLAME AND MOTH

The majority of the Flame and Moth mine workings are expected to be below the water table; therefore, development of the Flame and Moth mine requires continual dewatering through the Flame and Moth adit. However, the portal has been developed approximately 20 m above the water table so that there should be no long-term discharge from the site.

Hydrogeologic studies and water balance estimates indicate a potential adit discharge during the production of 2,912 m³/day (33 L/s) when the mine reaches its deepest levels. Water Licence QZ18-044 authorizes the Flame and Moth mine to discharge up to 3,024 m³/d (35 L/s).



Water quality encountered in the underground workings is generally compliant except for some metals (current groundwater wells show some iron and zinc), and with elevated levels of ammonia and total suspended solids from underground mining activities.

Water that is dewatered from the proposed workings is pumped to the surface and directed to the water treatment circuit located in the mill facility. Since August 2018 there has been effluent discharged from the water treatment system to Lightning Creek, with effluent flows not exceeding 20 L/s.

15.5.1.4 ONEK

There have been no mining or development activities at Onek. No current dewatering is occurring at Onek.

15.5.1.5 BERMINGHAM

The new underground workings at Bermingham will not be connected to the historical underground workings. The Bermingham requires continual dewatering through the New Bermingham Portal, with discharge flows typically ranging between 3.0 and 11.0 L/s. The WTP was designed to accommodate a maximum flow of 14 L/s (Alexco, 2021b). Water Licence QZ18-044 authorizes the Bermingham to discharge up to 1,200 m³/d, or the equivalent of 13.9 L/s.

Management of mine inflows at Bermingham is via underground sumps and pumps. Water that is dewatered from the workings is pumped to the surface and directed to the water treatment plant installed near the portal.

Water is treated to meet the effluent quality standards before being discharged to the ground. If excess water accumulates in either of the reactive rock storage areas (P-AML WRSF or the temporary ore/P-AML pad), the water is collected and transported to the water treatment plant.

The New Bermingham WTP discharges to the ground in the upper No Cash Creek catchment.

15.5.2 WATER TREATMENT

15.5.2.1 Bellekeno 625 Existing Water Treatment Facility

Adit drainages from Bellekeno have neutral pH levels but elevated total zinc concentrations. The Bellekeno 625 Water Treatment Facility (WTF, Figure 15-2) is in operation and is effective in treating Bellekeno mine water to remove metals and ammonia prior to discharge. Treatment for metals is likely



to continue over the long term, and these costs are included in the approved Reclamation and Closure Plan (RCP) for the Bellekeno.

The conventional WTP at Bellekeno 625 is designed to treat and discharge a maximum flow rate of 10 L/s. The mine water reports to a circular rapid mix tank where it is mixed with lime slurry and, if required, a coagulant. From the rapid mix tank, water passes into the first lined settling pond (Pond 1), where the majority of total suspended solids (TSS) and metal hydroxide flocculants settle to the bottom of the pond in the form of a sludge. Treated mine water from Pond 1 decants into Pond 2, which allows for additional settling prior to being discharged.

In 2022, dissolved organic carbon (DOC), in the form of molasses, was introduced into the mine workings to facilitate microbe growth and fuel in situ treatment.

Once treatment is established underground, the setting ponds will be converted to a passive treatment system (bioreactor) for treatment of long-term adit drainage and the mine pool will be treated in situ.

Sludge from the Bellekeno 625 WTF has been disposed of into a cell on the surface of the Valley Tailings as authorized under QML-0009. The sludge from Bellekeno 625 that is stored in the Valley Tailings cell is kept separate from the sludge generated at the other treatment facilities. The sludge containment cells are not lined in order to allow water to exfiltrate from the cells.

15.5.2.2 Lucky Queen

There is currently no water use license for Lucky Queen so there are no effluent water quality requirements. Hecla currently monitors the drainage from the 500 level adit. Surface water diversion infrastructure (berms, ditches) will be maintained as appropriate to manage runoff and limit erosion.

15.5.2.3 Flame and Moth

The Flame and Moth underground portal is adjacent to the mill. There are two water management ponds at the mill, one for water treatment effluent and the other for processing water.

15.5.2.3.1 Flame and Moth Pond

The Flame and Moth Pond is located adjacent to the mill pond and serves as a final polishing step for effluent from the water treatment plant. This pond can treat all the water pumped from the Flame and Moth portal. The clarifier overflow water from inside the mill building gravity flows via a high-density 152 mm HDPE insulated pipe into the Flame and Moth Pond. The water is then pumped from the pond to



either the Lightning Creek or Christal Creek discharge points. Discharge into Christal Creek reports to ground, while discharge into Lightning Creek is into surface water.

The Flame and Moth Pond was constructed with an engineered fill embankment.

15.5.2.3.2 Mill Pond

The mill process pond is located downgradient from the mill building. It is used to collect the seepage and drainage from around the mill, the mill dewatering circuits, and the Dry Stack Tailings Facility (DSTF). The pond contains and manages the process water balance required for the milling operation.

Thickener overflow water from inside the mill building gravity flows via a high-density polyethylene (HDPE) insulated pipe into the mill process pond. Sludge that accumulates in the mill process water pond is dredged into filtering geotextile sludge bags within a lined area and hauled underground for disposal when dried.

Process makeup water is pumped from the pond to a 7 m diameter by 7 m high process water storage tank for makeup and recycling in the milling process. The mill process pond is 32 by 79 meters in dimension with a total design capacity of 4,340 m³ based on a 0.4 m freeboard.

Studies are underway to determine if the DSTF can accommodate the inclusion of sludge from the Flame and Moth WTP. If positive, the results will be reported in updated Tailings Management Plans.

15.5.2.4 Onek

Surface water diversion infrastructure (berms, ditches) will be maintained as appropriate to manage surface runoff from entering the decline and limit erosion on site.

15.5.2.5 Bermingham

A conventional water treatment plant using lime addition for metals removal and breakpoint chlorination for ammonia treatment is located adjacent to the Bermingham portal. The mine effluent is pumped from the underground to a reactor tank on the clarifier. The underflow sludge reports to geotextile bags where it is filtered. Flow from the geotextile bags reports to the site's water treatment pond (Figure 15-6). Overflow water from the clarifier is directed to the settling pond. Decant from the settling pond gravity flows through a pipe in the access road and discharges into a settling box and cascades down a rip rap face.



The water chemistry at Bermingham is reviewed regularly to assess long-term water chemistry. Dissolved arsenic concentrations have been consistently below discharge limits in 2022 and are not expected to increase in the long term.

15.5.3 MILL WATER SUPPLY

The majority of the water used in the mill is recycled from one of two water management ponds, Flame and Moth Pond and Mill Pond (Figure 15-4) and is supplied primarily via a submersible pump. The Flame and Moth Pond is permitted to discharge and has appropriate environmental monitoring points.

The details on both ponds are provided in Subsection 15.5.2.3.

The mill water supply is used for processing stream dilution as well as by the plant clean-up hosing stations. Filtered process water is used to supply gland service water for all centrifugal water and slurry pumps in the plant.

15.5.4 RECEIVING ENVIRONMENT

The site is permitted to discharge water from both the Flame and Moth Pond and from the different mines. The Water Licence has varying standards for discharge water chemistry depending on the receiving environment. There is a substantial network of environmental monitoring stations, combined with many years of data and water modeling that shows that operations are not constrained by the net positive water balance, although water must be carefully managed across the site. Details are documented in the issued Water Licence QZ18-044. An adaptive management plan has also been designed to guide responses to unforeseen or contingency events regarding the water quality in the receiving environment.

15.6 WASTE ROCK MANAGEMENT

Studies conducted throughout KHM provide a detailed foundation for understanding the weathering behavior or 'geoenvironmental' characterization of rock in Keno Hill. These studies were used to derive a classification system for waste rock management and inform the Waste Rock Management Plan required by the Quartz Mining Licence QML-0009. All waste rock brought to the surface is classified as Non-Acid Metal Leaching (N-AML) or Potentially-Acid Metal Leaching (P-AML) based on field screening criteria developed for the individual deposits as described in the Waste Rock Management Plan (Alexco, 2022b). Geochemical screening criteria are defined for each deposit, and proportions of P-AML and N-AML material by rock type are estimated to plan materials handling and meet license conditions for the proposed development activities.



Most of the waste rock excavated is expected to be N-AML. Waste rock classified as N-AML will be stored in designated locations at each of the mine sites.

P-AML waste rock (mainly pyrite-rich graphitic schist) is categorized as waste rock and mineralized waste rock of no economic interest with an increased likelihood of acidic or metal leaching. P-AML is stored in designated P-AML waste rock storage facilities or underground as a cemented backfill within excavated production zones. Any water that enters a P-AML waste rock storage facility is collected and treated. Additionally, monitoring the upgrade and downgrade of each P-AML facility is done as part of ongoing site monitoring.

Table 15-1 provides a summary of the waste rock stockpile permitted limits. These permit limits are consistent with the current Water Licence QZ18-044.

Table STYLEREF 1 \s 15- – Waste Rock Storage by Deposit.

	Stockpiles	Material Type	Permit Limit (tonnes)	
	Elamo and Moth	P-AML	12,000	
Waste	Flame and Moth	N-AML	125,000	
	Dorminghom	P-AML	16,000	
	berningham	N-AML	190,000	

15.6.1 BELLEKENO WASTE ROCK STORAGE FACILITIES AND DISPOSAL AREAS

15.6.1.1 P-AML Waste Rock Storage Facilities

P-AML waste rock previously mined from the Bellekeno mine was placed in a lined temporary Waste Rock Storage Facility (WRSF) located south of the Bellekeno East portal (Figure 15-2). The facility was designed according to the approved generic design (EBA, 2008). During the temporary closure of Bellekeno between Q3 2013 and Q4 2020, the P-AML waste rock stored was transported underground. The temporary WRSF liner was removed and placed underground in 2021. Recontouring and revegetation are taking place with appropriate growth media and seed mixes.

15.6.1.2 N-AML Waste Rock Disposal Area

A Waste Rock Disposal Area (WRDA) was proposed to be constructed along the northeast flank of Sourdough Hill, northwest of the current Bellekeno 625 waste rock storage areas. In 2020, dewatering commenced in Q2, and the mine production resumed in Q4. Mine production ceased in Q4 2021. The Bellekeno WRDA has not been constructed because most of the N-AML waste rock generated from the



Bellekeno mine between Q4 2020 and Q4 2021 has been used for road construction material with a lesser amount for underground backfill. The Bellekeno mine is not included in the current Life of Mine (LOM) plan, and therefore there is no scheduled requirement for the construction of a Bellekeno WRDA.

15.6.1.3 Bellekeno 625 Waste Rock Dump

The Bellekeno 625 waste rock dump (Figure 15-2) is a historic facility that is included in this Reclamation and Closure Plan (RCP) under the designation of the Bellekeno Production Unit. Reclamation and closure of the Bellekeno 625 WRDA will include cleanup of equipment on the top surface of the WRDA, pulling back the crests with an excavator followed by scarification and revegetation of the flat surface of the WRDA. Long-term road access remains for pickup traffic to the Bellekeno 625 adit given it drains and inspections are required during the post-closure monitoring and maintenance period.

15.6.2 LUCKY QUEEN WASTE ROCK STORAGE AND DISPOSAL AREAS

15.6.2.1 P-AML Waste Rock Storage Facilities

A lined temporary P-AML storage facility is planned to be constructed near the portal. This will be used during the initial development stages. P-AML rock stored within the temporary facility will be moved back underground as a backfill as the mine transitions into production. All P-AML waste rock will be re-handled back underground prior to closure. The mine plans for Lucky Queen are still preliminary and it should be noted that Lucky Queen does not have the required water license to begin development.

15.6.2.2 N-AML Waste Rock Disposal Area

N-AML will be used for general construction and access road repairs and surface capping or placed into the onsite N-AML WRDA. N-AML material may also be placed underground as mine backfill, as required. The existing disturbance at Lucky Queen N-AML WRDA will be recontoured by pulling the crests back with an excavator followed by scarification and revegetation of the flat surface of the WRDA.

15.6.2.3 Lucky Queen Historic Waste Rock Dumps

Terrestrial reclamation of historic liabilities at Lucky Queen is currently under the scope of the District Closure Plan.



15.6.3 FLAME AND MOTH WASTE ROCK STORAGE AND DISPOSAL AREAS

15.6.3.1 Flame and Moth P-AML Waste Rock Storage Facilities

A lined temporary P-AML storage facility has been constructed near the portal entrance (up to 16,000 tonnes) and is shown in Figure 15-4. This was used during the initial development which has been completed. The current plan enables all P-AML development rock to remain underground, and the P-AML rock stored within the temporary facility will be moved back underground as a backfill. All P-AML waste rock will be re-handled back underground prior to closure.

15.6.3.2 Flame and Moth N-AML Waste Rock Storage Facilities

A N-AML waste rock disposal area will not be built for Flame and Moth as the rock will either be used for construction or used as a backfill. N-AML materials may be used for the construction of portal pad and laydown area, expanded coarse ore stockpile, mill yard expansion, new haul road to crusher, and construction of the toe berm and base layer for DSTF expansion.

15.6.4 ONEK WASTE ROCK STORAGE FACILITIES AND DISPOSAL AREAS

15.6.4.1 P-AML Waste Rock Storage Facilities

The Onek deposit is not currently in the Keno Hill LOM plan so no Onek P-AML waste dumps are planned.

15.6.4.2 N-AML Waste Rock Disposal Area

The Onek deposit is not currently in the Keno Hill LOM plan so no Onek N-AML WRDA is planned.

15.6.4.3 Onek Historic Waste Rock Dumps

Terrestrial reclamation of historic liabilities at Onek is currently under the scope of the District Closure Plan. A P-AML WRSF was constructed on the historic Onek waste rock dump to the north of the Onek historic open pit (Figure 15-5) for advanced exploration and production at Bellekeno. Although constructed, no P-AML rock has been brought to the surface and stored from the development of the



Onek decline. N-AML Development rock from Onek was used for the construction of the portal area laydown yard and haul road switchbacks.

15.6.5 BERMINGHAM WASTE ROCK STORAGE/DISPOSAL AREAS

Bermingham P-AML and N-AML waste rock storage facilities are indicated in Figure 15-6.

15.6.5.1 Bermingham P-AML Waste Rock Storage Facilities

A temporary P-AML storage facility has been constructed on the historic Bermingham waste rock dump. This and a secondary P-AML WRSF have been used during the initial development. Currently, the P-AML rock is used for underground backfill. The P-AML rock stored within the temporary facility will also be moved back underground when it can be used for the backfill. Thus, all P-AML waste rock will be re-handled back underground prior to closure.

15.6.5.2 Bermingham N-AML Waste Rock Storage Facilities

An N-AML waste rock from the Bermingham (Figure 15-6) has been used for the construction of portal pads, laydown areas, and roads at the Bermingham as is allowed by the Water Licence QZ18-044.

15.7 TAILINGS

Hecla employs Dry Stack Tailings technology for the management and long-term storage of tailings.

15.7.1 BACKGROUND

In June 2023 Tetra Tech issued for review a Tailing Management Plan (TMP) for Dry Stack Tailings Facility (DSTF). Prior to this, the following engineering design work has been completed (Tetra Tech, 2023):

- Preliminary design for Phase 1 of the DSTF completed between 2008 and 2010 (EBA 2008, 2010a, and 2010b).
- Detailed Phase 1 design completed in 2011 (EBA 2011).



- Phase 1b design completed in 2013 (EBA 2013) as an expansion to Phase 1 to accommodate the permitted tailings volume.
- Preliminary design for Phase 2 of the DSTF completed between 2013 and 2015 (EBA 2013 and Tetra Tech 2015).

Construction and operation of the Phase 1 area have generally progressed per the 2011 detailed design. The changes in the mine planning led to the entire Phase 1 footprint not being constructed. An area included in the footprint immediately north of the mill is now used as a fuel storage area, turnaround, and laydown area.

Monitoring instrumentation was installed during the design and construction of Phase 1, consisting of ground temperature cables (GTCs), slope indicators (SIs), and one standpipe piezometer. Data was collected over the years since installations and the performance of Phase 1 to date has been considered in the design of Phase 2.

The tailings have a low potential for acid rock drainage and metal leaching (Ensero, 2020). While there is some variability in neutralizing potential (NP) between tailings sourced from different areas of the mine site, the bulk NP of the tailings mix is sufficiently high that long-term acid generation is not anticipated.

The composition of the tailings is subject to the milling and filtering processes; however, the particle size distribution of the tailings is typically consistent.

15.7.2 OVERVIEW

The DSTF Phase 2 expansion is approved and included in the amended QML-0009 Revision 7 and Water Licence QZ18-044. These licenses allow for up to 907,000 t of dewatered tailings to be placed at the DSTF.

The existing DSTF presently holds a volume of 223,000 t, or 106,000 m³, and covers an area of approximately 2.4 hectares. The ultimate proposed DSTF capacity is approximately 881,000 t, or 385,000 m³, will cover an area of 5.5 hectares, and is designed to provide for storage and confinement of the tailings. The DTSF footprint is shown in Figure 15-7.





Figure STYLEREF 1 \s 15- – Overall DSTF Plan.

The Phase 2 expansion is located immediately south and southwest of the existing Phase 1 and adjacent to the mill. The area is mostly undeveloped and undisturbed, except for a waste rock storage area along the western edge of the footprint, and existing roadways along the footprint perimeters. Immediately north and northwest of Phase 2 is the Keno City waste dump and access road, respectively.

The DSTF is lined and any surface runoff entering the DSTF area is managed through the outer diversion berms, runoff collection ditches, and the water collection pond. The water collection pond was excavated into the existing ground and lined with an HDPE geomembrane liner. The pond capacity is 3,500 m³.

Surface water within the DSTF is managed with the construction of the drainage blanket and ensuring the tailings stack is graded to reduce surface erosion and direct surface water to areas that drain away from the facility.

On the North side of Phase 1, the drainage system existed from previous years. In the fall of 2023, Phase 1b foundation, lining, toe buttress, and drainage were constructed to allow for designed tailings placement in 2023 and 2024. The toe buttress has a drainage system to allow for proper drainage at the toe of the South side of DSTF Phase 1.



Site preparation and foundation requirements, as well as all other conditions regarding placement and compaction of the tailings, are detailed in the DSTF Operation, Maintenance, and Surveillance (OMS) manual, which forms part of the DSTF Construction and Operation Plan.

The tailings are deposited off a conveyor stacker outside the mill building. According to the TMP, approximately 60% of tailings produced will be placed in the DSTF, and the remaining 40% will be placed underground as backfill. Dewatered tailings for the DSTF storage are hauled from the tailings stockpile outside of the mill building to the DSTF and mechanically spread and compacted in 300 mm-high lifts to form a stacked tailings deposit.

The facility is designed and managed to meet both operational and closure requirements, with a minimum long-term liability and no long-term water treatment requirement. The experience on the existing DSTF supports that with the following performance indicators:

- 1. The moisture content of the filtered and stacked tailings is lower than the design, resulting in lower makeup water requirements and no discharge of mill water.
- 2. The metal content of the pore water is lower than initially estimated (~ 2 mg/L vs. 20 mg/L).
- 3. Humidity cell tests on Bellekeno tailings in the DSTF confirm there is no concern for acid or metal generation.
- 4. Progressive reclamation has been successfully implemented to date.
- 5. No pore water has been measured or observed in the DSTF monitoring well installed within the DSTF.
- 6. Compaction results have met design specifications.
- 7. Previously observed sluffing on the toe of the DSTF has been repaired, and the sinkholes have been excavated and repacked.
- 8. Ground temperature and slope indicator readings indicate no thawing of underlying permafrost or movement has occurred to date.

Geochemical characterization has been completed on tailings samples to date and continues during operation, according to the site TMP. Both laboratory and field-testing work shows that the tailings from Bellekeno are non-acid generating. Geochemical testing on tailings from Bermingham and Flame and Moth shows that they are geochemically similar to the already licensed tailings and that no additional measures are required to control metal leaching.

DSTF Phase 2 construction is scheduled to start in summer 2024. The design is currently being revised to incorporate comments received from the Yukon Government. Design revisions include revisions to the seismic criteria and re-evaluation of geotechnical design under updated criteria.



The current permit limits for the Dry Stack Tailings Facility and the Waste Rock Dump Facility are insufficient to cover the planned waste rock and tailings produced over the LOM. Permitting studies are underway and a reasonable timeframe has been identified in the LOM to obtain appropriate permits to establish additional facilities for tailings and waste rock dumps.

15.7.3 CLOSURE

Progressive reclamation has already begun on the DSTF with final slopes being re-contoured and revegetated with a soil cover. The evapotranspirative cover serving as a growth medium for revegetation is progressively placed as areas of the DSTF fill. When the ultimate capacity of the DSTF is reached, closure and decommissioning will include finishing placement of the evapo-transpirative cover, recontouring the slope as necessary, and ensuring that revegetation is occurring.



16. MARKET STUDIES

16.1 MARKET ANALYSIS

16.1.1 OVERVIEW

Global mined zinc output is approximately 13 million metric tons metal per year, contained in approximately 25 million metric tons of zinc concentrate. Global zinc smelting capacity is approximately 14 million metric tons zinc metal per year and includes 1.5 to 1.8 million metric tons of capacity to refine zinc secondary by-products into metal.

Global mined lead output is only approximately 4.6 million metric tons metal per year, contained in approximately 8 million metric tons of concentrates. Global lead smelting capacity is significantly higher at 13 million metric tons lead metal and also includes the capability to produce approximately 8 million metric tons lead metal from scrap and residues.

Hecla produces approximately 65,000 metric tonnes zinc and 54,000 metric tonnes lead metal, 18.0 Moz Silver and 130 koz Au in concentrates annually at its four mines in North America. Hecla's total output comprises less than 1% of both global zinc mine capacity and global lead mine capacity. Because Hecla's concentrate products also contain significant amounts of payable gold and silver, they are sought after by smelters who capture additional value from recovering precious metals through processing and refining zinc and silver concentrates. The current market for Hecla concentrate products is both very liquid and very strong, globally. Hecla's primary customer base operates in Korea, Japan, Canada, and China. Its concentrate products have also been exported to and processed in Mexico, Belgium, Italy, England, Germany, and the Netherlands.

Global silver supply is approximately 1 billion ounces with mine production accounting for around 80% of silver supply. The majority of silver produced is as a by-product of lead, zinc, copper, and gold mines. According to the Silver Institute, lead-zinc mines are the biggest contributors to global silver supply, accounting for about 32% of silver mine production in 2020. Mexico, China, and Peru produce 50% of world's silver, while the Canada accounts for only 1% of world silver production.

Silver demand is primarily composed of Industrial demand, which accounts for 50% of total silver demand of 1 billion ounces. Investment demand (physical and exchange traded products) and jewelry and silverware account for 25% share each respectively. Silver has the highest electrical conductivity of all metals and this property positions silver as a unique metal for multitude of uses in electronic circuitry in automotive and electronics. Silver's use in photovoltaic cells has also seen a rapid expansion in the past 5 years and is expected to be one of the key growth areas in green energy.

Gold supply is approximately 165 Moz, with mine production contributing 75% of gold supply and recycling accounting for the remaining 25%. In terms of gold demand, jewelry fabrication accounts for approximately 55% of total demand while Investment in physical bars, coins and Exchange Traded Funds



is at 25% of overall demand. Gold's use in technology applications was around 11 Moz, or 8% of total demand in 2021, according to the World Gold Council. Accommodative fiscal and monetary policies globally due to the COVID-19 lent support to investment demand for gold in 2020 as gold prices reached record levels in 2020.

16.1.2 COMMODITY PRICE PROJECTIONS

The principal commodities of Keno Hill are freely traded at prices that are widely known, so that prospects for sale of any production are virtually assured. Metal prices used in the estimation of Mineral Resources and Mineral Reserves is determined by Hecla's corporate office in Coeur d'Alene, Idaho, USA. Keno Hill Mineral Resources are estimated using the prices shown in Table 16-1, while Keno Hill Mineral Reserves are estimated using the prices shown in Table 16-1.

Table STYLEREF 1 \s 16- - Mineral Resource Metal Prices - 2023.

Commodity	Units	2023		
Ag	USD/oz Ag	\$21.00		
Au	USD/oz Au	\$1,750		
Pb	USD/lb Pb	\$1.15		
Zn	USD/lb Zn	\$1.35		

Table STYLEREF 1 \s 16- - Mineral Reserve Metal Prices - 2023.

Commodity	Units	2023		
Ag	USD/oz Ag	\$17.00		
Au	USD/oz Au	\$1,650		
Pb	USD/lb Pb	\$0.90		
Zn	USD/lb Zn	\$1.15		

The Mineral Reserve metal prices were established mid-year 2023 based on the following:

- Hecla's historic price decks for year-end 2022 Mineral Reserves and Resources, 2024 Long-Range Plans and 2023 budgets.
- Bloomberg Historical prices from June 26, 2023.
- Future prices from Consensus Economics from June 26, 2023.
- Wood Mackenzie Short Term Outlook reports for July 2023.



• Year-end 2022 Mineral Reserve metal price for selected peer and other companies.

The Mining Plus QP is of the opinion that the Mineral Reserve prices for silver and gold are moderately conservative when compared against thirdparty economics firm's long-term consensus pricing. The zinc and lead price are near the mean when compared against third-party economics firm's long-term consensus pricing.

Table 16-3 shows the realized metal prices Hecla has received for sales of its products over its two-year operating history.

Commodity	Units	2022	2023	Two Year Average
Ag	USD/oz Ag	\$21.11	\$23.46	\$22.29
Pb	USD/lb Pb	\$0.95	\$0.96	\$0.95
Zn	USD/lb Zn	\$1.61	\$1.14	\$1.37

Table STYLEREF 1 \s 16- - Hecla Historical Average Realized Metal Prices - Keno Hill Mine.

The economic analysis performed on the 11-year Mineral Reserve LOM plan assumes an average silver price of \$22.00/oz, lead price of \$0.95/lb and a zinc price of \$1.15/lb based upon analysis of December 11, 2023 consensus metal price forecasts by Consensus Economics Inc. The recovered gold in concentrate is not considered payable under the current smelter terms and has not been included in the economic analysis. Based on macroeconomic trends and end of year 2023 financial institution consensus pricing, the Mining Plus mining QP is of the opinion that Hecla's realized metal pricing will align with the TRS economic assumptions with the potential for short-term upside for silver through the end of 2025.

Please refer to the note regarding forward-looking information at the front of this Report.

16.2 CONTRACTS

16.2.1 CONCENTRATE SALES

The silver-lead concentrate shall be barged weekly from the Port of Skagway, Alaska to the Port of Seattle or the Port of Tacoma, Washington. From Washington it is shipped and distributed to smelters in Asia.

Zinc concentrate is shipped to Greens Creek, Alaska where it's blended with Hecla's Greens Creek Mine zinc precious metals concentrate and sent to markets in Asia and Canada.

The long-term indicative concentrate sales terms are shown in Table 16-4 and Table 16-5.



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Metallic Payables for Each Dry Metric Tonne			
Metal	Payables	Subject to Minimum Deduction	
Silver	95%	50 g/dmt	
Gold	95%	1 g/dmt	
Lead	95%	3 units	
Zinc	Not Payable		
TC, RC, Costs for Freight			
Silver RC	USD \$0.65/oz		
Gold RC	USD \$25.00/oz		
Concentrate TC	USD \$55 per dmt		
Freight	USD \$400 per wmt		

Table STYLEREF 1 \s 16- - Long Term Silver-Lead Concentrate Sales Terms.

Table STYLEREF 1 \s 16- - Long Term Zinc Concentrate Sales Terms.

Metallic Payables for Each Dry Metric Tonne				
Metal	Payables	Subject to Minimum Deduction		
Silver	70%	after a 3 oz deduction		
Lead Spot	Not Payable			
Zinc BM	85%	8 units		
TC, RC, Costs for Freight				
Silver RC	not applicable			
Concentrate TC	USD 320 per dmt			
Freight	USD 250 per wmt			

16.2.2 FORWARD SALES

Hecla uses financially-settled forward contracts to manage the exposure to changes in prices of silver in the concentrate shipments between the time of shipment and final settlement for monthly estimated sales. The silver hedging is typically completed two weeks in advance. The Keno Hill Mine does not hedge gold, lead, or zinc.

16.2.3 OTHER AGREEMENTS

As a condition of the commercial agreement with the Government of Canada under which Alexco acquired the property, future production from the property is subject to a 1.5% NSR royalty payable to the Government of Canada. This royalty is a condition of the ARSA, and it was transferred to Hecla as part of

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the Alexco acquisition in September 2022. Approximately CAD 1.2 million of the total CAD 4.0 million has been paid or accrued for as of the date of this Report.

16.2.4 OTHER CONTRACTS

Hecla has entered into a number of contracts to support the operations of the Project including:

- Transportation and shipping of zinc concentrate to a smelter at Greens Creek, Alaska, and silver-lead concentrate overseas.
- Yukon Energy Corp. provides power under contract to various substations and to the Keno Hill District Mill.
- Consumables such as propane, fuel, ground support, and reagents.
- Services including camp and catering services and drilling (exploration).
- Mine contractors are employed for specific mine development projects on occasion.

Hecla has provided Mining Plus with information on all outstanding contracts as well as the information for current pricing terms with smelters.



17. ENVIRONMENTAL STUDIES, PERMITTING, AND PLANS, NEGOTIATIONS, OR AGREEMENTS WITH LOCAL INDIVIDUALS OR GROUPS

Hecla is committed to operating in compliance with all regulations and standards of good practice for environmental, health, and safety. To uphold this commitment Hecla has developed and approved corporate policies for environmental, health and safety practices and has prepared a detailed management plan to facilitate the continuous improvement of its environment and health and safety performance. An Environmental Management System (EMS) is currently in the process of being implemented, completion is expected by the end of 2024.

The mine design meets current standards and the implementation of the proposed environmental and health and safety practices ensures that KHM is prepared to meet future challenges.

The following section describes the updated environmental, permitting, and social contexts of the KHM.

17.1 SITE CONTEXT

The historical operations in the district commenced in the early 1900s. These historical mines are spread out over approximately 200 km², and comprise upwards of 50 mine sites, three tailings disposal areas, and dozens of different shafts, adits, and open pits. Due to the long history of mining, Keno Hill is known as a brownfield site. The current environmental conditions reflect the brownfield conditions as well as the site Care and Maintenance activities to maintain license compliance. Environmental monitoring data and site characterization studies date back to the 1990s.

The Bellekeno, Lucky Queen, Flame and Moth, and Bermingham deposits are all part of the former United Keno Hill Mines (UKHM) claims, which included several historical mines and processing facilities within Keno Hill. The Bellekeno, Lucky Queen and Bermingham sites have historical mine workings, waste rock storage areas, and mine water discharges, whereas the Flame and Moth site only has minor historical surface mine workings and a waste rock storage area that were reclaimed during the construction of the Keno Hill District Mill.

Hecla and its subsidiary, ERDC, have a commercial agreement with the Government of Canada in which Hecla is responsible for the care, maintenance, and closure of the historical mines, with funding from the government and the company to address the historical liabilities. The commercial agreement also allows Hecla to undertake exploration of the AKHM site and undertake active mining. Under this agreement, Hecla is responsible for environmental assessment, permitting, compliance, and costs associated with its ongoing exploration and new mine development activities. Additionally, if a new mine is brought into production including the use of infrastructure associated with a historic mine, terrestrial liabilities (i.e.,


waste rock storage areas and roads) and water-related liabilities located within a designated "Production Unit" become the responsibility of Hecla. At this time, Bellekeno and Flame and Moth have been defined as one combined active Production Unit under the Bellekeno Production Unit. Bermingham Production Unit notice was submitted to CIRNAC and approved November 24, 2023. When commercial ore production occurs at Lucky Queen, then a production unit would need to be declared. That production unit would encompass the Lucky Queen mining area that is reasonably expected to be affected by production-related activities, including production features authorized in required permits and surface and groundwater expected to be affected by the permitted activities. Liability for reclamation and closure of the defined production unit would fall to AKHM.

Hecla, along with territorial, federal, and First Nation governments, is also responsible for developing a district-wide reclamation plan that addresses these historic environmental liabilities arising from past mining activities. Under the agreement, Hecla is indemnified from the historic environmental liabilities. The latest reclamation plan, revision 7, was prepared by Alexco and issued in October 2022. Currently, water treatment is carried out at five locations in Keno Hill (Galkeno 300, Galkeno 900, Silver King, Onek 400, and Valley Tailings), as required by the ERDC's Water Licence QZ21-012.

Alexco developed a reclamation plan that was used by Hecla to acquire Water Licence QZ21-012 in April 2023. Hecla is working towards implementing this water license and reclamation plan.

17.2 ENVIRONMENTAL AND SOCIO-ECONOMIC SETTING

The property is located within the Yukon Plateau (North) Ecoregion and is characterized by rolling upland areas and wide-open valleys. Vegetation communities include Northern boreal forests along the lower slopes and valley bottoms and open scree slopes above the tree line. Many of the valley bottoms include open peatlands, fens, and meadows. A variety of wildlife, birds, and fish species are present in the area.

Keno Hill falls in the subarctic clime of the Koppen climate classification. The closest current long-term climate record is at the Mayo Airport, which had an average daily temperature of -2.4°C and average annual precipitation of 313.5 mm, with 203.8 mm falling as rain for the 1981 to 2010 period (the public record is updated every 10 years). The wet season occurs in summer/fall with drier winters. Meteorological data have been collected in Keno Hill for three locations: since 2007 at the Calumet weather station as part of the development of the reclamation studies for historic liabilities; since 2011 at the Keno Hill District Mill meteorological station as part of Bellekeno mining operations; and, since 2012 at the Valley Tailings Facility meteorological station. The monthly and annual temperatures are on average colder at the three Keno Hill stations than at Mayo Airport, which is expected given the higher site elevation.



The environmental setting of the site is summarized in Table 17-1. The current environmental conditions reflect the brownfield conditions and recent improvements as a result of Care and Maintenance water treatment upgrades and interim reclamation undertaken by ERDC for the historic liabilities.

Drainage Region	Stewart River drainage region
Local Catchments	No Cash Creek, Flat Creek, Christal Creek, Lightning Creek
Ecoregion	Yukon Plateau (North)
Study Area Elevation	900-1,350 masl
Vegetation Communities	Northern boreal forests occupy lower slopes and valley bottom; spruce, pine, and alder; grasses and sedges, mosses occupy the forest floor; heavy moss and lichen growth resident as ground cover; understory of shrub willow; open and forest fringe areas of willow and scrub birch, and various flowering plant species.
	Moose, grizzly and black bear, caribou, beaver, wolf, lynx, marten, wolverine, western tanager, magnolia warbler, white-throated sparrow, bald eagle, furbearers, and small animals.
	Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed species include Common Nighthawk (Threatened); Rusty Blackbird and Olive-Sided Flycatcher (Special Concern).
Fish Species	Bering and Beaufort Sea salmonids and freshwater species, including Arctic grayling, Arctic char, lake trout, trout perch, lake whitefish, broad whitefish, burbot, inconnu, Arctic Cisco, Northern pike, slimy sculpin

Table STYLEREF 1 \s 17- – Keno Hill Mine Setting Summary.

The KHM is situated in the traditional territory of the First Nation of Na-Cho Nyäk Dun (FNNND). The deposits are located within 5 km of Keno City, which has a population of 20 as of June 2021, and 50 km from the community of Mayo, which has a population of 458 residents as of September 2020. The area has been shaped by mineral development over the past hundred years. Silver and lead ore deposits were discovered on Keno Hill in the early 1900s and the area has since seen fluctuating levels of ongoing quartz and placer mining and exploration. Today the area supports not only mineral development, but also tourism, recreational, and traditional land uses.

The KHM is supplied with electrical power by Yukon Energy Corporation from two hydroelectric plants near Mayo. The Silver Trail Highway runs through the KHM, en route to Keno City, and is the primary access route for the site. This road is a public highway that is maintained by the Government of Yukon.

17.3 PERMITS AND REGULATORY CONTEXT

Mining projects in Yukon require assessment under YESAA, as well as a Quartz Mining Licence (QML) under the Quartz Mining Act (QMA) and a Water Use Licence (WUL) under the Waters Act.

The existing approvals and assessments currently underway for both exploration and mine development activities are summarized in Table 17-2. The table also includes existing approvals under ERDC for the historic liabilities' care and maintenance, and reclamation plan. A number of environmental and socio-economic studies have been completed for Keno Hill since 2006 in support of the mining permit applications, as well as in support of the reclamation planning being completed by ERDC.



Authorization Number	Authorization Permit	Effective Date	Expiry Date			
YESAA Approvals ¹	Decision Documents and Evaluation Reports for projects #2006-0293, #2006-0157, #2008-0039, #2009-0030, #2011-0315, #2012-0141, #2010161, #2017-0086, #2017-0176, #2017-0183, and #2018-0169					
Bellekeno Mine	Authorization to deposit effluent (MDMER)	September 7, 2020	None Stated			
Flame & Moth Mine	Authorization to deposit effluent (MDMER)	November 30, 2020	None Stated			
QZ18-044	Type A Water Use Licence	July 23, 2020	August 1, 2037			
LQ00476	Class 4 Mining Land Use Approval	June 17, 2018	June 16, 2028			
QML-009	Quartz Mining Licence	Nov. 27, 2019	Aug. 1, 2037			
Permit No: 81-067	Commercial Dump Permit	January 1, 2022	December 31, 2026			
Permit No. 81-012 (ERDC)	Commercial Dump Permit	February 9, 2023	December 31, 2027			
Permit No: 4202-22-047	Delegation Dermit (angle valumes) ²	July 21, 2022	December 31, 2022			
Permit No: 4202-22-057	Relocation Permit (small volumes)	January 18, 2023	December 31, 2023			
Permit No. 3448 (Flat Creek Camp)	Sewage Disposal	June 10, 2008	None Stated			
Permit No. 3449 (Elsa houses)	Sewage Disposal	June 24, 2010	None Stated			
Permit No: YT-556 Permit No. YT 557	Explosives Magazine Permit Detonator Magazine Permit Flame and Moth	June 10, 2020	June 10, 2025			
Permit No: YT-558 Permit No. YT-559	Explosives Magazine Permit Detonator Magazine Permit Bermingham	June 29, 2020	June 29, 2025			
Permit No. YT-581 UG	Explosives Magazine Permit Flame and Moth	June 16, 2022	June 16, 2027			
Permit No. YT-580 UG	Explosives Magazine Permit Bermingham	June 16, 2022	June 16, 2027			
60738-1-25.0	Nuclear Substances and Radiation Devices Licence	March 7, 2023	May 31, 2025			

Table STYLEREF 1 \s 17- - Relevant Approvals, Permits, and Licenses.

Notes:

1. Refer to Table 3-1 – Relevant Assessment and Regulatory Approvals.

2. Renewal is expected to be obtained in 2024.

The Bellekeno, Bermingham, and Flame and Moth mines have all permits and authorizations in place to commence full-scale mine production. Water Licence Application QZ18-044 was submitted to the Yukon Water Board in August 2018 to renew the existing Water Use Licence QZ09-092 to include the Bermingham deposit and extend the license term for a further 17 years to 2037. The new Water Licence QZ18-044 was issued in July 2020 which includes Bellekeno and Flame and Moth as well. To maintain full-scale production for an extended period of time, or to increase production at those deposits, it is likely that modifications to certain permits will be required, including the Quartz Mining Licence (QML-0009), and the Water Licence QZ18-044, in order to increase water discharge amounts/rates, increase the volume or change location of waste rock and tailings storage, or other changes.

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Although the QML authorization is also in place for Onek and Lucky Queen, there are currently no plans to bring the Onek deposit into production. A minor amendment to the Water Licensc would be required to bring Lucky Queen into production. The existing approvals are for the mill throughput of 400 tpd (based upon a 12-month average) and will require additional amendment to the QML to increase the throughput to 550 tpd.

17.4 COMMUNITY AND FIRST NATION RELATIONS SOCIO-ECONOMIC MONITORING

Since Hecla acquired Alexco in 2022, Hecla has been working on a number of programs as a part of the Socio-Economic Monitoring in Keno Hill.

17.4.1 IMPLEMENTATION OF THE KENO HILL CITY SOCIO-ECONOMIC MITIGATION PLAN

AKHM meets regularly with stakeholders and First Nations regarding the ongoing operations as, well as the new development plans for Flame and Moth and Bermingham, presenting detailed information about the operations and seeking expression of concerns. Additional consultation facilitated by the regulators is also part of the formal YESAA and licensing processes. Key socio-economic risks identified for the project include relying on all employee workforce and not contractors for development, including the availability of skilled workforce locally and retainment of the workforce.

17.4.2 FIRST NATIONS RELATIONS

Hecla is party to a Comprehensive Cooperation and Benefits Agreement (CCBA) with the FNNND that recognizes the rights, obligations, and opportunities of the two parties.

17.4.3 COMMUNITY RELATIONS

Keno City is a small community situated at the end of the Silver Trail Highway with a population of approximately 12 permanent residents. Due to the close vicinity of this site to the community of Keno City, noise, dust, and traffic have been high-profile issues at this site and several permit conditions address these concerns. Several specific issues were raised during the YESAA process and have been included in the decision document and Quartz Mining Licence. Mitigation measures that have already been implemented or that are proposed by the company include limiting certain activities (e.g., crusher



operations) and types of traffic to the hours of 7 am – 7 pm, constructing a building around the crusher and installation of a sound dampening enclosure around the Flame and Moth ventilation fan.

Dust is closely managed and monitored at the site. The dust monitoring data is compared to the Yukon ambient air quality standards.

There is a network of access roads and haul roads throughout the district. Haul roads have been upgraded between Bermingham and the mill, and a bypass constructed around Keno City to reduce traffic and noise for the residents. Required road upgrades to access the Bermingham portal location were completed between 2018 and 2020 which mainly involved widening, surfacing, and installing berms along Calumet Road.

The local community and First Nations have expressed interest in continued access to recreation and tourism in the area, subsistence harvesting and traditional use, sport and commercial hunting, fishing, and trapping, mineral development, and preservation of historical resources. A Heritage Resource Overview Assessment was completed in 2018, in which no areas of overlapping high heritage values were identified for the project area (Ecofor, 2018). There are processes for the communication of issues and grievances in place.

Throughout 2022, AKHM was in discussions with Keno City residents and the office of the Yukon Government Director of Operations and Programs, Department of Community Services to enable AKHM to provide a household refuse haulage service to a community landfill elsewhere in the Yukon Territory for Keno City residents following the closure of the community's transfer station.

17.5 CLOSURE PLAN AND SECURITY

An updated Reclamation and Closure Plan was approved by the Yukon Government in October 2022 that encompasses all the mining and processing activities in the Keno Hill.

The Keno Hill Reclamation and Closure Plan addresses underground mining activities at the Bellekeno, Flame and Moth and Bermingham deposits, reclamation of existing disturbances at Lucky Queen and Onek, and for each mine all surface support infrastructure and activities, miners' dry area, offices, trailers, and portals.

Some key aspects of the closure plan are listed as below:

• Waste rock storage facilities will be regraded and then scarified. Organic materials may be blended into the surface to promote growth of vegetation. P-AML waste rock will mainly be placed as backfill in the mine or sloped to shed water and then covered with a 0.5 m layer of low permeability borrow material.



- Adits and raises will be sealed to prevent access. Bulkheads will be constructed in some areas to enhance water management activities.
- At the Flame and Moth, Bermingham and Bellekeno mines, in situ treatment measures will be implemented to reduce metal loadings if required. The active treatment systems will be replaced with passive bioreactor systems.
- All buildings and equipment that are not needed for the treatment activities will be removed from the portal areas. Any additional debris will be transferred to the Elsa solid waste disposal facility. The portal areas will be re-contoured and scarified to facilitate re-vegetation.
- Linear disturbances (roads) will be subject to standard decommissioning measures such as removal of culverts, scarification, revegetation, and removal of safety berms.
- The Flat Creek camp will be downsized as needed to support ongoing care and maintenance activities in the KHM.
- Buildings and other infrastructure in the mill area will be dismantled and sold for salvage or demolished on site and disposed of in an
 approved landfill. Concrete footings will be covered with overburden, scarified, and re-vegetated.
- The DSTF will continue to be progressively reclaimed over the life of the facility with recontouring the side slopes to the final design slope angle (3:1) and placing of cover. If monitoring indicates that it is necessary, meteoric water will be directed to a passive biological treatment system for polishing prior to discharge.
- Various monitoring activities will continue until the performance of the closure measures has been verified.

Hecla expects to have a site presence for many years while reclamation of the historical liabilities occurs. Therefore, monitoring of the Bellekeno, Lucky Queen, Flame and Moth, and Bermingham mine areas can be integrated with KHM monitoring programs over the long term. This is expected to improve the efficiency of these ongoing water treatment and monitoring activities.

YG requires financial security in the form of a letter of credit to cover potential liabilities associated with the cost of reclamation and closure. The third-party closure cost estimate is consistent with the plan requirements and closure costing guidance as per the August 2013 Reclamation and Closure Planning for Quartz Mining Projects. AKHM has completed a cost estimate to implement Revision 7 of the Reclamation and Closure Plan for the Keno Hill Mine and the estimated cost to implement the reclamation and closure plan at the End of Mine Life (EOM) is CAD 9,643,943. Following an internal review process, the amount of security currently required by the Yukon Government for the reclamation and closure of the Keno Hill Mine is CAD 9,681,500 which includes any security already held under the Water Act. AKHM was issued a Type A Water Licence (QZ18-044), and the Yukon Water Board also requires AKHM to furnish and



maintain financial security with the Yukon Government which includes any security held under the Quartz Mining Act. Following the review of the Reclamation and Closure Plan Revision 6, pursuant to the Waters Act, AKHM has furnished a security of CAD 11,346,433. It is important to note that not all the liabilities included in the cost estimate have yet been realized or created.

Additional closure costs may be incurred if the effectiveness of the current closure concepts cannot be demonstrated. For example, active water treatment may be required at Bellekeno if passive bioreactors are not capable of meeting the discharge criteria. A full-scale pilot bioreactor has operated successfully at Galkeno 900 to support the long-term water management and treatment assumptions in the closure plan. The ongoing monitoring programs will be critical for ensuring that there is sufficient information available to support final closure plans for these production areas. A pilot scale in situ treatment process has been successfully demonstrated at the Silver King mine.



18. CAPITAL AND OPERATING COSTS

Unless otherwise noted, all dollar amounts are presented in United States (USD) dollars based on a USD:CAD exchange rate of 1.35 and accurate to the 1st of January 2024, and all other measurements are metric values.

This section describes:

- Capital cost estimates, also referred to as Capital Expenditure or CapEx estimates.
- Operating cost estimates, also referred to as Operating Expenditure or OpEx estimates.

The capital cost and operating estimates were generated by Hecla and reviewed in detail and modified where necessary by the respective QP's from Mining Plus Canada (for all components except the process plant, and surface infrastructure) and by Sedgman Canada Ltd. (process plant, and surface infrastructure). The QPs consider the accuracy of the components of the capital cost estimate to be appropriate for an operating mine.

The forecasted capital and operating cost presented in this Technical Report is estimated to have an overall accuracy AACE Class 1 for Bermingham and Flame and Moth, and an AACE Class 3 for the Lucky Queen deposit.

The cost estimate is developed by the mine area and includes the development and production of the Flame and Moth and Bermingham deposits and the re-opening of the Lucky Queen plus the necessary infrastructure for increasing the scale of operations at the Keno Hill Mine.

18.1 CAPITAL COSTS

The capital costs are provided by Hecla and reviewed by Mining Plus Canada. The capital costs accuracy is considered equivalent or better than AACE Class 1 with an expected accuracy range of -3% to -10% on the low side and +3% to +15% on the high side. AACE Class 3 accuracy ranges from -10% to -20% on the low side and +10% to +30% on the high side.

18.1.1 SUMMARY OF CAPITAL COST ESTIMATE

Hecla uses the LOM plan as the planning guide for the KHM. The LOM capital costs total USD 194.85 million and include mine development, mine infrastructure, mobile equipment costs, and processing (Table 18-1). Mining Plus QP is of the opinion that the estimated capital costs for Keno Hill are reasonable.

Capital development is expected to include approximately 16.5 km of capital development up to 2034.



Capital Cost	Units	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Drilling	USDM	23.58	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	2.36	0.00	0.00
Mine Dev., Rehab., Stripping	USDM	96.39	18.85	6.89	2.11	17.92	16.58	9.98	5.97	6.21	5.13	4.82	1.93	0.00
Mine Infrastructure	USDM	11.83	6.62	2.33	0.00	0.38	0.51	1.13	0.12	0.00	0.73	0.00	0.00	0.00
Mobile Equipment	USDM	38.43	4.35	1.10	2.65	4.50	0.97	2.15	3.22	6.23	5.08	8.18	0.00	0.00
Ore Processing	USDM	15.88	1.45	3.92	0.50	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
Reclamation and Closure	USDM	8.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.74
Total Capital Costs	USDM	194.85	33.63	16.60	7.62	25.16	20.41	15.62	21.66	14.80	13.30	15.37	1.93	8.74

Table STYLEREF 1 \s 18- - Summary of Major Capital Cost Categories Across Keno Hill Mine.

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18.1.2 MINE CAPITAL EXPENDITURE

The mining capital cost estimate is comprised of sustaining and growth capital and is based on the following information:

- Equipment costs based on equipment expenditures to date, vendor quotations, and validated owner cost sheets.
- Quantity takes-offs from underground development and production designs with a monthly mining schedule.
- Quantity take-offs for materials provided by engineering drawings from capital projects.
- Labor rates provided by Hecla are currently in effect at Keno Hill and updated based on current local market conditions assuming owner mining with the exception of Lucky Queen which will be contractor mining.
- Productivities for mobile equipment, mining processes, and labor based current performance to date and performance estimates provided by other Hecla-owned operations.

Exclusions from the sustaining capital cost estimate include, but are not limited to, the following:

- Study costs to advance KHM engineering.
- Fluctuations in exchange rates.
- All sunk costs prior to the end of December 31st, 2023.
- Project financing and interest charges.
- Escalation during construction and operation
- Operating costs.

18.2 OPERATING COSTS

18.2.1 SUMMARY OF OPERATING COST ESTIMATE

The total operating costs are \$483.3 M over the LOM. This is net of capitalized underground development and milling. Mine, mill, and site G&A (excluding Corporate G&A) operating costs and unit operating costs, are summarized in Table 18-2 and Table 18-3 respectively, and discussed in more detail in the following sections.



S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada

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Operating Cost	Units	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Mining	USDM	244.15	27.39	21.73	19.41	27.03	21.45	21.91	20.56	20.67	21.48	25.18	17.34
Milling	USDM	88.31	7.58	8.05	8.40	8.49	8.65	8.71	8.72	8.64	8.68	8.69	3.70
G&A	USDM	150.84	14.48	15.39	15.22	15.14	14.13	14.14	14.14	14.01	14.09	14.11	6.01
Total Operating Costs	USDM	483.29	49.46	45.16	43.02	50.65	44.24	44.76	43.41	43.32	44.25	47.97	27.05

Table STYLEREF 1 \s 18- - Life of Mine Direct Operating Cost Summary.

Table STYLEREF 1 \s 18- - Life of Mine Unit Operating Cost.

Operating Cost	Units	Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Mining	USD/t	130.05	215.18	156.01	132.81	152.75	106.84	109.07	102.31	103.84	107.25	125.60	203.18
Milling	USD/t	47.04	59.57	57.80	57.45	47.96	43.08	43.37	43.39	43.38	43.36	43.37	43.37
G&A	USD/t	80.35	113.75	110.49	104.14	85.55	70.37	70.37	70.37	70.37	70.37	70.37	70.37
Total Operating Costs	USD/t	257.43	388.49	324.31	294.40	286.27	220.29	222.81	216.07	217.59	220.98	239.34	316.92

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18.2.2 OPERATING COSTS BASIS OF ESTIMATE

The operating cost estimate is based on the following information:

- Labor rates provided by Hecla are currently in effect at Keno Hill and updated based on current local market conditions assuming owner mining with the exception of Lucky Queen which will be contractor mining.
- Productivities for mobile equipment, mining processes, and labor based current performance to date and performance estimates provided by other Hecla-owned operations.

All mill-related infrastructure with the exception of the crusher is planned to operate 24 hours per day, 365 days per year, with less planned maintenance downtime. The crusher is planned to operate 12 hours per day during the day shift only. The mine will operate two 12-hour shifts per day.

The technical report labor cost build-up represents a combination of the first principal estimation and actual remuneration packages for project labor. The workforce varies throughout the years, depending on the production and development schedules. The peak workforce is 243 people, comprising 26 site management roles, 47 mill roles, and 30 on site services, environment, and health and safety. The majority of employees work 2 weeks on, 2 weeks off rotating schedule.

18.2.3 MINE OPERATING COST

The mine operating cost estimate includes equipment operation and maintenance, labor, new materials, explosives, ground support, ventilation, underground air heating, fuel, mine water pumping and treatment, parts, underground definition drilling, and supplies within the following major categories:

- Lateral and vertical development, including ground control.
- Underground services development.
- Production drilling, blasting, load/haul.
- Backfilling.

18.2.4 MILL OPERATING COST

The mill operating costs were developed by Hecla and reviewed and modified by the QP for the process plant (Sedgman Canada Ltd.). The quantities and cost data that form the basis for the mill operating costs include the following sources:



- Current experience with operating the existing mill.
- Metallurgical test work.
- Supplier quotations.

Non-reagent consumables include but are not limited to liners, drive belts, screens, pumps, cyclones, grinding media, filter cloth, electrical supplies, pipes, hoses, fittings, valves, motors, lubricants, fuel, lumber, and steel.

The grinding media uses forged balls and consumption was based on the current mill operation that is envisaged to increase to account for the higher throughput in the current mine plan.

The mill operating costs include the on-site assay lab located in the mill for regular operational samples. An allowance has been included for external assays on mill concentrates.

The annual mill operating cost is estimated at \$8.5 M per year or \$47.0 per milled tonne of ore. The process operating costs commence at the ore stockpile located beside the primary crusher building.

18.2.5 GENERAL AND ADMINISTRATIVE COST

The category of G&A includes the areas of Financial Administration, Site Environmental, Health and Safety, Camp Operations, Site Services, Mine Supervision, Mine Electrical and Mine General. G&A costs are estimated based on various fixed monthly costs as well as variable costs such as camp, equipment operations, electrical and employee travel.

The G&A costs are shown in Table 18-4.

Table STYLEREF 1 \s 18- – General and Ad	Iministrative Costs.
--	----------------------

Cost	Unit Cost (\$/t)	Total Cost (USDM)
Site G&A	83.35	150.84



19. ECONOMIC ANALYSIS

The economic analysis contained in this Technical Report Summary is based on the Keno Hill Probable Mineral Reserves material only, economic assumptions, and capital and operating costs provided by Hecla's technical team and validated by the Mining Plus QP and post-tax financial model QP.

19.1 FORWARD-LOOKING INFORMATION AND CAUTIONARY STATEMENTS

Please refer to the note regarding forward-looking information at the front of this Report.

19.2 METHODOLOGY USED

In the financial analysis, the Discounted Cash Flow (DCF) method was adopted to estimate the project's return based on expected future revenues, costs, and investments. Following the DCF method, the net cash flow for each period was discounted at an annual rate of 5% (unless stated otherwise) to a present value and then added to yield a net present value (NPV).

The DCF model for the project assumes that all figures are expressed in constant dollars or real terms. All monetary figures are expressed in United States dollars (USD) unless otherwise noted. Unless otherwise stated, all costs in this section of the TRS are expressed without allowance for escalation or currency fluctuation. Current Canadian tax regulations were applied within the financial model by Hecla Management with support from Hecla's tax advisors.

The QP's have reviewed the LOM cost estimates and DCF model in sufficient detail to be satisfied that the economic extraction of these Probable Mineral Reserves is justified.

A summary of the key project criteria is provided in the subsequent subsections.

19.3 ECONOMIC CRITERIA

The project value is determined on a pre-tax and after-tax basis at a 5% discount rate with the economic criteria in Table 19-1 and listed below.



OPERATE

Parameter	Units	Value	
Life of Mine		years	11
Average Mill Feed over LOM	tonnes/year	170,669	
	Silver (Ag)	%	96.0
Mill Decovery (Net)	Lead (Pb)	%	93.2
will Recovery (Net)	Zinc (Zn)	%	72.0
	Gold (Au)	%	-
Government of Canada NSR Royalty	%	1.5 (to max. CAD 4 M)	
Average Operating Cost	USD/ tonne milled	257.43	

Table STYLEREF 1 \s 19- - Economic Criteria Used to Determine Operations Value.

Additionally, the following criteria have been applied:

- Processing between 400 and 550 tonnes per day of mill feed for a total of 1.88 M tonnes over LOM.
- LOM production plan as summarized in Subsection 13.3.
- Total Mineral Reserves shown in Table 12-1.
- Silver-lead and zinc concentrates shipped to the smelter for treatment.
- NSR includes shipping, treatment, and refining costs.
- Revenue recognized at the time of production.

19.3.1 **REVENUE**

- Metal prices used in the economic analysis are constant USD 22.00/oz Ag, USD 0.95/lb Pb, and USD 1.15/lb Zn.
- Gold is not payable in the current Mineral Reserve calculations. In the current smelter contract gold is payable but no credits were found due to low quality in the concentrate.
- LOM net revenue is USD 1,117.6 million (after royalty and treatment and refining charges).
- Transportation, treatment, and refining charges are estimated at USD 2.65/oz Ag over the LOM.
- Mill process recovery in the Keno Hill LOM 2024 plan is estimated at 92.0% Ag, 88.0% Pb, and 4.0% Zn in the silver-lead concentrate and 68% Zn, 5.2% Pb, and 4.0% Ag in the zinc concentrate.



19.3.2 CAPITAL COSTS

Total LOM capital requirements have been estimated at USD 194.85 million and are described in detail in Section 18.1.1.

Closure costs of USD 8.74 million estimated by Hecla Yukon are included in the analysis at the end of the LOM.

This financial analysis does not include any sunk costs prior to year 1 of the economic analysis.

19.3.3 OPERATING COSTS

The LOM operating costs are shown in Table 19-2. The mining cost per tonne of ore milled is \$130.05 per tonne and processing costs are estimated at \$47.04 per tonne of ore milled. General and administration costs are estimated at \$80.35 per tonne of ore milled for a total operating cost of \$257.43 per tonne of ore milled.

Operating Cost	LOM Total Cost (\$ M)	LOM \$/Tonne Milled	LOM \$/oz Ag Payable
Mining	244.15	130.05	4.92
Processing	88.31	47.04	1.78
General and Administration	150.84	80.35	3.04
Total Operating Cost	483.29	257.43	9.73

Table STYLEREF 1 \s 19- - Summary of LOM Operating Costs.

Note: rounding of cost estimates may result in apparent summation differences when compared to overall unit costs.

19.3.4 TREATMENT, REFINING AND TRANSPORT

The total treatment and refining costs equate to an average of \$36.36 per tonne of ore milled for the life of mine. Transport costs equate to an average of \$33.85 per tonne of ore milled for the life of mine. These are summarized in Table 19-3.

Table STYLEREF 1 \s 19- - Treatment, Refining, and Transport Cost Statistics (Unit Costs Averaged over LOM).

Cost	LOM Total Cost (\$ M)	LOM \$/Tonne Milled	LOM \$/oz Ag Payable
Treatment and Refinement	68.27	36.36	1.37
Transport	63.55	33.85	1.28
Total	131.82	70.22	2.65

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19.3.5 TAXATION AND ROYALTIES

- There is an NSR royalty of 1.5% payable to the Government of Canada.
- Approximately CAD 1.2 million of the total CAD 4.0 million has been paid or accrued for as of the date of this Report.
- Taxes include Quartz Mining Tax, federal, and Yukon Taxes. It is assumed that the three operating deposits are treated as 'one mine' for income tax and royalty tax purposes.
- Matthew Blattman, post-tax economic model and analysis QP, has relied upon Hecla and its tax advisors for the calculation of the taxes in the economic model.

19.3.6 CLOSURE COST AND SALVAGE VALUE

For contemporary mining operations, the Government of Yukon requires financial security in an acceptable form (i.e., letter of credit or surety bond) to cover potential liabilities associated with the cost of reclamation and closure.

- As part of QML-0009, Yukon Government currently holds \$9,643,943 in security for the Bellekeno, Lucky Queen, Flame and Moth, Onek, and Bermingham mine operations, the mill area, and the DSTF. This amount was set in 2022, following a third-party review of AKHM's estimate of closure costs.
- As part of Water Licence QZ18-044 YG currently holds an additional \$1,702,490 in security for a total of \$11,346,433 of security held by the Yukon Government as per the AKHM Reclamation and Closure Plan Rev. 6.

There is no salvage value accounted in the cost model.

19.3.7 FINANCING

The economic analysis assumes 100% equity financing and is reported on a 100% ownership basis.



19.3.8 **INFLATION**

All estimates outlined herein are expressed in 2024 fiscal year prices. All projections are estimated in real terms, and they do not incorporate allocations for inflation.

19.4 **ECONOMIC ANALYSIS**

19.4.1 PRE-TAX FINANCIAL ANALYSIS AND RESULTS

The pre-tax financial model incorporated the production schedule and smelter term assumptions to produce annual recovered payable metal, or gross revenue, in each concentrate stream by year. Off-site costs, including the applicable refining and treatment costs, penalties, concentrate transportation charges and royalties were then deducted from gross revenue to determine the NSR. Further details of the smelter terms used to calculate the recovered metal value and off-site operating costs and royalties can be found in Section 16.

The operating cash flow was produced by deducting annual mining, processing and G&A from the NSR.

Sustaining and growth capital was deducted from the operating cash flow in the years they occur, to determine the net cash flow before taxes.

The financial analysis was carried out on a 100% Hecla ownership basis.

The LOM material tonnages and produced metal quantities used in the cash flow model are included in Table 19-4.

A summary of the pre-tax financial results is provided in Table 19-6.

ltem	Unit	LOM Total	Annual LOM Average					
Life of Mine	years	11.0	N/A					
Production								
Ore Milled	'000 tonnes	1,877	171					
Waste Mined	'000 tonnes	1,275	116					
Silver Grade	g/t	912	912					
Gold Grade	g/t	0.22	0.22					
Lead Grade	%	2.81	2.81					
Zinc Grade	%	2.53	2.53					
Contained Metal in Mine Production								
Silver	koz	55,068	5,006					

Table STYLEREF 1 \s 19- - LOM Production Summary.

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S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada

Item	Unit	LOM Total	Annual LOM Average
Lead	tonnes	52,772	4,797
Zinc	tonnes	47,517	4,320
Process Recoveries (P	roduced Metals)		
Silver	%	96.0%	96.0%
Lead	%	93.2%	93.2%
Zinc	%	72.0%	72.0%
Produced Metal			
Silver	koz	52,865	4,806
Lead	tonnes	49,205	4,473
Zinc	tonnes	34,212	3,110

Table STYLEREF 1 \s 19- - Summary of Pre-Tax Financial Results

Description	Units	Total						
Produced Metal (Gross Revenue)								
Silver	\$ million	1,092.8						
Lead	\$ million	90.8						
Zinc	\$ million	68.0						
Total Recovered Metal Value	\$ million	1,252						
Operating Costs								
Mining	\$/t milled	130.0						
Processing	\$/t milled	47.0						
G&A	\$/t milled	80.3						
Total Operating Cost over LOM	\$ million	483.3						
Capital Costs								
Mining	\$ million	158.4						
Processing	\$ million	15.9						
Infrastructure	\$ million	11.8						
Growth Capital	\$ million	79.9						
Sustaining Capital	\$ million	106.2						
Reclamation and Closure	\$ million	8.7						
Total Capital Cost over LOM	\$ million	194.8						
Financial Summary								
Pre-Tax Undiscounted Cash Flow	\$ million	439.5						
Pre-Tax NPV at 5%	\$ million	318.1						

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19.4.2 POST-TAX FINANCIAL EVALUATION

Considering the project on a stand-alone basis, the undiscounted after-tax cash flow totals USD 419.8 million over the mine life. For this cash flow analysis, the internal rate of return (IRR) and payback are not applicable since the Keno Hill Mine is producing saleable concentrate and revenue.

Table 19-6 provides a summary of LOM annual cumulative after-tax cash flow.

Table STYLEREF 1 \s 19- Cumulative Cash Flow After-Tax (\$ '000).								
Description Units Total								
Taxes	\$ million	\$19.7						
After-Tax Cashflow	\$ million	\$419.8						
After-Tax NPV 5%	\$ million	\$304.5						

The full annual cash flow model is presented in Table 19-7 in US dollars with no allowance for inflation, showing a pre-tax and after-tax NPV, using a 5% discount rate of USD 318.07 million and USD 304.45 million, respectively.

The QP is of the opinion that that as Keno Hill is an operating mine within a relatively stable tax jurisdiction, the above report section(s) accurately represent the current conditions at the mine. As such, the QP has no additional material recommendations to make.



Description	Units	LOM Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	203 5
Mining														
Underground														
Production	'000 tonnes	1,877.4	127.3	139.3	146.1	176.9	200.8	200.9	200.9	199.1	200.2	200.4	85.4	
Waste	'000 tonnes	1,274.9	173.4	100.8	47.3	218.2	186.7	138.6	93.0	97.5	93.6	98.7	27.2	
Processing														
Mill Feed	'000 tonnes	1,877.4	127.3	139.3	146.1	176.9	200.8	200.9	200.9	199.1	200.2	200.4	85.4	
Ag Grade	g/t	912.4	943.9	941.4	973.7	855.4	849.1	943.8	990.3	997.8	835.1	808.3	948.2	
Au Grade	g/t	0.22	0.10	0.11	0.13	0.18	0.26	0.30	0.32	0.30	0.28	0.19	0.09	
Pb Grade	%	2.81	2.11	2.05	2.00	2.22	3.47	3.25	3.43	3.63	2.70	2.81	2.03	
Zn Grade	%	2.53	1.34	1.58	1.99	3.23	3.22	3.33	3.30	2.74	2.34	2.08	1.06	
Revenue*														
Silver Concentrate														
Produced Silver	koz	50,663	3,554	3,878	4,209	4,477	5,043	5,608	5,886	5,876	4,946	4,792	2,394	
Produced Lead	tonnes	46,440	2,369	2,514	2,573	3,450	6,127	5,748	6,069	6,357	4,758	4,948	1,527	
Produced Zinc	tonnes	1,901	68	88	116	228	259	268	265	218	187	167	36	
Zinc Concentrate														
Produced Silver	koz	2,203	155	169	183	195	219	244	256	255	215	208	104	
Produced Lead	tonnes	2,765	141	150	153	205	365	342	361	379	283	295	91	
Produced Zinc	tonnes	32,311	1,157	1,493	1,975	3,881	4,397	4,554	4,504	3,714	3,187	2,833	616	
Net Revenue	USD '000	1,117,631	76,334	83,314	91,505	98,994	113,376	124,990	131,043	130,592	109,483	106,203	51,796	
Unit NSR	USD/t milled	595	600	598	626	559	565	622	652	656	547	530	607	
Operating Cost														
Mining (UG)	USD '000	244,147	27,394	21,726	19,409	27,028	21,454	21,910	20,557	20,673	21,476	25,176	17,344	
Processing	USD '000	88,307	7,584	8,050	8,395	8,486	8,651	8,711	8,717	8,636	8,682	8,692	3,702	
G&A	USD '000	150,840	14,481	15,387	15,218	15,137	14,131	14,136	14,139	14,009	14,091	14,105	6,007	

Table STYLEREF 1 \s 19- – After-Tax Discounted Cash Flow Model

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Description	Units	LOM Total	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	203 5
Total Operating Cost	USD '000	483,293	49,458	45,163	43,022	50,651	44,236	44,757	43,412	43,318	44,249	47,974	27,054	
Capital Cost														
Mining	USD '000	158,405	25,562	10,345	7,120	24,772	19,901	14,491	11,544	14,804	12,574	15,365	1,927	0
Processing	USD '000	15,878	1,455	3,923	500	0	0	0	10,000	0	0	0	0	0
Compiled G&A	USD '000	11,825	6,616	2,333	0	385	513	1,133	115	0	730	0	0	0
Closure	USD '000	8,740	0	0	0	0	0	0	0	0	0	0	0	8,74 0
Total Capital Cost	USD '000	194,848	33,633	16,601	7,620	25,156	20,414	15,625	21,659	14,804	13,304	15,365	1,927	8,74 0
Cash Flow														
Taxes	USD '000	19,713	0	0	1,337	113	1,830	2,863	2,940	3,438	2,257	1,688	3,247	0
After-Tax Cashflow	USD '000	419,777	-6,756	21,550	39,526	23,074	46,896	61,744	63,032	69,033	49,673	41,176	19,569	-8,7 40
Project Economics														
After Tax NPV (5%)	USD '000	304,450	-6,435	19,546	34,144	18,983	36,744	46,074	44,796	46,724	32,020	25,279	11,441	-4,8 67

*Note: gold is a contained metal but is not payable in the current smelter payment terms.

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S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada

19.5 SENSITIVITY ANALYSIS

Project risks can be identified in both economic and non-economic terms. To assess the robustness of the project's financial results, a sensitivity analysis was conducted in a range of +/- 20% on the key variables that impact the Keno Hill Mine after-tax NPV. Key economic risks were examined by assessing cash flow sensitivities, compared to the base case considering:

- Silver head grade.
- Silver price.
- Exchange rate.
- Operating costs.
- Capital costs (sustaining, growth and closure).

Sensitivities were performed on the key variables for silver because the revenue from silver is approximately 89% of the projects' net revenue stream with lead and zinc providing the remainder. NPV sensitivity over the base case have been calculated for a range of variations. The after-tax sensitivities are shown in Table 19-8.



Variance from Base Case	Head Grade (g/t Ag)	5% NPV (\$M)
-20%	729.9	146.38
-10%	821.1	225.59
0%	912.4	304.45
10%	1003.6	362.42
20%	1094.8	420.35
Variance from Base Case	Metal Prices (USD/oz Ag)	5% NPV (\$M)
-20%	17.60	127.79
-10%	19.80	216.38
0%	22.00	304.45
10%	24.20	369.08
20%	26.40	433.68
Variance from Base Case	FX Rate (USD/ CAD)	5% NPV (\$M)
-20%	1.08	307.97
-10%	1.22	306.21
0%	1.35	304.45
10%	1.49	302.00
20%	1.62	299.54
Variance from Base Case	Operating Costs (\$/t)	5% NPV (\$M)
-20%	205.95	356.38
-10%	231.69	330.43
0%	257.43	304.45
10%	283.18	269.75
20%	308.92	234.96
Variance from Base Case	Capital Costs (\$M)	5% NPV (\$M)
-20%	155.88	326.72
-10%	175.36	315.60
0%	194.85	304.45
10%	214.33	289.98
20%	233.82	275.42

Table STYLEREF 1 \s 19- – After-Tax NPV Sensitivity Analysis Result Table.

The NPV analysis indicates that the project value is most sensitive to the silver metal price, a ±10% variance in silver price resulted in a -29% and +21% variation in NPV.

In addition, the project value is also highly sensitive to silver head grade. For a ±10% variance in Ag head grade, the project resulted in a -26% and +19% variation.

Amongst the selected parameters, project value is least sensitive to the exchange rate and capital cost. The result for capital sensitivity is reflective of the low project capital requirements, leveraging the existing development and infrastructure (sunk cost).



S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada



Figure STYLEREF 1 \s 19- - After-Tax 5% NPV Sensitivity (-/+20% Project Variables).

The results of the sensitivity analysis demonstrated that the Keno Hill Mineral Reserve estimate is most sensitive to changes in metal prices, then head grade, followed by operating cost, capital cost, and the exchange rate. It is noted that positive revenue variances to the base case (metal price and head grade) are more impacted from the tax fluctuations which diminishes the gains to the after-tax NPV when compared to the negative variances to the base case. This causes the after-tax NPV to be slightly less sensitive overall to positive cashflow variances than negative.

19.6 COMMENTS ON ECONOMIC ANALYSIS

Hecla's QP is of the opinion that as Keno Hill is an operating mine within a relatively stable tax jurisdiction, the above report section(s) accurately represent the current conditions at the mine. As such, the QP has no additional material recommendations to make.



20. ADJACENT PROPERTIES

The Property is located within the Keno Hill region which has a long history of mining that has been outlined in other Sections of this report. There are numerous historic and abandoned workings associated with this history.

There are current and historic placer gold mining operations to the east and north of the Property. Victoria Gold Corp.'s Eagle Gold Mine is located 35 km west of the Property along the Silver Trail Highway. Gold mineralization at the Eagle Gold Mine is not considered indicative of the mineralization on the Property and is processed via an open pit and heap leach operation. The Eagle Mine operation may provide both benefits and challenges in terms of available resources for this Property.

Adjoining the Keno Hill tenements to the east and south, Metallic Minerals Corporation (Metallic Minerals) has the Keno Silver project which hosts historic silver mines which may be strike extensions to deposits within the Hecla tenements. Metallic Minerals has been conducting drilling at East Keno testing soil anomalies and geophysical features. Drilling in 2020 intersected high grade Ag-Pb-Zn sulfide vein mineralization which was similar in style to the Keno Hill silver mineralization. Metallic Minerals reports that drilling also intersected a mixed mesothermal and epithermal style of mineralization also noted at the Hecla Silver King deposit. Metallic Minerals is continuing to drill test exploration targets within its tenements and anticipates reporting an inaugural mineral resource estimate in early 2024.

Located to the southwest of the Keno Hill Property, the Banyan Gold Corp (Banyan) AurMac Gold Project is a combination of the Aurex and McQuesten projects optioned from Victoria Gold Corp. and Alexco Resource Corp, respectively, as well as additional claims staked directly by Banyan. On 18th May 2023, Banyan announced an updated Inferred Mineral Resource for the AurMac Property of 6.2 million ounces. The AurMac property is transected by the main Yukon highway and the access road to the Eagle Gold Mine open-pit and heap leach operations.



21. OTHER RELEVANT DATA AND INFORMATION

The QPs are not aware of other data to disclose.



22. INTERPRETATION AND CONCLUSIONS

The responsible QPs make the following interpretations and conclusions within each respective study area based on their review of data available for this TRS.

22.1 PROPERTY DESCRIPTION AND OWNERSHIP

Keno Hill quartz mining claims and quartz mining leases are held by Hecla through its wholly owned subsidiaries ERDC and AKHM. The current property ownership, access and licenses cover the areas included in the geological model, Mineral Resources and Mineral Reserves in this study.

The potential liabilities associated with the historic operations in Keno Hill are indemnified by the Government of Canada under the terms and conditions of the commercial agreement, subject to the requirement for ERDC to develop, permit and implement the site Reclamation Plan for the historic mining activities.

22.2 EXPLORATION AND MINERAL RESOURCES

Mineral Resources for Keno Hill have been prepared to industry best practice and conform to the resource categories defined by the SEC in S-K 1300. Mineral Resources have been stated exclusive of Mineral Reserves.

In the opinion of the QP, the resource evaluations reported herein are a reasonable representation of the global polymetallic Mineral Resources for the Bellekeno, Lucky Queen, Flame and Moth, Onek and Bermingham deposits given the current level of sampling.

Drilling and other source data has supported the update of Mineral Resource estimates with resources issued for the five main deposits at Keno Hill which comprise Bellekeno, Lucky Queen, Flame and Moth, Onek and Bermingham.

In reviewing the Hecla source data, Mining Plus considered and evaluated areas of risk that included exploration drilling, logging and analytical data collection and the associated quality control procedures, survey and location controls, interpretative modeling and the estimation process. Mining Plus considers these are sufficient to support Mineral Resource Estimation and has included the following comments:

• Recent drilling campaigns by Hecla and Alexco have conformed to industry standards; however, drilling preceding Alexco included issues with core or chip quality which limits their utility primarily to exploration purposes.



- Additional resource drilling has been completed on several of the Keno Hill deposits subsequent to the previous technical report completed in 2021 (Alexco, 2021b). Resource and grade control drilling were completed at the Bermingham deposit and at Flame and Moth. Exploratory drilling investigating extensions to existing resources was completed at Hector-Calumet, Silver King and Coral Wigwam deposits that lie along strike and between the major mineral resource areas.
- The reviewed and validated geological database was considered by the QP to be representative and suitable for constructing interpretative geological models and for the preparation of Mineral Resource estimates. The database was similarly considered suitable for mine design and scheduling and in conjunction with other modifying factors, suitable for Mineral Reserve estimation.
- The most recent drilling campaign (between September 2022 and October 2023) has incorporated drilling procedures used by Alexco and complemented by minor improvements introduced by Hecla. These practices have followed industry standards and are considered suitable for incorporation into the resource estimation. Drilling preceding Alexco typically has included issues with core or chip quality limiting their utility primarily to exploration purposes.
- The data spacing and distribution within the areas of the resource was sufficient to establish the degree of geological and grade continuity appropriate for mineral resource estimation.
- In the drilling database, geology logging prior to 2010 used a different approach for the description of the lithological code with inconsistent logging between both periods. Some records in the database included "NR" (No Recovery) entries in the assay data which were subsequently retained as NULLs in the estimation process. At Flame and Moth, it was noted that the NR intervals constituted around 15% of the total sampled length within some domains.
- Density determination was conducted using combined estimates from a pycnometer method applied to pulp samples and the Archimedes method on segments of drill core.
- Mining Plus considered the assay Quality Control program between 2006 and 2023 was acceptable and no significant contamination was observed with assay samples returning acceptable precision and accuracy without evidence of bias. The following comments on the quality control program were noted:
 - o Investigation and documented actions were not at a suitable standard for some assay failures.
 - o It was noted that duplication of pulp samples was discontinued as part of the Quality Control program after 2011.
 - o Pulverized blank standard controls have not been included as part of the Quality Control program.



- The applied interpretation and modelling criteria appeared to vary from deposit to deposit, including within the same deposit or structure. The interpretations are apparently based on a combination of geology and economic cut-off and a lack of accurate snapping was observed in some deposits. These differences were not considered to have a significant global impact on the mineral resource but could present an impact on a local scale.
- The block model grade interpolation was completed using differing estimation approaches to accommodate local and global biases which remained within the acceptable range. This approach includes estimation with regular parent cells applying proportion of the mineralized zone (Onek, Lucky Queen and Bellekeno) that makes it difficult to optimize underground resources. No material issue was detected except at the Bellekeno deposit where the resource classification was modified from Indicated to Inferred. Mining Plus noted that different estimation approaches have been applied to each deposit. The Mineral Resource classification has been applied to a reasonable standard where most blocks remain within a distance of 25 m of the source data and included as Indicated resources. It was noted in some cases a distance up to 50 m distance was permitted for the Indicated classification, which is typically wider than what would normally be applied in this style of mineralization.
- The implementation of grade capping was applied on a case-by-case basis. Overall, most of the estimation domains exhibited a low coefficient of variation. For Flame and Moth, a clamp method was employed to limit high-grade values. Whilst this method results in lower than anticipated grades in the high-grade zones, this method shows improved results compared to traditional capping methods. Mining Plus holds the opinion that there are no notable concerns regarding the outcomes of capping. In the case of Bermingham, the capping has been done on the raw data. Mining Plus advises against methods of raw data capping, as this may result in potentially higher loss of metal compared to capping applied to composites. Mining Plus has referred to older mineral resource assessments completed in the period 2010 to 2021 by Dr Gilles Arseneau, Ph.D., P. Geo. from SRK Canada who acted as the QP. Throughout this period Dr. Arseneau conducted diverse reviews of databases and quality control. Further details on these reviews have been included in Section 9 of this Report.
- The implementation of reconciliation in active mining areas is currently ongoing and a comprehensive review is underway. Mining Plus emphasizes that, in accordance with best practices, mining reconciliation remains an important tool in the Mineral Resource value chain. The outcomes from reconciliation studies play a crucial role in enhancing the understanding regarding the veracity of mineral resource estimates and anticipating future improvements.
- Mining Plus observed that the mineralization style and controls are well understood following an extensive period of mining
 operations and support the continuing release of Mineral Resources.
- Mining Plus considered that Hecla's Keno Hill has excellent potential for further exploration discoveries and for extensions to the current resources that remain on the Property, both along strike and at depth in the immediate resource areas and on other parts of the Property.



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- Mining Plus has assumed no risk for the processing and mining costs applied to the NSR economic cut-off for reporting the Mineral Resource estimates. These costs have reportedly been based on previous studies. However, verification with current Hecla costs (mining and processing cost) showed no significant differences in the reported resources.
- Assumptions made for various metal prices were deemed reasonable for reporting Mineral Resources while considering long-term price fluctuations. It remains essential to acknowledge that these parameters could be influenced by significant shifts in the market economy.

It is the opinion of the Mining Plus geology QP that the Mineral Resource models presented in this report are representative of the informing data and that the data is of sufficient quality and quantity to support the Mineral Resource estimate to the classifications applied.

22.3 MINING AND MINERAL RESERVES

- Mineral Reserves have been classified in accordance with the definitions for Mineral Reserves in S-K 1300.
- Mineral Reserves as of December 31, 2023 total 1.88 Mt grading 912 g/t Ag, 0.22 g/t Au, 2.81% Pb, and 2.53% Zn.
- Indicated Mineral Resources were converted to Probable Mineral Reserves. Inferred Mineral Resources were not converted to
 Mineral Reserves, however, are typically included in the Keno Hill long-range plan and therefore are removed from the life of mine cash
 flows to ensure economic confirmation of the Mineral Reserves.
- Mineral Reserves are estimated by qualified professionals using modern mine planning software in a manner consistent with industry practice.
- The mining method at KHM is overhand mechanized cut and fill (MCF) using cemented and uncemented rockfill as backfill. MCF is a highly selective method that enables the Mineral Reserves to be extracted safely and economically while adapting to the variable nature of the narrow vein geometry.
- Mill feed will come predominantly from the Bermingham deposit (70%), followed by the production from Flame and Moth (24%), and supplemented by Lucky Queen ore (6%).
- The current LOM period is estimated to be eleven years ending in 2034.
- The key risks to achieving the design basis include:
 - o Slower excavation rates, increased dilution, and increased ground support costs due to the relatively poor nature of the rock mass.



- o Localized conditions of higher water flow around water bearing structures.
- o Due to the relatively small nature of the operation, any unplanned breakdowns may have a potentially large effect.

The QP considers that the mine plan is sound, as it is based on conventional mining techniques, reasonable production assumptions, and due consideration of potential risks to achieving the mine plan. As the mine matures, the overall mine plan benefits from the flexibility of having multiple working fronts to achieve the desired production rate. The Mineral Reserves are subject to the type of risks that are common to underground polymetallic narrow vein mining operations and may be materially affect by the following risk factors:

- Changes in realized metal prices from what was assumed.
- Changes to the mining costs, processing and G&A costs used to calculate the cut-off grade.
- Changes in local interpretation of mineralization geometry or modelled continuity of mineralized zones.
- Changes to geotechnical or hydrogeological design assumptions resulting in schedule delays, increased dilution or reduced recoveries.
- Changes to mining and metallurgical recoveries.
- Changes in the long-term assumptions relating to concentrate payability, marketability and penalty terms.
- Changes in the mining development or geotechnical conditions resulting in additional unplanned dilution.
- Changes to the current mining method where certain zones or lenses permit.
- Assumptions as to the continued ability to access site, retain mineral tenure, obtain required environmental, mining, and other regulatory permits, and maintain a social license to operate with relevant stakeholders.

22.4 METALLURGICAL TESTING AND MINERAL PROCESSING

The Keno Hill Mine is currently engaged in mining and milling operations with an on-site mill producing silver-lead and zinc concentrates. Hecla has completed all mill upgrades planned by the former site operator, Alexco to support the future increase from 400 tpd to 550 tpd throughput.



22.5 INFRASTRUCTURE

The current infrastructure servicing the Keno Hill Mine is expected to be sufficient to sustain operations and Hecla has plans for refurbishment of repair as necessary within the mine plan. The following projects are some planned sustaining capital projects that should add capacity to the current DSTF and allow for the mine plan to utilize tailings in the underground cemented backfill.

- Hecla plans to build a CRF/tailings plant near Bermingham portal to support ongoing backfill activities at the Keno Hill Mine.
- Hecla plans to increase the capacity of the DSTF with a Phase 2 and Phase 3 extension.

DSTF Phase 2 construction is scheduled to start in summer 2024. The design is currently being revised to incorporate comments received from the Yukon Government. Design revisions include revisions to the seismic criteria and re-evaluation of geotechnical design under updated criteria.

The current permit limits for the Dry Stack Tailings Facility and the Waste Rock Dump Facility are insufficient to cover the planned waste rock and tailings produced over the LOM. Permitting studies are underway, and a reasonable timeframe has been identified in the LOM to obtain appropriate permits to establish additional facilities for tailings and waste rock dumps.

22.6 ENVIRONMENTAL STUDIES, PERMITTING, SOCIAL OR COMMUNITY IMPACTS

Hecla is committed to operating in compliance with all regulations and standards of good practice for environmental, health, and safety. To uphold this commitment Hecla has developed and approved corporate policies for environmental, health and safety practices and has prepared a detailed management plan to facilitate the continuous improvement of its environment and health and safety performance. An Environmental Management System is currently in the process of being implemented, completion is expected by the end of 2024.

Permits held by Hecla for the KHM are sufficient to ensure that mining activities are conducted within the regulatory framework required by regulations. The QP notes that the Bellekeno, Bermingham, and Flame and Moth mines have all permits and authorizations in place to commence or continue with full-scale mine production. The Bermingham deposit has the required permits to sustain mine production for a number of years, however, it will require an amendment to include recent additions to the Mineral Reserve in Bermingham Deep Northeast Zone. The Lucky Queen deposit has in place a Quartz Mining Licence (QML-0009) which authorizes mining operations, but Water Licence QZ18-044 would require an amendment before water-based activities for Lucky Queen can proceed.

To maintain full-scale production for an extended period of time, or to increase production at those deposits, it is likely that modifications to certain permits will be required, including the Quartz Mining Licence (QML-0009), and the Water Licence QZ18-044, in order to increase water discharge



amounts/rates, increase the volume or change location of waste rock and tailings storage, or other changes.

In addition, Hecla is progressing work to increase the current permit limits for the Dry Stack Tailings Facility and the Waste Rock Dump Facility as they are insufficient to cover the planned waste rock and tailings produced over the LOM. There is a reasonable expectation that Hecla will receive the required permits to proceed with the proposed LOM plan.

The mine design meets current standards and the implementation of the proposed environmental and health and safety practices ensures that the Keno Hill Mine is prepared to meet future challenges.

22.7 CAPITAL AND OPERATING COSTS AND ECONOMIC EVALUATION

The capital cost and operating estimates were generated by Hecla and reviewed in detail and modified where necessary by the Mining Plus mining QP. The QP considers the accuracy of the components of the capital cost estimate to be appropriate for an operating mine supported by historical costs and recent estimates.

The risks to both sustaining capital and operating costs are mitigated by several factors: the established site infrastructure including an operating mill, existing access to all three mines including advanced development in Flame and Moth and Lucky Queen mines. The majority of the operating costs are based on current estimates and performance with reasonable allowances for improvement through operational efficiencies and application of best practices in MCF development.

The sustaining capital cost for the project is USD 106.2 M with growth capital of USD 79.9 M and the reclamation and closure cost is USD 8.7 M for a total of USD 194.8 M. Operating costs average USD \$257.43/t of ore over the life of mine.

22.8 ECONOMIC ANALYSIS

The economic model for the project was developed by Hecla and reviewed in detail by the Mining Plus mining QP and the post-tax economic analysis QP, Mr. Matthew Blattman. KHM benefits from the operational history, safe jurisdiction and existing permits, as well as the existing infrastructure. Although a brownfields operation, the limitation of liabilities for the historic impacts of mining provides mitigation to that risk of liability and higher than expected closure costs.

Total cumulative after-tax cash flow to the project is USD 419.8 M. The before and after-tax Net Present Value of the project are USD 318.1 M and USD 304.5 M respectively at a 5% annual discount rate. The before and after-tax Internal



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Based on the assumptions in the model, the conclusions are that this Project provides a robust cashflow over the eleven-year mine life, producing high value lead-silver and zinc concentrates. The NPV analysis indicates that the project value is most sensitive to the silver metal price, a $\pm 10\%$ variance in silver price resulted in a -29% and +21% variation in NPV.

In addition, the project value is also highly sensitive to silver head grade. For a ±10% variance in Ag head grade, the project NPV can vary by -26% and +19%.

Amongst the selected parameters, project value is least sensitive to the exchange rate and capital cost. The result for capital sensitivity is reflective of the low project capital requirements, leveraging the existing development and infrastructure (sunk cost).

The results of the sensitivity analysis demonstrated that the Keno Hill Mineral Reserve estimates are most sensitive to changes in metal prices, then head grade, followed by operating cost, capital cost, and the exchange rate. It is noted that positive revenue variances to the base case (metal price and head grade) are more impacted from the tax fluctuations which diminishes the gains to the after-tax NPV when compared to the negative variances to the base case. This causes the after-tax NPV to be slightly less sensitive overall to positive cashflow variances than negative.


23. RECOMMENDATIONS

23.1 INTRODUCTION

This section contains a summary of recommendations and opportunities that could be considered for implementation in the future to de-risk, optimize and potentially extend the life of the Keno Hill Mine. The QPs provide the following recommendations.

23.2 GEOLOGY AND MINERAL RESOURCES

Hecla has maintained an active exploration program that seeks to identify mineralization extensions and to support the evaluation of mineral resources and provide grade control definition ahead of mining operations. Mining Plus considers the drilling, logging and drill core meet existing industry standards and are sufficient to support Mineral Resource Estimation and includes the following comments and recommendations:

- Mining Plus has recommended that the current data spacing, and distribution is maintained at all deposits and suggested monitoring the subsequent geological and grade continuity to ensure it continues to be appropriate for Mineral Resource Estimation.
- Review the logging disparities identified in drillings conducted before 2010 and conduct a comprehensive assessment of logging consistency across various drilling campaigns. This review aims to enhance the interpretation and modeling criteria for mineralized structures.
- Discrepancies observed between the entered assay data and the laboratory certificates were noted in the Onek database, and to a
 lesser extent at Bellekeno and Lucky Queen. Mining Plus considers that a more comprehensive audit be conducted to address these
 inconsistencies and verify if any other issues exist.
- Constant monitoring of the pulp bulk density is recommended by conducting checks using the paraffin wax method on samples estimated using the Archimedes density method. The checks will provide information on any relevant biases and must be included in the company's procedures.
- Mining Plus considers that adjustments to the procedures for underground face sampling and an improvement in onsite assaying may be sufficient to support the incorporation of face samples within future grade estimation processes. Face samples are normally reliable source data for estimations as they can be controlled at uniform boundaries and set locations within the mining development. Face sample data represents the closest spaced samples that can be used to determine local grade variability or continuity.
- Mining Plus recommends the following improvements to the Quality Control program:



- o Hecla should include an investigation of the origin of any quality control failures and to implement timely corrective measures.
- Hecla should continue to incorporate field duplicates, pulp duplicates and umpire check samples as essential parts of the Quality Control procedure to assess the precision of samples at various stages of sampling and comminution.
- o The incorporation of pulverized blank standard samples is recommended to evaluate contamination during the analysis stage.
- The applied geological interpretation and modelling criteria should be clearly defined and consistent during the interpretation of each structure and deposit, which will help improve precision in locally estimated resources.
- It is recommended that future resource estimates should establish clear and consistent estimation criteria as far as practicable, including:
 - o An update of the estimated resources at Onek, Lucky Queen and Bellekeno, with appropriate documentation and traceability of the data and information used is strongly recommended.
 - o The block model should use parent cells and sub cells to facilitate underground optimizations.
 - o A consistent capping method be applied uniformly across all deposits. The recommended approach is to consider capping after the compositing process, where the influence of high grades is mitigated.
 - o The NSR economic cut-off should be based on Hecla's current costs, which should include at a minimum the cost of mine and mineral processes, which can be tangible and realistic depending on the level of knowledge of mining development in the area.
- Monitor the estimation results of those domains with no record (NR or NULL) intervals mainly in Flame and Moth, to see potential risks in this area resulting from these samples.
- Continue with the Resource classification criteria for Indicated Resources using a distance of 25 m, which should be consistent wherever possible for all deposits.
- Implement mining reconciliation practices that help to better understand the veracity of mineral resource estimates and anticipate future improvements.



23.3 MINING AND MINERAL RESERVES

The QP notes that the overall mine plan benefits from increased flexibility and working fronts as the mine matures and the capital development advances. In the initial years, there is an opportunity to further de-risk the overall LOM plan and better predict the operational performance of future mining zones by addressing the following items:

- Undertake a more detailed dilution and extraction study, including consideration of any existing reconciliation studies, to better quantify the extraction recovery, dilution, and other modifying factors that Hecla is currently applying to all production designs. Specifically, the final cut underneath a planned sill can be expected to have a higher dilution from CRF failure due to blasting cycles of the final lift and previous lift. Use the results of the above noted studies to determine the actions necessary to align mine production grades with the Mineral Reserve Estimates.
- Complete additional geotechnical assessments to determine the amenability of the orebody to more productive and less costly mining methods. There is an opportunity to trial stope mining methods in the Flame and Moth between 2024 and 2026 to refine the method and application without affecting the overall LOM plan.
- Complete additional optimization on the Mineral Reserve mine plan and de-risk the mine plan on a development basis by assessing the potential for slower than planned increases to efficiency and underground unit development operations. Complete additional scenario scheduling to better understand the risk and plan appropriately to meet the schedule.
- Continue evaluating the option of mining at Flame and Moth earlier than planned as a large portion of the underground access has been completed and the mine is ready to produce ore with minimal development. This will assist with reducing the LOM plan risk by creating additional mining fronts with minimal upfront capital.
- Continue conducting definition diamond drilling throughout the remainder of the underground mining operation to convert Inferred to Indicated Mineral Resources and increase the understanding of the mineralization. Doing so may result in increased Mineral Reserves near planned capital and operational development and reduce the overall capital development intensity of the schedule.
- Investigate adding marginal underground Indicated Mineral Resources to the Mineral Reserves where appropriate.
- Complete hydrogeological studies to better understand the sources of water at Flame and Bermingham



• Review mining plans and benchmark other relevant Hecla operations to define definitive actions to attain the planned improvements in mining productivity, daily development advance and associated costs over the first four years.

23.4 MINERAL PROCESSING

The QP considers that there is an opportunity to improve the level of detail of the metallurgical predictions and particularly the concentrate production at a month-to-month operational level. Further locked cycle tests at the next stage of study are recommended for samples representing the Flame and Moth deposit and different blends according to the LOM production plan. There may be an opportunity to improve the concentrates grades with further testing, particularly of the zinc concentrate. Additional metallurgical testing at different head grades would also support the approach to capping recoveries, particularly for the comportment of lead to concentrates at lower head grade mill feed. In addition, further hardness tests are recommended on these samples to verify potential grindability variations for future mill feeds. It is also recommended that testing of the increased plant throughout above the 400 tpd be done in the first year of operation to identify potential bottlenecks and confirm requirements for mill modifications to achieve the 550 tpd throughput. Sedgman recommends that Hecla perform a series of debottlenecking exercises and productivity tests on the mill prior to and well in advance of the expected throughput increases. This will help to derisk the production profile and ensure a smooth ramp up.

23.5 ENVIRONMENTAL STUDIES, PERMITTING, SOCIAL OR COMMUNITY IMPACTS

The QP notes that that the Mineral Reserves contain material that is not fully permitted for extraction at both Bermingham (Bermingham Northeast Deep Zone) and Lucky Queen.

The QP recommends that Hecla continue with its planned permit approvals and amendment process to reduce the risk to the overall mine plan and investigate alternatives if required.

23.6 ECONOMICS ANALYSIS

The QP is of the opinion that as Keno Hill is an operating mine within a relatively stable tax jurisdiction, and the information contained in Section 19.4-Economic Analysis accurately represent the current conditions at the mine. As such, the QP has no additional material recommendations to make.



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25. RELIANCE ON INFORMATION PROVIDED BY REGISTRANT

This TRS has been prepared by the Qualified Persons (QPs) for Hecla Mining Company (the Registrant). The QPs have relied on information provided by the Registrant to inform this TRS. The findings, conclusions, opinions, and estimates contained herein are based on the following:

The Mining Plus QP has relied on Hecla for guidance on royalties, and other government levies or interests, applicable to revenue or income from the Property in the Executive Summary and Section 19.

The QPs have not independently verified the market studies and pricing basis for Mineral Resources, Mineral Reserves, and economics. The QPs have fully relied upon the information derived from Hecla and expert reports retained by Hecla for this information through the following documents:

- Consensus Economics Inc, Energy and Metals Consensus Forecasts, December 11, 2023.
- Hecla Mining Company, Proposed2023YearEndMetalPrices, dated August 18, 2023.

Metals price forecasting is a specialized business requiring knowledge of supply and demand, economic activity and other factors that are highly specialized and requires an extensive global database that is outside of the purview of a QP. The QPs consider it reasonable to rely upon Hecla to provide metal price forecasts and marketing information on the silver and zinc concentrates as they sought expert input for this information. This information is used in Section 16 of the Report. The information is also used in support of the Mineral Resource Estimate in Section 11, the Mineral Reserve Estimate in Section 12, and economic analysis in Section 19.

Mining Plus's QP has not researched property title or mineral rights for KHM and consider it reasonable to rely on Hecla's Land Administration personnel who are responsible for maintaining this information.

This information is used in Appendix A, Section 3 Property Description, and the Executive Summary.

The QPs have fully relied upon the information supplied by Hecla Mining Company and experts retained by Hecla Mining Company, for information related to environmental permitting, permitting, closure planning and related cost estimation, and social and community impacts. This information is publicly available via the Government of Yukon, Yukon Water Board and Yukon Environmental and Socio-Economic Assessment Board websites.

This information is used in Section 17 of the Report. The information is also used in support of the Mineral Resource Estimate in Section 11, the Mineral Reserve Estimate in Section 12, capital and operating costs in Section 18 and the economic analysis in Section 19.

The QPs have taken all appropriate steps, in their professional opinion, to ensure that the above information from Hecla is sound.

Except for the purposes legislated under US securities laws, any use of this TRS by any third party is at that party's sole risk.



26. DATE AND SIGNATURE PAGE

This report titled "S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada" with an effective date of December 31, 2023, was prepared and signed by:

Qualified Person or Consulting Firm	Responsible Sections	Signature	Date
Mining Plus Canada Ltd.	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.10, 1.11, 1.12.1, 1.13, 1.14.1, 1.14.2, 1.14.4, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 16, 17, 18, 19.1, 19.2, 19.3, 20, 21, 22.1, 22.2, 22.3, 22.6, 22.7, 23.1, 23.2, 23.3, 23.5, 24, 25	"signed"	February 15, 2024
Ms. Christina Vink, P.Eng.	1.8, 1.9 (excludes waste rock management and DSTF), 1.14.3, 10, 14, 15.1, 15.2, 15.3 15.4 15.5, 22.4, 22.5, 23.4	"signed"	February 15, 2024
Mr. Baoyao Tang, P.Eng.	1.9 (waste rock management and DSTF only), 15.6, 15.7	"signed"	February 15, 2024
Mr. Matthew Blattman, PE	1.12.2, 1.12.3, 19.4, 19.5, 19.6, 22.8, 23.6	"signed"	February 15, 2024

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Appendix A

Hecla Quartz Mining Claim and Lease Holdings in the Keno Hill

Excluding the Tailings Property

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
2		Active	43	Alexco Keno Hill Mining Corp 100%	2004/08/21	2004/08/23	2028/12/31	\$525	5
55590	NM00297	Active	ABEL	Alexco Keno Hill Mining Corp 100%	1946/10/08	1947/03/28	2025/02/23	\$210	21
YC02775		Active	Ag	Alexco Keno Hill Mining Corp 100%	2001/07/09	2001/07/10	2030/12/31	\$525	5
62132	NM00555	Active	AGRAM	Alexco Keno Hill Mining Corp 100%	1952/06/03	1952/06/17	2027/11/02	\$210	21
YC48132		Active	Alex 1	Alexco Keno Hill Mining Corp 100%	2006/05/26	2006/06/02	2043/12/31	\$525	5
YC48141		Active	Alex 10	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48231		Active	Alex 100	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48232		Active	Alex 101	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48233		Active	Alex 102	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48234		Active	Alex 103	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48235		Active	Alex 104	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48236		Active	Alex 105	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2039/12/31	\$525	5
YC48237		Active	Alex 106	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48238		Active	Alex 107	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48239		Active	Alex 108	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48240		Active	Alex 109	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48142		Active	Alex 11	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48241		Active	Alex 110	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48242		Active	Alex 111	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48243		Active	Alex 112	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48244		Active	Alex 113	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48245		Active	Alex 114	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48246		Active	Alex 115	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48247		Active	Alex 116	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48248		Active	Alex 117	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48249		Active	Alex 118	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48250		Active	Alex 119	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48143		Active	Alex 12	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48251		Active	Alex 120	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48252		Active	Alex 121	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48253		Active	Alex 122	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48254		Active	Alex 123	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48255		Active	Alex 124	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48256		Active	Alex 125	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48257		Active	Alex 126	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48258		Active	Alex 127	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48259		Active	Alex 128	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48260		Active	Alex 129	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48144		Active	Alex 13	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48261		Active	Alex 130	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48262		Active	Alex 131	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48263		Active	Alex 132	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48264		Active	Alex 133	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48265		Active	Alex 134	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48266		Active	Alex 135	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48267		Active	Alex 136	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48268		Active	Alex 137	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48269		Active	Alex 138	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48270		Active	Alex 139	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48145		Active	Alex 14	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48271		Active	Alex 140	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48272		Active	Alex 141	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48273		Active	Alex 142	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48274		Active	Alex 143	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48275		Active	Alex 144	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48276		Active	Alex 145	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48277		Active	Alex 146	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48278		Active	Alex 147	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48279		Active	Alex 148	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48280		Active	Alex 149	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48146		Active	Alex 15	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48281		Active	Alex 150	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48282		Active	Alex 151	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48283		Active	Alex 152	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48284		Active	Alex 153	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48285		Active	Alex 154	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48286		Active	Alex 155	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48287		Active	Alex 156	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48288		Active	Alex 157	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48289		Active	Alex 158	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48290		Active	Alex 159	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48147		Active	Alex 16	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48291		Active	Alex 160	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48292		Active	Alex 161	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48293		Active	Alex 162	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48294		Active	Alex 163	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48295		Active	Alex 164	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48296		Active	Alex 165	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48297		Active	Alex 166	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48298		Active	Alex 167	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48299		Active	Alex 168	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48300		Active	Alex 169	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48148		Active	Alex 17	Alexco Keno Hill Mining Corp 100%	2006/05/26	2006/06/02	2043/12/31	\$525	5
YC48301		Active	Alex 170	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48302		Active	Alex 171	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48303		Active	Alex 172	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48304		Active	Alex 173	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48305		Active	Alex 174	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48306		Active	Alex 175	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2046/12/31	\$525	5
YC48307		Active	Alex 176	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2046/12/31	\$525	5
YC48308		Active	Alex 177	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48309		Active	Alex 178	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48310		Active	Alex 179	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48149		Active	Alex 18	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48311		Active	Alex 180	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48312		Active	Alex 181	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48313		Active	Alex 182	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48314		Active	Alex 183	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48315		Active	Alex 184	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48316		Active	Alex 185	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48317		Active	Alex 186	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48318		Active	Alex 187	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48319		Active	Alex 188	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48320		Active	Alex 189	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48150		Active	Alex 19	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48321		Active	Alex 190	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48322		Active	Alex 191	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48323		Active	Alex 192	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48324		Active	Alex 193	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48325		Active	Alex 194	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48326		Active	Alex 195	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48327		Active	Alex 196	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48328		Active	Alex 197	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48329		Active	Alex 198	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48330		Active	Alex 199	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48133		Active	Alex 2	Alexco Keno Hill Mining Corp 100%	2006/05/26	2006/06/02	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48151		Active	Alex 20	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48331		Active	Alex 200	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48332		Active	Alex 201	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48333		Active	Alex 202	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48334		Active	Alex 203	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48335		Active	Alex 204	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48336		Active	Alex 205	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48337		Active	Alex 206	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48338		Active	Alex 207	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48548		Active	Alex 208	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48339		Active	Alex 209	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48152		Active	Alex 21	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48340		Active	Alex 210	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48341		Active	Alex 211	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48342		Active	Alex 212	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48343		Active	Alex 213	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48344		Active	Alex 214	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48345		Active	Alex 215	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48346		Active	Alex 216	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48347		Active	Alex 217	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48348		Active	Alex 218	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48349		Active	Alex 219	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48153		Active	Alex 22	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48350		Active	Alex 220	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48351		Active	Alex 221	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2043/12/31	\$525	5
YC48352		Active	Alex 222	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48353		Active	Alex 223	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2043/12/31	\$525	5
YC48354		Active	Alex 224	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2043/12/31	\$525	5
YC48355		Active	Alex 225	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48356		Active	Alex 226	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2043/12/31	\$525	5
YC48357		Active	Alex 227	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48358		Active	Alex 228	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48359		Active	Alex 229	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2042/12/31	\$525	5
YC48154		Active	Alex 23	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48360		Active	Alex 230	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2042/12/31	\$525	5
YC48361		Active	Alex 231	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2042/12/31	\$525	5
YC48362		Active	Alex 232	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2042/12/31	\$525	5
YC48363		Active	Alex 233	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2042/12/31	\$525	5
YC48364		Active	Alex 234	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2042/12/31	\$525	5
YC48365		Active	Alex 235	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2042/12/31	\$525	5
YC48366		Active	Alex 236	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2042/12/31	\$525	5
YC48367		Active	Alex 237	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48368		Active	Alex 238	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48369		Active	Alex 239	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48155		Active	Alex 24	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48370		Active	Alex 240	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48371		Active	Alex 241	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48372		Active	Alex 242	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48373		Active	Alex 243	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48374		Active	Alex 244	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48375		Active	Alex 245	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48376		Active	Alex 246	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48377		Active	Alex 247	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48378		Active	Alex 248	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48379		Active	Alex 249	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48156		Active	Alex 25	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48380		Active	Alex 250	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48381		Active	Alex 251	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48382		Active	Alex 252	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48383		Active	Alex 253	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48384		Active	Alex 254	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48385		Active	Alex 255	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48386		Active	Alex 256	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48387		Active	Alex 257	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48388		Active	Alex 258	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48389		Active	Alex 259	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48157		Active	Alex 26	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48390		Active	Alex 260	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48391		Active	Alex 261	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48392		Active	Alex 262	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48393		Active	Alex 263	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48549		Active	Alex 264	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48394		Active	Alex 265	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48395		Active	Alex 266	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48396		Active	Alex 267	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48397		Active	Alex 268	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48398		Active	Alex 269	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48158		Active	Alex 27	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48399		Active	Alex 270	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48400		Active	Alex 271	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48401		Active	Alex 272	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48402		Active	Alex 273	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48403		Active	Alex 274	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48404		Active	Alex 275	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48405		Active	Alex 276	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2042/12/31	\$525	5
YC48406		Active	Alex 277	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2046/12/31	\$525	5
YC48407		Active	Alex 278	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2046/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48408		Active	Alex 279	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2046/12/31	\$525	5
YC48159		Active	Alex 28	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48409		Active	Alex 280	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2046/12/31	\$525	5
YC48410		Active	Alex 287	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48411		Active	Alex 288	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48412		Active	Alex 289	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48160		Active	Alex 29	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48413		Active	Alex 290	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48414		Active	Alex 291	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48415		Active	Alex 292	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48416		Active	Alex 293	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48417		Active	Alex 294	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48418		Active	Alex 295	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48419		Active	Alex 296	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48420		Active	Alex 297	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48421		Active	Alex 298	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48422		Active	Alex 299	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48134		Active	Alex 3	Alexco Keno Hill Mining Corp 100%	2006/05/26	2006/06/02	2043/12/31	\$525	5
YC48161		Active	Alex 30	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48423		Active	Alex 300	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48424		Active	Alex 301	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48425		Active	Alex 302	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48426		Active	Alex 303	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48427		Active	Alex 304	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48428		Active	Alex 305	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48429		Active	Alex 306	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48430		Active	Alex 307	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48431		Active	Alex 308	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48432		Active	Alex 309	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48162		Active	Alex 31	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48433		Active	Alex 310	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48434		Active	Alex 311	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48435		Active	Alex 312	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48436		Active	Alex 313	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48437		Active	Alex 314	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48438		Active	Alex 315	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48439		Active	Alex 316	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48440		Active	Alex 317	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48441		Active	Alex 318	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48442		Active	Alex 319	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48163		Active	Alex 32	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48443		Active	Alex 320	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48444		Active	Alex 321	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48445		Active	Alex 322	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48446		Active	Alex 323	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48447		Active	Alex 324	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48448		Active	Alex 325	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48449		Active	Alex 326	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48450		Active	Alex 327	Alexco Keno Hill Mining Corp 100%	2006/05/19	2006/06/02	2043/12/31	\$525	5
YC48451		Active	Alex 328	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48452		Active	Alex 329	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48164		Active	Alex 33	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48453		Active	Alex 330	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48454		Active	Alex 331	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48455		Active	Alex 332	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48456		Active	Alex 333	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5
YC48457		Active	Alex 334	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5
YC48458		Active	Alex 335	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48459		Active	Alex 336	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5
YC48460		Active	Alex 337	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5
YC48461		Active	Alex 338	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5
YC48462		Active	Alex 339	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5
YC48165		Active	Alex 34	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48463		Active	Alex 340	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5
YC48464		Active	Alex 341	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5
YC48465		Active	Alex 342	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2042/12/31	\$525	5
YC48466		Active	Alex 343	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48467		Active	Alex 344	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48468		Active	Alex 345	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48469		Active	Alex 346	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48470		Active	Alex 347	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2042/12/31	\$525	5
YC48471		Active	Alex 348	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2042/12/31	\$525	5
YC48472		Active	Alex 349	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2042/12/31	\$525	5
YC48166		Active	Alex 35	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48473		Active	Alex 350	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2042/12/31	\$525	5
YC48474		Active	Alex 351	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2042/12/31	\$525	5
YC48475		Active	Alex 352	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2042/12/31	\$525	5
YC48476		Active	Alex 353	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48477		Active	Alex 354	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2042/12/31	\$525	5
YC48478		Active	Alex 355	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48479		Active	Alex 356	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2042/12/31	\$525	5
YC48480		Active	Alex 357	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48481		Active	Alex 358	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2042/12/31	\$525	5
YC48482		Active	Alex 359	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48167		Active	Alex 36	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2043/12/31	\$525	5
YC48483		Active	Alex 360	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48484		Active	Alex 361	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48485		Active	Alex 362	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48486		Active	Alex 363	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48487		Active	Alex 364	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48488		Active	Alex 365	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48489		Active	Alex 366	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48490		Active	Alex 367	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48491		Active	Alex 368	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48492		Active	Alex 369	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48168		Active	Alex 37	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48493		Active	Alex 371	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48494		Active	Alex 372	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48495		Active	Alex 373	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48496		Active	Alex 374	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48497		Active	Alex 375	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48498		Active	Alex 376	Alexco Keno Hill Mining Corp 100%	2006/06/02	2006/06/02	2042/12/31	\$525	5
YC48499		Active	Alex 377	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2046/12/31	\$525	5
YC48500		Active	Alex 379	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48169		Active	Alex 38	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48501		Active	Alex 380	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48502		Active	Alex 381	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48503		Active	Alex 382	Alexco Keno Hill Mining Corp 100%	2006/05/23	2006/06/02	2042/12/31	\$525	5
YC48504		Active	Alex 383	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2042/12/31	\$525	5
YC48505		Active	Alex 384	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2042/12/31	\$525	5
YC48506		Active	Alex 386	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2042/12/31	\$525	5
YC48170		Active	Alex 39	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48135		Active	Alex 4	Alexco Keno Hill Mining Corp 100%	2006/05/26	2006/06/02	2043/12/31	\$525	5
YC48171		Active	Alex 40	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48507		Active	Alex 400	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2026/12/31	\$525	5
YC48508		Active	Alex 401	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2026/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48509		Active	Alex 403	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2026/12/31	\$525	5
YC48510		Active	Alex 404	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2026/12/31	\$525	5
YC48172		Active	Alex 41	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48173		Active	Alex 42	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48511		Active	Alex 423	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2026/12/31	\$525	5
YC48512		Active	Alex 424	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2026/12/31	\$525	5
YC48513		Active	Alex 425	Alexco Keno Hill Mining Corp 100%	2006/05/24	2006/06/02	2026/12/31	\$525	5
YC48514		Active	Alex 429	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48174		Active	Alex 43	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48515		Active	Alex 430	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48516		Active	Alex 431	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48517		Active	Alex 432	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48518		Active	Alex 433	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48519		Active	Alex 434	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48520		Active	Alex 435	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48521		Active	Alex 436	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48522		Active	Alex 437	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48523		Active	Alex 438	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48524		Active	Alex 439	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48175		Active	Alex 44	Alexco Keno Hill Mining Corp 100%	2006/05/15	2006/06/02	2043/12/31	\$525	5
YC48525		Active	Alex 440	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48526		Active	Alex 441	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48527		Active	Alex 442	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48528		Active	Alex 443	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48529		Active	Alex 444	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48530		Active	Alex 445	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48531		Active	Alex 446	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48532		Active	Alex 447	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48533		Active	Alex 448	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48534		Active	Alex 449	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48176		Active	Alex 45	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48535		Active	Alex 450	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48536		Active	Alex 451	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48537		Active	Alex 452	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48538		Active	Alex 453	Alexco Keno Hill Mining Corp 100%	2006/05/17	2006/06/02	2043/12/31	\$525	5
YC48539		Active	Alex 454	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48540		Active	Alex 455	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48541		Active	Alex 456	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48542		Active	Alex 457	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48543		Active	Alex 458	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48544		Active	Alex 459	Alexco Keno Hill Mining Corp 100%	2006/05/16	2006/06/02	2043/12/31	\$525	5
YC48177		Active	Alex 46	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC48545		Active	Alex 460	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48546		Active	Alex 461	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC48547		Active	Alex 462	Alexco Keno Hill Mining Corp 100%	2006/05/18	2006/06/02	2043/12/31	\$525	5
YC56176		Active	Alex 463	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/12	2042/12/12	\$525	5
YC56177		Active	Alex 464	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/12	2042/12/12	\$525	5
YC56178		Active	Alex 465	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56179		Active	Alex 466	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56180		Active	Alex 467	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56181		Active	Alex 468	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56182		Active	Alex 469	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC48178		Active	Alex 47	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC56183		Active	Alex 470	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56184		Active	Alex 471	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56185		Active	Alex 472	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56186		Active	Alex 473	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56187		Active	Alex 474	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC56188		Active	Alex 475	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56189		Active	Alex 476	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56190		Active	Alex 477	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56191		Active	Alex 478	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56192		Active	Alex 479	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC48179		Active	Alex 48	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC56193		Active	Alex 480	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56194		Active	Alex 481	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56195		Active	Alex 482	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56196		Active	Alex 483	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56197		Active	Alex 484	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56198		Active	Alex 485	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56199		Active	Alex 486	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2046/12/22	\$525	5
YC56200		Active	Alex 487	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56201		Active	Alex 488	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56202		Active	Alex 489	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC48180		Active	Alex 49	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC56203		Active	Alex 490	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56204		Active	Alex 491	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56205		Active	Alex 492	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56206		Active	Alex 493	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56207		Active	Alex 494	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56208		Active	Alex 495	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56209		Active	Alex 496	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56210		Active	Alex 497	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2046/12/22	\$525	5
YC56211		Active	Alex 498	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2046/12/22	\$525	5
YC56212		Active	Alex 499	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2046/12/22	\$525	5
YC48136		Active	Alex 5	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48181		Active	Alex 50	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC56213		Active	Alex 500	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2046/12/22	\$525	5
YC56214		Active	Alex 501	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2046/12/22	\$525	5
YC56215		Active	Alex 502	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56216		Active	Alex 503	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2046/12/22	\$525	5
YC56217		Active	Alex 504	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56218		Active	Alex 505	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56219		Active	Alex 506	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56220		Active	Alex 507	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56221		Active	Alex 508	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56222		Active	Alex 509	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC48182		Active	Alex 51	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC56223		Active	Alex 510	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56224		Active	Alex 511	Alexco Keno Hill Mining Corp 100%	2007/06/09	2007/06/22	2042/12/22	\$525	5
YC56225		Active	Alex 512	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56226		Active	Alex 513	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56227		Active	Alex 514	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56228		Active	Alex 515	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56229		Active	Alex 516	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56230		Active	Alex 517	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56231		Active	Alex 518	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56232		Active	Alex 519	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC48183		Active	Alex 52	Alexco Keno Hill Mining Corp 100%	2006/05/21	2006/06/02	2043/12/31	\$525	5
YC56233		Active	Alex 520	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56234		Active	Alex 521	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56235		Active	Alex 522	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56236		Active	Alex 523	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56237		Active	Alex 524	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56238		Active	Alex 525	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56239		Active	Alex 526	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5

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YC56240		Active	Alex 527	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56241		Active	Alex 528	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56242		Active	Alex 529	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2046/12/22	\$525	5
YC48184		Active	Alex 53	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC56243		Active	Alex 530	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56244		Active	Alex 531	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56245		Active	Alex 532	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56246		Active	Alex 533	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56247		Active	Alex 534	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56248		Active	Alex 535	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56249		Active	Alex 536	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56250		Active	Alex 537	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56251		Active	Alex 538	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56252		Active	Alex 539	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC48185		Active	Alex 54	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC56253		Active	Alex 540	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56254		Active	Alex 541	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56255		Active	Alex 542	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56256		Active	Alex 543	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56257		Active	Alex 544	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56258		Active	Alex 545	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56259		Active	Alex 546	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56260		Active	Alex 547	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56261		Active	Alex 548	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56262		Active	Alex 549	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC48186		Active	Alex 55	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC56263		Active	Alex 550	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56264		Active	Alex 551	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56265		Active	Alex 552	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC56266		Active	Alex 553	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/22	2042/12/22	\$525	5
YC56267		Active	Alex 554	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56268		Active	Alex 556	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56269		Active	Alex 558	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC48187		Active	Alex 56	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC56270		Active	Alex 560	Alexco Keno Hill Mining Corp 100%	2007/06/22	2007/06/22	2042/12/22	\$525	5
YC56271		Active	Alex 562	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/22	2042/12/22	\$525	5
YC56272		Active	Alex 564	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/22	2042/12/22	\$525	5
YC56273		Active	Alex 565	Alexco Keno Hill Mining Corp 100%	2007/06/10	2007/06/13	2042/12/13	\$525	5
YC48188		Active	Alex 57	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48189		Active	Alex 58	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48190		Active	Alex 59	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48137		Active	Alex 6	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48191		Active	Alex 60	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC56874		Active	Alex 601	Alexco Keno Hill Mining Corp 100%	2007/07/14	2007/07/24	2026/12/31	\$525	5
YC56875		Active	Alex 602	Alexco Keno Hill Mining Corp 100%	2007/07/14	2007/07/24	2026/12/31	\$525	5
YC56876		Active	Alex 603	Alexco Keno Hill Mining Corp 100%	2007/07/14	2007/07/24	2026/12/31	\$525	5
YC56877		Active	Alex 604	Alexco Keno Hill Mining Corp 100%	2007/07/14	2007/07/24	2026/12/31	\$525	5
YC56878		Active	Alex 605	Alexco Keno Hill Mining Corp 100%	2007/07/14	2007/07/24	2026/12/31	\$525	5
YC56879		Active	Alex 606	Alexco Keno Hill Mining Corp 100%	2007/07/14	2007/07/24	2026/12/31	\$525	5
YC48192		Active	Alex 61	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48193		Active	Alex 62	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48194		Active	Alex 63	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48195		Active	Alex 64	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48196		Active	Alex 65	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48197		Active	Alex 66	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48198		Active	Alex 67	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48199		Active	Alex 68	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48200		Active	Alex 69	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48138		Active	Alex 7	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48201		Active	Alex 70	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48202		Active	Alex 71	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48203		Active	Alex 72	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48204		Active	Alex 73	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48205		Active	Alex 74	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48206		Active	Alex 75	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48207		Active	Alex 76	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48208		Active	Alex 77	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48209		Active	Alex 78	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48210		Active	Alex 79	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48139		Active	Alex 8	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48211		Active	Alex 80	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48212		Active	Alex 81	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48213		Active	Alex 82	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48214		Active	Alex 83	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48215		Active	Alex 84	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48216		Active	Alex 85	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48217		Active	Alex 86	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48218		Active	Alex 87	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48219		Active	Alex 88	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48220		Active	Alex 89	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48140		Active	Alex 9	Alexco Keno Hill Mining Corp 100%	2006/05/20	2006/06/02	2043/12/31	\$525	5
YC48221		Active	Alex 90	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48222		Active	Alex 91	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48223		Active	Alex 92	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48224		Active	Alex 93	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48225		Active	Alex 94	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48226		Active	Alex 95	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC48227		Active	Alex 96	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48228		Active	Alex 97	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48229		Active	Alex 98	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
YC48230		Active	Alex 99	Alexco Keno Hill Mining Corp 100%	2006/05/22	2006/05/22	2043/12/31	\$525	5
55429	NM00533	Active	BALTO	Alexco Keno Hill Mining Corp 100%	1946/05/25	1946/06/06	2027/11/02	\$210	21
YC01993	NM00720	Active	Blue	Alexco Keno Hill Mining Corp 100%	1999/09/09	1999/09/10	2033/10/02	\$210	21
YC90545	NM00721	Active	Blue Fr. 2	Alexco Keno Hill Mining Corp 100%	2011/09/17	2011/09/20	2033/10/02	\$210	21
YC90546	NM00722	Active	Blue Fr. 3	Alexco Keno Hill Mining Corp 100%	2011/09/17	2011/09/20	2033/10/02	\$210	21
YC90503	NM00719	Active	BULLDOZER F 2	Alexco Keno Hill Mining Corp 100%	2012/08/26	2012/08/27	2033/10/02	\$210	21
59534	NM00543	Active	BUNKER	Alexco Keno Hill Mining Corp 100%	1950/03/18	1950/04/01	2027/11/02	\$210	21
59535	NM00544	Active	BUNKER NO. 1	Alexco Keno Hill Mining Corp 100%	1950/03/18	1950/04/01	2027/11/02	\$210	21
55587	NM00294	Active	CAIN	Alexco Keno Hill Mining Corp 100%	1946/10/08	1947/03/28	2025/02/23	\$210	21
81152		Active	Carol	Alexco Keno Hill Mining Corp 100%	1962/05/29	1962/06/04	2043/12/31	\$525	5
80239		Active	Carol 1	Alexco Keno Hill Mining Corp 100%	1957/10/08	1957/10/16	2043/12/31	\$525	5
80240		Active	Carol 2	Alexco Keno Hill Mining Corp 100%	1957/10/08	1957/10/16	2043/12/31	\$525	5
80241		Active	Carol 3	Alexco Keno Hill Mining Corp 100%	1957/10/08	1957/10/16	2043/12/31	\$525	5
80242		Active	Carol 4	Alexco Keno Hill Mining Corp 100%	1957/10/08	1957/10/16	2043/12/31	\$525	5
80348		Active	Carol 5	Alexco Keno Hill Mining Corp 100%	1959/06/26	1959/07/02	2043/12/31	\$525	5
YC02670		Active	Chiko 1	Alexco Keno Hill Mining Corp 100%	2000/10/12	2000/10/27	2038/12/31	\$525	5
YC02679		Active	Chiko 10	Alexco Keno Hill Mining Corp 100%	2000/10/14	2000/10/27	2037/12/31	\$525	5
YC02671		Active	Chiko 2	Alexco Keno Hill Mining Corp 100%	2000/10/12	2000/10/27	2037/12/31	\$525	5
YC02672		Active	Chiko 3	Alexco Keno Hill Mining Corp 100%	2000/10/12	2000/10/27	2037/12/31	\$525	5
YC02673		Active	Chiko 4	Alexco Keno Hill Mining Corp 100%	2000/10/12	2000/10/27	2037/12/31	\$525	5
YC02674		Active	Chiko 5	Alexco Keno Hill Mining Corp 100%	2000/10/12	2000/10/27	2037/12/31	\$525	5
YC02675		Active	Chiko 6	Alexco Keno Hill Mining Corp 100%	2000/10/12	2000/10/27	2037/12/31	\$525	5
YC02676		Active	Chiko 7	Alexco Keno Hill Mining Corp 100%	2000/10/14	2000/10/27	2037/12/31	\$525	5
YC02677		Active	Chiko 8	Alexco Keno Hill Mining Corp 100%	2000/10/14	2000/10/27	2037/12/31	\$525	5
YC02678		Active	Chiko Fr. 9	Alexco Keno Hill Mining Corp 100%	2000/10/14	2000/10/27	2037/12/31	\$525	5
59645	NM00545	Active	DAISY FRACTION	Alexco Keno Hill Mining Corp 100%	1950/07/15	1950/07/22	2027/11/02	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
16097	NM00531	Active	DAVID	Alexco Keno Hill Mining Corp 100%	1925/11/14	1925/12/08	2027/11/02	\$210	21
YC57134		Active	Doh Fr.	Alexco Keno Hill Mining Corp 100%	2007/08/04	2007/08/21	2028/12/31	\$525	5
61599	NM00550	Active	DON FRACTION	Alexco Keno Hill Mining Corp 100%	1951/05/23	1951/05/25	2027/11/02	\$210	21
59692	NM00200	Active	DORA	Alexco Keno Hill Mining Corp 100%	1950/09/11	1950/09/19	2028/07/29	\$210	21
59932	NM00548	Active	DUDE	Alexco Keno Hill Mining Corp 100%	1950/10/05	1950/10/11	2027/11/02	\$210	21
YC90504		Pending	Duncan Fr. 4	Alexco Keno Hill Mining Corp 100%	2013/09/13	2013/09/13	2036/09/13	\$525	5
59519	NM00542	Active	EVY	Alexco Keno Hill Mining Corp 100%	1949/11/24	1949/11/30	2027/11/02	\$210	21
61916	NM00554	Active	EVY	Alexco Keno Hill Mining Corp 100%	1951/08/16	1951/08/29	2027/11/02	\$210	21
55592	NM00539	Active	FOX	Alexco Keno Hill Mining Corp 100%	1946/10/12	1947/03/28	2027/11/02	\$210	21
61877	NM00553	Active	FOX	Alexco Keno Hill Mining Corp 100%	1951/08/13	1951/08/15	2027/11/02	\$210	21
55593	NM00540	Active	GRETA	Alexco Keno Hill Mining Corp 100%	1946/10/16	1947/03/28	2027/11/02	\$210	21
61600	NM00551	Active	GROUSE	Alexco Keno Hill Mining Corp 100%	1951/05/13	1951/05/25	2027/11/02	\$210	21
YC02323		Active	Hoito 1	Alexco Keno Hill Mining Corp 100%	1999/12/11	1999/12/29	2046/12/29	\$525	5
YC02324		Active	Hoito 2	Alexco Keno Hill Mining Corp 100%	1999/12/11	1999/12/29	2046/12/29	\$525	5
YC02326		Active	Hoito 4	Alexco Keno Hill Mining Corp 100%	1999/12/12	1999/12/29	2046/12/29	\$525	5
YC02328		Active	Hoito 6	Alexco Keno Hill Mining Corp 100%	1999/12/12	1999/12/29	2046/12/29	\$525	5
YC02330		Active	Hoito 8	Alexco Keno Hill Mining Corp 100%	1999/12/12	1999/12/29	2046/12/29	\$525	5
55589	NM00296	Active	HORSESHOE	Alexco Keno Hill Mining Corp 100%	1946/10/08	1947/03/28	2025/02/23	\$210	21
61598	NM00549	Active	JIB NO. 2	Alexco Keno Hill Mining Corp 100%	1951/05/16	1951/05/25	2027/11/02	\$210	21
84489		Active	Joe 2	Alexco Keno Hill Mining Corp 100%	1965/05/28	1965/06/02	2043/12/31	\$525	5
80453		Active	Joe No. 1	Alexco Keno Hill Mining Corp 100%	1960/07/18	1960/05/27	2043/12/31	\$525	5
YC42549		Active	К1	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2047/12/15	\$525	5
YC42558		Active	К 10	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC56127		Active	К 100	Alexco Keno Hill Mining Corp 100%	2007/06/15	2007/06/15	2024/12/31	\$525	5
YC56128		Active	К 101	Alexco Keno Hill Mining Corp 100%	2007/06/15	2007/06/15	2024/12/31	\$525	5
YC56129		Active	K 102	Alexco Keno Hill Mining Corp 100%	2007/06/15	2007/06/15	2024/12/31	\$525	5
YC56155		Active	К 103	Alexco Keno Hill Mining Corp 100%	2007/06/21	2007/06/22	2027/12/31	\$525	5
YC56156		Active	К 104	Alexco Keno Hill Mining Corp 100%	2007/06/21	2007/06/22	2027/12/31	\$525	5
YC56157		Active	К 105	Alexco Keno Hill Mining Corp 100%	2007/06/21	2007/06/22	2027/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC56158		Active	K 106	Alexco Keno Hill Mining Corp 100%	2007/06/21	2007/06/22	2027/12/31	\$525	5
YC56159		Active	K 107	Alexco Keno Hill Mining Corp 100%	2007/06/21	2007/06/22	2027/12/31	\$525	5
YC42559		Active	K 11	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42560		Active	K 12	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42561		Active	K 13	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42562		Active	K 14	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42563		Active	K 15	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42564		Active	K 16	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42565		Active	K 17	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42566		Active	K 18	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42567		Active	K 19	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42550		Active	К 2	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2047/12/15	\$525	5
YC42568		Active	К 20	Alexco Keno Hill Mining Corp 100%	2005/11/29	2005/12/15	2043/12/15	\$525	5
YC42569		Active	K 21	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42570		Active	К 22	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42571		Active	К 23	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42572		Active	K 24	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42573		Active	K 25	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42574		Active	K 26	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42575		Active	К 27	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2030/12/15	\$525	5
YC42576	NM00715	Active	К 28	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2033/10/02	\$210	21
YC42577		Active	К 29	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2030/12/15	\$525	5
YC42551		Active	К 3	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2047/12/15	\$525	5
YC42578	NM00716	Active	К 30	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2033/10/02	\$210	21
YC42579		Active	К 31	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2030/12/15	\$525	5
YC42580	NM00717	Active	К 32	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2033/10/02	\$210	21
YC42581		Active	К 33	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5
YC42582		Active	К 34	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5
YC42583		Active	К 35	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/01	2047/12/31	\$525	5

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YC42584		Active	К 36	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/01	2043/12/31	\$525	5
YC42585		Active	К 37	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/01	2043/12/31	\$525	5
YC42586		Active	К 38	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/01	2043/12/31	\$525	5
YC42587		Active	К 39	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5
YC42552		Active	К 4	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2043/12/15	\$525	5
YC42588		Active	К 40	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5
YC42589		Active	К 41	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2037/12/15	\$525	5
YC42590		Active	К 42	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2037/12/15	\$525	5
YC42591		Active	К 43	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2037/12/15	\$525	5
YC42592		Active	К 44	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2037/12/15	\$525	5
YC42593		Active	К 45	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2037/12/15	\$525	5
YC42594		Active	К 46	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2040/12/15	\$525	5
YC42595		Active	К 47	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2037/12/15	\$525	5
YC42596		Active	К 48	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2037/12/15	\$525	5
YC42597		Active	К 49	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/03	2038/12/31	\$525	5
YC42553		Active	К 5	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2043/12/15	\$525	5
YC42598		Active	К 50	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2037/12/15	\$525	5
YC42599		Active	К 51	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/15	2037/12/31	\$525	5
YC42600		Active	К 52	Alexco Keno Hill Mining Corp 100%	2005/12/03	2005/12/03	2037/12/03	\$525	5
YC42601		Active	К 53	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/05	2027/12/31	\$525	5
YC42602		Active	К 54	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2027/12/15	\$525	5
YC42605		Active	К 57	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2038/12/15	\$525	5
YC42606		Active	К 58	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2037/12/15	\$525	5
YC42607		Active	К 59	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2037/12/15	\$525	5
YC42554		Active	К 6	Alexco Keno Hill Mining Corp 100%	2005/12/04	2005/12/15	2043/12/15	\$525	5
YC42608		Active	К 60	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2038/12/15	\$525	5
YC42609		Active	K 61	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2043/12/15	\$525	5
YC42610		Active	К 62	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2043/12/15	\$525	5
YC42611		Active	К 63	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC42612		Active	К 64	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5
YC42613		Active	К 65	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5
YC42614		Active	К 66	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5
YC42615		Active	К 67	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5
YC42616		Active	K 68	Alexco Keno Hill Mining Corp 100%	2005/12/01	2005/12/15	2043/12/15	\$525	5
YC42617		Active	К 69	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2047/12/15	\$525	5
YC42555		Active	К 7	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42618		Active	К 70	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2047/12/15	\$525	5
YC42619		Active	К 71	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2043/12/15	\$525	5
YC42620		Active	К 72	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2043/12/15	\$525	5
YC42621		Active	К 73	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2043/12/15	\$525	5
YC42622		Active	К 74	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2043/12/15	\$525	5
YC42623		Active	К 75	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2043/12/15	\$525	5
YC42624		Active	К 76	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2043/12/15	\$525	5
YC42625		Active	k 77	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2039/12/15	\$525	5
YC42626		Active	k 78	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2043/12/15	\$525	5
YC42627		Active	К 79	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2027/12/15	\$525	5
YC42556		Active	К 8	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC42628	NM00718	Active	К 80	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2033/10/02	\$210	21
YC42629		Active	K 81	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2027/12/15	\$525	5
YC42630		Active	К 82	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2027/12/15	\$525	5
YC42631		Active	К 83	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2027/12/15	\$525	5
YC42632		Active	К 84	Alexco Keno Hill Mining Corp 100%	2005/12/02	2005/12/15	2027/12/15	\$525	5
YC42633		Active	К 85	Alexco Keno Hill Mining Corp 100%	2005/12/05	2005/12/15	2033/12/15	\$525	5
YC55953		Active	К 87	Alexco Keno Hill Mining Corp 100%	2007/05/26	2007/05/28	2043/12/31	\$525	5
YC56115		Active	К 88	Alexco Keno Hill Mining Corp 100%	2007/06/13	2007/06/13	2027/12/31	\$525	5
YC56116		Active	К 89	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/13	2043/12/31	\$525	5
YC42557		Active	К 9	Alexco Keno Hill Mining Corp 100%	2005/11/30	2005/12/15	2043/12/15	\$525	5
YC56117		Active	К 90	Alexco Keno Hill Mining Corp 100%	2007/06/12	2007/06/13	2042/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC56118		Active	К 91	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/13	2028/12/31	\$525	5
YC56119		Active	К 92	Alexco Keno Hill Mining Corp 100%	2007/06/11	2007/06/13	2028/12/31	\$525	5
YC56120		Active	К 93	Alexco Keno Hill Mining Corp 100%	2007/06/13	2007/06/13	2028/12/31	\$525	5
YC56121		Active	К 94	Alexco Keno Hill Mining Corp 100%	2007/06/13	2007/06/13	2028/12/31	\$525	5
YC56122		Active	К 95	Alexco Keno Hill Mining Corp 100%	2007/06/14	2007/06/15	2028/12/31	\$525	5
YC56123		Active	К 96	Alexco Keno Hill Mining Corp 100%	2007/06/14	2007/06/15	2028/12/31	\$525	5
YC56124		Active	К 97	Alexco Keno Hill Mining Corp 100%	2007/06/14	2007/06/15	2028/12/15	\$525	5
YC56125		Active	К 98	Alexco Keno Hill Mining Corp 100%	2007/06/14	2007/06/15	2028/12/15	\$525	5
YC56126		Active	К 99	Alexco Keno Hill Mining Corp 100%	2007/06/14	2007/06/15	2028/12/15	\$525	5
YC90502		Active	K Fr. 109	Alexco Keno Hill Mining Corp 100%	2012/08/19	2012/09/10	2028/09/10	\$525	5
YC90501		Active	K Fr. 110	Alexco Keno Hill Mining Corp 100%	2012/08/19	2012/09/10	2028/09/10	\$525	5
YC69940	NM00641	Active	K108F	Alexco Keno Hill Mining Corp 100%	2008/09/02	2008/09/10	2030/02/23	\$210	21
YB6418 4		Active	Lakehead 1	Alexco Keno Hill Mining Corp 100%	1995/06/27	1995/06/28	2038/12/31	\$525	5
YB6418 5		Active	Lakehead 2	Alexco Keno Hill Mining Corp 100%	1995/06/27	1995/06/28	2038/12/31	\$525	5
YA17395	NM00638	Active	Lem 1	Alexco Keno Hill Mining Corp 100%	1977/11/04	1977/11/14	2030/02/23	\$210	21
YA17404		Active	Lem 10	Alexco Keno Hill Mining Corp 100%	1977/11/10	1977/11/14	2026/12/31	\$525	5
YA17405		Active	Lem 11	Alexco Keno Hill Mining Corp 100%	1977/11/10	1977/11/14	2026/12/31	\$525	5
YA17396	NM00639	Active	Lem 2	Alexco Keno Hill Mining Corp 100%	1977/11/04	1977/11/14	2030/02/23	\$210	21
YA17397	NM00640	Active	Lem 3	Alexco Keno Hill Mining Corp 100%	1977/11/04	1977/11/14	2030/02/23	\$210	21
YA17398		Active	Lem 4	Alexco Keno Hill Mining Corp 100%	1977/11/04	1977/11/14	2026/12/31	\$525	5
YA17399		Active	Lem 5	Alexco Keno Hill Mining Corp 100%	1977/11/10	1977/11/14	2026/12/31	\$525	5
YA17400		Active	Lem 6	Alexco Keno Hill Mining Corp 100%	1977/11/10	1977/11/14	2026/12/31	\$525	5
YA17401		Active	Lem 7	Alexco Keno Hill Mining Corp 100%	1977/11/10	1977/11/14	2026/12/31	\$525	5
YA17402		Active	Lem 8	Alexco Keno Hill Mining Corp 100%	1977/11/10	1977/11/14	2026/12/31	\$525	5
YA17403		Active	Lem 9	Alexco Keno Hill Mining Corp 100%	1977/11/10	1977/11/14	2026/12/31	\$525	5
YD6329 1		Active	LJ 1	Alexco Keno Hill Mining Corp 100%	2010/12/20	2010/12/22	2043/12/22	\$525	5
YD6330 0		Active	LJ 10	Alexco Keno Hill Mining Corp 100%	2010/12/20	2010/12/22	2043/12/22	\$525	5
YC90548		Active	LJ 11	Alexco Keno Hill Mining Corp 100%	2011/08/31	2011/09/02	2043/12/31	\$525	5
YD6329 2		Active	LJ 2	Alexco Keno Hill Mining Corp 100%	2010/12/20	2010/12/22	2043/12/22	\$525	5

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Renewal Cost Term Grant Lease Status **Claim Name** Owner Staked Recorded Expiry per Term (CAD) (Years) YD6329 Active LJ 3 Alexco Keno Hill Mining Corp. - 100% 2010/12/20 2010/12/22 2043/12/22 \$525 5 3 YD6329 LJ 4 Alexco Keno Hill Mining Corp. - 100% 2010/12/20 2010/12/22 2043/12/22 \$525 5 Active 4 YD6329 2010/12/20 2010/12/22 2043/12/22 5 Active LJ 5 Alexco Keno Hill Mining Corp. - 100% \$525 5 YD6329 Active Ц6 Alexco Keno Hill Mining Corp. - 100% 2010/12/20 2010/12/22 2043/12/22 \$525 5 6 YD6329 Active Ц7 Alexco Keno Hill Mining Corp. - 100% 2010/12/20 2010/12/22 2043/12/22 \$525 5 7 YD6329 2010/12/20 2010/12/22 2043/12/22 5 Active LJ 8 Alexco Keno Hill Mining Corp. - 100% \$525 8 YD6329 Alexco Keno Hill Mining Corp. - 100% 2010/12/22 2043/12/22 Active 119 2010/12/20 \$525 5 9 Pending Lucky Baldwin YC90544 Alexco Keno Hill Mining Corp. - 100% 2016/10/21 2016/10/25 2027/10/25 \$525 5 56529 NM00502 MALCOM Alexco Keno Hill Mining Corp. - 100% 1948/06/12 1948/06/14 2025/11/28 \$210 21 Active YC02774 Active Man Alexco Keno Hill Mining Corp. - 100% 2001/07/09 2001/07/10 2030/12/31 \$525 5 2025/12/31 YC32221 2004/08/23 \$525 5 Active Mom 1 Alexco Keno Hill Mining Corp. - 100% 2004/08/19 YC32222 Active Alexco Keno Hill Mining Corp. - 100% 2004/08/19 2004/08/23 2025/12/31 \$525 5 Mom 2 YC32223 Active Mom 3 Alexco Keno Hill Mining Corp. - 100% 2004/08/19 2004/08/23 2025/12/31 \$525 5 YC32224 Mom 4 Alexco Keno Hill Mining Corp. - 100% 2004/08/19 2004/08/23 2025/12/31 \$525 5 Active YC32225 2004/08/17 2004/08/23 2025/12/31 \$525 5 Active Mom 5 Alexco Keno Hill Mining Corp. - 100% YC32226 Active Mom 6 Alexco Keno Hill Mining Corp. - 100% 2004/08/17 2004/08/23 2025/12/31 \$525 5 YC32227 2004/08/18 2004/08/23 2025/12/31 \$525 5 Active Mom 7 Alexco Keno Hill Mining Corp. - 100% YC32228 2004/08/18 2004/08/23 2025/12/31 \$525 Active Alexco Keno Hill Mining Corp. - 100% 5 Mom 8 YC90541 Alexco Keno Hill Mining Corp. - 100% 2017/08/12 2017/08/15 2028/08/15 \$525 5 Active Nifty Fourteen YC39585 Active No name Alexco Keno Hill Mining Corp. - 100% 2005/08/24 2005/09/01 2024/12/31 \$525 5 YC57135 2007/08/22 2007/08/22 2028/12/31 \$525 5 Active O No Fr. Alexco Keno Hill Mining Corp. - 100% Y 33741 Active O.K. 1 Alexco Keno Hill Mining Corp. - 100% 1970/12/10 1970/12/11 2042/12/31 \$525 5 Y 85968 Active O.K. 10 Alexco Keno Hill Mining Corp. - 100% 1973/10/02 1973/10/10 2042/12/31 \$525 5 Y 33742 O.K. 2 1970/12/10 1970/12/11 2042/12/31 \$525 Active Alexco Keno Hill Mining Corp. - 100% 5 1971/09/11 2042/12/31 \$525 5 Y 56174 Active O.K. 3 Alexco Keno Hill Mining Corp. - 100% 1971/09/15 Y 56175 Active O.K. 4 Alexco Keno Hill Mining Corp. - 100% 1971/09/11 1971/09/15 2042/12/31 \$525 5 Y 85963 Active O.K. 5 Alexco Keno Hill Mining Corp. - 100% 1973/10/02 1973/10/10 2042/12/31 \$525 5 O.K. 6 1973/10/02 1973/10/10 2042/12/31 \$525 5 Y 85964 Active Alexco Keno Hill Mining Corp. - 100% Y 85965 Active O.K. 7 Alexco Keno Hill Mining Corp. - 100% 1973/10/02 1973/10/10 2042/12/31 \$525 5

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S-K 1300 Technical Report Summary on the Keno Hill Mine, Yukon, Canada
Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
Y 85966		Active	О.К. 8	Alexco Keno Hill Mining Corp 100%	1973/10/02	1973/10/10	2042/12/31	\$525	5
Y 85967		Active	О.К. 9	Alexco Keno Hill Mining Corp 100%	1973/10/02	1973/10/10	2042/12/31	\$525	5
YC01994		Active	One	Alexco Keno Hill Mining Corp 100%	1999/09/23	1999/09/28	2028/09/09	\$525	5
59313		Active	Paddy	Alexco Keno Hill Mining Corp 100%	1949/06/29	1949/07/08	2043/12/31	\$525	5
83253		Active	Paddy 2	Alexco Keno Hill Mining Corp 100%	1963/10/09	1963/10/16	2043/12/31	\$525	5
83254		Active	Paddy 3	Alexco Keno Hill Mining Corp 100%	1963/10/09	1963/10/16	2043/12/31	\$525	5
83721		Active	Paddy 4	Alexco Keno Hill Mining Corp 100%	1964/10/25	1964/10/26	2043/12/31	\$525	5
83722		Active	Paddy 5	Alexco Keno Hill Mining Corp 100%	1964/10/25	1964/10/26	2043/12/31	\$525	5
55588	NM00295	Active	PRO	Alexco Keno Hill Mining Corp 100%	1946/10/08	1947/03/28	2025/02/23	\$210	21
59275	NM00541	Active	QUAIL	Alexco Keno Hill Mining Corp 100%	1949/06/13	1949/06/22	2027/11/02	\$210	21
59824	NM00547	Active	QUAIL FRACTION	Alexco Keno Hill Mining Corp 100%	1950/09/22	1950/10/02	2027/11/02	\$210	21
56522	NM00893	Active	QUEST	Alexco Keno Hill Mining Corp 100%	1948/06/05	1948/06/08	2042/06/19	\$210	21
59273	NM00894	Active	QUILL	Alexco Keno Hill Mining Corp 100%	1949/06/12	1949/06/21	2042/06/19	\$210	21
55586	NM00293	Active	REX	Alexco Keno Hill Mining Corp 100%	1946/10/08	1947/03/28	2025/02/23	\$210	21
16350	NM00874	Active	RING	Alexco Keno Hill Mining Corp 100%	1927/07/31	1927/08/27	2041/08/19	\$210	21
59683	NM00546	Active	ROCK	Alexco Keno Hill Mining Corp 100%	1950/09/11	1950/09/19	2027/11/02	\$210	21
13009	NM00199	Active	SMILES	Alexco Keno Hill Mining Corp 100%	1920/02/13	1920/04/28	2028/07/29	\$210	21
YC90547		Active	Snowdrift Fr. 17	Alexco Keno Hill Mining Corp 100%	2011/08/31	2011/09/02	2041/12/31	\$525	5
55446	NM00536	Active	SOL	Alexco Keno Hill Mining Corp 100%	1946/08/20	1946/08/21	2027/11/02	\$210	21
55445	NM00535	Active	SOLOMAN	Alexco Keno Hill Mining Corp 100%	1946/08/16	1946/08/16	2027/11/02	\$210	21
YC32218		Active	Son 1	Alexco Keno Hill Mining Corp 100%	2004/08/17	2004/08/23	2025/12/31	\$525	5
YC32219		Active	Son 2	Alexco Keno Hill Mining Corp 100%	2004/08/17	2004/08/23	2025/12/31	\$525	5
YC32220		Active	Son 3	Alexco Keno Hill Mining Corp 100%	2004/08/17	2004/08/23	2025/12/31	\$525	5
YC39676		Active	Son 4	Alexco Keno Hill Mining Corp 100%	2005/08/26	2005/09/01	2024/12/31	\$525	5
YC39586		Active	Son 5	Alexco Keno Hill Mining Corp 100%	2005/09/08	2005/09/12	2024/12/31	\$525	5
YC39587		Active	Son 6	Alexco Keno Hill Mining Corp 100%	2005/09/08	2005/09/12	2024/12/31	\$525	5
YC02773		Active	Spider	Alexco Keno Hill Mining Corp 100%	2001/07/06	2001/07/10	2030/12/31	\$525	5
55433	NM00534	Active	SUNRISE	Alexco Keno Hill Mining Corp 100%	1946/06/15	1946/06/20	2027/11/02	\$210	21
61601	NM00552	Active	TARM	Alexco Keno Hill Mining Corp 100%	1951/05/13	1951/05/25	2027/11/02	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
55520	NM00538	Active	THUNDER BIRD	Alexco Keno Hill Mining Corp 100%	1946/09/15	1947/02/04	2027/11/02	\$210	21
Y 31586		Active	Toni 1	Alexco Keno Hill Mining Corp 100%	1968/11/29	1968/12/02	2042/12/31	\$525	5
Y 31587		Active	Toni 2	Alexco Keno Hill Mining Corp 100%	1968/11/29	1968/12/02	2042/12/31	\$525	5
13258	NM00211	Active	VANGUARD FRAC.	Alexco Keno Hill Mining Corp 100%	1920/06/19	1920/07/28	2028/09/13	\$210	21
55426	NM00532	Active	WILDCAT	Alexco Keno Hill Mining Corp 100%	1946/05/25	1946/06/03	2027/11/02	\$210	21
55519	NM00537	Active	WILLOW	Alexco Keno Hill Mining Corp 100%	1946/09/05	1947/02/04	2027/11/02	\$210	21
YB2894 2		Active	DOUG 1	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/08/31	1992/09/04	2048/12/31	\$525	5
YB2894 3		Active	DOUG 2	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/08/31	1992/09/04	2048/12/31	\$525	5
YB2894 4		Active	DOUG 3	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/08/31	1992/09/04	2048/12/31	\$525	5
YB2894 5		Active	DOUG 4	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/08/31	1992/09/04	2048/12/31	\$525	5
YB2899 8		Active	Doug 5	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/09/10	1992/09/25	2048/12/31	\$525	5
YB2899 9		Active	Doug 6	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/09/10	1992/09/25	2048/12/31	\$525	5
YB2900 0		Active	Doug 7	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/09/10	1992/09/25	2048/12/31	\$525	5
YB2900 1		Active	Doug 8	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/09/10	1992/09/25	2048/12/31	\$525	5
YB2939 5		Active	DOUG 9	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/11/18	1992/11/18	2048/12/31	\$525	5
YC02325		Active	Hoito 3	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1999/12/12	1999/12/29	2046/12/29	\$525	5
YC02327		Active	Hoito 5	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1999/12/12	1999/12/29	2046/12/29	\$525	5
YC02329		Active	Hoito 7	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1999/12/12	1999/12/29	2046/12/29	\$525	5
YB2944 0		Active	JARRET 1	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/12/18	1992/12/18	2048/12/31	\$525	5
YC01768		Active	Jarret 2	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1999/04/24	1999/04/30	2044/12/31	\$525	5
YC42603		Active	К 55	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	2005/12/05	2005/12/15	2027/12/15	\$525	5
YC42604		Active	К 56	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	2005/12/05	2005/12/15	2027/12/15	\$525	5
YB6419 1		Active	Lakehead 10	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/27	1995/06/28	2047/12/31	\$525	5



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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YB6419 4		Active	Lakehead 11	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/29	1995/06/30	2047/12/31	\$525	5
YB6419 5		Active	Lakehead 12	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/29	1995/06/30	2047/12/31	\$525	5
YB6419 6		Active	Lakehead 13	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/29	1995/06/30	2047/12/31	\$525	5
YB6419 2		Active	Lakehead 3	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/29	1995/06/30	2047/12/31	\$525	5
YB6419 3		Active	Lakehead 4	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/29	1995/06/30	2047/12/31	\$525	5
YB6418 6		Active	Lakehead 5	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/27	1995/06/28	2047/12/31	\$525	5
YB6418 7		Active	Lakehead 6	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/27	1995/06/28	2047/12/31	\$525	5
YB6418 8		Active	Lakehead 7	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/27	1995/06/28	2047/12/31	\$525	5
YB6418 9		Active	Lakehead 8	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/27	1995/06/28	2047/12/31	\$525	5
YB6419 0		Active	Lakehead 9	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1995/06/27	1995/06/28	2047/12/31	\$525	5
YB2900 2		Active	Mary 1	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1902/09/10	1992/09/25	2046/12/31	\$525	5
YB2900 3		Active	Mary 2	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/09/10	1992/09/25	2046/12/31	\$525	5
YB2900 4		Active	Mary 3	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1902/09/10	1992/09/25	2050/12/31	\$525	5
YB2900 5		Active	Mary 4	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1902/09/10	1992/09/25	2050/12/31	\$525	5
YB2939 4		Active	MARY 6	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1992/11/18	1992/11/18	2046/12/31	\$525	5
YC10995		Active	Mary A 0	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	2003/08/19	2003/09/02	2043/12/31	\$525	5
YC10996		Active	Mary B 0	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	2003/08/19	2003/09/02	2043/12/31	\$525	5
YC10897		Active	North F.	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	2003/08/07	2003/08/08	2043/12/31	\$525	5
YC01212		Active	South F	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1998/07/04	1998/07/06	2042/12/31	\$525	5
YC02322		Active	Twins 7	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	1999/12/14	1999/12/29	2043/12/29	\$525	5
YC10946		Active	Wedge 1	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	2003/09/09	2003/09/09	2042/12/31	\$525	5



Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YC10993		Active	Wedge 2	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	2003/09/10	2003/09/18	2043/12/31	\$525	5
YC10994		Active	Wedge 3	Alexco Keno Hill Mining Corp 49%, Banyan Gold Corporation - 51%	2003/09/10	2003/09/18	2043/12/31	\$525	5
14871	NM00895	Active	ALEXANDRA	Alexco Keno Hill Mining Corp 100%	1923/08/19	1923/10/12	2042/04/29	\$210	21
59665	NM00904	Active	CASA	Alexco Keno Hill Mining Corp 100%	1950/08/08	1950/08/11	2042/04/29	\$210	21
38815	NM00899	Active	EAGLE 1	Alexco Keno Hill Mining Corp 100%	1934/10/07	1934/11/14	2042/04/29	\$210	21
38811	NM00898	Active	EAGLE 2	Alexco Keno Hill Mining Corp 100%	1934/10/03	1934/11/12	2042/04/29	\$210	21
16171	NM00897	Active	EAGLE FRAC.	Alexco Keno Hill Mining Corp 100%	1926/06/13	1926/07/13	2042/04/29	\$210	21
59668	NM00907	Active	GATO	Alexco Keno Hill Mining Corp 100%	1950/08/08	1950/08/11	2042/04/29	\$210	21
55482	NM00900	Active	JEAN	Alexco Keno Hill Mining Corp 100%	1946/09/04	1947/01/24	2042/04/29	\$210	21
59666	NM00905	Active	LOMA	Alexco Keno Hill Mining Corp 100%	1950/08/08	1950/08/11	2042/04/29	\$210	21
14873	NM00896	Active	NATHALIE	Alexco Keno Hill Mining Corp 100%	1923/08/19	1923/10/12	2042/04/29	\$210	21
59662	NM00901	Active	NINA	Alexco Keno Hill Mining Corp 100%	1950/08/07	1950/08/11	2042/04/29	\$210	21
59669	NM00908	Active	PAVO	Alexco Keno Hill Mining Corp 100%	1950/08/08	1950/08/11	2042/04/29	\$210	21
59664	NM00903	Active	PERO	Alexco Keno Hill Mining Corp 100%	1950/08/08	1950/08/11	2042/04/29	\$210	21
59667	NM00906	Active	PORCO	Alexco Keno Hill Mining Corp 100%	1950/08/08	1950/08/11	2042/04/29	\$210	21
59663	NM00902	Active	TORO	Alexco Keno Hill Mining Corp 100%	1950/08/07	1950/08/11	2042/04/29	\$210	21
56501	NM00916	Active	83	Elsa Reclamation & Development Company Ltd 100%	1947/09/17	1947/09/24	2042/07/24	\$210	21
56502	NM00917	Active	A.A.	Elsa Reclamation & Development Company Ltd 100%	1947/09/17	1947/09/24	2042/07/24	\$210	21
55548	NM00322	Active	ACE-HI	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/13	2025/02/08	\$210	21
55549	NM00323	Active	ACE-HI 1	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/13	2025/02/08	\$210	21
55559	NM00331	Active	ACE-HI 10	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/14	2025/02/08	\$210	21
55560	NM00332	Active	ACE-HI 11	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/14	2025/02/08	\$210	21
55550	NM00324	Active	ACE-HI 2	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/13	2025/02/08	\$210	21
55552	NM00325	Active	ACE-HI 4	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/14	2025/02/08	\$210	21
55553	NM00326	Active	ACE-HI 5	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/14	2025/02/08	\$210	21
55555	NM00327	Active	ACE-HI 6	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/14	2025/02/08	\$210	21
55556	NM00328	Active	ACE-HI 7	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/14	2025/02/08	\$210	21
55557	NM00329	Active	ACE-HI 8	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/14	2025/02/08	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
55558	NM00330	Active	ACE-HI 9	Elsa Reclamation & Development Company Ltd 100%	1946/10/17	1947/02/14	2025/02/08	\$210	21
56575	NM00986	Active	ACRE FRACTION	Elsa Reclamation & Development Company Ltd 100%	1948/07/14	1948/07/21	2043/06/12	\$210	21
14858		Active	ADA	Elsa Reclamation & Development Company Ltd 100%	1923/07/30	1923/08/30	2027/12/31	\$525	5
83011	NM00593	Active	ADAM FRACTION	Elsa Reclamation & Development Company Ltd 100%	1963/06/29	1963/07/09	2027/11/02	\$210	21
55477	NM00809	Active	ADONAIS	Elsa Reclamation & Development Company Ltd 100%	1946/08/31	1947/01/24	2038/12/15	\$210	21
12840	NM00361	Active	AJAX	Elsa Reclamation & Development Company Ltd 100%	1919/09/09	1919/10/28	2025/04/30	\$210	21
14466	NM00827	Active	AJAX	Elsa Reclamation & Development Company Ltd 100%	1921/09/30	1921/12/07	2039/08/18	\$210	21
80178	NM00499	Active	ALBERTA L	Elsa Reclamation & Development Company Ltd 100%	1956/12/07	1956/12/13	2025/11/26	\$210	21
55573	NM00276	Active	ALICE	Elsa Reclamation & Development Company Ltd 100%	1946/10/25	1947/02/17	2029/04/18	\$210	21
59013	NM00930	Active	ALICE	Elsa Reclamation & Development Company Ltd 100%	1948/08/28	1948/09/01	2042/08/08	\$210	21
62317	NM00470	Active	ALICE 1	Elsa Reclamation & Development Company Ltd 100%	1953/07/25	1953/08/05	2025/11/26	\$210	21
62318	NM00471	Active	ALICE 2	Elsa Reclamation & Development Company Ltd 100%	1953/07/25	1953/08/05	2025/11/26	\$210	21
YB2972 7		Active	ALLA 4	Elsa Reclamation & Development Company Ltd 100%	1993/03/15	1993/03/19	2044/12/31	\$525	5
81223	NM00651	Active	ANDY	Elsa Reclamation & Development Company Ltd 100%	1962/06/21	1962/06/26	2031/03/12	\$210	21
13108	NM00910	Active	ANEROID	Elsa Reclamation & Development Company Ltd 100%	1920/04/27	1920/06/10	2042/07/18	\$210	21
12909	NM00642	Active	ANTHONY	Elsa Reclamation & Development Company Ltd 100%	1919/10/13	1919/12/17	2030/03/24	\$210	21
56443	NM00811	Active	APEX FR.	Elsa Reclamation & Development Company Ltd 100%	1947/07/11	1947/07/15	2038/12/15	\$210	21
55476	NM00808	Active	APOLLO	Elsa Reclamation & Development Company Ltd 100%	1946/08/31	1947/01/23	2038/12/15	\$210	21
14089	NM00692	Active	ARCTIC	Elsa Reclamation & Development Company Ltd 100%	1921/05/03	1921/07/26	2035/12/19	\$210	21
16589	NM00351	Active	ARDELLE	Elsa Reclamation & Development Company Ltd 100%	1925/06/12	1925/07/23	2025/03/30	\$210	21
55474	NM00806	Active	ARETHUSA	Elsa Reclamation & Development Company Ltd 100%	1946/08/31	1947/01/23	2038/12/15	\$210	21
16561	NM00753	Active	ARIZONA	Elsa Reclamation & Development Company Ltd 100%	1925/06/02	1925/06/30	2037/01/27	\$210	21
14225	NM00966	Active	ARNOLD	Elsa Reclamation & Development Company Ltd 100%	1921/07/18	1921/09/24	2043/05/07	\$210	21
55475	NM00807	Active	ARTEMIS	Elsa Reclamation & Development Company Ltd 100%	1946/08/31	1947/01/23	2038/12/15	\$210	21
38819	NM00979	Active	ASTORIA	Elsa Reclamation & Development Company Ltd 100%	1934/10/28	1934/11/19	2043/06/12	\$210	21
14998	NM00701	Active	ATLANTIC	Elsa Reclamation & Development Company Ltd 100%	1924/06/18	1924/07/14	2036/01/29	\$210	21
38687	NM00829	Active	AUGUST	Elsa Reclamation & Development Company Ltd 100%	1930/08/13	1930/09/16	2039/08/18	\$210	21
62200	NM00370	Active	B & H	Elsa Reclamation & Development Company Ltd 100%	1952/07/25	1952/08/04	2025/04/30	\$210	21
59373	NM00195	Active	BANKER	Elsa Reclamation & Development Company Ltd 100%	1949/07/28	1949/07/29	2028/06/16	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
59374	NM00196	Active	BANKER 1	Elsa Reclamation & Development Company Ltd 100%	1949/07/28	1949/07/29	2028/06/16	\$210	21
59375	NM00197	Active	BANKER 2	Elsa Reclamation & Development Company Ltd 100%	1949/07/28	1949/07/29	2028/06/16	\$210	21
59376	NM00198	Active	BANKER 3	Elsa Reclamation & Development Company Ltd 100%	1949/07/28	1949/07/29	2028/06/16	\$210	21
YB4371 2		Active	Barb One	Elsa Reclamation & Development Company Ltd 100%	1994/10/12	1994/10/12	2024/12/31	\$525	5
14446	NM00911	Active	BARKER Jr	Elsa Reclamation & Development Company Ltd 100%	1921/10/13	1921/12/01	2042/07/24	\$210	21
55569	NM00840	Active	BARKY	Elsa Reclamation & Development Company Ltd 100%	1946/10/24	1947/02/17	2040/07/27	\$210	21
15306	NM00953	Active	BEAR	Elsa Reclamation & Development Company Ltd 100%	1928/10/27	1928/11/29	2042/08/26	\$210	21
55048	NM00960	Active	BEE	Elsa Reclamation & Development Company Ltd 100%	1937/10/01	1937/10/29	2042/08/28	\$210	21
14826		Active	BELL YORK	Elsa Reclamation & Development Company Ltd 100%	1923/06/04	1923/07/09	2027/12/31	\$525	5
59518	NM00846	Active	BEN	Elsa Reclamation & Development Company Ltd 100%	1949/11/01	1949/11/01	2040/07/27	\$210	21
59474	NM00958	Active	BERRHOME	Elsa Reclamation & Development Company Ltd 100%	1949/08/31	1949/09/03	2042/08/26	\$210	21
59121	NM00970	Active	BERRMAC 1	Elsa Reclamation & Development Company Ltd 100%	1948/11/04	1948/11/10	2043/05/07	\$210	21
59122	NM00971	Active	BERRMAC 2	Elsa Reclamation & Development Company Ltd 100%	1948/11/04	1948/11/10	2043/05/07	\$210	21
59123	NM00972	Active	BERRMAC 3	Elsa Reclamation & Development Company Ltd 100%	1948/11/04	1948/11/10	2043/05/07	\$210	21
59124	NM00973	Active	BERRMAC 4	Elsa Reclamation & Development Company Ltd 100%	1948/11/04	1948/11/10	2043/05/07	\$210	21
59476	NM00975	Active	BERRNAT	Elsa Reclamation & Development Company Ltd 100%	1949/08/31	1949/09/03	2043/05/07	\$210	21
56533	NM00436	Active	BES	Elsa Reclamation & Development Company Ltd 100%	1948/06/09	1948/06/23	2025/11/26	\$210	21
59342	NM00845	Active	BETS	Elsa Reclamation & Development Company Ltd 100%	1949/07/14	1949/07/19	2040/07/27	\$210	21
56524	NM00918	Active	BETTY	Elsa Reclamation & Development Company Ltd 100%	1948/06/05	1948/06/11	2042/07/24	\$210	21
38831	NM00980	Active	BILLYS	Elsa Reclamation & Development Company Ltd 100%	1935/04/25	1935/05/15	2043/06/12	\$210	21
55371	NM00365	Active	BINGO	Elsa Reclamation & Development Company Ltd 100%	1945/07/20	1945/10/25	2025/04/30	\$210	21
14084	NM00695	Active	BIRMINGHAM	Elsa Reclamation & Development Company Ltd 100%	1921/05/03	1921/07/25	2036/01/15	\$210	21
12869	NM00994	Active	BLACK CAP	Elsa Reclamation & Development Company Ltd 100%	1919/09/27	1919/11/12	2043/11/19	\$210	21
13480	NM00763	Active	BLACK MAGGIE	Elsa Reclamation & Development Company Ltd 100%	1920/08/13	1920/10/13	2037/09/03	\$210	21
62272	NM00344	Active	BLOOD	Elsa Reclamation & Development Company Ltd 100%	1952/09/13	1952/09/17	2025/02/15	\$210	21
13143	NM00617	Active	BLUE BELL	Elsa Reclamation & Development Company Ltd 100%	1920/05/07	1920/06/16	2030/01/31	\$210	21
59160	NM00841	Active	BLUE BIRD	Elsa Reclamation & Development Company Ltd 100%	1948/11/11	1948/11/22	2040/07/27	\$210	21
59366	NM00209	Active	BLUE FOX 10	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/20	\$210	21
59343	NM00202	Active	BLUE FOX 2	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/27	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
59359	NM00201	Active	BLUE FOX 3	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/27	\$210	21
59360	NM00203	Active	BLUE FOX 4	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/20	\$210	21
59361	NM00204	Active	BLUE FOX 5	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/20	\$210	21
59362	NM00205	Active	BLUE FOX 6	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/20	\$210	21
59363	NM00206	Active	BLUE FOX 7	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/20	\$210	21
59364	NM00207	Active	BLUE FOX 8	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/20	\$210	21
59365	NM00208	Active	BLUE FOX 9	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/20	\$210	21
13122	NM00880	Active	BLUE ROCK	Elsa Reclamation & Development Company Ltd 100%	1920/04/28	1920/06/12	2041/11/14	\$210	21
13151	NM00636	Active	BLUE STONE	Elsa Reclamation & Development Company Ltd 100%	1920/05/07	1920/06/16	2029/12/31	\$210	21
59351	NM00210	Active	BLUE-FOX 1	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2028/07/27	\$210	21
55394		Active	BOB	Elsa Reclamation & Development Company Ltd 100%	1946/02/07	1946/03/05	2027/12/31	\$525	5
59543	NM01008	Active	BOB	Elsa Reclamation & Development Company Ltd 100%	1950/04/14	1950/05/01	2044/02/09	\$210	21
59494	NM01011	Active	BOBBIE 10	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2044/02/12	\$210	21
59486	NM00456	Active	BOBBIE 2	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59487	NM00457	Active	BOBBIE 3	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59488	NM00458	Active	BOBBIE 4	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59491	NM01009	Active	BOBBIE 7	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2044/02/12	\$210	21
59493	NM01010	Active	BOBBIE 9	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2044/02/12	\$210	21
55365	NM00275	Active	вока	Elsa Reclamation & Development Company Ltd 100%	1945/07/08	1945/10/25	2029/04/18	\$210	21
15250	NM00914	Active	BOYLE	Elsa Reclamation & Development Company Ltd 100%	1928/07/15	1928/08/06	2042/07/24	\$210	21
59026	NM00920	Active	BOYLE	Elsa Reclamation & Development Company Ltd 100%	1948/09/11	1948/09/13	2042/07/24	\$210	21
15249	NM00242	Active	BRIDGETTE	Elsa Reclamation & Development Company Ltd 100%	1928/07/15	1928/08/06	2029/02/28	\$210	21
59316	NM00287	Active	BRISTOL	Elsa Reclamation & Development Company Ltd 100%	1949/07/11	1949/07/19	2024/06/27	\$210	21
12988	NM00274	Active	BRITANNIA	Elsa Reclamation & Development Company Ltd 100%	1920/03/10	1920/04/09	2029/04/18	\$210	21
59041	NM00987	Active	BUCKEYE	Elsa Reclamation & Development Company Ltd 100%	1948/09/20	1948/09/21	2043/06/12	\$210	21
59795	NM00572	Active	BUCKO	Elsa Reclamation & Development Company Ltd 100%	1950/09/29	1950/10/02	2027/11/02	\$210	21
55513	NM00311	Active	BUCONJO 10	Elsa Reclamation & Development Company Ltd 100%	1946/09/15	1947/02/03	2025/01/31	\$210	21
55514	NM00312	Active	BUCONJO 11	Elsa Reclamation & Development Company Ltd 100%	1946/09/15	1947/02/03	2025/01/31	\$210	21
55515	NM00313	Active	BUCONJO 12	Elsa Reclamation & Development Company Ltd 100%	1946/09/19	1947/02/03	2025/01/31	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
55509	NM00307	Active	BUCONJO 6	Elsa Reclamation & Development Company Ltd 100%	1946/09/14	1947/02/01	2025/01/31	\$210	21
55511	NM00309	Active	BUCONJO 8	Elsa Reclamation & Development Company Ltd 100%	1946/09/15	1947/02/03	2025/01/31	\$210	21
55512	NM00310	Active	BUCONJO 9	Elsa Reclamation & Development Company Ltd 100%	1946/09/15	1947/02/03	2025/01/31	\$210	21
14884	NM00912	Active	BUDDY	Elsa Reclamation & Development Company Ltd 100%	1923/09/02	1923/10/22	2042/07/24	\$210	21
13454	NM00772	Active	BULL FROG	Elsa Reclamation & Development Company Ltd 100%	1920/07/29	1920/10/02	2038/03/30	\$210	21
YA39498		Active	Bulldozer 1	Elsa Reclamation & Development Company Ltd 100%	1979/04/03	1979/04/04	2026/12/31	\$525	5
83133	NM00656	Active	Bunk	Elsa Reclamation & Development Company Ltd 100%	1963/08/12	1963/08/13	2031/03/12	\$210	21
13058	NM00863	Active	BUNNY	Elsa Reclamation & Development Company Ltd 100%	1920/04/03	1920/05/11	2041/04/25	\$210	21
16166	NM00941	Active	BUNNY	Elsa Reclamation & Development Company Ltd 100%	1926/06/08	1926/07/12	2042/08/20	\$210	21
59542	NM01007	Active	BUNT	Elsa Reclamation & Development Company Ltd 100%	1950/04/14	1950/05/01	2044/02/09	\$210	21
14445	NM00950	Active	BUSH	Elsa Reclamation & Development Company Ltd 100%	1921/10/11	1921/12/01	2042/08/26	\$210	21
59420	NM00955	Active	CACHI 1	Elsa Reclamation & Development Company Ltd 100%	1949/07/27	1949/08/10	2042/08/26	\$210	21
59421	NM00956	Active	CACHI 2	Elsa Reclamation & Development Company Ltd 100%	1949/07/27	1949/08/10	2042/08/26	\$210	21
59422	NM00957	Active	CACHI 3	Elsa Reclamation & Development Company Ltd 100%	1949/07/27	1949/08/10	2042/08/26	\$210	21
62341	NM00288	Active	CAKE	Elsa Reclamation & Development Company Ltd 100%	1953/11/11	1953/11/20	2024/06/27	\$210	21
62282	NM00280	Active	CALF	Elsa Reclamation & Development Company Ltd 100%	1952/09/21	1952/10/02	2029/04/18	\$210	21
13114	NM00290	Active	CALUMET 1	Elsa Reclamation & Development Company Ltd 100%	1920/04/27	1920/06/11	2024/08/15	\$210	21
15319	NM00243	Active	CALUMET 2	Elsa Reclamation & Development Company Ltd 100%	1929/03/01	1929/03/27	2029/02/28	\$210	21
59249	NM00268	Active	CAMARRILA	Elsa Reclamation & Development Company Ltd 100%	1949/05/28	1949/05/31	2029/01/18	\$210	21
59248	NM00267	Active	CAMEO	Elsa Reclamation & Development Company Ltd 100%	1949/05/28	1949/05/31	2029/01/18	\$210	21
13175	NM00666	Active	CAMOROTE	Elsa Reclamation & Development Company Ltd 100%	1920/05/05	1920/06/19	2033/10/31	\$210	21
55484	NM00967	Active	CANADA	Elsa Reclamation & Development Company Ltd 100%	1946/08/26	1947/01/24	2043/05/07	\$210	21
12970	NM00873	Active	CANADIAN	Elsa Reclamation & Development Company Ltd 100%	1919/09/19	1920/03/04	2041/08/14	\$210	21
59250	NM00269	Active	CAPSTAN	Elsa Reclamation & Development Company Ltd 100%	1949/05/28	1949/05/31	2029/01/18	\$210	21
12878	NM00831	Active	CARIBOU	Elsa Reclamation & Development Company Ltd 100%	1919/09/06	1919/11/26	2040/09/14	\$210	21
Y 68414		Active	Case 1	Elsa Reclamation & Development Company Ltd 100%	1972/08/03	1972/08/17	2043/12/31	\$525	5
Y 68415		Active	Case 2	Elsa Reclamation & Development Company Ltd 100%	1972/08/03	1972/08/17	2043/12/31	\$525	5
Y 68416		Active	Case 3	Elsa Reclamation & Development Company Ltd 100%	1972/08/07	1972/08/17	2043/12/31	\$525	5
62236	NM00403	Active	CAT	Elsa Reclamation & Development Company Ltd 100%	1952/08/25	1952/08/27	2025/06/12	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
81226	NM00653	Active	CATHY	Elsa Reclamation & Development Company Ltd 100%	1962/06/20	1962/06/26	2031/03/12	\$210	21
83012	NM00594	Active	CATHY FRACTION	Elsa Reclamation & Development Company Ltd 100%	1963/06/29	1963/07/09	2027/11/02	\$210	21
38779	NM00665	Active	CHANCE	Elsa Reclamation & Development Company Ltd 100%	1934/03/29	1934/04/18	2033/06/17	\$210	21
55120	NM00802	Active	CHANCE	Elsa Reclamation & Development Company Ltd 100%	1938/11/05	1938/11/28	2038/12/15	\$210	21
59796	NM00573	Active	CHARITY	Elsa Reclamation & Development Company Ltd 100%	1950/09/29	1950/10/02	2027/11/02	\$210	21
13089	NM00825	Active	CHIEF	Elsa Reclamation & Development Company Ltd 100%	1920/04/16	1920/06/08	2039/08/18	\$210	21
13088	NM00824	Active	CHIEF 2	Elsa Reclamation & Development Company Ltd 100%	1920/04/16	1920/06/08	2039/08/18	\$210	21
13092	NM00961	Active	CHIEF 3	Elsa Reclamation & Development Company Ltd 100%	1920/04/18	1920/06/08	2042/08/26	\$210	21
13093	NM00627	Active	CHIEF 4	Elsa Reclamation & Development Company Ltd 100%	1920/04/18	1920/06/09	2029/12/06	\$210	21
62284	NM00467	Active	CITY	Elsa Reclamation & Development Company Ltd 100%	1952/09/27	1952/10/02	2025/11/26	\$210	21
59475	NM00959	Active	CLIMBEAGLE	Elsa Reclamation & Development Company Ltd 100%	1949/08/31	1949/09/03	2042/08/26	\$210	21
59120	NM00954	Active	CLIMBER	Elsa Reclamation & Development Company Ltd 100%	1948/11/04	1948/11/10	2042/08/26	\$210	21
80358	NM00580	Active	CLOSURE	Elsa Reclamation & Development Company Ltd 100%	1959/07/09	1959/07/21	2027/11/02	\$210	21
55421	NM00849	Active	COMPLEX	Elsa Reclamation & Development Company Ltd 100%	1946/05/25	1946/08/16	2040/08/28	\$210	21
62153	NM00320	Active	CON	Elsa Reclamation & Development Company Ltd 100%	1952/06/14	1952/07/02	2025/02/01	\$210	21
56473	NM00601	Active	CORA	Elsa Reclamation & Development Company Ltd 100%	1947/08/11	1947/08/25	2028/07/22	\$210	21
55480	NM00858	Active	CORA	Elsa Reclamation & Development Company Ltd 100%	1946/08/26	1947/01/24	2041/02/11	\$210	21
56574	NM00978	Active	CORA 2	Elsa Reclamation & Development Company Ltd 100%	1948/07/09	1948/07/21	2043/06/02	\$210	21
59765	NM00892	Active	CORA Fr 2	Elsa Reclamation & Development Company Ltd 100%	1950/09/23	1950/09/27	2042/06/17	\$210	21
14094	NM00363	Active	CORAL	Elsa Reclamation & Development Company Ltd 100%	1921/05/04	1921/07/26	2025/04/30	\$210	21
55420	NM00564	Active	CROESUS	Elsa Reclamation & Development Company Ltd 100%	1946/05/22	1946/05/27	2027/11/02	\$210	21
13418	NM00372	Active	CUB	Elsa Reclamation & Development Company Ltd 100%	1920/07/26	1920/09/25	2025/05/10	\$210	21
59005	NM00509	Active	D.C.	Elsa Reclamation & Development Company Ltd 100%	1948/08/11	1948/08/26	2026/11/01	\$210	21
14883	NM00699	Active	DARWIN	Elsa Reclamation & Development Company Ltd 100%	1923/09/16	1923/10/18	2036/01/28	\$210	21
62367	NM00472	Active	DAWSON	Elsa Reclamation & Development Company Ltd 100%	1954/06/19	1954/06/21	2025/11/26	\$210	21
59367	NM00996	Active	DE CHUCK	Elsa Reclamation & Development Company Ltd 100%	1949/07/21	1949/07/25	2043/11/19	\$210	21
55315	NM00882	Active	DELIA	Elsa Reclamation & Development Company Ltd 100%	1944/09/22	1945/02/19	2041/11/14	\$210	21
59253	NM00270	Active	DENTON	Elsa Reclamation & Development Company Ltd 100%	1949/06/01	1949/06/03	2029/01/18	\$210	21
14846	NM00687	Active	DENVER	Elsa Reclamation & Development Company Ltd 100%	1923/07/17	1923/08/11	2035/10/14	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
55577	NM00277	Active	DEVON	Elsa Reclamation & Development Company Ltd 100%	1946/09/19	1947/03/20	2029/04/18	\$210	21
YA40163		Active	Dice 1	Elsa Reclamation & Development Company Ltd 100%	1979/06/14	1979/06/29	2037/12/29	\$525	5
YA40173		Active	Dice 11	Elsa Reclamation & Development Company Ltd 100%	1979/06/15	1979/06/29	2037/12/29	\$525	5
YA40174		Active	Dice 12	Elsa Reclamation & Development Company Ltd 100%	1979/06/15	1979/06/29	2037/12/29	\$525	5
YA40175		Active	Dice 13	Elsa Reclamation & Development Company Ltd 100%	1979/06/15	1979/06/29	2037/12/29	\$525	5
YA40176		Active	Dice 14	Elsa Reclamation & Development Company Ltd 100%	1979/06/15	1979/06/29	2037/12/29	\$525	5
YA40164		Active	Dice 2	Elsa Reclamation & Development Company Ltd 100%	1979/06/14	1979/06/29	2037/12/29	\$525	5
YA40165		Active	Dice 3	Elsa Reclamation & Development Company Ltd 100%	1979/06/14	1979/06/29	2037/12/29	\$525	5
YA40166		Active	Dice 4	Elsa Reclamation & Development Company Ltd 100%	1979/06/14	1979/06/29	2037/12/29	\$525	5
YA40167		Active	Dice 5	Elsa Reclamation & Development Company Ltd 100%	1979/06/14	1979/06/29	2037/12/29	\$525	5
YA40168		Active	Dice 6	Elsa Reclamation & Development Company Ltd 100%	1979/06/14	1979/06/29	2037/12/29	\$525	5
YA40169		Active	Dice 7	Elsa Reclamation & Development Company Ltd 100%	1979/06/14	1979/06/29	2037/12/29	\$525	5
YA40170		Active	Dice 8	Elsa Reclamation & Development Company Ltd 100%	1979/06/14	1979/06/29	2037/12/29	\$525	5
YA40171		Active	Dice 9	Elsa Reclamation & Development Company Ltd 100%	1979/06/15	1979/06/29	2037/12/29	\$525	5
55362	NM00430	Active	DIVIDE	Elsa Reclamation & Development Company Ltd 100%	1945/07/08	1945/10/25	2025/11/26	\$210	21
62283	NM00466	Active	DIVORCE	Elsa Reclamation & Development Company Ltd 100%	1952/09/21	1952/10/02	2025/11/26	\$210	21
55585	NM00567	Active	DIXIE	Elsa Reclamation & Development Company Ltd 100%	1946/11/10	1947/03/20	2027/11/02	\$210	21
14903	NM00746	Active	DIXIE	Elsa Reclamation & Development Company Ltd 100%	1923/10/31	1923/11/21	2036/10/07	\$210	21
55333	NM00804	Active	DOE	Elsa Reclamation & Development Company Ltd 100%	1945/05/23	1945/10/16	2038/12/15	\$210	21
14228	NM00765	Active	Dolly Varden	Elsa Reclamation & Development Company Ltd 100%	1921/07/24	1921/09/24	2038/02/15	\$210	21
61733	NM00397	Active	DON FRACTION	Elsa Reclamation & Development Company Ltd 100%	1951/07/07	1951/07/19	2025/06/12	\$210	21
15393	NM00559	Active	DONNIE	Elsa Reclamation & Development Company Ltd 100%	1929/07/17	1929/08/26	2027/11/02	\$210	21
16497	NM00669	Active	DONNIE	Elsa Reclamation & Development Company Ltd 100%	1924/07/20	1924/08/28	2033/11/24	\$210	21
61021	NM00574	Active	DOT	Elsa Reclamation & Development Company Ltd 100%	1950/10/26	1950/10/27	2027/11/02	\$210	21
62294	NM00404	Active	DOUBT	Elsa Reclamation & Development Company Ltd 100%	1952/10/04	1952/10/11	2025/06/12	\$210	21
55440	NM00431	Active	DOUGLAS	Elsa Reclamation & Development Company Ltd 100%	1946/07/01	1946/07/06	2025/11/26	\$210	21
62268	NM00340	Active	DRAKE	Elsa Reclamation & Development Company Ltd 100%	1952/09/13	1952/09/17	2025/02/15	\$210	21
14223	NM00927	Active	DREADNAUGHT	Elsa Reclamation & Development Company Ltd 100%	1921/07/17	1921/09/24	2042/08/08	\$210	21
62271	NM00343	Active	DUCE	Elsa Reclamation & Development Company Ltd 100%	1952/09/13	1952/09/17	2025/02/15	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
59468	NM00367	Active	DUNCAN 1	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2025/04/30	\$210	21
59469	NM00368	Active	DUNCAN 2	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2025/04/30	\$210	21
59470	NM00369	Active	DUNCAN 3	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2025/04/30	\$210	21
55499	NM00853	Active	DUPLEX	Elsa Reclamation & Development Company Ltd 100%	1946/09/12	1947/02/01	2040/10/12	\$210	21
16588	NM00350	Active	EAGLE	Elsa Reclamation & Development Company Ltd 100%	1925/06/12	1925/07/23	2025/03/30	\$210	21
61908	NM00462	Active	EDBO	Elsa Reclamation & Development Company Ltd 100%	1951/08/07	1951/08/22	2025/11/26	\$210	21
61909	NM00463	Active	EDBO 2	Elsa Reclamation & Development Company Ltd 100%	1951/08/07	1951/08/22	2025/11/26	\$210	21
59478	NM00449	Active	EDITH-CAVELL 1	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59479	NM00450	Active	EDITH-CAVELL 2	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59480	NM00451	Active	EDITH-CAVELL 3	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59481	NM00452	Active	EDITH-CAVELL 4	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59482	NM00453	Active	EDITH-CAVELL 5	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59483	NM00454	Active	EDITH-CAVELL 6	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59484	NM00455	Active	EDITH-CAVELL 7	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2025/11/26	\$210	21
59485	NM00597	Active	EDITH-CAVELL 8	Elsa Reclamation & Development Company Ltd 100%	1949/09/03	1949/09/06	2027/11/26	\$210	21
59670	NM00386	Active	EDITH-CAVELL 9	Elsa Reclamation & Development Company Ltd 100%	1950/08/05	1950/08/16	2025/05/22	\$210	21
16496	NM00942	Active	EFFIE	Elsa Reclamation & Development Company Ltd 100%	1924/08/04	1924/08/28	2042/08/20	\$210	21
56591	NM00355	Active	EILEEN	Elsa Reclamation & Development Company Ltd 100%	1948/08/19	1948/08/20	2025/03/30	\$210	21
59754	NM00847	Active	EILEEN	Elsa Reclamation & Development Company Ltd 100%	1950/09/24	1950/09/26	2040/07/27	\$210	21
55319	NM00563	Active	ELI	Elsa Reclamation & Development Company Ltd 100%	1944/10/12	1945/02/19	2027/11/02	\$210	21
59419	NM00570	Active	ELI 2	Elsa Reclamation & Development Company Ltd 100%	1949/07/20	1949/08/08	2027/11/02	\$210	21
59296	NM00932	Active	ELINOR 1	Elsa Reclamation & Development Company Ltd 100%	1949/06/20	1949/06/30	2042/08/08	\$210	21
59302	NM00935	Active	ELINOR 2	Elsa Reclamation & Development Company Ltd 100%	1949/06/20	1949/06/30	2042/08/08	\$210	21
59297	NM00933	Active	ELINOR 3	Elsa Reclamation & Development Company Ltd 100%	1949/06/20	1949/06/30	2042/08/08	\$210	21
59298	NM00934	Active	ELINOR 4	Elsa Reclamation & Development Company Ltd 100%	1949/06/20	1949/06/30	2042/08/08	\$210	21
16523	NM00773	Active	ELSA	Elsa Reclamation & Development Company Ltd 100%	1924/09/13	1924/10/11	2038/05/12	\$210	21
13169	NM00814	Active	ELSIE FRACTIONA	Elsa Reclamation & Development Company Ltd 100%	1920/05/11	1920/06/18	2039/01/01	\$210	21
55473	NM00805	Active	ENDYMION	Elsa Reclamation & Development Company Ltd 100%	1946/08/31	1947/01/23	2038/12/15	\$210	21
62247	NM00465	Active	ERICA	Elsa Reclamation & Development Company Ltd 100%	1952/09/04	1952/09/05	2025/11/26	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
38737	NM00915	Active	ETHEL	Elsa Reclamation & Development Company Ltd 100%	1932/03/22	1932/04/11	2042/07/24	\$210	21
14169	NM00691	Active	ETTA	Elsa Reclamation & Development Company Ltd 100%	1921/07/10	1921/09/14	2035/12/19	\$210	21
14327	NM00798	Active	EUREKA	Elsa Reclamation & Development Company Ltd 100%	1921/08/21	1921/10/11	2038/12/15	\$210	21
12877	NM00875	Active	EUREKA	Elsa Reclamation & Development Company Ltd 100%	1919/08/31	1919/11/26	2041/08/20	\$210	21
16026	NM00348	Active	EXTENSION	Elsa Reclamation & Development Company Ltd 100%	1925/07/29	1925/08/31	2025/03/30	\$210	21
16087	NM00799	Active	EXTENSION	Elsa Reclamation & Development Company Ltd 100%	1925/10/19	1925/11/24	2038/12/15	\$210	21
62944	NM00474	Active	FAIR FRACTION	Elsa Reclamation & Development Company Ltd 100%	1955/12/30	1956/01/06	2025/11/26	\$210	21
61725	NM00525	Active	FALLOT	Elsa Reclamation & Development Company Ltd 100%	1951/07/09	1951/07/16	2026/11/01	\$210	21
59437	NM00510	Active	FALLS 1	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
59446	NM00519	Active	FALLS 10	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
59447	NM00520	Active	FALLS 11	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2026/11/01	\$210	21
59448	NM00521	Active	FALLS 12	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2026/11/01	\$210	21
59449	NM00522	Active	FALLS 13	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2026/11/01	\$210	21
59450	NM00523	Active	FALLS 14	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2026/11/01	\$210	21
59451	NM00524	Active	FALLS 15	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2026/11/01	\$210	21
59452	NM00384	Active	FALLS 16	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2025/05/22	\$210	21
59438	NM00511	Active	FALLS 2	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
59439	NM00512	Active	FALLS 3	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
59440	NM00513	Active	FALLS 4	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
59441	NM00514	Active	FALLS 5	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
59442	NM00515	Active	FALLS 6	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
59443	NM00516	Active	FALLS 7	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
59444	NM00517	Active	FALLS 8	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
59445	NM00518	Active	FALLS 9	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2026/11/01	\$210	21
14085	NM00694	Active	FIG TREE	Elsa Reclamation & Development Company Ltd 100%	1921/05/03	1921/07/25	2036/01/08	\$210	21
80347	NM00578	Active	FILL	Elsa Reclamation & Development Company Ltd 100%	1959/06/03	1959/06/10	2027/11/02	\$210	21
62826	NM00289	Active	FILTER FRACTION	Elsa Reclamation & Development Company Ltd 100%	1955/06/16	1955/06/23	2024/06/27	\$210	21
80359	NM00581	Active	FINAL	Elsa Reclamation & Development Company Ltd 100%	1959/07/09	1959/07/21	2027/11/02	\$210	21
12876	NM00850	Active	FISHER	Elsa Reclamation & Development Company Ltd 100%	1919/09/02	1919/11/26	2040/09/14	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
38643	NM00762	Active	FLAME	Elsa Reclamation & Development Company Ltd 100%	1929/10/13	1929/11/13	2037/11/29	\$210	21
55527	NM00377	Active	FLY FRACTION	Elsa Reclamation & Development Company Ltd 100%	1946/09/18	1947/02/04	2025/05/22	\$210	21
12870	NM00812	Active	FORAKER FRACTIO	Elsa Reclamation & Development Company Ltd 100%	1919/10/01	1919/11/13	2038/12/27	\$210	21
13412		Active	FOREST	Elsa Reclamation & Development Company Ltd 100%	1920/07/24	1920/09/24	2027/12/31	\$525	5
12845	NM00891	Active	FOX	Elsa Reclamation & Development Company Ltd 100%	1919/09/04	1919/10/28	2042/03/11	\$210	21
55599	NM00261	Active	FRANCES 3	Elsa Reclamation & Development Company Ltd 100%	1947/03/29	1947/04/18	2029/01/09	\$210	21
55600	NM00262	Active	FRANCES 4	Elsa Reclamation & Development Company Ltd 100%	1947/03/29	1947/04/18	2029/01/09	\$210	21
56401	NM00263	Active	FRANCES 5	Elsa Reclamation & Development Company Ltd 100%	1947/03/29	1947/04/18	2029/01/09	\$210	21
56402	NM00264	Active	FRANCES 6	Elsa Reclamation & Development Company Ltd 100%	1947/03/29	1947/04/18	2029/01/09	\$210	21
56403	NM00265	Active	FRANCES 7	Elsa Reclamation & Development Company Ltd 100%	1947/03/29	1947/04/18	2029/01/09	\$210	21
56404	NM00266	Active	FRANCES 8	Elsa Reclamation & Development Company Ltd 100%	1947/03/29	1947/04/18	2029/01/09	\$210	21
14220	NM00926	Active	FRANK	Elsa Reclamation & Development Company Ltd 100%	1921/07/17	1921/09/24	2042/08/08	\$210	21
13152	NM00685	Active	FRIENDSHIP	Elsa Reclamation & Development Company Ltd 100%	1920/05/07	1920/06/16	2035/01/30	\$210	21
55317	NM00963	Active	FROG	Elsa Reclamation & Development Company Ltd 100%	1944/10/11	1945/02/19	2043/02/03	\$210	21
59125	NM00871	Active	FRONTIER	Elsa Reclamation & Development Company Ltd 100%	1948/11/11	1948/11/13	2040/01/06	\$210	21
80517	NM00584	Active	GAIL FRACTION	Elsa Reclamation & Development Company Ltd 100%	1960/07/19	1960/08/04	2027/11/02	\$210	21
Y 69403		Active	Galaxy	Elsa Reclamation & Development Company Ltd 100%	1973/05/22	1973/06/05	2026/12/31	\$525	5
YA77506		Active	Galena	Elsa Reclamation & Development Company Ltd 100%	1984/06/06	1984/06/13	2028/12/31	\$525	5
13032	NM01012	Active	GALENA FARM	Elsa Reclamation & Development Company Ltd 100%	1920/03/04	1920/05/06	2044/03/23	\$210	21
38812	NM00682	Active	GALENA HILL	Elsa Reclamation & Development Company Ltd 100%	1934/10/03	1934/11/12	2035/04/14	\$210	21
14816	NM00951	Active	GIBRALTAR	Elsa Reclamation & Development Company Ltd 100%	1923/02/28	1923/04/13	2042/08/26	\$210	21
84616	NM00791	Active	GLORIA FRACTION	Elsa Reclamation & Development Company Ltd 100%	1965/08/06	1965/08/24	2038/10/17	\$210	21
80361	NM00583	Active	GNAT	Elsa Reclamation & Development Company Ltd 100%	1959/07/15	1959/07/22	2027/11/02	\$210	21
55386	NM00886	Active	GOPHER	Elsa Reclamation & Development Company Ltd 100%	1945/08/09	1945/10/26	2041/11/14	\$210	21
59821	NM00460	Active	GRACE	Elsa Reclamation & Development Company Ltd 100%	1950/10/01	1950/10/02	2025/11/26	\$210	21
15304	NM00767	Active	GREEN BACK	Elsa Reclamation & Development Company Ltd 100%	1928/10/04	1928/11/27	2038/03/13	\$210	21
14336	NM00649	Active	GREENSTONE	Elsa Reclamation & Development Company Ltd 100%	1921/08/24	1921/10/19	2030/05/28	\$210	21
12817	NM00273	Active	GROUND HOG	Elsa Reclamation & Development Company Ltd 100%	1919/09/04	1919/10/20	2029/04/18	\$210	21
15305	NM00940	Active	GRUB STAKE	Elsa Reclamation & Development Company Ltd 100%	1928/10/10	1928/11/27	2042/08/20	\$210	21

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80357	NM00579	Active	НАР	Elsa Reclamation & Development Company Ltd 100%	1959/07/09	1959/07/21	2027/11/02	\$210	21
10269	NM00833	Active	НАРРҮ	Elsa Reclamation & Development Company Ltd 100%	1936/07/05	1936/07/22	2040/07/27	\$210	21
59315	NM00945	Active	HARDIX	Elsa Reclamation & Development Company Ltd 100%	1949/06/25	1949/07/13	2042/08/20	\$210	21
55177	NM00364	Active	HARDWICK	Elsa Reclamation & Development Company Ltd 100%	1940/10/08	1940/12/19	2025/04/30	\$210	21
56525	NM00353	Active	HARRIETT	Elsa Reclamation & Development Company Ltd 100%	1948/06/12	1948/06/14	2025/03/30	\$210	21
59030	NM00969	Active	HAVLOCK	Elsa Reclamation & Development Company Ltd 100%	1948/09/13	1948/09/17	2043/05/07	\$210	21
16025	NM00668	Active	HAWKS NEST	Elsa Reclamation & Development Company Ltd 100%	1925/07/28	1925/08/31	2033/11/24	\$210	21
55428	NM00890	Active	HAY	Elsa Reclamation & Development Company Ltd 100%	1946/06/02	1946/08/19	2041/11/14	\$210	21
55582	NM00565	Active	HECLA	Elsa Reclamation & Development Company Ltd 100%	1946/10/24	1947/03/20	2027/11/02	\$210	21
16326	NM00663	Active	HECTOR	Elsa Reclamation & Development Company Ltd 100%	1927/05/09	1927/05/30	2033/06/17	\$210	21
14908	NM00425	Active	HELEN	Elsa Reclamation & Development Company Ltd 100%	1923/11/01	1923/11/27	2025/11/26	\$210	21
55364	NM00795	Active	HELEN	Elsa Reclamation & Development Company Ltd 100%	1945/07/08	1945/10/25	2038/11/01	\$210	21
55318	NM00429	Active	HENRY	Elsa Reclamation & Development Company Ltd 100%	1944/10/11	1945/02/19	2025/11/26	\$210	21
55478	NM00810	Active	HESPERIDES	Elsa Reclamation & Development Company Ltd 100%	1946/08/31	1947/01/24	2038/12/15	\$210	21
13072	NM00862	Active	HIGHLANDER	Elsa Reclamation & Development Company Ltd 100%	1920/04/03	1920/06/04	2041/04/25	\$210	21
56506	NM00758	Active	HILL	Elsa Reclamation & Development Company Ltd 100%	1947/11/21	1947/11/28	2037/05/23	\$210	21
38720	NM00248	Active	НОВО	Elsa Reclamation & Development Company Ltd 100%	1931/07/04	1931/07/24	2029/02/28	\$210	21
56577	NM00919	Active	НОВО	Elsa Reclamation & Development Company Ltd 100%	1948/07/19	1948/08/03	2042/07/24	\$210	21
61209	NM00387	Active	НОВО 3	Elsa Reclamation & Development Company Ltd 100%	1950/12/04	1950/12/18	2025/05/22	\$210	21
56592	NM00225	Active	HOLIDAY 1	Elsa Reclamation & Development Company Ltd 100%	1948/08/15	1948/08/23	2028/08/22	\$210	21
56600	NM00232	Active	HOLIDAY 10	Elsa Reclamation & Development Company Ltd 100%	1948/08/14	1948/08/23	2028/08/22	\$210	21
59001	NM00233	Active	HOLIDAY 11	Elsa Reclamation & Development Company Ltd 100%	1948/08/14	1948/08/23	2028/08/22	\$210	21
59002	NM00234	Active	HOLIDAY 12	Elsa Reclamation & Development Company Ltd 100%	1948/08/14	1948/08/23	2028/08/22	\$210	21
59003	NM00235	Active	HOLIDAY 13	Elsa Reclamation & Development Company Ltd 100%	1948/08/14	1948/08/23	2028/08/22	\$210	21
59004	NM00236	Active	HOLIDAY 14	Elsa Reclamation & Development Company Ltd 100%	1948/08/14	1948/08/23	2028/08/22	\$210	21
56593	NM00226	Active	HOLIDAY 2	Elsa Reclamation & Development Company Ltd 100%	1948/08/15	1948/08/23	2028/08/22	\$210	21
56594	NM00227	Active	HOLIDAY 3	Elsa Reclamation & Development Company Ltd 100%	1948/08/12	1948/08/23	2028/08/22	\$210	21
56595	NM00228	Active	HOLIDAY 4	Elsa Reclamation & Development Company Ltd 100%	1948/08/12	1948/08/23	2028/08/22	\$210	21
56597	NM00229	Active	HOLIDAY 7	Elsa Reclamation & Development Company Ltd 100%	1948/08/12	1948/08/23	2028/08/22	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
56598	NM00230	Active	HOLIDAY 8	Elsa Reclamation & Development Company Ltd 100%	1948/08/12	1948/08/23	2028/08/22	\$210	21
56599	NM00231	Active	HOLIDAY 9	Elsa Reclamation & Development Company Ltd 100%	1948/08/14	1948/08/23	2028/08/22	\$210	21
13133	NM00702	Active	HOMESTAKE	Elsa Reclamation & Development Company Ltd 100%	1920/04/29	1920/06/15	2036/02/27	\$210	21
59171	NM00279	Active	HONEYMOON 1	Elsa Reclamation & Development Company Ltd 100%	1949/01/16	1949/01/25	2029/04/18	\$210	21
59172	NM00379	Active	HONEYMOON 2	Elsa Reclamation & Development Company Ltd 100%	1949/01/16	1949/01/25	2025/05/22	\$210	21
59173	NM00380	Active	HONEYMOON 3	Elsa Reclamation & Development Company Ltd 100%	1949/01/16	1949/01/25	2025/05/22	\$210	21
59174	NM00381	Active	HONEYMOON 4	Elsa Reclamation & Development Company Ltd 100%	1949/01/16	1949/01/25	2025/05/22	\$210	21
59175	NM00382	Active	HONEYMOON 5	Elsa Reclamation & Development Company Ltd 100%	1949/01/16	1949/01/25	2025/05/22	\$210	21
59176	NM00383	Active	HONEYMOON 6	Elsa Reclamation & Development Company Ltd 100%	1949/01/16	1949/01/25	2025/05/22	\$210	21
55377	NM00366	Active	HOPE	Elsa Reclamation & Development Company Ltd 100%	1945/08/04	1945/10/26	2025/04/30	\$210	21
55273	NM00298	Active	HUB	Elsa Reclamation & Development Company Ltd 100%	1943/10/21	1944/05/27	2025/01/30	\$210	21
55536	NM00212	Active	HUSKY	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1947/02/12	2028/08/10	\$210	21
55537	NM00213	Active	HUSKY 1	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1947/02/12	2028/08/10	\$210	21
56576	NM00224	Active	HUSKY 12	Elsa Reclamation & Development Company Ltd 100%	1948/07/19	1948/07/21	2028/08/10	\$210	21
55538	NM00214	Active	HUSKY 2	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1947/02/12	2028/08/10	\$210	21
55539	NM00215	Active	HUSKY 3	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1946/10/22	2028/08/10	\$210	21
55540	NM00216	Active	HUSKY 4	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1946/10/22	2028/08/10	\$210	21
55541	NM00217	Active	HUSKY 5	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1946/10/22	2028/08/10	\$210	21
55542	NM00218	Active	HUSKY 6	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1946/10/22	2028/08/10	\$210	21
55543	NM00219	Active	HUSKY 7	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1946/10/22	2028/08/10	\$210	21
55544	NM00220	Active	HUSKY 8	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1947/02/12	2028/08/10	\$210	21
55545	NM00221	Active	HUSKY 9	Elsa Reclamation & Development Company Ltd 100%	1946/10/15	1946/10/22	2028/08/10	\$210	21
14087	NM00696	Active	HUXLEY	Elsa Reclamation & Development Company Ltd 100%	1921/05/03	1921/07/26	2036/01/20	\$210	21
55479	NM00602	Active	IDOL	Elsa Reclamation & Development Company Ltd 100%	1946/08/26	1947/01/24	2029/07/22	\$210	21
16554	NM00247	Active	IKWOGGY	Elsa Reclamation & Development Company Ltd 100%	1925/05/29	1925/06/15	2029/02/28	\$210	21
59385	NM00272	Active	INCA	Elsa Reclamation & Development Company Ltd 100%	1949/07/23	1949/07/29	2029/01/18	\$210	21
80346	NM00577	Active	INCA FRACTION	Elsa Reclamation & Development Company Ltd 100%	1959/04/23	1959/04/30	2027/11/02	\$210	21
56567	NM00985	Active	INDIANA	Elsa Reclamation & Development Company Ltd 100%	1948/06/26	1948/06/28	2043/06/12	\$210	21
55326	NM00373	Active	IRENE	Elsa Reclamation & Development Company Ltd 100%	1945/04/06	1945/10/16	2025/05/22	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
13799		Active	IVAN	Elsa Reclamation & Development Company Ltd 100%	1921/05/12	1921/06/23	2027/12/31	\$525	5
12810	NM00394	Active	IVY	Elsa Reclamation & Development Company Ltd 100%	1919/08/23	1919/10/14	2025/06/12	\$210	21
61744	NM00398	Active	JACK	Elsa Reclamation & Development Company Ltd 100%	1951/07/14	1951/07/20	2025/06/12	\$210	21
55427	NM00889	Active	JAY	Elsa Reclamation & Development Company Ltd 100%	1946/06/01	1946/08/19	2041/11/14	\$210	21
12809	NM00393	Active	JEAN	Elsa Reclamation & Development Company Ltd 100%	1919/08/23	1919/10/10	2025/06/12	\$210	21
16524	NM00774	Active	JEAN	Elsa Reclamation & Development Company Ltd 100%	1924/09/12	1924/10/11	2038/05/19	\$210	21
84626	NM00793	Active	JEAN FRACTIONAL	Elsa Reclamation & Development Company Ltd 100%	1965/08/20	1965/08/26	2038/10/17	\$210	21
15294	NM00999	Active	JEFFREY SPECIAL	Elsa Reclamation & Development Company Ltd 100%	1928/09/06	1928/09/28	2044/02/02	\$210	21
81139	NM00587	Active	JEFFY FRACTION	Elsa Reclamation & Development Company Ltd 100%	1962/05/29	1962/05/31	2027/11/02	\$210	21
55581	NM00965	Active	JENBET	Elsa Reclamation & Development Company Ltd 100%	1946/10/24	1947/03/20	2043/02/03	\$210	21
83532	NM00624	Active	JENNY 3	Elsa Reclamation & Development Company Ltd 100%	1964/07/15	1964/07/17	2030/02/28	\$210	21
81228	NM00588	Active	JENNY FRACTION	Elsa Reclamation & Development Company Ltd 100%	1962/06/13	1962/06/28	2027/11/02	\$210	21
83003	NM00590	Active	JENNY TOO FRACT	Elsa Reclamation & Development Company Ltd 100%	1963/06/05	1963/06/12	2027/11/02	\$210	21
38694	NM00679	Active	JESSIE	Elsa Reclamation & Development Company Ltd 100%	1930/10/26	1930/11/21	2035/04/14	\$210	21
59178	NM00237	Active	JESSIE 1	Elsa Reclamation & Development Company Ltd 100%	1949/01/20	1949/01/25	2028/08/29	\$210	21
59180	NM00238	Active	JESSIE 3	Elsa Reclamation & Development Company Ltd 100%	1949/01/20	1949/01/25	2028/08/29	\$210	21
38744	NM00681	Active	JEWEL	Elsa Reclamation & Development Company Ltd 100%	1932/06/20	1932/07/21	2035/04/14	\$210	21
15366	NM00837	Active	JIGGYWIG	Elsa Reclamation & Development Company Ltd 100%	1929/06/09	1929/07/18	2040/07/27	\$210	21
55330	NM00883	Active	JIMMIE	Elsa Reclamation & Development Company Ltd 100%	1945/05/01	1945/10/16	2041/11/14	\$210	21
38715	NM00664	Active	JOCK	Elsa Reclamation & Development Company Ltd 100%	1931/05/03	1931/05/20	2033/06/17	\$210	21
61919	NM00399	Active	JOY FRACTION	Elsa Reclamation & Development Company Ltd 100%	1951/08/30	1951/08/31	2025/06/12	\$210	21
82531	NM00655	Active	Joyce	Elsa Reclamation & Development Company Ltd 100%	1963/03/05	1963/03/12	2031/03/12	\$210	21
14880	NM00952	Active	JUMBO	Elsa Reclamation & Development Company Ltd 100%	1923/09/29	1923/10/17	2042/08/26	\$210	21
62992	NM00614	Active	JUNE	Elsa Reclamation & Development Company Ltd 100%	1956/06/24	1956/07/11	2029/08/21	\$210	21
59274	NM00796	Active	JUNE	Elsa Reclamation & Development Company Ltd 100%	1949/06/12	1949/06/22	2038/11/01	\$210	21
80345		Active	K.P.O.	Elsa Reclamation & Development Company Ltd 100%	1958/10/07	1958/10/14	2043/12/31	\$525	5
80082		Active	K.P.O. 1	Elsa Reclamation & Development Company Ltd 100%	1956/10/05	1956/10/05	2043/12/31	\$525	5
80362		Active	K.P.O. 13	Elsa Reclamation & Development Company Ltd 100%	1959/07/15	1959/07/24	2043/12/31	\$525	5
80364		Active	K.P.O. 15	Elsa Reclamation & Development Company Ltd 100%	1959/07/15	1959/07/24	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
80366		Active	K.P.O. 17	Elsa Reclamation & Development Company Ltd 100%	1959/07/15	1959/07/24	2043/12/31	\$525	5
80367		Active	K.P.O. 18	Elsa Reclamation & Development Company Ltd 100%	1959/07/15	1959/07/24	2043/12/31	\$525	5
80368		Active	K.P.O. 19	Elsa Reclamation & Development Company Ltd 100%	1959/07/15	1959/07/24	2043/12/31	\$525	5
80083		Active	K.P.O. 2	Elsa Reclamation & Development Company Ltd 100%	1956/10/05	1956/10/05	2043/12/31	\$525	5
80369		Active	K.P.O. 20	Elsa Reclamation & Development Company Ltd 100%	1959/07/15	1959/07/24	2043/12/31	\$525	5
80370		Active	K.P.O. 21	Elsa Reclamation & Development Company Ltd 100%	1959/07/16	1959/07/24	2043/12/31	\$525	5
80372		Active	K.P.O. 23	Elsa Reclamation & Development Company Ltd 100%	1959/07/16	1959/07/24	2043/12/31	\$525	5
80374		Active	K.P.O. 25	Elsa Reclamation & Development Company Ltd 100%	1959/07/17	1959/07/24	2043/12/31	\$525	5
80376		Active	K.P.O. 27	Elsa Reclamation & Development Company Ltd 100%	1959/07/18	1959/07/24	2043/12/31	\$525	5
80378		Active	K.P.O. 29	Elsa Reclamation & Development Company Ltd 100%	1959/07/19	1959/07/28	2043/12/31	\$525	5
80084		Active	K.P.O. 3	Elsa Reclamation & Development Company Ltd 100%	1956/10/05	1956/10/05	2043/12/31	\$525	5
80085		Active	K.P.O. 4	Elsa Reclamation & Development Company Ltd 100%	1956/10/05	1956/10/05	2043/12/31	\$525	5
80561	NM00586	Active	KANGAROO FRACTI	Elsa Reclamation & Development Company Ltd 100%	1960/10/18	1960/10/25	2027/11/02	\$210	21
62248	NM00526	Active	KARIN	Elsa Reclamation & Development Company Ltd 100%	1952/09/04	1952/09/05	2026/11/01	\$210	21
62198	NM00401	Active	KARL	Elsa Reclamation & Development Company Ltd 100%	1952/07/21	1952/08/04	2025/06/12	\$210	21
59177	NM00286	Active	KAY R.	Elsa Reclamation & Development Company Ltd 100%	1949/01/19	1949/01/25	2024/06/27	\$210	21
59336	NM00843	Active	KAYE	Elsa Reclamation & Development Company Ltd 100%	1949/07/14	1949/07/19	2040/07/27	\$210	21
55579	NM00278	Active	KENO	Elsa Reclamation & Development Company Ltd 100%	1946/09/19	1947/03/20	2029/04/18	\$210	21
12784	NM00622	Active	KENO	Elsa Reclamation & Development Company Ltd 100%	1919/07/29	1919/09/10	2030/02/23	\$210	21
16556	NM00768	Active	KENO	Elsa Reclamation & Development Company Ltd 100%	1925/05/29	1925/06/18	2038/03/21	\$210	21
55024	NM00830	Active	KENO	Elsa Reclamation & Development Company Ltd 100%	1936/10/14	1936/10/30	2039/08/18	\$210	21
62295	NM00468	Active	KENT	Elsa Reclamation & Development Company Ltd 100%	1952/10/04	1952/10/11	2025/11/26	\$210	21
62310	NM00469	Active	KID	Elsa Reclamation & Development Company Ltd 100%	1953/07/02	1953/07/15	2025/11/26	\$210	21
12812	NM00748	Active	KID	Elsa Reclamation & Development Company Ltd 100%	1919/08/17	1919/10/16	2036/10/19	\$210	21
56419	NM00944	Active	KIJO	Elsa Reclamation & Development Company Ltd 100%	1947/05/31	1947/06/10	2042/08/20	\$210	21
15264	NM00346	Active	KIM	Elsa Reclamation & Development Company Ltd 100%	1928/07/28	1928/08/10	2025/03/30	\$210	21
62270	NM00342	Active	KING	Elsa Reclamation & Development Company Ltd 100%	1952/09/13	1952/09/17	2025/02/15	\$210	21
12818	NM00660	Active	KING	Elsa Reclamation & Development Company Ltd 100%	1919/09/04	1919/10/20	2031/09/27	\$210	21
15323	NM01000	Active	KLONDIKE	Elsa Reclamation & Development Company Ltd 100%	1929/03/07	1929/04/25	2044/02/02	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
13558	NM00603	Active	LADUE	Elsa Reclamation & Development Company Ltd 100%	1920/09/11	1920/11/05	2029/07/07	\$210	21
13225	NM00645	Active	LAKE 1	Elsa Reclamation & Development Company Ltd 100%	1920/06/08	1920/07/13	2030/04/27	\$210	21
13276	NM00646	Active	LAKE 2	Elsa Reclamation & Development Company Ltd 100%	1920/06/08	1920/08/25	2030/04/27	\$210	21
13277	NM00647	Active	LAKE 3	Elsa Reclamation & Development Company Ltd 100%	1920/06/08	1920/08/25	2030/04/27	\$210	21
13222	NM00635	Active	LAKOTA	Elsa Reclamation & Development Company Ltd 100%	1920/06/07	1920/07/09	2029/12/31	\$210	21
62051	NM00400	Active	LAMB FRACTION	Elsa Reclamation & Development Company Ltd 100%	1951/10/26	1951/11/07	2025/06/12	\$210	21
12961	NM00857	Active	LAST CHANCE	Elsa Reclamation & Development Company Ltd 100%	1919/09/06	1920/02/26	2041/02/05	\$210	21
62977	NM00650	Active	LE BLANC	Elsa Reclamation & Development Company Ltd 100%	1956/06/10	1956/06/21	2031/03/12	\$210	21
61635		Active	LEO	Elsa Reclamation & Development Company Ltd 100%	1951/06/10	1951/06/11	2043/12/31	\$525	5
59710		Active	LEO 1	Elsa Reclamation & Development Company Ltd 100%	1950/09/23	1950/09/26	2043/12/31	\$525	5
59850		Active	LEO 10	Elsa Reclamation & Development Company Ltd 100%	1950/09/27	1950/10/02	2043/12/31	\$525	5
59851		Active	LEO 11	Elsa Reclamation & Development Company Ltd 100%	1950/09/27	1950/10/02	2043/12/31	\$525	5
59852		Active	LEO 12	Elsa Reclamation & Development Company Ltd 100%	1950/09/27	1950/10/02	2043/12/31	\$525	5
59853		Active	LEO 13	Elsa Reclamation & Development Company Ltd 100%	1950/09/27	1950/10/02	2043/12/31	\$525	5
59854		Active	LEO 14	Elsa Reclamation & Development Company Ltd 100%	1950/09/27	1950/10/02	2043/12/31	\$525	5
59855		Active	LEO 15	Elsa Reclamation & Development Company Ltd 100%	1950/09/27	1950/10/02	2043/12/31	\$525	5
59856		Active	LEO 16	Elsa Reclamation & Development Company Ltd 100%	1950/09/27	1950/10/02	2043/12/31	\$525	5
59857		Active	LEO 17	Elsa Reclamation & Development Company Ltd 100%	1950/09/27	1950/10/02	2043/12/31	\$525	5
59941		Active	LEO 18	Elsa Reclamation & Development Company Ltd 100%	1950/10/09	1950/10/12	2043/12/31	\$525	5
59942		Active	LEO 19	Elsa Reclamation & Development Company Ltd 100%	1950/10/09	1950/10/12	2043/12/31	\$525	5
59711		Active	LEO 2	Elsa Reclamation & Development Company Ltd 100%	1950/09/23	1950/09/26	2043/12/31	\$525	5
59712		Active	LEO 3	Elsa Reclamation & Development Company Ltd 100%	1950/09/23	1950/09/26	2043/12/31	\$525	5
59714		Active	LEO 4	Elsa Reclamation & Development Company Ltd 100%	1950/09/23	1950/09/26	2043/12/31	\$525	5
59715		Active	LEO 5	Elsa Reclamation & Development Company Ltd 100%	1950/09/23	1950/09/26	2043/12/31	\$525	5
59716		Active	LEO 6	Elsa Reclamation & Development Company Ltd 100%	1950/09/23	1950/09/26	2043/12/31	\$525	5
59717		Active	LEO 7	Elsa Reclamation & Development Company Ltd 100%	1950/09/23	1950/09/26	2043/12/31	\$525	5
59718		Active	LEO 8	Elsa Reclamation & Development Company Ltd 100%	1950/09/23	1950/09/26	2043/12/31	\$525	5
59849		Active	LEO 9	Elsa Reclamation & Development Company Ltd 100%	1950/09/27	1950/10/02	2043/12/31	\$525	5
16512	NM00671	Active	LILL	Elsa Reclamation & Development Company Ltd 100%	1924/08/14	1924/09/09	2033/11/24	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
14222	NM00501	Active	LILY	Elsa Reclamation & Development Company Ltd 100%	1921/07/17	1921/09/24	2026/03/31	\$210	21
55442	NM00284	Active	LIME	Elsa Reclamation & Development Company Ltd 100%	1946/07/21	1946/07/30	2024/06/27	\$210	21
15364	NM00769	Active	LINK	Elsa Reclamation & Development Company Ltd 100%	1929/06/07	1929/07/16	2038/03/22	\$210	21
12830	NM00750	Active	LION	Elsa Reclamation & Development Company Ltd 100%	1919/08/27	1919/10/23	2036/10/24	\$210	21
82289	NM00589	Active	LITE FRACTION	Elsa Reclamation & Development Company Ltd 100%	1962/08/01	1962/08/07	2027/11/02	\$210	21
14229	NM00928	Active	LITTLE CHARLIE	Elsa Reclamation & Development Company Ltd 100%	1921/08/18	1921/09/24	2042/08/08	\$210	21
15329	NM00766	Active	LITTLE FRACTION	Elsa Reclamation & Development Company Ltd 100%	1929/04/07	1929/05/16	2038/03/08	\$210	21
55269	NM00881	Active	LITTLE GIRL	Elsa Reclamation & Development Company Ltd 100%	1943/06/28	1943/11/09	2041/11/14	\$210	21
12821	NM00423	Active	LIZZIE	Elsa Reclamation & Development Company Ltd 100%	1919/09/07	1919/10/20	2025/11/26	\$210	21
12965	NM00859	Active	LONE STAR	Elsa Reclamation & Development Company Ltd 100%	1919/09/02	1920/03/01	2041/02/20	\$210	21
59673	NM00396	Active	LOON	Elsa Reclamation & Development Company Ltd 100%	1950/09/07	1950/09/08	2025/06/12	\$210	21
56516	NM00321	Active	LOOS	Elsa Reclamation & Development Company Ltd 100%	1948/04/18	1948/04/21	2025/02/02	\$210	21
55495	NM00851	Active	LORNE	Elsa Reclamation & Development Company Ltd 100%	1946/09/14	1947/02/01	2040/10/12	\$210	21
13019	NM00625	Active	LOTUS	Elsa Reclamation & Development Company Ltd 100%	1920/02/22	1920/05/04	2029/11/25	\$210	21
56405	NM00433	Active	LOUIS 1	Elsa Reclamation & Development Company Ltd 100%	1947/03/29	1947/04/18	2025/11/26	\$210	21
56406	NM00596	Active	LOUIS 2	Elsa Reclamation & Development Company Ltd 100%	1947/03/22	1947/04/18	2027/11/26	\$210	21
56407	NM00434	Active	LOUIS 3	Elsa Reclamation & Development Company Ltd 100%	1947/03/22	1947/04/18	2025/11/26	\$210	21
56408	NM00435	Active	LOUIS 4	Elsa Reclamation & Development Company Ltd 100%	1947/03/22	1947/04/18	2025/11/26	\$210	21
14219	NM00925	Active	LOUISE	Elsa Reclamation & Development Company Ltd 100%	1921/07/17	1921/09/24	2042/08/08	\$210	21
55501	NM00300	Active	LOVIE	Elsa Reclamation & Development Company Ltd 100%	1946/09/15	1947/02/01	2025/01/30	\$210	21
16585	NM00771	Active	LUCKY	Elsa Reclamation & Development Company Ltd 100%	1925/06/09	1925/06/11	2038/03/29	\$210	21
13021	NM00674	Active	LUCKY QUEEN	Elsa Reclamation & Development Company Ltd 100%	1920/02/18	1920/05/04	2035/02/17	\$210	21
16552	NM00775	Active	LUCKY STRIKE	Elsa Reclamation & Development Company Ltd 100%	1925/05/22	1925/06/15	2038/06/14	\$210	21
13586	NM00637	Active	LUNA	Elsa Reclamation & Development Company Ltd 100%	1920/09/09	1920/11/12	2029/12/31	\$210	21
38857	NM00632	Active	M.T.	Elsa Reclamation & Development Company Ltd 100%	1935/08/22	1935/10/01	2029/12/06	\$210	21
2201	NM00816	Active	MABEL	Elsa Reclamation & Development Company Ltd 100%	1913/02/23	1913/03/17	2039/02/15	\$210	21
62202	NM00464	Active	MAGGIE	Elsa Reclamation & Development Company Ltd 100%	1952/07/31	1952/08/05	2025/11/26	\$210	21
14233	NM00659	Active	MAGGIE	Elsa Reclamation & Development Company Ltd 100%	1921/06/28	1921/09/24	2031/09/24	\$210	21
12829	NM00747	Active	MAPLE LEAF	Elsa Reclamation & Development Company Ltd 100%	1919/08/27	1919/10/23	2036/10/15	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
59520	NM00385	Active	MARG	Elsa Reclamation & Development Company Ltd 100%	1949/12/10	1949/12/14	2025/05/22	\$210	21
56530	NM00508	Active	MARIE ELENA	Elsa Reclamation & Development Company Ltd 100%	1948/06/11	1948/06/17	2026/11/01	\$210	21
55385	NM00885	Active	MARMOT	Elsa Reclamation & Development Company Ltd 100%	1945/08/09	1945/10/26	2041/11/14	\$210	21
13787	NM00618	Active	MARY	Elsa Reclamation & Development Company Ltd 100%	1921/05/09	1921/06/21	2030/01/31	\$210	21
59014	NM00968	Active	MARY L.	Elsa Reclamation & Development Company Ltd 100%	1948/08/28	1948/09/01	2043/05/07	\$210	21
14168	NM00690	Active	MASTIFF	Elsa Reclamation & Development Company Ltd 100%	1921/07/10	1921/09/14	2035/11/14	\$210	21
12937	NM00764	Active	MATHOLE	Elsa Reclamation & Development Company Ltd 100%	1919/10/12	1920/01/03	2037/09/07	\$210	21
59255	NM00271	Active	MATTAGAMI	Elsa Reclamation & Development Company Ltd 100%	1949/06/01	1949/06/03	2029/01/18	\$210	21
38748	NM00759	Active	MAY	Elsa Reclamation & Development Company Ltd 100%	1932/07/25	1932/08/15	2037/09/03	\$210	21
56573	NM00438	Active	MAYO	Elsa Reclamation & Development Company Ltd 100%	1948/06/22	1948/07/12	2025/11/26	\$210	21
12919	NM00752	Active	MAYO	Elsa Reclamation & Development Company Ltd 100%	1919/09/09	1919/12/22	2036/12/21	\$210	21
55497	NM00852	Active	MAYO	Elsa Reclamation & Development Company Ltd 100%	1946/09/12	1947/02/01	2040/10/12	\$210	21
38619	NM00815	Active	McCARTHY FRACTI	Elsa Reclamation & Development Company Ltd 100%	1929/08/15	1929/09/19	2039/01/01	\$210	21
62131	NM00848	Active	METEOR	Elsa Reclamation & Development Company Ltd 100%	1952/06/15	1952/06/16	2040/07/27	\$210	21
14088	NM00693	Active	MIDWAY	Elsa Reclamation & Development Company Ltd 100%	1921/05/03	1921/07/26	2035/12/30	\$210	21
56590	NM00568	Active	MIKE	Elsa Reclamation & Development Company Ltd 100%	1948/08/12	1948/08/18	2027/11/02	\$210	21
59764	NM00571	Active	MIKE	Elsa Reclamation & Development Company Ltd 100%	1950/09/21	1950/09/26	2027/11/02	\$210	21
16571	NM00755	Active	MINERVA	Elsa Reclamation & Development Company Ltd 100%	1925/05/29	1925/07/07	2037/03/22	\$210	21
16040	NM00756	Active	MINERVA JR.	Elsa Reclamation & Development Company Ltd 100%	1925/08/17	1925/09/23	2037/04/14	\$210	21
62837	NM00406	Active	MINK FRACTION	Elsa Reclamation & Development Company Ltd 100%	1955/07/26	1955/08/03	2025/06/12	\$210	21
12814	NM00633	Active	MINTO	Elsa Reclamation & Development Company Ltd 100%	1919/08/16	1919/08/17	2029/12/16	\$210	21
12920	NM00424	Active	MINTO 2	Elsa Reclamation & Development Company Ltd 100%	1919/09/10	1919/12/22	2025/11/26	\$210	21
12879	NM00877	Active	MIRAMICHI	Elsa Reclamation & Development Company Ltd 100%	1919/08/30	1919/09/26	2041/09/16	\$210	21
81227	NM00654	Active	Мо	Elsa Reclamation & Development Company Ltd 100%	1962/06/20	1962/06/26	2031/03/12	\$210	21
15236	NM00757	Active	MOHAWK	Elsa Reclamation & Development Company Ltd 100%	1928/05/16	1928/06/13	2037/04/20	\$210	21
55443	NM00432	Active	MONARCH	Elsa Reclamation & Development Company Ltd 100%	1946/07/22	1946/08/26	2025/11/26	\$210	21
16568	NM00672	Active	MONOPLY	Elsa Reclamation & Development Company Ltd 100%	1925/05/28	1925/07/07	2033/11/24	\$210	21
16569	NM00673	Active	MONTE CARLO	Elsa Reclamation & Development Company Ltd 100%	1925/06/05	1925/07/07	2033/11/24	\$210	21
55312	NM00981	Active	MONTY	Elsa Reclamation & Development Company Ltd 100%	1944/07/24	1945/02/13	2043/06/12	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
12819	NM00876	Active	MOOSE	Elsa Reclamation & Development Company Ltd 100%	1919/09/02	1919/10/20	2041/08/21	\$210	21
62267	NM00339	Active	MORGAN	Elsa Reclamation & Development Company Ltd 100%	1952/09/13	1952/09/17	2025/02/15	\$210	21
55332	NM00374	Active	MOSS	Elsa Reclamation & Development Company Ltd 100%	1945/05/22	1945/10/16	2025/05/22	\$210	21
62366	NM00358	Active	MOSSBACK	Elsa Reclamation & Development Company Ltd 100%	1954/05/30	1954/06/08	2025/03/30	\$210	21
38642	NM00760	Active	MOTH	Elsa Reclamation & Development Company Ltd 100%	1929/10/10	1929/11/13	2037/12/08	\$210	21
13025	NM00834	Active	NABOB	Elsa Reclamation & Development Company Ltd 100%	1920/03/07	1920/05/05	2040/07/27	\$210	21
14990	NM00359	Active	NAETHING	Elsa Reclamation & Development Company Ltd 100%	1924/06/10	1924/07/09	2025/04/12	\$210	21
59341	NM00844	Active	NANCE	Elsa Reclamation & Development Company Ltd 100%	1949/07/14	1949/07/19	2040/07/27	\$210	21
15374	NM00427	Active	NANCY	Elsa Reclamation & Development Company Ltd 100%	1929/06/21	1929/07/24	2025/11/26	\$210	21
12880	NM00861	Active	NAPOLEON	Elsa Reclamation & Development Company Ltd 100%	1919/09/16	1919/11/28	2041/03/13	\$210	21
38873	NM00630	Active	NEIN	Elsa Reclamation & Development Company Ltd 100%	1935/10/31	1935/12/04	2029/12/06	\$210	21
59169	NM00443	Active	NEWLYWED 1	Elsa Reclamation & Development Company Ltd 100%	1949/01/16	1949/01/25	2025/11/26	\$210	21
59170	NM00444	Active	NEWLYWED 2	Elsa Reclamation & Development Company Ltd 100%	1949/01/16	1949/01/25	2025/11/26	\$210	21
55583	NM00566	Active	NIKKA	Elsa Reclamation & Development Company Ltd 100%	1946/10/23	1947/03/20	2027/11/02	\$210	21
83004	NM00591	Active	NIP FRACTION	Elsa Reclamation & Development Company Ltd 100%	1963/06/10	1963/06/12	2027/11/02	\$210	21
62235	NM00576	Active	NM	Elsa Reclamation & Development Company Ltd 100%	1952/08/26	1952/08/27	2027/11/02	\$210	21
16511	NM00670	Active	NO CASH	Elsa Reclamation & Development Company Ltd 100%	1924/08/09	1924/09/09	2033/11/24	\$210	21
16170	NM00800	Active	NOD FR.	Elsa Reclamation & Development Company Ltd 100%	1926/06/13	1926/07/13	2038/12/15	\$210	21
38658	NM00504	Active	NOIDER	Elsa Reclamation & Development Company Ltd 100%	1930/01/07	1930/01/27	2026/11/01	\$210	21
83010	NM00592	Active	NORTH FRACTION	Elsa Reclamation & Development Company Ltd 100%	1963/06/24	1963/06/25	2027/11/02	\$210	21
16012	NM00347	Active	NORTH STAR	Elsa Reclamation & Development Company Ltd 100%	1925/07/08	1925/08/14	2025/03/30	\$210	21
13415	NM00992	Active	NORTH STAR	Elsa Reclamation & Development Company Ltd 100%	1920/07/24	1920/09/25	2043/11/13	\$210	21
80360	NM00582	Active	OBOE	Elsa Reclamation & Development Company Ltd 100%	1959/07/15	1959/07/22	2027/11/02	\$210	21
56566	NM00984	Active	OHIO	Elsa Reclamation & Development Company Ltd 100%	1948/06/26	1948/06/28	2043/06/12	\$210	21
13094	NM00556	Active	OK FRACTION	Elsa Reclamation & Development Company Ltd 100%	1920/04/18	1920/06/09	2027/11/02	\$210	21
61596	NM00461	Active	ONEK	Elsa Reclamation & Development Company Ltd 100%	1951/05/15	1951/05/21	2025/11/26	\$210	21
14086	NM00697	Active	ORANGE	Elsa Reclamation & Development Company Ltd 100%	1921/05/03	1921/07/25	2036/01/21	\$210	21
62959		Active	ORCHID 10	Elsa Reclamation & Development Company Ltd 100%	1956/05/18	1956/05/30	2042/12/31	\$525	5
62960		Active	ORCHID 11	Elsa Reclamation & Development Company Ltd 100%	1956/05/18	1956/05/30	2042/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
62961		Active	ORCHID 12	Elsa Reclamation & Development Company Ltd 100%	1956/05/18	1956/05/30	2042/12/31	\$525	5
80123	NM00490	Active	ORCHID 13	Elsa Reclamation & Development Company Ltd 100%	1956/12/07	1956/12/13	2025/11/26	\$210	21
80124	NM00491	Active	ORCHID 14	Elsa Reclamation & Development Company Ltd 100%	1956/12/07	1956/12/13	2025/11/26	\$210	21
62964		Active	ORCHID 17	Elsa Reclamation & Development Company Ltd 100%	1956/05/18	1956/05/30	2042/12/31	\$525	5
62966		Active	ORCHID 19	Elsa Reclamation & Development Company Ltd 100%	1956/05/18	1956/05/30	2042/12/31	\$525	5
62951		Active	ORCHID 2	Elsa Reclamation & Development Company Ltd 100%	1956/05/16	1956/05/30	2042/12/31	\$525	5
62968		Active	ORCHID 21	Elsa Reclamation & Development Company Ltd 100%	1956/05/18	1956/05/30	2043/12/31	\$525	5
62969		Active	ORCHID 22	Elsa Reclamation & Development Company Ltd 100%	1956/05/18	1956/05/30	2043/12/31	\$525	5
62970		Active	ORCHID 23	Elsa Reclamation & Development Company Ltd 100%	1956/05/18	1956/05/30	2043/12/31	\$525	5
62971		Active	ORCHID 24	Elsa Reclamation & Development Company Ltd 100%	1956/05/18	1956/05/30	2043/12/31	\$525	5
62975	NM00482	Active	ORCHID 28	Elsa Reclamation & Development Company Ltd 100%	1956/05/19	1956/05/30	2025/11/26	\$210	21
62976	NM00483	Active	ORCHID 29	Elsa Reclamation & Development Company Ltd 100%	1956/05/19	1956/05/30	2025/11/26	\$210	21
80179	NM00500	Active	ORCHID 30	Elsa Reclamation & Development Company Ltd 100%	1957/05/07	1957/05/10	2025/11/26	\$210	21
80120	NM00487	Active	ORCHID 34	Elsa Reclamation & Development Company Ltd 100%	1956/12/04	1956/12/13	2025/11/26	\$210	21
80121	NM00488	Active	ORCHID 35	Elsa Reclamation & Development Company Ltd 100%	1956/12/07	1956/12/13	2025/11/26	\$210	21
80122	NM00489	Active	ORCHID 36	Elsa Reclamation & Development Company Ltd 100%	1956/12/07	1956/12/13	2025/11/26	\$210	21
80164	NM00494	Active	ORCHID 39	Elsa Reclamation & Development Company Ltd 100%	1957/03/27	1957/04/03	2025/11/26	\$210	21
62953		Active	ORCHID 4	Elsa Reclamation & Development Company Ltd 100%	1956/05/16	1956/05/30	2042/12/31	\$525	5
80165	NM00495	Active	ORCHID 40	Elsa Reclamation & Development Company Ltd 100%	1957/03/27	1957/04/03	2025/11/26	\$210	21
80168	NM00498	Active	ORCHID 43	Elsa Reclamation & Development Company Ltd 100%	1957/03/27	1957/04/03	2025/11/26	\$210	21
80169		Active	ORCHID 44	Elsa Reclamation & Development Company Ltd 100%	1957/03/27	1957/04/03	2043/12/31	\$525	5
80170		Active	ORCHID 45	Elsa Reclamation & Development Company Ltd 100%	1957/03/27	1957/04/03	2043/12/31	\$525	5
Y 68364		Active	Orchid 46	Elsa Reclamation & Development Company Ltd 100%	1972/07/12	1972/07/19	2043/12/31	\$525	5
Y 68365		Active	Orchid 47	Elsa Reclamation & Development Company Ltd 100%	1972/07/12	1972/07/19	2043/12/31	\$525	5
Y 68366		Active	Orchid 48	Elsa Reclamation & Development Company Ltd 100%	1972/07/12	1972/07/19	2043/12/31	\$525	5
Y 68367		Active	Orchid 49	Elsa Reclamation & Development Company Ltd 100%	1972/07/12	1972/07/19	2043/12/31	\$525	5
Y 68368		Active	Orchid 50	Elsa Reclamation & Development Company Ltd 100%	1972/07/12	1972/07/19	2043/12/31	\$525	5
Y 68369		Active	Orchid 51	Elsa Reclamation & Development Company Ltd 100%	1972/07/12	1972/07/19	2043/12/31	\$525	5
Y 68370		Active	Orchid 52	Elsa Reclamation & Development Company Ltd 100%	1972/07/12	1972/07/19	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
Y 68371		Active	Orchid 53	Elsa Reclamation & Development Company Ltd 100%	1972/07/12	1972/07/19	2043/12/31	\$525	5
62955		Active	ORCHID 6	Elsa Reclamation & Development Company Ltd 100%	1956/05/16	1956/05/30	2042/12/31	\$525	5
62956		Active	ORCHID 7	Elsa Reclamation & Development Company Ltd 100%	1956/05/16	1956/05/30	2042/12/31	\$525	5
62957		Active	ORCHID 8	Elsa Reclamation & Development Company Ltd 100%	1956/05/16	1956/05/30	2042/12/31	\$525	5
62958		Active	ORCHID 9	Elsa Reclamation & Development Company Ltd 100%	1956/05/16	1956/05/30	2042/12/31	\$525	5
12852	NM00998	Active	ORPHAN	Elsa Reclamation & Development Company Ltd 100%	1919/09/15	1919/10/31	2044/01/18	\$210	21
13542	NM00530	Active	OUTCAST FRACTIO	Elsa Reclamation & Development Company Ltd 100%	1920/10/01	1920/10/25	2026/11/18	\$210	21
56581	NM01005	Active	OVERTIME 1	Elsa Reclamation & Development Company Ltd 100%	1948/08/07	1948/08/13	2044/02/09	\$210	21
56583	NM00439	Active	OVERTIME 13	Elsa Reclamation & Development Company Ltd 100%	1948/08/07	1948/08/13	2025/11/26	\$210	21
56584	NM00440	Active	OVERTIME 14	Elsa Reclamation & Development Company Ltd 100%	1948/08/07	1948/08/13	2025/11/26	\$210	21
56585	NM00441	Active	OVERTIME 15	Elsa Reclamation & Development Company Ltd 100%	1948/08/09	1948/08/13	2025/11/26	\$210	21
56586	NM00442	Active	OVERTIME 16	Elsa Reclamation & Development Company Ltd 100%	1948/08/09	1948/08/13	2025/11/26	\$210	21
59453	NM00445	Active	OVERTIME 17	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2025/11/26	\$210	21
59454	NM00446	Active	OVERTIME 18	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2025/11/26	\$210	21
59455	NM00447	Active	OVERTIME 19	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2025/11/26	\$210	21
56582	NM01006	Active	OVERTIME 2	Elsa Reclamation & Development Company Ltd 100%	1948/08/07	1948/08/13	2044/02/09	\$210	21
59456	NM00448	Active	OVERTIME 20	Elsa Reclamation & Development Company Ltd 100%	1949/08/17	1949/08/19	2025/11/26	\$210	21
59040	NM00285	Active	ОХО	Elsa Reclamation & Development Company Ltd 100%	1948/09/18	1948/09/21	2024/06/27	\$210	21
14999	NM00700	Active	PACIFIC	Elsa Reclamation & Development Company Ltd 100%	1924/06/18	1924/07/14	2036/01/29	\$210	21
59294	NM00997	Active	PACSAX	Elsa Reclamation & Development Company Ltd 100%	1949/06/20	1949/06/30	2043/12/29	\$210	21
14093	NM00937	Active	PAGODA	Elsa Reclamation & Development Company Ltd 100%	1921/05/04	1921/07/26	2042/08/20	\$210	21
16564	NM00817	Active	PAL OF MINE	Elsa Reclamation & Development Company Ltd 100%	1925/05/18	1925/06/30	2039/05/28	\$210	21
14091	NM00362	Active	PASCO	Elsa Reclamation & Development Company Ltd 100%	1921/05/04	1921/07/26	2025/04/30	\$210	21
2203	NM00318	Active	PATRICIA	Elsa Reclamation & Development Company Ltd 100%	1913/03/25	1913/04/08	2025/02/01	\$210	21
12820	NM00360	Active	PEACH	Elsa Reclamation & Development Company Ltd 100%	1919/09/04	1919/10/20	2025/04/30	\$210	21
55206	NM00562	Active	PEARL	Elsa Reclamation & Development Company Ltd 100%	1941/08/14	1941/10/30	2027/11/02	\$210	21
12873	NM00813	Active	PERRY FRACTIONA	Elsa Reclamation & Development Company Ltd 100%	1919/10/01	1919/11/14	2038/12/28	\$210	21
13158	NM00684	Active	PHOENIX	Elsa Reclamation & Development Company Ltd 100%	1920/05/01	1920/06/17	2034/02/27	\$210	21
55500	NM00299	Active	PIL	Elsa Reclamation & Development Company Ltd 100%	1946/09/14	1947/02/01	2025/01/30	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
12785	NM00688	Active	PINOCHLE	Elsa Reclamation & Development Company Ltd 100%	1919/07/30	1919/09/11	2035/10/29	\$210	21
55561	NM00982	Active	PIRATE	Elsa Reclamation & Development Company Ltd 100%	1946/10/31	1947/02/17	2043/06/12	\$210	21
55562	NM00983	Active	PIRATE 1	Elsa Reclamation & Development Company Ltd 100%	1946/10/31	1947/02/17	2043/06/12	\$210	21
55563	NM00333	Active	PIRATE 2	Elsa Reclamation & Development Company Ltd 100%	1946/10/31	1947/02/17	2025/02/08	\$210	21
55564	NM00334	Active	PIRATE 3	Elsa Reclamation & Development Company Ltd 100%	1946/10/31	1947/02/17	2025/02/15	\$210	21
55565	NM00335	Active	PIRATE 4	Elsa Reclamation & Development Company Ltd 100%	1946/10/31	1947/02/17	2025/02/15	\$210	21
55566	NM00336	Active	PIRATE 5	Elsa Reclamation & Development Company Ltd 100%	1946/10/31	1947/02/17	2025/02/15	\$210	21
55567	NM00337	Active	PIRATE 6	Elsa Reclamation & Development Company Ltd 100%	1946/10/31	1947/02/17	2025/02/15	\$210	21
55568	NM00338	Active	PIRATE 7	Elsa Reclamation & Development Company Ltd 100%	1946/10/31	1947/02/17	2025/02/15	\$210	21
59299	NM00988	Active	PIRATE EAST	Elsa Reclamation & Development Company Ltd 100%	1949/06/22	1949/06/30	2043/06/12	\$210	21
16499	NM00349	Active	PLATA	Elsa Reclamation & Development Company Ltd 100%	1924/08/07	1924/08/28	2025/03/30	\$210	21
13182	NM00615	Active	POCA PLATA	Elsa Reclamation & Development Company Ltd 100%	1920/05/07	1920/06/21	2029/09/30	\$210	21
56559	NM00239	Active	POO FRACTION	Elsa Reclamation & Development Company Ltd 100%	1948/06/23	1948/06/25	2028/08/29	\$210	21
12875	NM00686	Active	PORCUPINE	Elsa Reclamation & Development Company Ltd 100%	1919/10/03	1919/11/15	2035/01/21	\$210	21
16553	NM00776	Active	PORCUPINE	Elsa Reclamation & Development Company Ltd 100%	1925/05/28	1925/06/15	2038/06/20	\$210	21
55389	NM00888	Active	PORKY	Elsa Reclamation & Development Company Ltd 100%	1945/08/12	1945/10/26	2041/11/14	\$210	21
55029	NM01002	Active	PREMIER	Elsa Reclamation & Development Company Ltd 100%	1937/01/19	1937/02/15	2044/02/02	\$210	21
55308	NM00506	Active	PRINCE	Elsa Reclamation & Development Company Ltd 100%	1944/06/18	1945/02/12	2026/11/01	\$210	21
62558	NM00473	Active	PRINCESS FRACTI	Elsa Reclamation & Development Company Ltd 100%	1954/10/10	1954/10/27	2025/11/26	\$210	21
59387	NM00569	Active	PUEBLO	Elsa Reclamation & Development Company Ltd 100%	1949/07/21	1949/07/29	2027/11/02	\$210	21
16558	NM00855	Active	PUNCH	Elsa Reclamation & Development Company Ltd 100%	1925/05/28	1925/06/18	2040/12/29	\$210	21
62269	NM00341	Active	QUEEN	Elsa Reclamation & Development Company Ltd 100%	1952/09/13	1952/09/17	2025/02/15	\$210	21
81721	NM00658	Active	R.J.	Elsa Reclamation & Development Company Ltd 100%	1962/07/02	1962/07/10	2031/07/10	\$210	21
13073	NM00878	Active	RAM	Elsa Reclamation & Development Company Ltd 100%	1920/04/10	1920/06/04	2041/10/17	\$210	21
55436	NM00283	Active	RAND	Elsa Reclamation & Development Company Ltd 100%	1946/06/10	1946/06/24	2024/06/27	\$210	21
55022	NM00561	Active	RANDO	Elsa Reclamation & Development Company Ltd 100%	1936/10/01	1936/10/28	2027/11/02	\$210	21
14227	NM00938	Active	READY CASH	Elsa Reclamation & Development Company Ltd 100%	1921/07/17	1921/09/24	2042/08/20	\$210	21
62309	NM00405	Active	RENO	Elsa Reclamation & Development Company Ltd 100%	1952/07/02	1952/07/15	2025/06/12	\$210	21
12800	NM00749	Active	RENO	Elsa Reclamation & Development Company Ltd 100%	1919/08/05	1919/10/01	2036/10/19	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
84617	NM00792	Active	REVENGE FRACTIO	Elsa Reclamation & Development Company Ltd 100%	1965/08/06	1965/08/24	2038/10/17	\$210	21
55387	NM00887	Active	REX	Elsa Reclamation & Development Company Ltd 100%	1945/08/10	1945/10/26	2041/11/14	\$210	21
56578	NM00354	Active	REX (F)	Elsa Reclamation & Development Company Ltd 100%	1948/07/25	1948/08/03	2025/03/30	\$210	21
12780	NM00619	Active	RICO	Elsa Reclamation & Development Company Ltd 100%	1919/07/21	1919/08/27	2030/02/18	\$210	21
14898	NM00677	Active	RIO	Elsa Reclamation & Development Company Ltd 100%	1923/10/12	1923/11/15	2035/04/14	\$210	21
55384	NM00507	Active	ROAD	Elsa Reclamation & Development Company Ltd 100%	1945/08/06	1945/10/26	2026/11/01	\$210	21
55341	NM00884	Active	ROBIN	Elsa Reclamation & Development Company Ltd 100%	1945/06/09	1945/10/17	2041/11/14	\$210	21
62339	NM00291	Active	ROCKET FRACTION	Elsa Reclamation & Development Company Ltd 100%	1953/10/01	1953/10/02	2024/07/13	\$210	21
55526	NM00376	Active	ROSE	Elsa Reclamation & Development Company Ltd 100%	1946/09/18	1947/02/04	2025/05/22	\$210	21
55271	NM00529	Active	ROSEMARY	Elsa Reclamation & Development Company Ltd 100%	1943/07/01	1943/11/09	2026/11/09	\$210	21
12779	NM00616	Active	ROULETTE	Elsa Reclamation & Development Company Ltd 100%	1919/07/10	1919/08/27	2030/01/26	\$210	21
13709	NM00558	Active	ROY	Elsa Reclamation & Development Company Ltd 100%	1921/04/12	1921/05/28	2027/11/02	\$210	21
61976	NM00575	Active	ROZ FRACTION	Elsa Reclamation & Development Company Ltd 100%	1951/09/19	1951/09/19	2027/11/02	\$210	21
62199	NM00402	Active	RUBE	Elsa Reclamation & Development Company Ltd 100%	1952/07/21	1952/08/04	2025/06/12	\$210	21
14989	NM00667	Active	RUBY	Elsa Reclamation & Development Company Ltd 100%	1924/06/09	1924/07/09	2033/11/24	\$210	21
13038	NM00634	Active	SADIE	Elsa Reclamation & Development Company Ltd 100%	1920/03/18	1920/05/06	2029/12/17	\$210	21
55327	NM00803	Active	SAM	Elsa Reclamation & Development Company Ltd 100%	1945/04/10	1945/10/16	2038/12/15	\$210	21
55214	NM00839	Active	SANTIAGO	Elsa Reclamation & Development Company Ltd 100%	1941/11/06	1942/02/23	2040/07/27	\$210	21
14090	NM00936	Active	SAXON	Elsa Reclamation & Development Company Ltd 100%	1921/05/03	1921/07/26	2042/08/20	\$210	21
13591	NM00557	Active	SCOT	Elsa Reclamation & Development Company Ltd 100%	1921/01/06	1921/02/18	2027/11/02	\$210	21
12783	NM00621	Active	SCOTTY	Elsa Reclamation & Development Company Ltd 100%	1919/07/29	1919/09/10	2030/01/24	\$210	21
56534	NM00437	Active	SEGLE	Elsa Reclamation & Development Company Ltd 100%	1948/06/09	1948/06/23	2025/11/26	\$210	21
14288	NM00648	Active	SEXTANT	Elsa Reclamation & Development Company Ltd 100%	1921/08/08	1921/10/04	2030/05/15	\$210	21
55309	NM00428	Active	SHAMROCK	Elsa Reclamation & Development Company Ltd 100%	1944/06/27	1945/02/12	2025/11/26	\$210	21
12803	NM00704	Active	SHAMROCK	Elsa Reclamation & Development Company Ltd 100%	1919/08/04	1919/10/08	2036/04/28	\$210	21
12931	NM00995	Active	SHEPHERD	Elsa Reclamation & Development Company Ltd 100%	1919/10/15	1919/12/31	2043/11/19	\$210	21
12990	NM00661	Active	SILVER BELL	Elsa Reclamation & Development Company Ltd 100%	1920/02/20	1920/04/15	2031/09/28	\$210	21
38730	NM00801	Active	SILVER FR.	Elsa Reclamation & Development Company Ltd 100%	1931/08/20	1931/09/16	2038/12/15	\$210	21
13069	NM00836	Active	SILVER HOARD	Elsa Reclamation & Development Company Ltd 100%	1920/03/07	1920/05/31	2040/07/27	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
14216	NM00924	Active	SILVER SPOON	Elsa Reclamation & Development Company Ltd 100%	1921/07/17	1921/09/24	2042/08/08	\$210	21
55039	NM00631	Active	SIS	Elsa Reclamation & Development Company Ltd 100%	1937/08/13	1937/09/03	2029/12/06	\$210	21
59027	NM00921	Active	SISTER	Elsa Reclamation & Development Company Ltd 100%	1948/09/11	1948/09/13	2042/07/24	\$210	21
12915	NM00872	Active	SIWASH	Elsa Reclamation & Development Company Ltd 100%	1919/09/22	1919/12/19	2041/08/13	\$210	21
38882	NM00629	Active	SLIVER	Elsa Reclamation & Development Company Ltd 100%	1936/03/16	1936/03/31	2029/12/06	\$210	21
59436	NM00249	Active	SLOPE 2	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
62946	NM00476	Active	SNOW	Elsa Reclamation & Development Company Ltd 100%	1956/02/08	1956/02/10	2025/11/26	\$210	21
Y 87471		Active	Snowdrift 10	Elsa Reclamation & Development Company Ltd 100%	1974/03/18	1974/03/21	2044/12/31	\$525	5
Y 87472		Active	Snowdrift 11	Elsa Reclamation & Development Company Ltd 100%	1974/03/18	1974/03/21	2044/12/31	\$525	5
YA01412		Active	Snowdrift 17	Elsa Reclamation & Development Company Ltd 100%	1975/09/22	1975/10/08	2044/12/31	\$525	5
Y 87470		Active	Snowdrift 9	Elsa Reclamation & Development Company Ltd 100%	1974/03/18	1974/03/21	2043/12/31	\$525	5
12816	NM00620	Active	SOLO 2	Elsa Reclamation & Development Company Ltd 100%	1919/08/15	1919/10/18	2030/02/18	\$210	21
59630	NM00459	Active	SOLO FRACTION	Elsa Reclamation & Development Company Ltd 100%	1950/07/18	1950/07/21	2025/11/26	\$210	21
14893	NM00698	Active	SPENCER	Elsa Reclamation & Development Company Ltd 100%	1923/10/01	1923/11/14	2036/01/27	\$210	21
38813	NM00976	Active	SPOT	Elsa Reclamation & Development Company Ltd 100%	1934/10/08	1934/11/12	2043/06/02	\$210	21
55307	NM01003	Active	STANWIX	Elsa Reclamation & Development Company Ltd 100%	1944/06/06	1945/02/12	2044/02/02	\$210	21
13721	NM00949	Active	STAURT	Elsa Reclamation & Development Company Ltd 100%	1921/04/26	1921/06/07	2042/08/26	\$210	21
13035	NM00503	Active	STONE	Elsa Reclamation & Development Company Ltd 100%	1920/03/18	1920/05/06	2026/11/01	\$210	21
83023	NM00595	Active	STONE FRACTION	Elsa Reclamation & Development Company Ltd 100%	1963/07/15	1963/07/16	2027/11/02	\$210	21
59457	NM00250	Active	SUDDO 1	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
59466	NM00259	Active	SUDDO 10	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
59467	NM00260	Active	SUDDO 11	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
59458	NM00251	Active	SUDDO 2	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/18	2028/12/19	\$210	21
59459	NM00252	Active	SUDDO 3	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
59460	NM00253	Active	SUDDO 4	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
59461	NM00254	Active	SUDDO 5	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
59462	NM00255	Active	SUDDO 6	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
59463	NM00256	Active	SUDDO 7	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
59464	NM00257	Active	SUDDO 8	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
59465	NM00258	Active	SUDDO 9	Elsa Reclamation & Development Company Ltd 100%	1949/08/16	1949/08/19	2028/12/19	\$210	21
84580	NM00789	Active	SURPLOMB 2	Elsa Reclamation & Development Company Ltd 100%	1965/07/07	1965/07/14	2038/10/17	\$210	21
84581	NM00790	Active	SURPLOMB 3	Elsa Reclamation & Development Company Ltd 100%	1965/07/10	1965/07/14	2038/10/17	\$210	21
81225	NM00652	Active	SUSY Q.	Elsa Reclamation & Development Company Ltd 100%	1962/06/15	1962/06/26	2031/03/12	\$210	21
15303	NM00828	Active	SWISS	Elsa Reclamation & Development Company Ltd 100%	1928/09/29	1928/10/26	2039/08/18	\$210	21
59293	NM00931	Active	SYLDIX	Elsa Reclamation & Development Company Ltd 100%	1949/06/17	1949/06/30	2042/08/08	\$210	21
14307	NM00241	Active	SYLVIA	Elsa Reclamation & Development Company Ltd 100%	1921/07/20	1921/10/06	2029/02/28	\$210	21
55334	NM00240	Active	TAKU	Elsa Reclamation & Development Company Ltd 100%	1945/05/23	1945/10/16	2028/09/07	\$210	21
59327	NM00407	Active	TALISMAN	Elsa Reclamation & Development Company Ltd 100%	1949/07/13	1949/07/19	2025/06/19	\$210	21
83132	NM00623	Active	TECH	Elsa Reclamation & Development Company Ltd 100%	1963/08/06	1963/08/13	2030/02/28	\$210	21
84628	NM00794	Active	TESS	Elsa Reclamation & Development Company Ltd 100%	1965/08/27	1965/09/09	2038/10/17	\$210	21
16313	NM01001	Active	THELMA	Elsa Reclamation & Development Company Ltd 100%	1927/03/14	1927/04/07	2044/02/02	\$210	21
16204	NM00626	Active	THISTLE	Elsa Reclamation & Development Company Ltd 100%	1926/07/16	1926/08/12	2029/12/03	\$210	21
15207	NM00281	Active	TICK	Elsa Reclamation & Development Company Ltd 100%	1928/03/31	1928/04/28	2024/06/27	\$210	21
12807	NM00751	Active	TIGER	Elsa Reclamation & Development Company Ltd 100%	1919/08/27	1919/10/10	2036/10/27	\$210	21
14885	NM00913	Active	TILLY	Elsa Reclamation & Development Company Ltd 100%	1923/09/02	1923/10/22	2042/07/24	\$210	21
13027	NM00835	Active	TIN CAN	Elsa Reclamation & Development Company Ltd 100%	1920/03/07	1920/05/05	2040/07/27	\$210	21
59335	NM00864	Active	TIP TOP	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2041/05/15	\$210	21
16253	NM00678	Active	TIPPY	Elsa Reclamation & Development Company Ltd 100%	1926/09/20	1926/10/06	2035/04/14	\$210	21
59295	NM00962	Active	TIPTOE	Elsa Reclamation & Development Company Ltd 100%	1949/06/20	1949/06/30	2042/08/29	\$210	21
55065	NM00838	Active	TIPTOP	Elsa Reclamation & Development Company Ltd 100%	1938/03/04	1938/03/28	2040/07/27	\$210	21
56505	NM00947	Active	TOM BOY	Elsa Reclamation & Development Company Ltd 100%	1947/10/06	1947/10/10	2042/08/22	\$210	21
38741	NM00680	Active	томтом	Elsa Reclamation & Development Company Ltd 100%	1932/05/30	1932/06/20	2035/04/14	\$210	21
16079	NM00683	Active	TOO GOOD	Elsa Reclamation & Development Company Ltd 100%	1925/09/12	1925/11/29	2035/06/14	\$210	21
56504	NM00946	Active	TOPOLO	Elsa Reclamation & Development Company Ltd 100%	1947/09/15	1947/09/26	2042/08/22	\$210	21
13622	NM00644	Active	TRAVICE	Elsa Reclamation & Development Company Ltd 100%	1921/03/12	1921/04/23	2030/04/22	\$210	21
59161	NM00842	Active	TREASURE ISLAND	Elsa Reclamation & Development Company Ltd 100%	1948/11/18	1948/11/22	2040/07/27	\$210	21
62281	NM00345	Active	TREY	Elsa Reclamation & Development Company Ltd 100%	1952/09/27	1952/10/02	2025/02/15	\$210	21
14332	NM00604	Active	TRIANGLE	Elsa Reclamation & Development Company Ltd 100%	1921/08/24	1921/10/18	2029/07/11	\$210	21

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
12838	NM00879	Active	TUNDRA	Elsa Reclamation & Development Company Ltd 100%	1919/09/06	1919/10/27	2041/11/01	\$210	21
14833	NM00662	Active	TUNNEL	Elsa Reclamation & Development Company Ltd 100%	1923/06/04	1923/07/19	2031/09/30	\$210	21
55525	NM00375	Active	U. N.	Elsa Reclamation & Development Company Ltd 100%	1946/09/18	1947/02/04	2025/05/22	\$210	21
83533	NM00657	Active	U.K. No. 17	Elsa Reclamation & Development Company Ltd 100%	1964/07/14	1964/07/17	2031/03/12	\$210	21
62723	NM00606	Active	UK 1	Elsa Reclamation & Development Company Ltd 100%	1955/03/22	1955/03/29	2029/04/30	\$210	21
62735	NM00610	Active	UK 13	Elsa Reclamation & Development Company Ltd 100%	1955/03/22	1955/03/29	2029/04/30	\$210	21
62736	NM00611	Active	UK 14	Elsa Reclamation & Development Company Ltd 100%	1955/03/22	1955/03/29	2029/04/30	\$210	21
62835	NM00612	Active	UK 15	Elsa Reclamation & Development Company Ltd 100%	1955/07/06	1955/07/08	2029/04/30	\$210	21
62836	NM00613	Active	UK 16	Elsa Reclamation & Development Company Ltd 100%	1955/07/06	1955/07/08	2029/04/30	\$210	21
62724	NM00607	Active	UK 2	Elsa Reclamation & Development Company Ltd 100%	1955/03/22	1955/03/29	2029/04/30	\$210	21
62729	NM00608	Active	UK 7	Elsa Reclamation & Development Company Ltd 100%	1955/03/22	1955/03/29	2029/04/30	\$210	21
62730	NM00609	Active	UK 8	Elsa Reclamation & Development Company Ltd 100%	1955/03/22	1955/03/29	2029/04/30	\$210	21
12923	NM00675	Active	UNCLE SAM	Elsa Reclamation & Development Company Ltd 100%	1919/10/12	1919/12/26	2035/03/12	\$210	21
14002	NM00856	Active	UPTON	Elsa Reclamation & Development Company Ltd 100%	1921/05/07	1921/06/25	2041/02/05	\$210	21
55270	NM00505	Active	V.D.	Elsa Reclamation & Development Company Ltd 100%	1943/06/29	1943/11/09	2026/11/01	\$210	21
56503	NM00352	Active	V.O.	Elsa Reclamation & Development Company Ltd 100%	1947/09/17	1947/09/24	2025/03/30	\$210	21
59338	NM00974	Active	VALLEY	Elsa Reclamation & Development Company Ltd 100%	1949/07/15	1949/07/19	2043/05/07	\$210	21
16271	NM01013	Active	VAN KEUREN	Elsa Reclamation & Development Company Ltd 100%	1926/09/01	1926/10/23	2044/03/22	\$210	21
16375	NM00282	Active	VENTURE	Elsa Reclamation & Development Company Ltd 100%	1927/09/04	1927/10/18	2024/06/27	\$210	21
Y 33308		Active	Venus 3	Elsa Reclamation & Development Company Ltd 100%	1970/04/05	1970/04/06	2028/12/31	\$525	5
Y 97333		Active	Venus 4	Elsa Reclamation & Development Company Ltd 100%	1975/05/08	1975/05/09	2028/12/31	\$525	5
80227	NM00527	Active	VENUS FRACTION 1	Elsa Reclamation & Development Company Ltd 100%	1957/06/20	1957/07/03	2026/11/07	\$210	21
80228	NM00528	Active	VENUS FRACTION 2	Elsa Reclamation & Development Company Ltd 100%	1957/06/20	1957/07/03	2026/11/07	\$210	21
13156	NM00826	Active	VERNA	Elsa Reclamation & Development Company Ltd 100%	1920/05/05	1920/06/17	2039/08/18	\$210	21
15346	NM00426	Active	VIMY	Elsa Reclamation & Development Company Ltd 100%	1929/05/31	1929/06/21	2025/11/26	\$210	21
38723	NM00560	Active	VIOLA	Elsa Reclamation & Development Company Ltd 100%	1931/07/27	1931/08/14	2027/11/02	\$210	21
13153	NM00676	Active	VIOLA	Elsa Reclamation & Development Company Ltd 100%	1920/05/18	1920/06/16	2035/03/14	\$210	21
14092	NM00922	Active	WALL EYE	Elsa Reclamation & Development Company Ltd 100%	1921/05/04	1921/07/26	2042/08/08	\$210	21
12998	NM00860	Active	WALSH	Elsa Reclamation & Development Company Ltd 100%	1920/02/28	1920/04/17	2041/02/28	\$210	21

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55361	NM00977	Active	WANDERER	Elsa Reclamation & Development Company Ltd 100%	1945/07/04	1945/10/25	2043/06/02	\$210	21
55496	NM00964	Active	WARREN	Elsa Reclamation & Development Company Ltd 100%	1946/09/15	1947/02/01	2043/02/03	\$210	21
13367	NM00703	Active	WARRIOR	Elsa Reclamation & Development Company Ltd 100%	1920/08/12	1920/10/12	2036/02/27	\$210	21
15365	NM00770	Active	WASP	Elsa Reclamation & Development Company Ltd 100%	1929/06/11	1929/07/11	2038/03/27	\$210	21
13109	NM00130	Active	WATCH	Elsa Reclamation & Development Company Ltd 100%	1920/04/27	1920/06/10	2026/07/18	\$210	21
62945	NM00475	Active	WEATHER FRACTIO	Elsa Reclamation & Development Company Ltd 100%	1955/12/30	1956/01/06	2025/11/26	\$210	21
YB6500 5		Active	Webfoot	Elsa Reclamation & Development Company Ltd 100%	1995/09/28	1995/09/29	2027/12/31	\$525	5
16557	NM00754	Active	WESTON	Elsa Reclamation & Development Company Ltd 100%	1925/05/30	1925/06/18	2037/03/07	\$210	21
14231	NM00939	Active	WETT	Elsa Reclamation & Development Company Ltd 100%	1921/07/18	1921/09/24	2042/08/20	\$210	21
14081	NM00797	Active	WHIPSAW	Elsa Reclamation & Development Company Ltd 100%	1921/06/11	1921/07/23	2038/12/15	\$210	21
13110	NM00823	Active	WHITEHORSE	Elsa Reclamation & Development Company Ltd 100%	1920/04/27	1920/06/10	2039/08/05	\$210	21
14095	NM00923	Active	WIGWAM	Elsa Reclamation & Development Company Ltd 100%	1921/05/04	1921/07/26	2042/08/08	\$210	21
56500	NM01004	Active	WILD CAT	Elsa Reclamation & Development Company Ltd 100%	1947/09/18	1947/09/22	2044/02/02	\$210	21
56417	NM00378	Active	WILD MAN	Elsa Reclamation & Development Company Ltd 100%	1947/06/05	1947/06/10	2025/05/22	\$210	21
14404	NM00605	Active	WILLIAM FOURTH	Elsa Reclamation & Development Company Ltd 100%	1921/09/20	1921/11/05	2029/07/11	\$210	21
16083	NM00929	Active	WINFRED	Elsa Reclamation & Development Company Ltd 100%	1925/09/11	1925/11/20	2042/08/08	\$210	21
16498	NM00943	Active	WINSOME	Elsa Reclamation & Development Company Ltd 100%	1924/08/04	1924/08/28	2042/08/20	\$210	21
12871	NM00689	Active	WOLVERINE	Elsa Reclamation & Development Company Ltd 100%	1919/10/03	1919/11/13	2035/10/30	\$210	21
80518	NM00585	Active	WREN FRACTION	Elsa Reclamation & Development Company Ltd 100%	1960/07/19	1960/08/04	2027/11/02	\$210	21
15331	NM00244	Active	х	Elsa Reclamation & Development Company Ltd 100%	1929/05/09	1929/05/30	2029/02/28	\$210	21
55392		Active	YUKON	Elsa Reclamation & Development Company Ltd 100%	1945/11/03	1946/01/30	2027/12/31	\$525	5
56515	NM00948	Active	YUKON	Elsa Reclamation & Development Company Ltd 100%	1948/04/15	1948/04/19	2042/08/22	\$210	21
62312	NM00391	Active	ZELMA 1	Elsa Reclamation & Development Company Ltd 100%	1953/07/19	1953/07/31	2025/05/22	\$210	21
62313	NM00392	Active	ZELMA 2	Elsa Reclamation & Development Company Ltd 100%	1953/07/19	1953/07/31	2025/05/22	\$210	21
62314	NM00356	Active	ZELMA 3	Elsa Reclamation & Development Company Ltd 100%	1953/07/19	1953/07/31	2025/03/30	\$210	21
62315	NM00357	Active	ZELMA 4	Elsa Reclamation & Development Company Ltd 100%	1953/07/19	1953/07/31	2025/03/30	\$210	21
YB2972 8		Active	ALLA 5	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1993/03/16	1993/03/19	2044/12/31	\$525	5
YB2972 9		Active	ALLA 6	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1993/03/16	1993/03/19	2044/12/31	\$525	5

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62152	NM00319	Active	BUCK	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1952/06/14	1952/07/02	2025/02/01	\$210	21
55504	NM00302	Active	BUCONJO 1	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1946/09/14	1947/02/01	2025/01/31	\$210	21
55516	NM00314	Active	BUCONJO 13	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1946/09/19	1947/02/03	2025/01/31	\$210	21
55517	NM00315	Active	BUCONJO 14	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1946/09/24	1947/02/03	2025/01/31	\$210	21
55518	NM00316	Active	BUCONJO 15	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1946/09/19	1947/02/03	2025/01/31	\$210	21
62154	NM00317	Active	BUCONJO 16	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1952/06/16	1952/07/02	2025/01/31	\$210	21
55505	NM00303	Active	BUCONJO 2	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1946/09/14	1947/02/01	2025/01/31	\$210	21
55506	NM00304	Active	BUCONJO 3	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1946/09/14	1947/02/01	2025/01/31	\$210	21
55507	NM00305	Active	BUCONJO 4	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1946/09/14	1947/02/01	2025/01/31	\$210	21
55508	NM00306	Active	BUCONJO 5	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1946/09/14	1947/02/01	2025/01/31	\$210	21
55510	NM00308	Active	BUCONJO 7	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1904/09/14	1947/02/01	2025/01/31	\$210	21
55503	NM00301	Active	BUCONJO FRACTIO	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1946/09/14	1947/02/01	2025/01/31	\$210	21
YB4372 9		Active	Raven	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1994/10/18	1994/10/18	2027/12/31	\$525	5
Y 88686		Active	Snowdrift	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/05/31	1974/06/05	2044/12/31	\$525	5
Y 87462		Active	Snowdrift 1	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/03/15	1974/03/21	2044/12/31	\$525	5
Y 97219		Active	Snowdrift 12	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/12/18	1974/12/23	2044/12/31	\$525	5
Y 97220		Active	Snowdrift 13	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/12/18	1974/12/23	2043/12/31	\$525	5
Y 97221		Active	Snowdrift 14	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/12/18	1974/12/23	2043/12/31	\$525	5
Y 97222		Active	Snowdrift 15	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/12/18	1974/12/23	2043/12/31	\$525	5
Y 97223		Active	Snowdrift 16	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/12/18	1974/12/23	2043/12/31	\$525	5
YA01413		Active	Snowdrift 18	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1975/09/22	1975/10/08	2043/12/31	\$525	5

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Grant	Lease	Status	Claim Name	Owner	Staked	Recorded	Expiry	Renewal Cost per Term (CAD)	Term (Years)
YA01414		Active	Snowdrift 19	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1975/09/22	1975/10/08	2043/12/31	\$525	5
Y 87463		Active	Snowdrift 2	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/03/15	1974/03/21	2043/12/31	\$525	5
YA01415		Active	Snowdrift 20	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1975/09/22	1975/10/08	2042/12/31	\$525	5
YA01416		Active	Snowdrift 21	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1975/09/22	1975/10/08	2043/12/31	\$525	5
Y 87464		Active	Snowdrift 3	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/03/15	1974/03/21	2043/12/31	\$525	5
Y 87465		Active	Snowdrift 4	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/03/18	1974/03/21	2042/12/31	\$525	5
Y 87466		Active	Snowdrift 5	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/03/18	1974/03/21	2042/12/31	\$525	5
Y 87467		Active	Snowdrift 6	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/03/18	1974/03/21	2042/12/31	\$525	5
Y 87468		Active	Snowdrift 7	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/03/18	1974/03/21	2042/12/31	\$525	5
Y 87469		Active	Snowdrift 8	Elsa Reclamation & Development Company Ltd 49%, Banyan Gold Corporation - 51%	1974/03/18	1974/03/21	2042/12/31	\$525	5
13452	NM00643	Active	RICO	Evelyn Crandall Exec Est.Bessie E. Stewart - 50%, Elsa Reclamation & Development Company Ltd 50%	1920/08/02	1920/10/02	2030/03/28	\$210	21
13060	NM00832	Active	KIDDO	John Hawthorne - 50%, Elsa Reclamation & Development Company Ltd 50%	1920/04/03	1920/05/11	2040/11/11	\$210	21
16393	NM00993	Active	ARGENTUM	Nora Ethel Swenson - 50%, Elsa Reclamation & Development Company Ltd 50%	1928/02/02	1928/02/25	2043/11/16	\$210	21

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EXHIBIT 97

HECLA MINING COMPANY

INCENTIVE-BASED COMPENSATION RECOVERY POLICY

1. <u>Policy Purpose</u>. The purpose of this Hecla Mining Company (the "Company") Incentive-Based Compensation Recovery Policy (this "Policy") is to enable the Company to recover Erroneously Awarded Compensation in the event that the Company is required to prepare an Accounting Restatement. This Policy is intended to comply with the requirements set forth in Listed Company Manual Section 303A.14 of the corporate governance rules of the New York Stock Exchange (the "Listing Rule") and shall be construed and interpreted in accordance with such intent. Unless otherwise defined in this Policy, capitalized terms shall have the meaning ascribed to such terms in Section 7. This Policy shall become effective on October 1, 2023.

2. Policy Administration. This Policy shall be administered by the Compensation Committee of the Board (the "Committee") unless the Board determines to administer this Policy itself. The Committee has full and final authority to make all determinations under this Policy, in each case to the extent permitted under the Listing Rule and in compliance with (or pursuant to an exemption from the application of) Section 409A of the Code. All determinations and decisions made by the Committee pursuant to the provisions of this Policy shall be final, conclusive, and binding on all persons, including the Company, its affiliates, its stockholders, and Executive Officers. Any action or inaction by the Committee with respect to an Executive Officer under this Policy in no way limits the Committee's actions or decisions not to act with respect to any other Executive Officer under this Policy or under any similar policy, agreement, or arrangement, nor shall any such action or inaction serve as a waiver of any rights the Company may have against any Executive Officer other than as set forth in this Policy.

3. Policy Application. This Policy applies to all Incentive-Based Compensation received by a person: (a) after beginning service as an Executive Officer; (b) who served as an Executive Officer at any time during the performance period for such Incentive-Based Compensation; (c) while the Company had a class of securities listed on a national securities exchange or a national securities association; and (d) during the three completed fiscal years immediately preceding the Accounting Restatement Date. In addition to such last three completed fiscal years, the immediately preceding clause (d) includes any transition period that results from a change in the Company's fiscal year within or immediately following such three completed fiscal years; provided, however, that a transition period between the last day of the Company's previous fiscal year end and the first day of its new fiscal year that comprises a period of nine to twelve months shall be deemed a completed fiscal year. For purposes of this Section 3, Incentive-Based Compensation is deemed received in the Company's fiscal period during which the Financial Reporting Measure specified in the Incentive-Based Compensation award is attained, even if the payment or grant of the Incentive-Based Compensation occurs after the end of that period. For the avoidance of doubt, Incentive-Based Compensation that is

subject to both a Financial Reporting Measure vesting condition and a service-based vesting condition shall be considered received when the relevant Financial Reporting Measure is achieved, even if the Incentive-Based Compensation continues to be subject to the service-based vesting condition.

4. Policy Recovery Requirement. In the event of an Accounting Restatement, the Company will reasonably promptly recover Erroneously Awarded Compensation, in amounts determined pursuant to this Policy. The Company's obligation to recover Erroneously Awarded Compensation is not dependent on if or when the Company files restated financial statements. Recovery under this Policy with respect to an Executive Officer shall not require the finding of any misconduct by such Executive Officer or such Executive Officer being found responsible for the accounting error leading to an Accounting Restatement. In the event of an Accounting Restatement, the Company shall satisfy the Company's obligations under this Policy to recover any amount owed from any applicable Executive Officer by exercising its sole and absolute discretion in how to accomplish such recovery, to the extent permitted under the Listing Rule and in compliance with (or pursuant to an exemption from the application of) Section 409A of the Code. The Company's recovery obligation pursuant to this Section 4 shall not apply to the extent that the Committee, or in the absence of the Committee, a majority of the independent directors serving on the Board, determines that such recovery would be impracticable and:

a. The direct expense paid to a third party to assist in enforcing this Policy would exceed the amount to be recovered. Before concluding that it would be impracticable to recover any amount of Erroneously Awarded Compensation based on expense of enforcement, the Company must make a reasonable attempt to recover such Erroneously Awarded Compensation, document such reasonable attempt(s) to recover, and provide that documentation to the Stock Exchange; or

b. Recovery would likely cause an otherwise tax-qualified retirement plan, under which benefits are broadly available to employees of the registrant, to fail to meet the requirements of Section 401(a)(13) or Section 411(a) of the Code.

5. <u>Policy Prohibition on Indemnification and Insurance Reimbursement</u>. The Company is prohibited from indemnifying any Executive Officer or former Executive Officer against the loss of Erroneously Awarded Compensation. Further, the Company is prohibited from paying or reimbursing an Executive Officer for purchasing insurance to cover any such loss.

6. <u>Required Policy-Related Filings</u>. The Company shall file all disclosures with respect to this Policy in accordance with the requirements of the federal securities laws, including disclosures required by U.S. Securities and Exchange Commission filings.

7. Definitions.

a. "Accounting Restatement" means an accounting restatement due to the material noncompliance of the Company with any financial reporting requirement under the securities laws, including any required accounting restatement to correct an error in previously issued financial statements that is material to the previously issued financial statements ("Big R" restatement), or that would result in a material misstatement if the error were corrected in the current period or left uncorrected in the current period ("little r" restatement").

b. "Accounting Restatement Date" means the earlier to occur of: (i) the date the Board, a committee of the Board, or the officer or officers of the Company authorized to take such action if the Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare an Accounting Restatement; and (ii) the date a court, regulator, or other legally authorized body directs the Company to prepare an Accounting Restatement.

c. "Board" means the board of directors of the Company.

d. "Code" means the U.S. Internal Revenue Code of 1986, as amended. Any reference to a section of the Code or regulation thereunder includes such section or regulation, any valid regulation or other official guidance promulgated under such section, and any comparable provision of any future legislation or regulation amending, supplementing, or superseding such section or regulation.

e. "Erroneously Awarded Compensation" means, in the event of an Accounting Restatement, the amount of Incentive-Based Compensation previously received that exceeds the amount of Incentive-Based Compensation that otherwise would have been received had it been determined based on the restated amounts in such Accounting Restatement, and must be computed without regard to any taxes incurred or paid by the relevant Executive Officer; provided, however, that for Incentive-Based Compensation based on stock price or total stockholder return, where the amount of Erroneously Awarded Compensation is not subject to mathematical recalculation directly from the information in an Accounting Restatement: (i) the amount of Erroneously Awarded Compensation areasonable estimate of the effect of the Accounting Restatement on the stock price or total stockholder return upon which the Incentive-Based Compensation was received; and (ii) the Company must maintain documentation of the

determination of that reasonable estimate and provide such documentation to the Stock Exchange.

f. "Executive Officer" means the Company's president, principal financial officer, principal accounting officer (or if there is no such accounting officer, the controller), any vice-president of the Company in charge of a principal business unit, division, or function (such as sales, administration, or finance), any other officer who performs a policy-making function, or any other person who performs similar policy-making functions for the Company. An executive officer of the Company's parent or subsidiary is deemed an "Executive Officer" if the executive officer performs such policy making functions for the Company. For the avoidance of doubt, "Executive Officer" includes, but is not limited to, any person identified as an executive officer pursuant to Item 401(b) of Regulation S-K under the U.S. Securities Act of 1933, as amended.

g. "Financial Reporting Measure" means any measure that is determined and presented in accordance with the accounting principles used in preparing the Company's financial statements, and any measure that is derived wholly or in part from such measure; provided, however, that a Financial Reporting Measure is not required to be presented within the Company's financial statements or included in a filing with the U.S. Securities and Exchange Commission to qualify as a "Financial Reporting Measure." For purposes of this Policy, "Financial Reporting Measure" includes, but is not limited to, stock price and total stockholder return.

h. "Incentive-Based Compensation" means any compensation that is granted, earned, or vested based wholly or in part upon the attainment of a Financial Reporting Measure.

i. "Stock Exchange" means the national stock exchange on which the Company's common stock is listed.

8. <u>Acknowledgement</u>. Each Executive Officer shall sign and return to the Company, within 30 calendar days following the later of (i) the effective date of this Policy first set forth above or (ii) the date the individual becomes an Executive Officer, the Acknowledgement Form attached hereto as Exhibit A, pursuant to which the Executive Officer agrees to be bound by, and to comply with, the terms and conditions of this Policy.

9. <u>Committee Indemnification</u>. Any members of the Committee, and any other members of the Board who assist in the administration of this Policy, shall not be personally liable for any action, determination or interpretation made with respect to this Policy and shall be fully indemnified by the Company to the fullest extent under applicable law and Company policy with respect to any such action, determination, or interpretation. The foregoing sentence shall not limit any other rights to indemnification of the members of the Board under applicable law or Company policy.

10. <u>Severability</u>. The provisions in this Policy are intended to be applied to the fullest extent of the law. To the extent that any provision of this Policy is found to be unenforceable or invalid under any applicable law, such provision shall be applied to the maximum extent permitted and shall automatically be deemed amended in a manner consistent with its objectives to the extent necessary to conform to any limitations required under applicable law.

11. <u>Amendment; Termination</u>. The Board may amend this Policy from time to time in its sole and absolute discretion and shall amend this Policy as it deems necessary to reflect the Listing Rule, to comply with (or maintain an exemption from the application of) Section 409A of the Code. The Board may terminate this Policy at any time.

12. <u>Other Recovery Obligations; General Rights</u>. To the extent that the application of this Policy would provide for recovery of Incentive-Based Compensation that the Company recovers pursuant to Section 304 of the Sarbanes-Oxley Act or other recovery obligations, the amount the relevant Executive Officer has already reimbursed the Company will be credited to the required recovery under this Policy. This Policy shall not limit the rights of the Company to take any other actions or pursue other remedies that the Company may deem appropriate under the circumstances and under applicable law, in each case to the extent permitted under the Listing Rule and in compliance with (or pursuant to an exemption from the application of) Section 409A of the Code. Nothing contained in this Policy shall limit the Company's ability to seek recoupment, in appropriate circumstances (including circumstances beyond the scope of this Policy) and as permitted by applicable law, of any amounts from any individual, in each case to the extent permitted under the Listing Rule and in compliance with (or pursuant to an exemption from the application of) Section 409A of the Code.

13. <u>Successors</u>. This Policy is binding and enforceable against all Executive Officers and their beneficiaries, heirs, executors, administrators, or other legal representatives.

14. <u>Governing Law; Venue</u>. This Policy and all rights and obligations hereunder are governed by and construed in accordance with the internal laws of the State of Delaware, excluding any choice of law rules or principles that may direct the application of the laws of another jurisdiction. All actions arising out of or relating to this Policy shall be heard and determined exclusively in the Court of Chancery of the State of Delaware or, if such court declines to exercise jurisdiction or if subject matter jurisdiction over the matter that is the subject of any such legal action or proceeding is vested exclusively in the U.S. federal courts, the U.S. District Court for the District of Delaware.
HECLA MINING COMPANY INCENTIVE-BASED COMPENSATION RECOVERY POLICY ACKNOWLEDGEMENT FORM

By signing below, the undersigned acknowledges and confirms that the undersigned has received and reviewed a copy of the Hecla Mining Company (the "<u>Company</u>") Incentive-Based Compensation Recovery Policy (the "<u>Policy</u>").

By signing this Acknowledgement Form, the undersigned acknowledges and agrees that the undersigned is and will continue to be subject to the Policy and that the Policy will apply both during and after the undersigned's employment with the Company. Further, by signing below, the undersigned agrees to abide by and be contractually bound by, the terms of the Policy, including, without limitation, by returning any Erroneously Awarded Compensation (as defined in the Policy) to the Company to the extent required by, and in a manner consistent with, the Policy. Further, by signing below, the undersigned agrees that the terms of the Policy shall govern in the event of any inconsistency between the Policy and the terms of any employment agreement to which the undersigned is a party, or the terms of any compensation plan, program, or agreement under which any compensation has been granted, awarded, earned, or paid.

EXECUTIVE OFFICER	
Signature	
Print Name	
Date	

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