Technical Report on the Updated Mineral Resource Estimate at the Black Pine Gold Project, Cassia and Oneida Counties, Idaho, USA

Liberty Gold Corp.

SLR Project No: 233.03744.R0000

Effective Date:
January 21, 2023

Signature Date:
March 10, 2023

Prepared by:
SLR Consulting (Canada) Ltd.

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Distribution: 1 copy – Liberty Gold Corp.
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1.0 SUMMARY

1.1 Executive Summary

SLR has prepared this technical report on the Black Pine Project (Black Pine or the Project), located in Cassia and Oneida counties, Idaho, for Liberty Gold Corp. (Liberty Gold). The purpose of this report is to disclose the results of an updated Mineral Resource estimate. This report, with an effective date of January 21, 2023 (the Effective Date), conforms to National Instrument 43-101 (NI 43-101) Standards of Disclosure for Mineral Projects. The Mineral Resource estimate presented in this Technical Report supersedes all prior resource estimates for the Project.

Liberty Gold is listed on the Toronto Stock Exchange (XTSE:LGD) and holds its interest in the Black Pine project through its wholly owned subsidiary, Pilot Gold (USA) Inc., a Delaware, USA Corporation.

Liberty Gold is the 100% owner of federal lode claims hosting the Mineral Resource at the Black Pine property, having originally purchased the property from Western Pacific Resources Corp. (Western Pacific) through an agreement dated June 15, 2016. Under this agreement Western Pacific received $800,000 in cash, a 0.5% net smelter royalty (NSR), and 300,000 common shares of Liberty Gold. Portions of the property staked subsequent to the purchase are not subject to the NSR.

The Black Pine Project was the site of open-pit mining and cyanide heap-leach processing from 1991 to 1998.

The total estimated Mineral Resources at the Project are presented in Table 1-1. The Mineral Resources comprise approximately 157.3 million tonnes (Mt) at an average grade of 0.52 g/t Au containing approximately 2.61 million ounces (Moz) in the Indicated category and approximately 35.2 Mt at an average grade of 0.43 g/t Au containing approximately 0.48 Moz Au in the Inferred Mineral Resources category. There are no Measured Mineral Resources.

Table 1-1: Summary of Mineral Resources as at January 21, 2023
Liberty Gold Corp. – Black Pine Project

Classification	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Indicated	157,267	0.52	2,613
Inferred	35,150	0.43	483

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a gold cut-off grade of 0.20 g/t and using a long-term gold price of US$1,800 per ounce.
3. Mineral Resources are estimated using a variable recovery derived from metallurgical studies.
4. Bulk density is variable by rock type.
5. There are no Mineral Reserves currently estimated at the Black Pine Project.
6. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
7. Mineral Resources are reported within conceptual open pit shells.
8. Rounding as required by reporting guidelines may result in apparent discrepancies between tonnes, grades, and contained gold content.
9. The effective date of the Mineral Resource estimate is January 21, 2023.

The QPs are not aware of any unusual environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors not discussed in this report that could materially affect the potential development of the Black Pine Mineral Resources as of the Effective Date of the report.

1.1.1 Conclusions

The Black Pine project data is considered to be acceptable for use in the estimation of the project mineral resources, and the authors are unaware of any significant risks or uncertainties that could be expected to affect the reliability of the estimated resources.

The updated mineral resource estimate outlines a large, oxidized gold deposit that is similar in nature to other oxidized bulk tonnage gold deposits that are currently in production throughout the Great Basin. Significant opportunities for resource expansion exist, including a number of undrilled, sparsely drilled, or shallowly drilled areas that surround the historical pits and lie within soil anomalies that extend beyond the drill-tested areas. Areas of shallow alluvial or upper plate cover west of the Rangefront Fault also present targets for resource expansion.

The QPs offer the following conclusions by area:

1.1.1.1 Geology and Mineral Resources

- The Black Pine Project is a sedimentary rock-hosted, Carlin-type gold deposit.
- The property has been the site of previous mining and exploration activities including 30 million tonnes of ore mined, 434,000 ounces produced, and 1,877 drill holes delineating mineralization.
- The database has been through rigorous auditing and verification methods and in the opinion of the QP is adequate for Mineral Resource estimation.
- The QA/QC protocols and results conducted by Liberty Gold are to industry standards and allow for confidence in the assays used in the database.
- The Mineral Resource estimates have been prepared utilizing acceptable estimation methodologies, and the classifications of Indicated and Inferred Mineral Resources conform to CIM (2014) definitions.
- The geologic and resource interpretation models for the Project are good representations of the Projects geology and mineralization and can be relied upon for use in the Resource Estimation.
- The Mineral Resource estimation approach, including interpolation design and grade restriction, is reasonable.
- Total Mineral Resources at the Black Pine Project above a gold cut-off grade of 0.2 g/t Au are estimated to total:
    - Measured and Indicated – 157 Mt grading 0.52 g/t Au, containing 2.61 Moz Au .
    - Inferred – 35 Mt grading 0.43 g/t Au, containing 0.48 Moz Au.
- There is potential to outline additional Mineral Resources with additional exploration drilling programs at the Black Pine Project.

1.1.1.2 Metallurgical Test Work

- The Black Pine Project is predominantly an oxide deposit with very little sulfides and some organic carbon.

- All carbonaceous and sulfide material has been geologically identified (3D modelled) and this material is excluded from the ROM heap leach metallurgical recovery domains.
- The Black Pine oxide resources are amenable to low-cost ROM conventional heap leaching.
    - Oxide resources demonstrate low sensitivity to heap leach feed particle size.
    - Cyanide and lime consumptions are low.
- Black Pine deposits are characterized as having low silica and high carbonate content, making them non-acid generating and amenable to more favorable environmental permitting and closure practices.
- Some mining face and heap-leach bench blending of modest clay (portions of Pola and Polb resources from Discovery Zone) is planned.
- Potential cyanide consuming elements are low (S=, Cu, Ni, and Zn). Other potential toxic elements are also very low (As, Hg, and Se).

1.1.1.3 Risks

In addition to drilling to expand and infill the existing deposit, Liberty Gold has undertaken considerable work to de-risk the property pursuant to mining, including the acquisition of water rights as well as private surface and mineral rights, and the completion of several phases of permit expansion.

The QPs note the following risks:

- A better understanding of the original material contributing to the legacy backfill dumps and waste dumps needs to be developed. Material types which were mined need to be studied to be certain that proper care and handling of the material is taken to de-risk any of the material being sent for processing or further storage.
- A lack of production records prevents any reliable reconciliation work for the Project.

In the QPs' opinion, there are no other significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information presented in this Technical Report or the data provided to SLR by Liberty Gold. The QP is of the opinion that the exploration information presented in this Technical Report to be reasonably representative of the Property geology and gold mineralization.

1.1.2 Recommendations

The QPs offer the following recommendations:

1.1.2.1 Geology and Mineral Resources

1. Submit density samples for the backfill dumps, waste dumps, and the quaternary alluvium (QAL) rock type to assist in estimating tonnages for mine design and operations planning.
2. Carry out a Phase I work program totalling approximately US$10.5 million, that includes RC and core drilling and additional metallurgical testing, with the intent to update the resource in late 2023. Drilling should focus on upgrading Inferred portions of the current Resources to Indicated, step-out drilling along the margins of defined zones of mineralization and testing of new targets.
3. Subject to positive Phase I results, complete a Phase II work program totalling approximately US$17.5 million. The Phase II program would allow for continued exploration and resource

definition drilling, metallurgical testing, permitting activities, and completion of a pre-feasibility study including all studies not already completed in Phase 1.

The costs of the recommended phased programs are detailed in Table 1-2. Phase II is dependent on the results of the Phase I work program.

Table 1-2: Recommended Black Pine Project Budget
Liberty Gold Corp. – Black Pine Project

Activity	Phase I (US$)		Phase II (US$)	
	Exploration	Development	Exploration	Development
Drilling	3,613,000	195,000	3,500,000	1,750,000
Geology	150,000		150,000	
Assaying and Geochemistry	1,379,000		1,300,000	450,000
Metallurgy		440,000		550,000
Engineering		125,000		250,000
Resource Estimation	170,000	150,000	150,000	150,000
Permitting	100,000	50,000	100,000	250,000
Environmental	400,000	300,000	100,000	500,000
Water Permitting	317,000	450,000	50,000	300,000
Pre-feasibility		160,000		3,500,000
Field Support	700,000		850,000	
Administrative	283,000		275,000	250,000
Wages and Salaries	1,122,000		1,100,000	1,000,000
ESG	50,000		50,000	200,000
Contingency	250,000	50,000	250,000	450,000
Total	**8,534,000**	**1,920,000**	**7,875,000**	**9,600,000**
	10,454,000		**17,475,000**	

1.1.2.2 Metallurgical Test Work

The following work is needed to progress Black Pine metallurgical development to pre-feasibility and ultimately feasibility level.

1. Complete Phase 4A, 4B, and 4C variability composite testing at KCA. Phase 4A is currently in progress.
2. Plan additional metallurgical core drilling and variability composite testing in 2023 to fill gaps in the current drilled resource to ultimately satisfy feasibility level study requirements.
3. Continue with select metallurgical domain environmental characterization of composite heads and residues to assist project engineering/design and permitting.
4. Initiate a blast fragmentation study in 2023 to finalize ROM heap leach Feed P_{80} values for each metallurgical domain to aid in finalizing gold recovery models.

1.2 Technical Summary

1.2.1 Property Description

The Black Pine Project is located in Cassia and Oneida counties, Idaho, approximately 29 km northwest of the town of Snowville, Utah, the nearest substantial community, and 13 km north-northeast of Curlew Junction, the intersection of Utah State Highways 30 and 42. The approximate geographic center of the Black Pine property is 42.082°N latitude and 113.047°W longitude.

The climate in the Project area and the surrounding region is of the continental, intermontane type.

The Black Pine property straddles the eastern margin of the northerly-trending Black Pine Mountains. Elevations within the property range from a low of 1,650 m along the eastern edge, to a maximum of approximately 2,440 m in the western part of the property. The topography is moderately steep over much of the area.

1.2.2 Land Tenure

The Black Pine property consists of a contiguous block of 622 unpatented federal lode mining claims, one lease of State of Idaho mineral rights over a one square mile section (259 ha), a majority interest in 462.5 ha of private mineral rights, and 56.4 ha of private property, all located in the State of Idaho within either Cassia and Oneida counties, and that occupy a combined area of 4,843 hectares (ha). The approximate geographic center of the property is 42.082°N latitude and 113.047°W longitude. Annual claim-maintenance fees are the only federal payments related to unpatented mining claims, and these fees have been paid in full through September 1, 2023. County recording fees are also required annually, as well as a lease payment to the State of Idaho. Liberty Gold's annual claim holding costs are estimated to be $US 103,115 in 2023.

Liberty Gold is the 100% owner of all unpatented federal lode claims that comprise the majority of the Black Pine property, having purchased 345 of the unpatented claims from Western Pacific Resources Corp. (Western Pacific) through an agreement dated June 15, 2016. Under this agreement, Western Pacific received $800,000 in cash, a 0.5% net smelter royalty (NSR) on production from the 345 unpatented claims, and 300,000 common shares of Liberty Gold. Western Pacific subsequently assigned the 0.5% NSR to Deer Trail Mining Company, LLC. Liberty Gold subsequently expanded the property by staking 277 unpatented claims from 2016 to 2022 for a total of 622 claims. Mineral production from the entire property is subject to the Idaho Mine License Tax, equivalent to 1.0% of "ores mined or extracted, and royalties received from mining".

In February 2021, Liberty Gold purchased private land totalling 56.4 ha to the immediate southeast of the claim block. Power and water were provided to the site, with construction of a core storage facility and it is presently being used as a base for exploration activities. In November 2021, Liberty Gold acquired a 20-year lease for mineral rights from the State of Idaho on a one square mile (2.96 square kilometre) parcel of land located immediately east of the historic heap leach pad. In August 2022, Liberty Gold completed acquisition of a 66.65% controlling interest in certain private mineral rights held over U.S. Bureau of Land Management (BLM) lands contiguous with the eastern margin of the State of Idaho lease.

According to its environmental experts, Stantec Consulting Services Inc. (Brown, 2016), Liberty Gold is liable only for disturbance incurred as part of Liberty Gold's exploration activities, or if Liberty Gold causes disturbance to the historical leach pad or other designated areas.

1.2.3 Existing Infrastructure

Services are readily available at nearby towns, including Snowville and Tremonton, Utah, and Burley, Idaho. Skilled labour and experienced contractors can be sourced from Salt Lake City, Utah, and Elko, Nevada. Grid electrical power is available from a transformer on a major power line about 10 km southeast of the project, with a 25 kV distribution line extending to the eastern property boundary. Liberty Gold received a positive initial system impact study from Idaho Power Distribution Company on the supply of up to 10 megawatts of electrical power along the distribution line, which is managed by Raft River Rural Electric Co-op Inc.

Water for exploration drilling needs is available from several wells on BLM land and private land immediately east of the property.

1.2.4 Exploration and Mining History

Numerous prospects and small mines in the Black Pine mountains exploited base- and precious-metal deposits commencing in the late 1800s and extending into the early 1900s, when minor amounts of zinc, silver, and mercury were produced. Gold was discovered in the late 1930s or early 1940s at the Tallman mercury mine, located within the current Black Pine project, and a small open pit was operated at Tallman from 1949 to 1955 with total production reported to be 109,000 tonnes with an average gold grade of 5.14 g/t Au.

From 1963 through mid-1990, Newmont Mining, Kerr Addison Mines Ltd, Gold Resources Inc. (Gold Resources), Permian Exploration Account, ASARCO, Pioneer Nuclear Inc., Pegasus Gold Corp. (Pegasus), Inspiration Resource Corp., and Noranda Exploration, Inc. (Noranda) explored various portions of the Black Pine property. During this period, extensive soil-sample geochemical grids were completed, and a total of 66,731 m are known to have been drilled in 775 drill holes. Approximately 99% of the historical holes and metres drilled were completed using reverse-circulation (RC) and, for some uncertain but small number of holes, conventional-rotary methods. A total of eight holes were drilled using diamond-core (core) methods.

In 1986 through 1989, Noranda completed 536 of the holes mentioned above and discovered and delineated several zones of disseminated, sedimentary-rock-hosted gold mineralization. Noranda then produced a feasibility study in 1990 prior to selling the property to Pegasus in June 1990. Pegasus put the property into production in late 1991 as an open-pit run-of-mine (ROM) heap-leach operation that closed in 1997. During this period, Pegasus also drilled 1,080 RC holes and 18 core holes, for an aggregate total of 117,601 m.

Approximately 26.5 million tonnes of waste rock and 31 million tonnes of ore were mined by Pegasus between 1991 and 1997, with 434,800 ounces of gold produced at an average gold recovery of 65%. The heap-leach pad was rinsed and reclaimed after production ceased.

The property was idle from 1999 to 2009. Western Pacific acquired the property by staking in 2009, carried out geophysical surveys, and drilled 35 RC holes for a total of 7,217 m prior to vending the property to Liberty Gold in 2016.

Since acquiring the project, Liberty Gold has undertaken extensive data compilation and analysis, as well as drilling 856 holes, consisting of 824 RC holes for 204,881 m, and 33 core holes for 6,715 m.

1.2.5 Geology and Mineralization

As presently understood, the Black Pine property geology is comprised of a lower structural plate that includes the Devonian Jefferson Formation and Mississippian Manning Canyon Shale, a middle plate characterized by Pennsylvanian carbonate rocks of the Oquirrh Group, and an upper plate predominantly consisting of Permian siltstones and sandstones of the Oquirrh Group. The lithologic contact between the lower plate and middle plate is sheared and brecciated, and middle plate units are complexly structurally interleaved. Middle plate strata are considerably more deformed than strata in the upper and lower plates.

The middle plate, which hosts the gold mineralization of interest, has a structural thickness ranging from approximately 200 to 500 m. At least two major deformational events are evident, manifested by Mesozoic thrust faults and tight to open folds, overprinted by Cenozoic, low- to high-angle normal faults. Gold is distributed throughout the middle structural plate, with higher-grade mineralization occurring within favorable stratigraphic units, such as calcareous siltstones, as well as in and adjacent to breccia bodies and along variously orientated low- to high-angle brittle faults.

The Black Pine gold mineralization can be best classified as sedimentary rock-hosted, Carlin-style mineralization.

Three-dimensional modelling by Liberty Gold, utilizing surface mapping and drill data, envisions a relatively flat fault separating the lower and middle plates, with a structurally thickened middle plate centered on the outcropping area of mineralization and diminishing in thickness to the north and south. The distribution of higher-grade gold mineralization is controlled to a large extent by favourable stratigraphy as well as a series of north- to northwest-striking listric normal faults that bound the east side of an overthickened zone of massive limestone and dolostone.

1.2.6 Drilling

Liberty Gold carried out drilling activities in 2017 and 2019 through 2022, totalling 211,599 m in 856 holes. Drilling in 2022 comprised 318 RC holes for 66,381 m and 6 core holes for 1,118 m and focused on expanding the known smaller, near-surface satellite zones of mineralization (primarily the E, F, M, and Back Range zones), expansion and infill of the Rangefront Zone, and testing of reconnaissance targets, including Bobcat and South Rangefront.

1.2.7 Sampling, Sample Preparation, Analysis and Security

While documentation is not complete, all of the historical operators were reputable, well-known mining/exploration companies, and the independent laboratories used to analyze the drill samples of the historical operators prior to the historical open-pit mining operation at the Black Pine project were also widely known and commonly used by the exploration and mining industry at the time. There is ample evidence that these companies and their chosen commercial laboratories followed accepted industry practices with respect to sample preparation, analytical procedures, and security.

The sample preparation, analysis, and security protocols of Liberty Gold, as well as their QA/QC program, are consistent with current industry standards, and no material issues were identified through analysis of their QA/QC results.

1.2.8 Data Verification

The historical drill hole data have undergone extensive verification. This verification included checking of the database values using historical records, and statistical analyses.

The resource estimation was guided to a significant extent by Liberty Gold's lithological and structural (geological) models. SLR is of the opinion that Liberty Gold's geological model is of high quality and provided critical geological support that is required to support the estimation of the project resources.

The QP is of the opinion that the Black Pine data as a whole are acceptable for the purposes used in this report.

1.2.9 Metallurgical Testing and Mineral Processing

1.2.9.1 Historical Metallurgical Testing (1974-1988)

A significant number of historical reports that document metallurgical testing completed prior to the historical mining operations that began in 1991 were reviewed. Production records from the Pegasus operation indicate that the average gold recovery by ROM heap leaching from 1991 through 1998 was 64.1%. The highest annual average recovery reported was 80% in 1993, and the lowest was 54% in 1994.

1.2.9.2 Liberty Gold Testing (2018-2023)

Liberty Gold initiated metallurgical testing in 2019. Five metallurgical test programs were subsequently completed and a sixth is in progress. These programs include:

1. 2019 Bulk Sample Program – six backhoe bulk samples were excavated from five historic Pegasus Gold open pits and one surface resource area. The samples underwent geo-metallurgical characterization and bottle-roll and column-leach testing.
2. 2019 Large-diameter PQ Core Program (Phase 1) – Liberty gold drilled six large-diameter PQ core holes in the Discovery and Rangefront zones in late 2019. A total of 29 metallurgical composites were selected for geo-metallurgical characterization and bottle-roll and column-leach testing.
3. 2020 Large-diameter PQ Core Program (Phase 2) – In late 2020, Liberty Gold drilled nine additional PQ core holes in the Discovery and CD zones. A total of 45 metallurgical composites were selected for a testing program similar to that described in item 2 above.
4. 2021 Low Grade Composite Program (Phase 3) - In late 2021, Liberty Gold directed KCA to perform column testing on 15 composites composed of PQ core with average head assays between 0.1 and 0.2 g/t Au.
5. 2022 Rangefront Zone Column Test Program (Phase 4a) – In late 2021, Liberty Gold drilled four PQ core holes in the Rangefront Zone. A total of 24 metallurgical composites were selected for a testing program similar to those described above. Phase 4A work is ongoing, and data were not available in time to be used for the Resource Estimate.
6. Additional 2022 core drilling in the C/D Pit, F Zone, M Zone, and Discovery Zone areas will be tested in Phases 4B and 4C. Phase 4B has been submitted to the lab and testing will start in Q1, 2023.

Metallurgical characterization identified the following lithologic units as potential unique metallurgical recovery domains, where the numbers in parentheses indicate the number of samples that have been tested.

- PPos – sandstone, quartzite, and siltstones (3)
- Pola – limestone and sandy limestone (21)
- Polb – siltstone, sandy limestone, and dolomite (13)
- Polc – siltstone, limestone, sandstone, and dolomite (26)
- Pold – limestone, dolomite, sandstone, and quartzite (17)
- Pols – limestone, sandstone, and quartzite (9)
- PMmx – limestone, siltstone, quartzite (1)
- PMmc – shale, limestone, and quartzite (0)– lower plate, underlies most gold mineralization)

Preliminary recovery equations have been assigned to each of the lithologic units, with separate equations for low and high-grade domains within the lithologic units. As more drilling and testing is conducted, it is expected that metallurgical domain recovery models will improve, especially in the C/D Pit, M Zone, and F Zone where gaps exist.

The QP is of the opinion that samples tested are sufficiently representative to support the conclusions summarized herein. Metallurgical testing is ongoing and is designed in part to continue to evaluate all types and styles of mineralization.

1.2.10 Mineral Resources

The Mineral Resource is based on 1,854 historical RC holes and 26 historic diamond core holes, as well as 768 RC and 30 core holes drilled by Liberty Gold. The historical holes at the Black Pine Project were primarily drilled from the mid 1980s to the late 1990s by Noranda and Pegasus Gold.

Mineral Resources at the Black Pine Project were modelled and estimated by:

- Developing a geological model in Leapfrog Geo reflecting low-angle fault control and stratigraphic control of mineralization hosted in receptive carbonate host rocks.
- Evaluating the drill data statistically.
- Interpreting low (0.1 g/t Au) and high-grade (0.3 g/t Au for Rangefront and 0.5 g.t Au for all other areas) gold-domains using Leapfrog Geo.
- Compositing data to 3.048 m (10 feet) within the gold domains.
- Coding a block model comprised of 10 x 10 x 5 (x, y, z) metre blocks and sub-blocked to 2.5 x 2.5 x 1.25 metre blocks to the domains.
- Analyzing the modelled mineralization geostatistically to aid in the establishment of estimation and classification parameters.
- Interpolating gold grades using inverse distance cubed (ID^3) and a three-pass interpolation strategy into the model blocks using the mineral domain coding to explicitly constrain the gold grade estimations.
- Evaluating statistically and visually, the resulting model in detail prior to finalizing the mineral resource estimation.

The Black Pine Deposit Mineral Resource has been constrained by optimized pit shells created using a gold price of US$1,800/ounce and pit slopes ranging from 45 to 47 degrees in eight sectors defined by geotechnical studies. Additional inputs for the pit-optimizations include: Mining - $2.35/tonne mined; heap leaching - $2.00/tonne processed; and G&A cost of $0.80/tonne processed at an assumed 10 million tonnes (Mt) per year processing rate. Gold recoveries are based on equations derived from metallurgical data and vary by grade and rock unit. A 0.5% net smelter return royalty was also applied.

The in-pit resources were further constrained by the application of a cut-off grade of 0.20 g Au/t to all model blocks lying within the optimized pit shells. The portions of blocks coded as containing carbonaceous material were assigned a recovery of 0% and thus excluded from the resource estimate.

The Black Pine Mineral Resources were classified as Indicated or Inferred based on drill hole spacing, confidence in the geological interpretation, and apparent continuity of mineralization. There are no Measured Resources at the Black Pine Project. Indicated Mineral Resources were defined where drill hole spacing of 50 m to 60 m was achieved. The drill holes spacing for indicated classification is supported with the experimental variogram ranges. All remaining blocks contained within the wireframe model and estimated within the block model were limited to an Inferred classification. The backfill dumps and waste dumps that contain mineralization above the cut-off grade were classified as Inferred Mineral Resources.

The QPs are not aware are not aware of any unusual environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors not discussed in this report that could materially affect the potential development of the Black Pine project mineral resources as of the Effective Date of the report.

2.0 INTRODUCTION

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The QPs are not aware of any unusual environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors not discussed in this report that could materially affect the potential development of the Black Pine Mineral Resources as of the Effective Date of the report.

2.1 Sources of Information

Ryan Rodney, C.P.G, SLR Associate Geologist, is a Qualified Person (QP) under NI 43-101 and is responsible for the overall Technical Report including Sections 1 to 12 and 14 to 27. Section 13 was prepared by Consulting Metallurgist Gary L. Simmons, MMSA, a QP with respect to metallurgy.

Mr. Rodney visited the Black Pine property along with Dr. Moira T. Smith and Liberty Gold staff on November 9, 2022. This site visit included geologic overviews of the Project, detailed inspections of exposures in most of the historical open pits, reviews of Liberty Gold reverse-circulation rotary (RC) chips and drill core, the verification of drill hole locations, and inspections of active drill sites. The visit also included detailed discussions of the evolving geologic understanding of the project and associated mineralization.

Dr. Smith, also a QP under NI 43-101, has prepared Sections 2 through 10 and 15 through 24 of this Technical Report. As Corporate Technical Advisor and former Vice President of Exploration for Liberty Gold, Dr. Smith has visited the property on a regular basis since it was acquired by Liberty Gold in 2016, with the most recent visit on December 5 through 11, 2022.

Sections 11, 12, and 14 of this Technical Report have been prepared by or under the supervision of Ryan Rodney. Mr. Rodney is a QP under NI 43-101 and has no affiliation with Liberty Gold except that of independent consultant/client relationship. Mr. Rodney was assisted by Sarah Conolly, P. Geo, SLR Senior

Geologist, April Barrios, Senior Resource Geologist for Liberty Gold, and Will Lepore, Principal Geologist for Liberty Gold in the preparation of wireframe models and resource estimations.

Discussions were held with the following Liberty Gold personnel:

- Moira Smith, Ph.D., P.Geo., Corporate Technical Advisor for Liberty Gold
- Jon Gilligan, B.Sc., Ph.D., Chief Operating Officer for Liberty Gold
- Peter Shabestari, B.Sc., C.P.G., Vice President of Exploration for Liberty Gold
- April Barrios, B.Sc., P.Geo., Senior Resource Geologist for Liberty Gold
- Will Lepore, M.Sc., P.Geo., Principal Geologist for Liberty Gold
- Randy Hannink, M.Sc., Senior Geologist for Liberty Gold

Section 13 was prepared by Consulting Metallurgist Gary L. Simmons, MMSA, a QP with respect to metallurgy. Mr. Simmons has no affiliation with Liberty Gold except that of independent consultant/client relationship.

As of the Effective Date of this report, Mr. Simmons visited the Black Pine project site on June 3, 2019, October 18 and 19, 2019, June 22 and 23, 2020, and May 13, 2021. In respective chronology, during these site visits Mr. Simmons toured the Project and reviewed relevant geology, the historical pits, and historical Noranda metallurgical sample locations; collected bulk samples for metallurgical testing; revisited the historical open pits, visited some drill sites, and discussed metallurgical aspects of the Project with the on-site geologists; and, in the company of other Liberty Gold staff and consultants, determined potential heap leach and crusher locations for the purposes of the ongoing economic assessment.

Messrs. Rodney and Simmons share responsibility for contributions to Sections 1, 25, 26, and 27.

Table 2-1 presents a summary of the QP report preparation and responsibilities in this Technical Report.

Table 2-1: Summary of QP Report Preparation and Responsibilities
Liberty Gold Corp. – Black Pine Project

Qualified Person	Title/Position	Report Preparation	Section Responsibilities
Moira T. Smith, Ph.D., P.Geo	Corporate Technical Advisor, Liberty Gold Corp.	2 to 10 and 15 to 24	N/A
Ryan Rodney, C.P.G.	Associate Geologist, SLR International Corporation	1, 11, 12, 14, 25 to 27	1.1.1.1, 1.1.2, 1.2.4-1.2.8, 1.2.10, 11, 12, 14, 25.1, 26.1, 27
Gary L. Simmons, MMSA	Consultant, GL Simmons Consulting LLC	1, 13, 25 to 27	1.1.1.2, 1.2.9, 13, 25, 26, 27

The documentation reviewed, and other sources of information, are listed at the end of this report in Section 27 References. Of particular note, this report incorporates information and descriptions drawn from a report for Liberty Gold by Gustin et al. (2021) entitled "*Updated Technical Report and Resource Estimate for the Black Pine Gold Project, Cassia County, Idaho, USA*" with an effective date of June 20, 2021.

The Effective Date of this technical report is January 21, 2023.

2.2 Units and List of Abbreviations

In this report, measurements are generally reported in metric units unless original Imperial units are deemed to be best reported as-is. Where information was originally reported in Imperial units and converted to metric for the purposes of this report, conversions have been made according to the formulas shown below.

Currency, units of measure, and conversion factors used in this report are listed below:

Linear Measure

- 1 centimetre = 0.3937 inch
- 1 metre = 3.2808 feet = 1.0936 yard
- 1 kilometre = 0.6214 mile

Area Measure

- 1 hectare = 2.471 acres = 0.0039 square mile

Capacity Measure (liquid)

- 1 liter = 0.2642 US gallons

Weight

- 1 tonne = 1.1023 short tons = 2,205 pounds
- 1 kilogram = 2.205 pounds

Unless otherwise indicated, all references to dollars ($) in this report refer to currency of the United States.

μ	micron	kVA	kilovolt-amperes
μg	microgram	kW	kilowatt
a	annum	kWh	kilowatt-hour
A	ampere	L	litre
bbl	barrels	lb	pound
Btu	British thermal units	L/s	litres per second
°C	degree Celsius	m	metre
C$	Canadian dollars	M	mega (million); molar
cal	calorie	m^2	square metre
cfm	cubic feet per minute	m^3	cubic metre
cm	centimetre	MASL	metres above sea level
cm^2	square centimetre	m^3/h	cubic metres per hour
d	day	mi	mile
dia	diameter	min	minute
dmt	dry metric tonne	μm	micrometre
dwt	dead-weight ton	mm	millimetre
°F	degree Fahrenheit	mph	miles per hour
ft	foot	MVA	megavolt-amperes
ft^2	square foot	MW	megawatt
ft^3	cubic foot	MWh	megawatt-hour
ft/s	foot per second	oz	Troy ounce (31.1035g)
g	gram	oz/st, opt	ounce per short ton
G	giga (billion)	ppb	part per billion
Gal	Imperial gallon	ppm	part per million

g/L	gram per litre	psia	pound per square inch absolute
Gpm	Imperial gallons per minute	psig	pound per square inch gauge
g/t	gram per tonne	RL	relative elevation
gr/ft^3	grain per cubic foot	s	second
gr/m^3	grain per cubic metre	st	short ton
ha	hectare	stpa	short ton per year
hp	horsepower	stpd	short ton per day
hr	hour	t	metric tonne
Hz	hertz	tpa	metric tonne per year
in.	inch	tpd	metric tonne per day
in^2	square inch	US$	United States dollar
J	joule	USg	United States gallon
k	kilo (thousand)	USgpm	US gallon per minute
kcal	kilocalorie	V	volt
kg	kilogram	W	watt
km	kilometre	wmt	wet metric tonne
km^2	square kilometre	wt%	weight percent
km/h	kilometre per hour	yd^3	cubic yard
kPa	kilopascal	yr	year

3.0 RELIANCE ON OTHER EXPERTS

This Technical Report has been prepared by SLR for Liberty Gold. The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to SLR at the time of preparation of this Technical Report.
- Assumptions, conditions, and qualifications as set forth in this Technical Report.
- Data, reports, and other infrastructure supplied by Liberty Gold and other third party sources.

For the purpose of this Technical Report, SLR has relied on ownership information provided by Liberty Gold. With respect to land title for unpatented mining claims, the client has relied on an opinion by Erwin and Thompson, LLP dated June 9, 2016; updates by Erwin Thompson Faillers dated: December 12, 2017, January 26, 2018, October 2, 2018, and September 10, 2019; and an opinion by Parsons Behle and Latimer dated March 25, 2022. For the private surface lands owned by Liberty Gold, a title report dated April 29, 2022, was provided by Parsons, Behle and Latimer. For private mineral rights, an opinion was provided by Parsons, Behle and Latimer dated April 22, 2022. All opinions found all properties in good standing. References are provided in Section 27 of this report. These opinions are relied on in Section 4.2 and the Summary of this Technical Report. SLR has not researched property title or mineral rights for the Liberty Gold and expresses no opinion as to the ownership status of the property.

SLR has relied on information regarding potential environmental liabilities or concerns at the Project provided in a Stantec Consulting Services Inc. (Stantec) report prepared by Brown (2016).

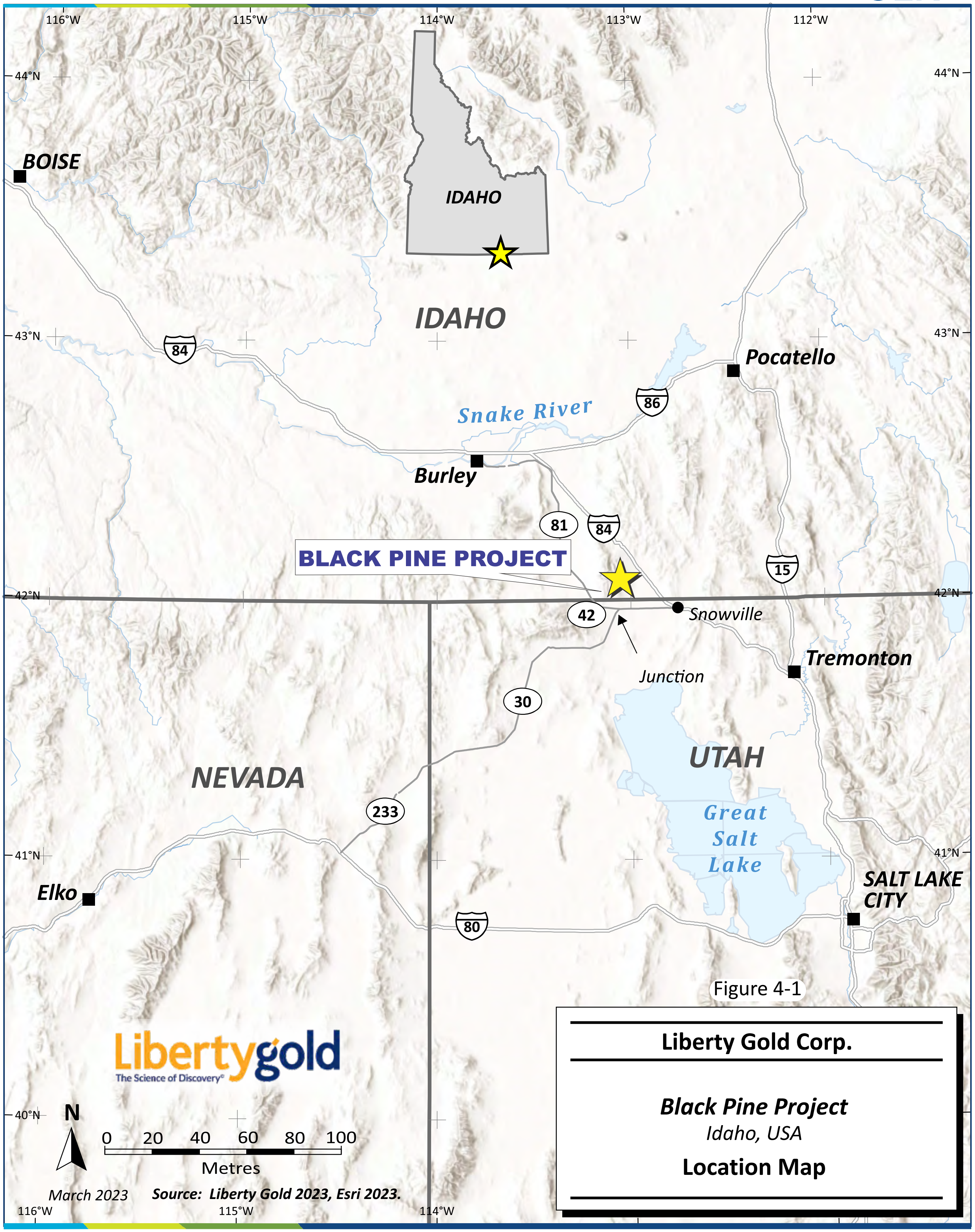
SLR has relied on Liberty Gold for guidance on applicable taxes, royalties, and other government levies or interests, applicable to revenue or income from Black Pine.

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

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 Location

The Black Pine Project is located in Cassia and Oneida counties, Idaho, approximately 29 km northwest of the town of Snowville, Utah, the nearest substantial community, and 13 km north-northeast of Curlew Junction, the intersection of Utah State Highways 30 and 42 (Figure 4-1). The approximate geographic center of the Black Pine property is 42.082°N latitude and 113.047°W longitude.



116°W
115°W
114°W
113°W
112°W
44°N
43°N
42°N
41°N
40°N
BOISE
IDAHO
IDAHO
84
Pocatello
86
Snake River
Burley
81
84
BLACK PINE PROJECT
15
42
Snowville
Junction
Tremonton
30
UTAH
NEVADA
233
Great Salt Lake
SALT LAKE CITY
Elko
80
N
0 20 40 60 80 100
Metres
March 2023
Source: Liberty Gold 2023, Esri 2023.
Liberty Gold Corp.
Black Pine Project
Idaho, USA
Location Map

Figure 4-1

4.2 Land Tenure

4.2.1 Unpatented Federal Lode Claims

The portion of the Black Pine property on which the Mineral Resource lies consists of a largely contiguous block of 622 unpatented Federal lode mining claims within Cassia and Oneida counties, Idaho (Figure 4-2). The claims occupy a combined area of 4,843 ha as of the Effective Date of this report. The unpatented claims lie in portions of or all of Sections 11, 13-16, 19-29, and 31-35 of T15S, R29E; Sections 1-6 and 8-12 of T16S, R29E; Sections 35 and 36, of T15S, R28E; Sections 1 and 2, T16S, R28E; Section 31, T15S, R30E; and Section 7, T16S, R30E, Boise Meridian.

Liberty Gold is the 100% owner of all unpatented federal lode claims that comprise the majority of the Black Pine property, having purchased 345 of the unpatented claims from Western Pacific Resources Corp. (Western Pacific) through an agreement dated June 15, 2016. Under this agreement, Western Pacific received $800,000 in cash, a 0.5% net smelter royalty (NSR) on production from the 345 unpatented claims, and 300,000 common shares of Liberty Gold. Western Pacific subsequently assigned the 0.5% NSR to Deer Trail Mining Company, LLC. Liberty gold expanded the property by staking 277 unpatented claims between 2016 and 2022 for a total of 622 claims.

The irregular pattern of claims in the eastern part of the property reflects federal lands that are not open to Mineral Location by staking (discussed further below).

The unpatented claims are monumented with 10-cm by 10-cm wooden posts bearing metal tags so as to meet Idaho State regulations. The claim map, valid as of the Effective Date of this report, is presented in Figure 4-2.

Ownership of the unpatented mining claims is in the name of the holder (locator), subject to the paramount title of the United States of America. The majority of the claims are under the administration of the U.S. Forest Service (USFS). A total of 106 claims in the eastern portion of the property lie partly or entirely within lands administered by the U.S. Bureau of Land Management (BLM). Under the Mining Law of 1872, which governs the location of unpatented mining claims on Federal lands, the locator has the right to explore, develop, and mine minerals on unpatented mining claims without payments of production royalties to the U.S. government, subject to the surface-management regulation of the USFS and the BLM. In recent years, there have been unsuccessful efforts in the U.S. Congress to amend the 1872 Mining Law to include, among other items, a provision for production royalties payable to the U.S. government. Annual claim-maintenance fees are the only Federal payments related to unpatented mining claims, and these fees have been paid in full through September 1, 2023. County recording fees are also required annually. Liberty Gold’s annual holding costs for the Black Pine unpatented mining claims, exclusive of lease fees, were $103,015 in 2022 and will be same amount in 2023 (Table 4-1). The unpatented claims do not expire as long as the Federal and county fees are paid.

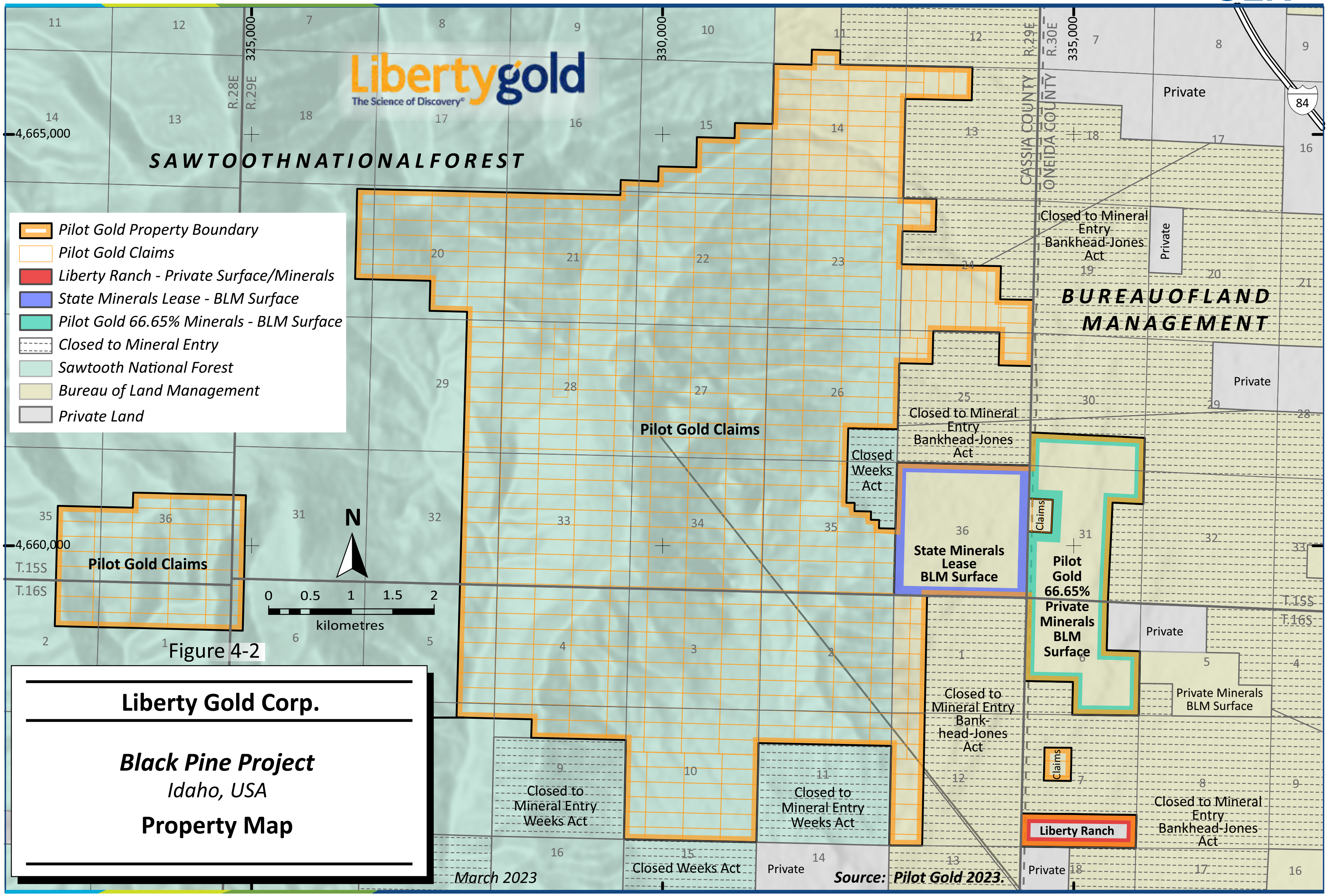


Figure 4-2

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Property Map

Table 4-1: Annual Claim Holding Costs for the Black Pine Property
Liberty Gold Corp. – Black Pine Project

Annual Fee Type	2022 (US$)	2023 (US$)
Unpatented BLM Claim Fees	102,630	102,630
County Recording Fees	385	385
Total Annual Claim Fees	**103,015**	**103,015**
Section 36 Mineral Lease	2,978	3,037

Some BLM-administered lands to the east and south of the Black Pine Project are closed to locatable mineral entry under the Bankhead-Jones Farm Tenant Act of 1937, Pub. L. No. 75-10, 50 Stat. 522 (codified as amended at 7 U.S.C. §§ 1010-1013a (2006)). Past operators have obtained Hardrock Prospector Permits allowing for gold and silver mining activities on Bankhead-Jones Act lands. However, recent rulings by the U.S. Government have restricted mining activities on these lands to energy minerals (e.g., uranium) on Bankhead-Jones Act lands. Whether or not a path exists for Liberty Gold to explore for gold or locate infrastructure on these lands, which are not part of Liberty Gold's landholdings, is under investigation.

Some USFS-administered lands are closed to locatable mineral entry under the Weeks Act of 1911 (36 Stat. 961). Past operators have obtained Hardrock Prospector Permits and Special Use Permits from the USFS for gold and silver mining.

4.2.2 Idaho State Mineral Lease

Effective November 18, 2021, Pilot Gold was granted a 20-year lease by the Idaho State Board of Land Commissioners on metallic mineral rights in Section 36, T15S R29E in Cassia County, totalling 260 ha/642 acres. The surface is owned and administered by the BLM.

4.2.3 Liberty Ranch

In February 2021, Pilot Gold purchased 139.4 acres (56.4 ha) in Section 7, T15S, R30E, immediately southeast of the project area, including water and mineral rights. It is presently being used as the project headquarters for exploration activities.

4.2.4 Private Mineral Rights

In February and August 2022, Pilot Gold purchased a 66.65% controlling interest in 911 acres (386.7 ha) of mineral rights located in Section 6 of T16S, R30E, and Sections 30 and 31 of T15S, R30E to the east of the Idaho State mineral rights in Section 36. The BLM owns and administers the surface rights.

4.3 Agreements and Encumbrances

Liberty Gold obtained its interest in the Black Pine property by means of an agreement with Western Pacific dated June 15, 2016. Under this agreement, Western Pacific received consideration of $800,000 in cash, a grant of a 0.5% NSR, and 300,000 common shares of Liberty Gold. As a result of this transaction, Liberty Gold is the 100% owner of the Black Pine property.

Western Pacific assigned the 0.5% NSR to Deer Trail Mining Company, LLC. This royalty applies to production from the original 345 claims obtained by Liberty Gold from Western Pacific.

The Section 36 Idaho State Lease is subject to a minimum annual royalty of $1,000 for years 1 through 5 and $2,500 for years 6 through 20. Production is subject to a 5% Net Smelter Return Royalty payable to the State of Idaho.

Production of metallic minerals from the private mineral rights lands described above will be subject to a 0.25% NSR.

Mineral production from the entire property is subject to the Idaho Mine License Tax, equivalent to 1.0% of the value of "*ores mined or extracted and royalties received from mining*".

Surface rights for access, exploration, and mining of the unpatented claims are fully held by Liberty Gold under the Mining Law of 1872, subject to surface-use regulations under applicable Federal and State environmental law (see Section 4.2.10).

4.4 Environmental Liabilities

Liberty Gold retained Stantec Consulting Services Inc. (Stantec) to review information regarding potential environmental liabilities or concerns, the results of which are documented in a report by Brown (2016). According to Stantec, Liberty Gold is liable only for disturbance incurred as part of Liberty Gold's exploration activities, or if Liberty Gold causes disturbance of the historical leach pad or other designated areas.

The historical heap-leach pad, which lies partially within the Black Pine property, was reclaimed prior to Liberty Gold's acquisition of the property (Figure 4-3). Pegasus Gold Corp. (Pegasus) stopped adding cyanide solution to the heap-leach pad in 1998. Since then, the USFS has been capturing runoff water at the base of the heap leach in buried concrete vaults, treating it with zero-valent iron, and delivering the treated water to a 40.5-hectare land-application area downhill from the leach pad. Water is sampled two to four times during the land-application period and soils are analyzed every other year. The heap leach has ongoing issues with cyanide and elevated levels of nitrate and arsenic. The USFS provides annual water-quality monitoring reports to the Idaho Department of Environmental Quality (IDEQ, (http://www.deq.idaho.gov/). The heap leach and land-application area are fenced off. A local rancher monitors the equipment and precipitation.

The USFS holds a $1.5 million bond from Pegasus, and the interest on this bond covers the cost of the ongoing water-monitoring program. This bond is expected to cover any future issues with the previous operations.

Source: Liberty Gold, 2017

Figure 4-3: View of the Reclaimed Black Pine Mine Heap-Leach Pad, Looking East

4.5 Environmental and Permitting

With the exception of claims along the eastern border of the property, which are on land administered by the BLM, all exploration work on unpatented claims between June 2011 and February 2019 was permitted under a Plan of Operations (PoO) approved by the USFS, as described below. This PoO (#2011-030938-B) was granted to Western Pacific by the USFS on June 2, 2011, and subsequently amended on May 30, 2012. A cash bond totalling $67,300 was posted with the USFS to cover potential reclamation costs. PoO 2011-030938-B was transferred to Liberty Gold in 2016 and assigned a new number (#2016-063179), and the bond amount was increased to $206,400. PoO #2016-063179 authorizes 33.12 acres of disturbance (13.4 ha).

A new Plan of Operations (#2017-072046) was submitted to the USFS on May 11, 2017, and approved on February 12, 2019. The new PoO allows for construction of roads and up to 370 drill sites, 47.9 km of drill roads, and 57.1 ha of disturbance within a 7.3 km^2 area surrounding the historical mined pits and two satellite areas to the northwest and southeast.

In February 2020, a modification to the PoO adding up to 154 drill sites, 24.6 km of drill roads, and 20.5 ha of disturbance within a 4.7 km^2 area was submitted to the USFS and BLM. Approval was granted in March 2021, allowing access to lower elevation areas along the eastern range front. The most recent PoO revision also grants access to the mine production well and use of public roads on BLM-administered land (case number IDI-039132). Total permitted access includes up to 596 drill sites, 91.1 km of drill roads, and 91.0 ha of disturbance within a 11.9 km^2 area.

An additional PoO was submitted to the BLM in September 2021 and approved in September 2022 (case numbers IDI-039411 and IDI-039412). This approval is additional to the existing PoO issued by the USFS for current exploration activities at Black Pine over a surface area of 12.4 km^2, totalling 14.2 ha of disturbance over 18.8 km miles of new and existing roads and 117 drill pads, in the Section 36 lease area, unpatented lode claims, and the private mineral lands located to the east of the Black Pine resource area.

In July 2022, Liberty Gold received an approved Notice of Intent (NOI) from the USFS permitting a drill site on the high priority regional Gully Target, located approximately 2 kilometres north of the current area of operations.

As of the Effective Date of this report, total authorized exploration activity under the USFS and BLM PoOs include 713 drill sites, 110 km of drill roads, and 105.1 ha of disturbance, over an area of 24.3 km^2.

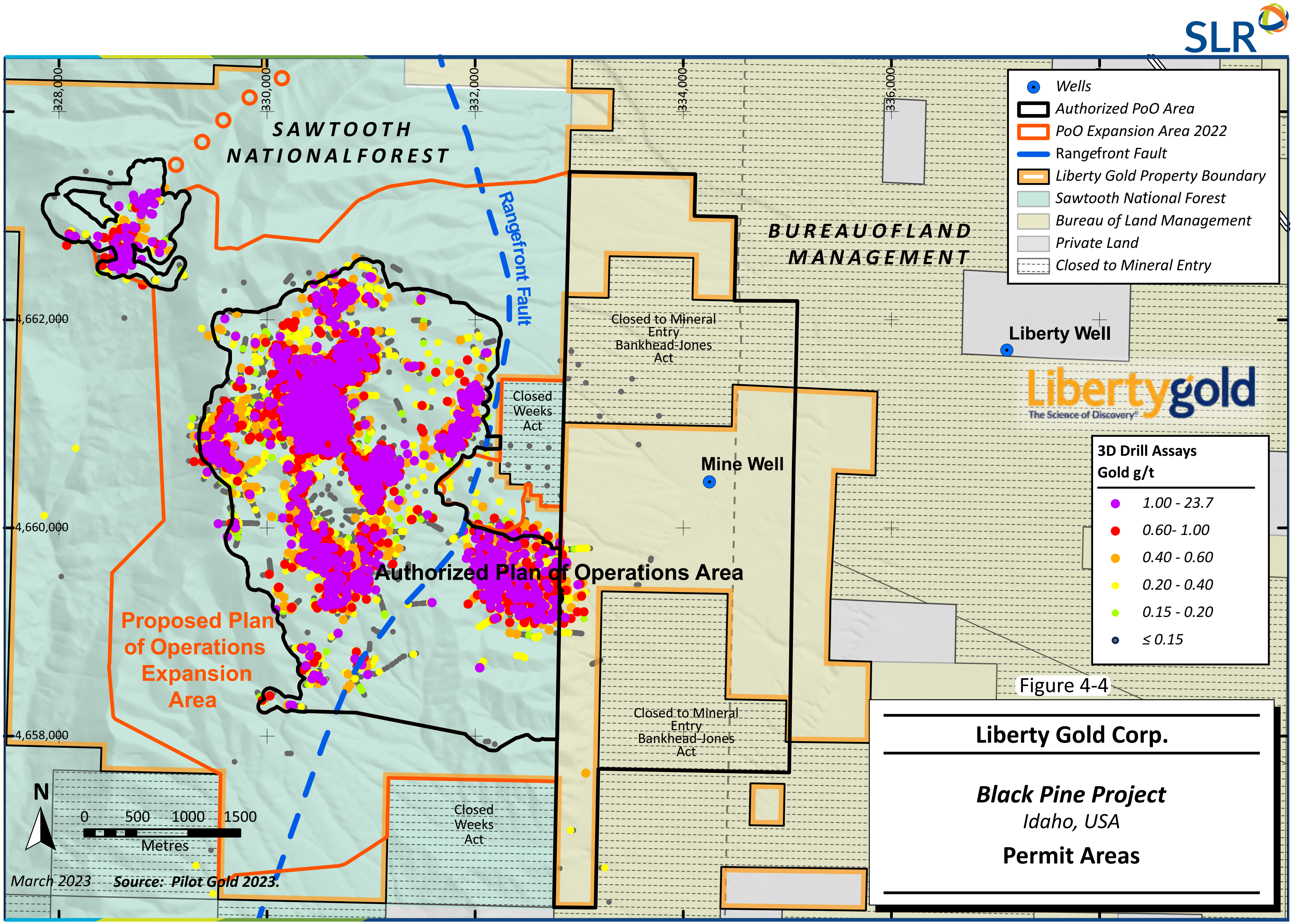
In October 2022, a new modification to the PoO was submitted to the USFS. Proposed disturbance includes 245 new drill sites, 52.5 km of drill roads, and 59 km^2 of disturbance over an area of 11.4 km^2 surrounding the existing PoO area.

Permit areas are summarized in Figure 4-4.

As of December 2022, there are 176 open drill sites and 157 reclaimed drill sites, 35.3 km of open drill roads, 14.0 km of reclaimed drill roads, and 33.9 ha of open disturbance and 16.6 ha of reclaimed disturbance (total 50.4 ha).

There are no unique biological or cultural issues currently identified within the project area. Mitigation/avoidance procedures for such things as greater sage-grouse mating periods, mule-deer winter range, sensitive plant species, and introduction of noxious-weed species are stipulated in the PoO. At present, drilling on USFS land is restricted to the months between June 30 and March 1 in the lower elevations to account for sage-grouse mating periods. In the far south, drilling is restricted to the months between March 15 and December 15 and some low-elevation roads are restricted until May 15 because of mule deer winter habitat. However, there are no restrictions for other areas, which comprise most of the mineralized zones and targets. On BLM land, there are seasonal drilling restrictions in areas with 3 km of active greater sage-grouse leks between November 1 and July 31.

The reclamation bond for the Western Pacific Resources PoO has been incorporated into a single reclamation bond of $2,383,900 to cover Liberty Gold's permitted disturbance on USFS-administered lands. The BLM holds two reclamation bonds totalling $388,909 for activities on BLM-administered lands.



SLR
SAWTOOTH NATIONALFOREST
Rangefront Fault
BUREAUOFLAND MANAGEMENT
Wells
Authorized PoO Area
PoO Expansion Area 2022
Rangefront Fault
Liberty Gold Property Boundary
Sawtooth National Forest
Bureau of Land Management
Private Land
Closed to Mineral Entry
328,000
330,000
332,000
334,000
336,000
4,662,000
4,660,000
4,658,000
Closed to Mineral Entry Bankhead-Jones Act
Closed Weeks Act
Liberty Well
Libertygold
The Science of Discovery
Mine Well
3D Drill Assays Gold g/t
1.00 - 23.7
0.60- 1.00
0.40 - 0.60
0.20 - 0.40
0.15 - 0.20
≤ 0.15
Authorized Plan of Operations Area
Proposed Plan of Operations Expansion Area
Figure 4-4
Closed to Mineral Entry Bankhead-Jones Act
N
0 500 1000 1500
Metres
Closed Weeks Act
March 2023
Source: Pilot Gold 2023.
Liberty Gold Corp.
Black Pine Project
Idaho, USA
Permit Areas

4.6 Water Rights

Several water wells are located immediately east of the property on BLM land. In accordance with Idaho Code 42-202A, Liberty Gold was granted temporary, 5 acre-foot per annum (afa) water rights by the Idaho Department of Water Resources (IDWR) in 2019 through 2021. Water was used for drilling and dust suppression. In April 2020 an additional 50 afa was leased from a local farmer through the Idaho State water bank. The use of water for mining or exploration is considered a beneficial use approved by IDWR.

The water needs of the historical mining were being met through a single production well known as the Black Pine Mine Well, which was licensed for 868.5 afa in two water rights. Access to the well was granted to Liberty Gold as part of the PoO amendment in March 2021, allowing Liberty Gold to refurbish and start pumping from the well. In November 2022 Pilot Gold USA successfully purchased these two rights out of the Bankruptcy and transferred title to their name.

In 2021 and 2022, Liberty Gold secured two separate lease-option agreements for an aggregate 2,194.5 afa of agricultural water from local farm owners, granting water rights to be used during mining activities.

Liberty Gold also purchased the rights to an additional 140 afa of water rights through its acquisition of the private ranch described in Section 4.2.3.

In total, Liberty Gold has secured, through purchase and lease agreements, access to over 3,200 afa of water rights, sufficient for any future large-scale mining operation envisioned at Black Pine.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The information summarized in this section is derived from publicly available sources, as cited.

5.1 Access to the Property

The Black Pine project is located approximately 10 km west of U.S. Interstate Highway 84 (I-84) and access is available from I-84 and Utah State Highway 30 via improved gravel roads (County Road 36,000W and County Road 9,000S), jointly maintained by Oneida County and Liberty Gold. These connect with Forest Route 201, a USFS-maintained gravel road, for 4.0 km to the property entrance. The property can also be accessed from the north on I-84 via County Road 38,000W, an improved gravel road.

There are a number of locked gates within the property. Permission to enter and keys must be obtained from Liberty Gold or the USFS.

A number of major population centers with commercial air service are located in the region surrounding the Black Pine project. The cities of Twin Falls, Idaho, and Salt Lake City, Utah, are located about 175 km to the northwest and 190 km to the southeast, respectively. Elko, Nevada is located approximately 300 km southwest of the project, and Boise, Idaho is 340 km to the northwest. Figure 4-1 shows the location of the Project and Figure 5-1 shows the access routes to the Project from surrounding cities.

5.2 Climate

The climate in the project area and the surrounding region is of the continental, intermontane type. Temperatures and precipitation can vary widely from the high-desert valleys directly east of the property to the crest of the Black Pine Mountains on the west side of the property. Annual precipitation is approximately 25 cm at the base of the range, with significant variations dependent on elevation. Summer temperatures in the valleys commonly range from 5°C to over 40°C. Winter temperatures generally vary from -10°C to 10° C, but they can occasionally drop to -20°C. Winter snowfall at the higher elevations can impede access from mid-November through late April unless snow removal equipment is deployed. Mining can be conducted year-round, but exploration activities can be impacted by winter snowstorms.

Liberty Gold recently installed two weather stations and an air quality monitoring station to collect baseline data on climate and air quality.

5.3 Physiography

The Black Pine property straddles the eastern margin of the northerly-trending Black Pine Mountains. Elevations within the property range from a low of 1,650 m along the eastern edge, to a maximum of approximately 2,440 m in the western part of the property. The topography is moderately steep over much of the area. There are no perennial streams; all watersheds in the property eventually drain into the Great Salt Lake basin, located to the south. Vegetation in the lower elevations of the project area consists mainly of grasses and sagebrush. In the higher elevations, increased moisture allows juniper, piñon, mountain mahogany, and locally on steep, north-facing slopes, spruce to grow. A recent wildfire has denuded much of the range and only a few scattered patches of trees remain within the property.

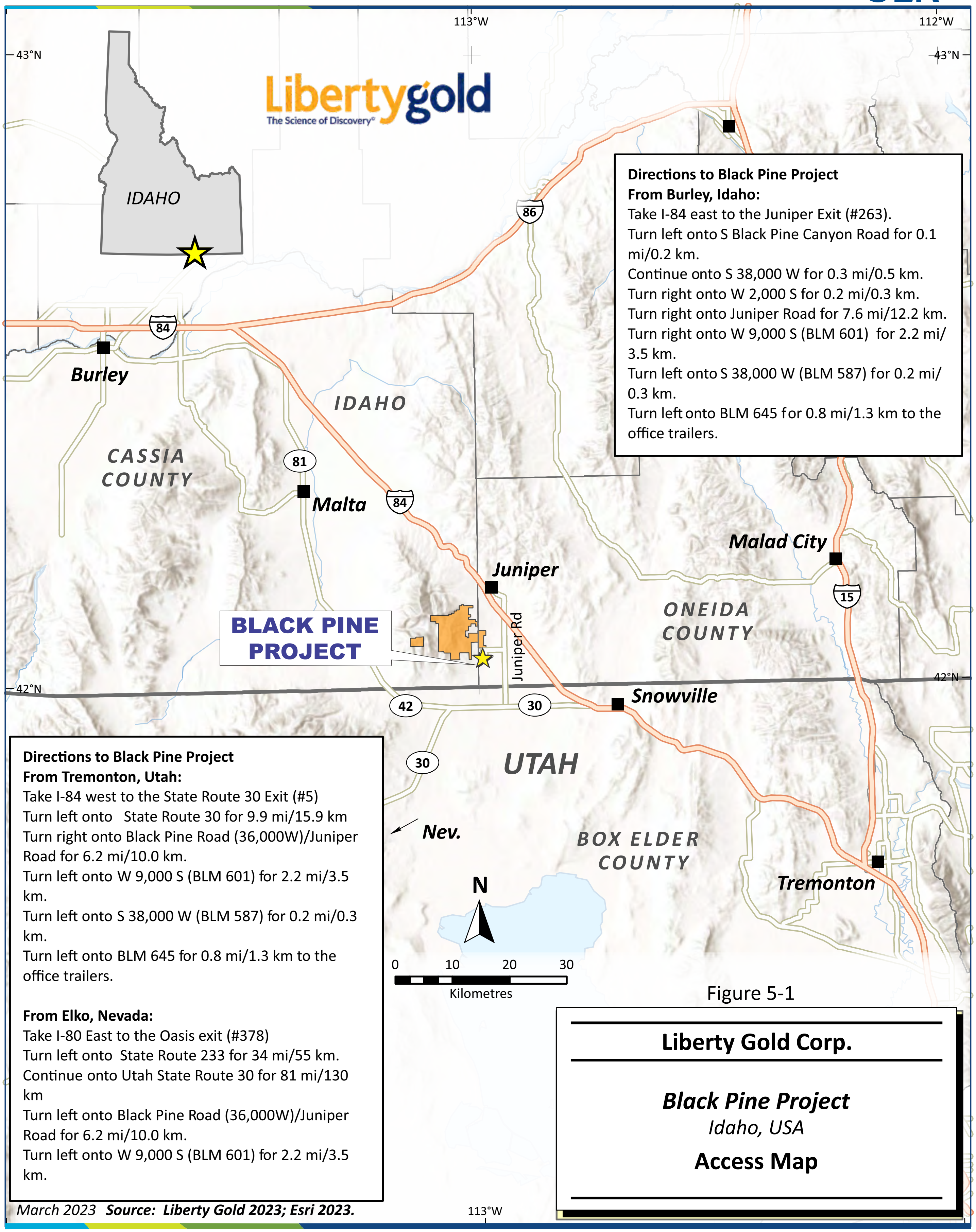


Figure 5-1

Liberty Gold Corp.

Black Pine Project
Idaho, USA
Access Map

5.4 Local Resources and Infrastructure

The small agricultural community of Snowville, Utah, is the nearest town to the project, about 30 km to the southeast. Basic lodging, fuel, and some supplies are available. Burley, Idaho, the Cassia County seat, is located 80 km to the northwest, and Tremonton, Utah, is located an equal distance to the southeast. Both are full-service communities with availability of food, lodging, fuel, banking, telecommunications, and other project needs. Heavy equipment and operators are available from numerous local contractors. Drilling, engineering, and heavy-equipment services are available in Salt Lake City, Utah, and Elko, Nevada, as is skilled labor for mining and construction.

Grid electrical power is available from a transformer on a major power line about 10 km southeast of the project, with a 25 kV distribution line extending to the eastern property boundary. Liberty Gold received a positive initial system impact study from Idaho Power Distribution Company on the supply of up to 10 megawatts of electrical power along the distribution line, which is managed by Raft River Rural Electric Co-op Inc. Further studies are on-going to refine transmission bottlenecks, system design constraints and cost estimates.

Water for exploration drilling needs is available from several wells on BLM land and private land immediately east of the property. The Black Pine Mine well (see Section 0), used during the historical mining operations, was drilled in the southeast quarter of the northeast quarter of Section 36, with water encountered just below 5,000 feet (1,524 m) in elevation (USDA Forest Service, 1993).

6.0 HISTORY

The information summarized in this section was originally extracted and modified from Hefner et al. (1991), Shaddrick (2013), and unpublished company files, as well as other sources as cited, and it is largely unmodified from that presented in Gustin et al (2021).

6.1 Exploration History

The Black Pine Mountains were first explored in the 1880s (Sawyer et al., 1997). Numerous prospects and small mines exploited base- and precious-metal deposits through the late 1800s and early 1900s, when minor amounts of zinc, silver, and mercury were produced. Gold was discovered in the late 1930s or early 1940s at the Tallman mercury mine, located on the current Black Pine project. The Virmyra Gold Mining Company operated a small open pit from 1949 to 1955 at the Tallman area (Prochnau, 1985). Total production was reported to be 120,000 tons with an average gold grade of 5.14 g Au/t (Hefner et al, 1991).

Modern exploration of the Black Pine project area began in the 1960s. Relatively little information is currently available concerning exploration work done in the 1960s to 1981. Much of what is known of that period is based on a summary in Threlkeld (1983) and archival material as follows:

- **1963 - 1964:** Newmont Mining (Newmont) carried out geologic mapping and surface geochemical sampling, which culminated in the drilling of 17 holes. Newmont terminated their involvement with the property in 1964 at approximately the same time as the Carlin deposit was discovered in Nevada.
- **1974 - 1975:** Newmont Mining reacquired the property and drilled 20 holes. At least three of the holes encountered gold grades >1.71 g/t Au. Newmont also carried out soil geochemical surveys, as well as induced potential (IP) and ground magnetic surveys over the Tallman mercury mine area. The geophysical work was done on NW-SE lines and detected a broad area of IP chargeability highs beneath the Tallman Pit area. Newmont terminated their second involvement with the property in 1975.
- **1975:** Kerr Addison Mines Ltd. collected rock samples from unknown locations on the property and submitted them for copper, zinc, and gold analyses.
- **1974 - 1976:** Gold Resources Inc. (Gold Resources) and Permian Exploration Account (Permian) held claims over a portion of the property and collected numerous rock and soil samples. Liberty Gold has historical records that indicate Gold Resources drilled 16 holes during this time period. Kermadex also staked claims and carried out soil sampling in the region during this time, but little else is known of their work or results.
- **1977 - 1978:** ASARCO leased the property from Gold Resources and Permian and carried out grid-based soil sampling, geological mapping, and geophysical surveys. The geophysics consisted of ground-based gravity, VLF, and IP surveys on two lines. A shallow conductor attributed to either disseminated sulfides or graphitic material was detected with the IP and VLF, but the gravity response was minimal (Paterson, 1979). ASARCO drilled 34 “percussion” holes before terminating their interest in 1978. No data are available for the 34 holes drilled by Asarco.
- **1979 - 1981:** Pioneer Nuclear Inc. (Pioneer) acquired the property in 1979. Pioneer carried out soil sampling and drilled 23 holes in 1979, of which 13 holes encountered gold grades greater than 0.51 g Au/t. In 1980 and 1981, Pioneer drilled five holes in and around the historical Tallman pit.

- **1983 - 1986:** Permian and Pegasus formed a joint venture and drilled 88 holes at the property during 1983, and an additional 36 RC holes and one diamond core ("core") hole in 1984. Pegasus re-assayed samples from selected Pioneer holes in 1985 and defined the Tallman and Tallman NE gold deposits to a significant extent with their drilling.
- **1986:** Inspiration Resource Corp. (Inspiration) took soil samples across several lines of existing soil grids. This work was likely completed as due-diligence confirmation sampling, as there doesn't appear to have been a joint venture agreement between Inspiration and Permian.
- **1986 - 1990:** In 1986, Noranda Exploration, Inc. (Noranda) acquired the property from Permian. Over four years, Noranda carried out an extensive exploration and drilling program, including soil and rock sampling, detailed geological mapping, and stratigraphic studies. In 1987, Noranda contracted TerraSense Inc. to complete an airborne magnetic survey over a significant portion of the Black Pine Mountains that included the current property. These data have not been digitized or fully interpreted by Liberty Gold. Noranda drilled a total of 532 RC and conventional rotary holes, as well as four core holes for metallurgical testing samples.

  On the basis of this work, Noranda discovered most of the gold zones that were later mined by Pegasus. Noranda produced a feasibility study in early 1990 and sold the property to Pegasus in June 1990.
- **1990 - 1998:** Pegasus put the property into production in late 1991 as an open-pit heap-leach operation. Pegasus did not build the mine as designed in the Noranda feasibility study, however, choosing to load the leach pads with run-of-mine (ROM) mineralized material instead of crushing it. Pegasus drilled 1,082 RC holes and 17 core holes from 1990 through 1997. Soil samples were collected from grids along the southern range front and north of Mineral Gulch, and an extensive rock-sampling program was carried out. Three-dimensional deposit models were created based on domains of exploration drill hole and blast-hole assays, without taking detailed geology into account. Mining ceased in late 1997, and the last gold was recovered from the heap in 1998. The USFS seized the reclamation bond and reclaimed the property.
- **1999 – 2009:** The property was idle from 1999 to 2009. Western Pacific acquired the property by staking claims in 2009 and 2010.
- **2010 - 2012:** Western Pacific contracted 82 line-km of gravity and 20 line-km of ground magnetic surveys, and drilled a total of 38 RC holes. This was followed by an aeromagnetic survey in 2012 of 1,842 line-km flown by EDCON-PRJ, Inc. and interpreted by Fritz Geophysics. (Fritz, 2012).

6.2 Historical Geological Mapping

The regional to district-scale geology of the Black Pine project area is illustrated by the 1:50,000 scale U.S. Geological Survey (USGS) map of the Strevell 15-Minute Quadrangle, Cassia County, Idaho by Smith (1982). Noranda geologists and consultants produced the most comprehensive geological map of the Black Pine property (Ohlin, 1988). Later mapping by Pegasus did not appear to improve upon the Noranda maps, even with the additional exposures afforded by the open pits.

Pit-geology maps generated by Willis (2011) for Western Pacific were imported into the Liberty Gold database and draped onto topography using Leapfrog software, which allowed Liberty Gold to conclude that the 2011 pit maps correlate well with down-hole lithology data.

Liberty Gold possesses numerous scanned geological maps from historical operators, which have either been integrated into the database or superseded by Liberty Gold mapping and modelling.

6.3 Historical Soil Sample and Stream Sediment Data

Liberty Gold has compiled and digitized geochemical data from 12,623 soil samples collected and analyzed by at least three historical operators, including Noranda, Pegasus, and Western Pacific (Figure 6-1). Relatively little is known about the soil-sampling methods used by operators prior to 2011. Soil sampling was primarily grid-based, with sample spacings ranging from approximately 15 m to 120 m. There are also numerous scanned maps of earlier soil grids of limited extents from nearly every historical operator, including Gold Resources, Newmont, Kermadex, Inspiration, Permian, Asarco, Pegasus (pre-Noranda), and Pioneer. Where possible, these have been geospatially registered and digitized by Liberty Gold. Comparison of the Pegasus-era soil data with scanned maps of Noranda-era compiled soil samples indicates that Pegasus collected up to 2900 soil samples to the north of Mineral Gulch, south of the I Pit and Rangefront zone.

Western Pacific contracted two soil surveys. The northern grid (1,175 samples) was collected by Rangefront Consulting LLC of Elko, Nevada, and the southern grid (1,300 samples) was collected by North American Exploration of Salt Lake City, Utah. The work was done under the supervision of Western Pacific's qualified person. Samples were collected on 50 m by 50 m grids with locations established by handheld Global Positioning System (GPS) units. Soil material was taken from the "B" horizon, where present, and omitted in areas of exposed rock.

The soil samples compiled by Liberty Gold delineate a strong gold-in-soil anomaly, with 4,986 samples that assayed in excess of 0.050 g Au/t and 3,205 samples that assayed greater than 0.100 g Au/t. These samples principally form a broad, diamond-shaped anomaly over the historical mine area, of approximately four km north-south by about three km in an east-west direction (Figure 6-11). It is clear that soil geochemistry played a critical part in determining historical exploration targets, owing to the excellent correlation between elevated gold-in-soils and the locations of historical deposits and pits, as well as its correlation with historical drill targets. Significant portions of the historical gold-in-soil anomalies have not been adequately drill tested at Black Pine and are high-priority drill targets for Liberty Gold.

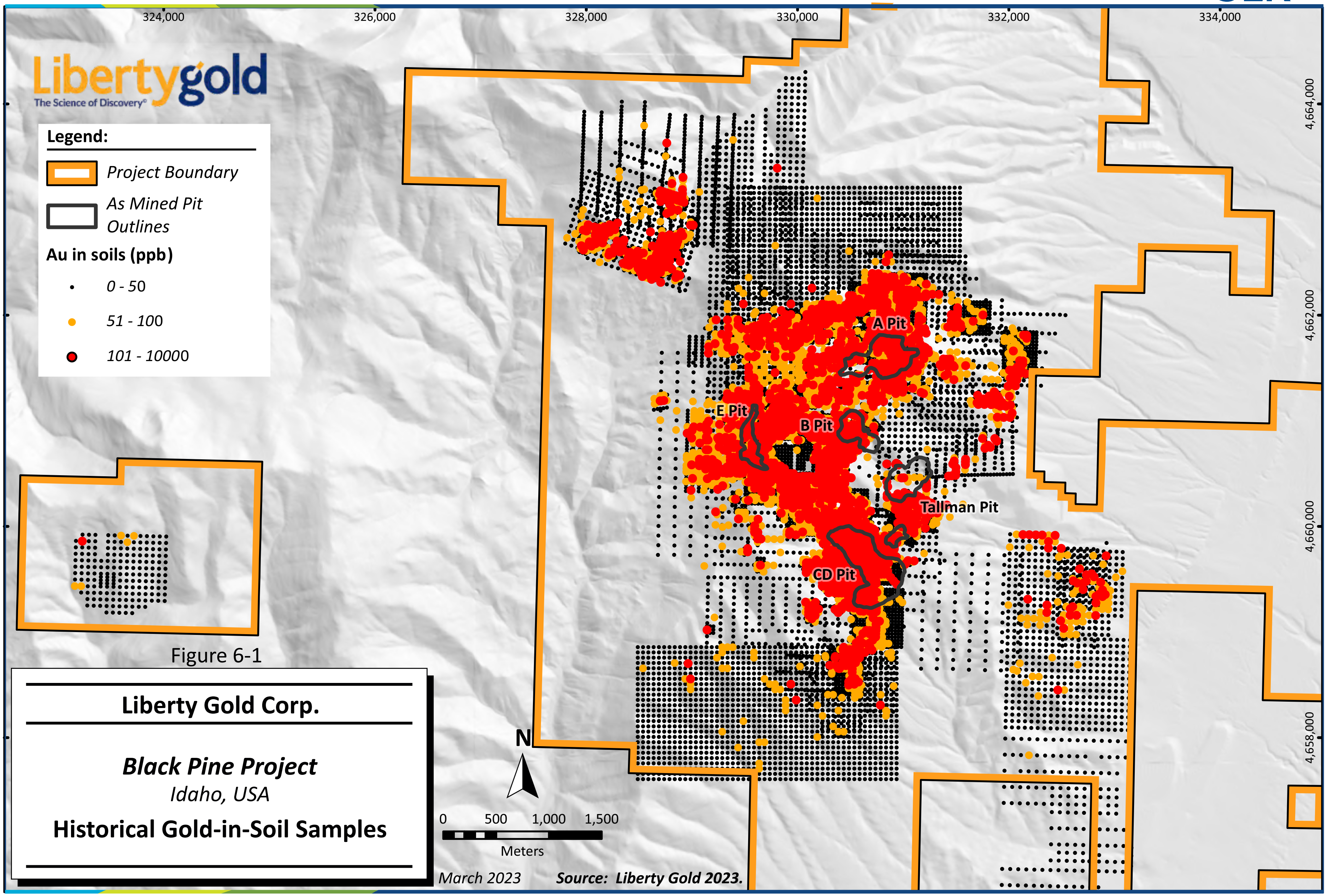


Figure 6-1

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Historical Gold-in-Soil Samples

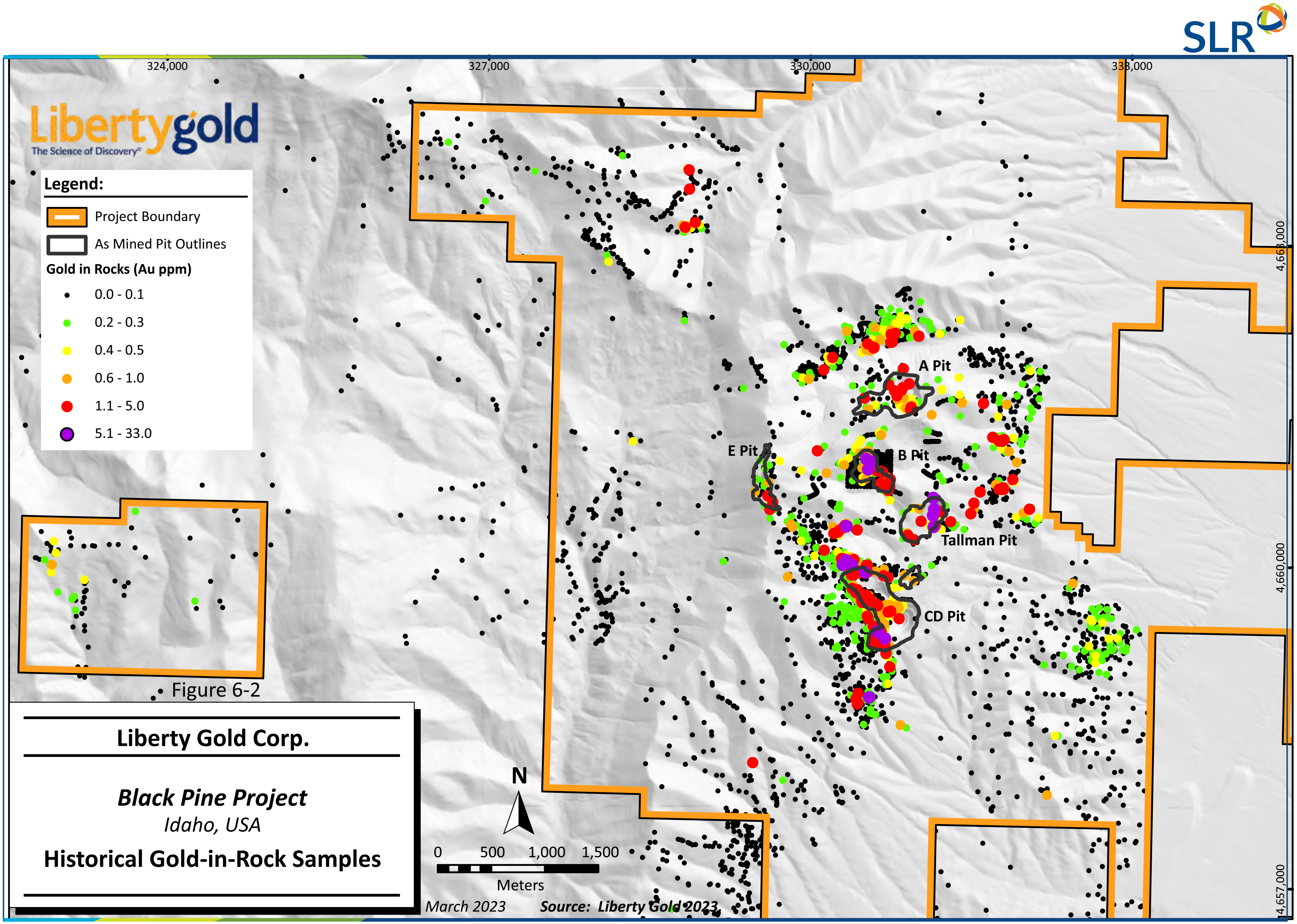
Stream-sediment surveys were carried out by previous operators across the broader Black Pine Mountains as part of a regional exploration effort. This data is not presently being used by Liberty Gold, as it has largely been superseded by soil and rock data.

6.4 Historical Rock-Chip Geochemistry

A large number of historical surface rock samples have been taken over the course of exploration of the Black Pine property. A historical electronic database with 5,202 samples across the Black Pine Mountains was recovered from Pegasus' project archives, including 4,516 that were taken within the current property boundary. Of these, 59 are lacking location information. Liberty Gold has scanned and digitized all maps that could be georeferenced to validate the historical rock sample locations.

Western Pacific collected 251 rock-chip samples, primarily focused on existing pits and road cuts, that were intended to verify and expand the known mineralization indicated by the historical exploration and mining data (Shaddrick, 2013). A total of 250 of these samples are located within the current property boundary.

Of the 4,516 historical samples in the digital database taken within Liberty's current property boundary, 1,344 returned gold values in excess of 0.1 g Au/t, 168 were in excess of 1.0 g Au/t, and 19 samples assayed greater than 5.0 g Au/t. The presently compiled historical gold results from rock samples are shown in Figure 6-2.


Libertygold
The Science of Discovery
Legend:
Project Boundary
As Mined Pit Outlines
Gold in Rocks (Au ppm)
0.0 - 0.1
0.2 - 0.3
0.4 - 0.5
0.6 - 1.0
1.1 - 5.0
5.1 - 33.0
324,000
327,000
330,000
333,000
4,663,000
4,660,000
4,657,000
A Pit
B Pit
E Pit
Tallman Pit
CD Pit
N
0 500 1,000 1,500
Meters
March 2023
Source: Liberty Gold 2023
Figure 6-2
Liberty Gold Corp.
Black Pine Project
Idaho, USA
Historical Gold-in-Rock Samples

6.5 Historical Drilling

This section summarizes the drilling carried out in the Black Pine property by historical operators. The information presented in this section of the report is derived from multiple sources, as cited.

6.5.1 Summary

Liberty Gold has compiled information for a total of 192,248 m drilled in 1,887 holes at Black Pine, not including ASARCO holes for which no data were found (Table 6-1). Approximately 99% of the holes and metres were drilled using conventional rotary and RC methods, and 26 of the holes were drilled using diamond-core methods. Other than the core holes, many of the historical holes lack explicit designation as to the type of drilling method, specifically conventional rotary versus RC. In many cases, these are assumed to be RC holes, but it is likely that some are conventional-rotary holes, especially the older holes. There is no assay data currently available for 34 conventional rotary or RC holes drilled by ASARCO in 1977.

Table 6-1: Summary of Black Pine Project Historical Drilling
Liberty Gold Corp. – Black Pine Project

Company	Year	RC/Rotary Holes		Core Holes		Total	
		No.	Metres	No.	Metres	No.	Metres
Newmont	1964, 1974	37	3,119	-	-	37	3,119
Gold Resources	1974-1976	13	1,083	3	135	16	1,218
Pioneer Nuclear	1979-1981	28	2,458	-	-	28	2,458
PEA/Pegasus	1983-1985	123	8,245	1	76	124	8,321
Noranda	1986-1989	532	51,366	4	245	536	51,611
Pegasus	1990-1997	1,082	116,447	16	1154	1,098	117,601
Western Pacific	2011-2012	38	7,920	-	-	38	7,920
Total[1]		**1,853**	**190,638**	**24**	**1,610**	**1,877**	**192,248**

Notes:
1. 34 holes drilled by ASARCO in 1977 excluded from the tally as there is no assay data currently available.

The majority of the historical holes were drilled vertical, or within 10° of vertical. Roughly one-third have been drilled as angled holes, including 676 holes drilled at angles shallower than -75°. The geometry of gold mineralization at Black Pine varies considerably but is generally gently dipping with some areas of more steeply dipping mineralization. Historical operators appear to have generally designed drill holes to intersect mineralization as obliquely as possible.

Figure 6-3 shows the locations of historical drill hole collars within the Black Pine property.

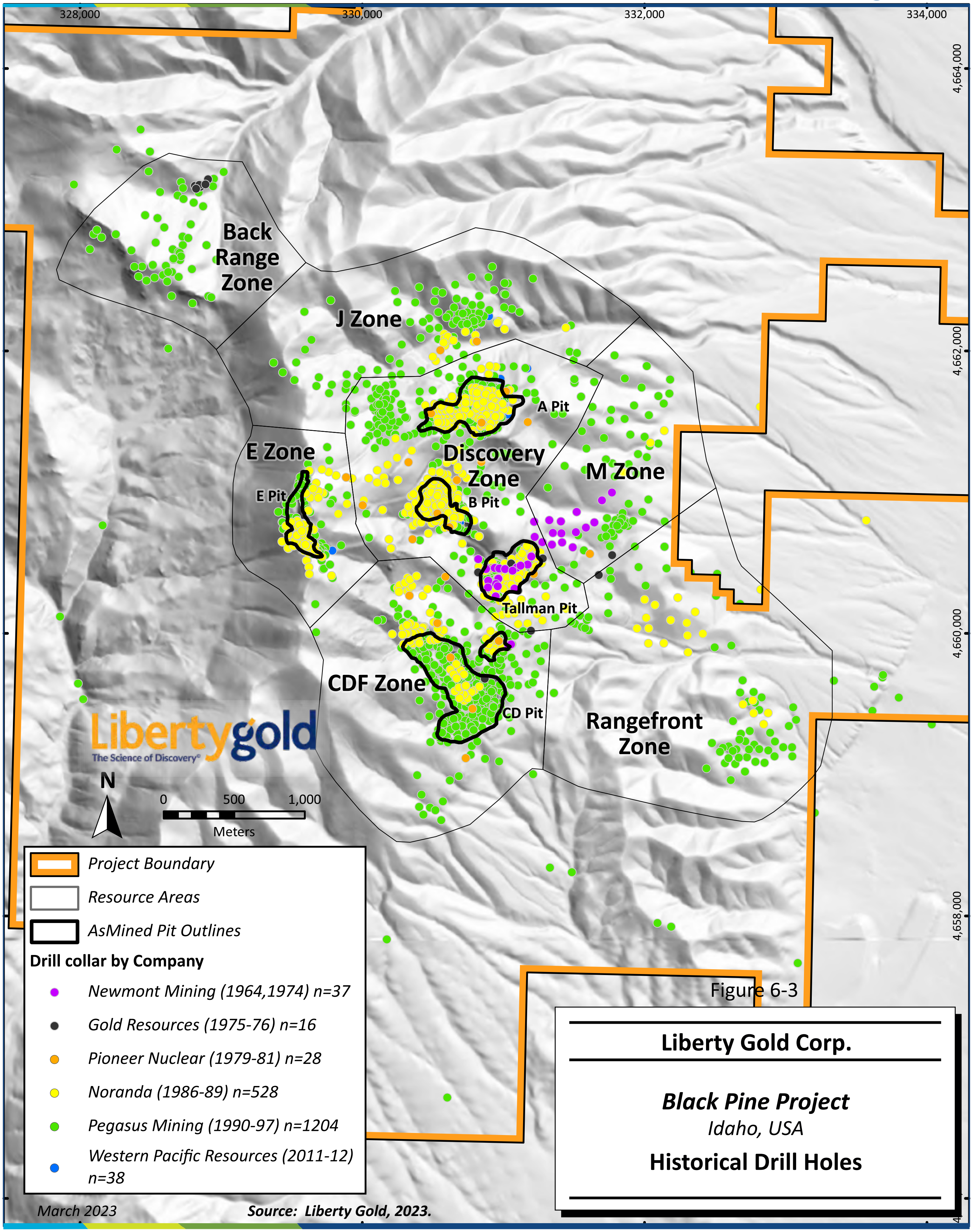


Figure 6-3

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Historical Drill Holes

The QP is not aware of the details regarding the drilling contractors, drilling methods, sampling procedures, collar-survey methods, and types of drill rigs utilized in the historical Black Pine drilling programs other than those summarized below.

The historical drilling discovered and defined gold mineralization that was eventually mined from seven historical open pits. These pits produced approximately 435,000 ounces of recovered gold from a little more than 30 Mt of ore between 1991 and 1997. The pits lie within mineralized zones of various sizes, and only a portion of each mineralized zone was mined (Figure 6-4). Table 6-2 summarizes the size, average drilled grade, highest-grade drill hole assay, and best gold intersection in terms of grade multiplied by thickness from each of the mined mineralized zones.

Table 6-2: Summary of Mined Gold Zones and Drill Highlights
Liberty Gold Corp. – Black Pine Project

Gold Zone	Length (ft)	Width (ft)	Depth (ft)	Avg Mined Grade (g/t Au)	Highest-Grade Drill Assay (g/t Au over 1.5 m)	Highest Grade x Thickness Intercept[1]
E	575	100	75	1.5	46.7	19.81 m @ 16.09 g/t Au
B	350	300	100	1.38	38.26	73.16 m @ 3.24 g/t Au
A	650	350	100	0.6	8.57	96.0 m @ 1.03 g/t Au
Tallman	350	200	120	0.9	11.31	50.3 m @ 1.76 g/t Au
C/D	800	250	100	0.58	25.27	103.6 m @ 0.83 g/t Au

Notes:

1. Intervals reported at 0.2 g Au/t cut-off.
2. Width is intercept width and may not portray true thickness

Several additional zones were identified by the drilling but were not mined, such as the A Basin, J Anomaly, and Rangefront Anomaly (Figure 6-4).

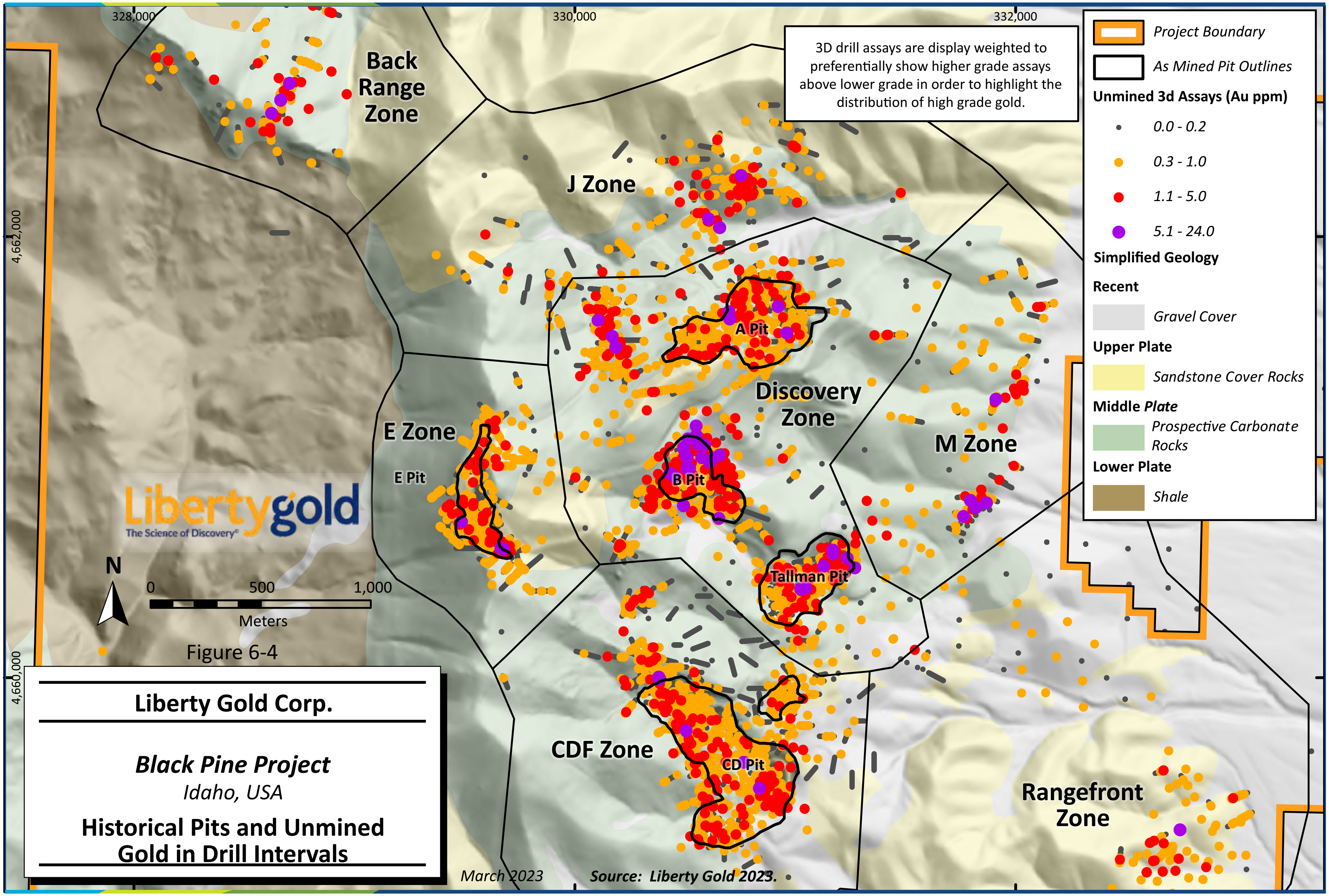


Figure 6-4

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Historical Pits and Unmined Gold in Drill Intervals

6.5.2 Newmont 1964 and 1974

Newmont drilled 17 rotary holes of uncertain type (RC or conventional rotary) in the area of the historical Tallman mine in 1964 and collected drill-chip samples over 1.52-metre (5-foot) intervals. Drilling was carried out by Sprague and Henwood, Inc. with 14.3-centimetre tricone and 12.1-centimetre hammer bits. Some or all of these holes were drilled with a truck-mounted Portadrill No. 753. Drilling was done both wet and dry; difficult drilling conditions were commonly noted. Newmont concluded the results of the drilling program “did not indicate sufficient strength of mineralization to encourage us to look further for an orebody” (Hardie, 1964) and terminated its interest in the property.

Newmont reacquired the property and in 1974 drilled 20 rotary and/or RC percussion holes. Eklund Drilling (Eklund) of Elko, Nevada was the contractor and samples were collected over 1.52-metre intervals. Drilling was carried out to the northeast of the historical Tallman mine, exploring for a possible extension or offset of mineralization. An unknown quantity of drill hole collar locations, but greater than five, were later surveyed by Desert West Land Surveys at the direction of Noranda.

6.5.3 Gold Resources and Permian 1974-1976

A total of 13 RC or rotary holes and three core holes, for a total of 1,218 m, were drilled by Gold Resources and Permian. Udy Core Drilling of Leadore, Idaho carried out the core drilling and Drilling Services International carried out the RC drilling for Gold Resources and Permian, but no other information is available.

6.5.4 ASARCO 1977

ASARCO drilled 34 “percussion” holes, mostly at the E Zone in the area of the top of Black Pine Cone Peak, with several holes west of Anomaly A and into A Basin in the Discovery Zone. ASARCO abandoned their interest in the property in 1978. No other information is available.

6.5.5 Pioneer Nuclear 1979-1981

Pioneer Nuclear drilled 28 RC drill holes for a total of 2,458 m in 1979 through 1981, of which 13 holes intersected gold grades more than 0.55 g Au/t in at least one sample interval. Samples were collected variably on 1.52 to 3.05 m intervals. An unknown number of collar locations were later surveyed by Desert West Land Surveys at the direction of Noranda.

6.5.6 Permian and Pegasus 1983-1986

The Permian Pegasus joint venture drilled 88 holes in 1983. At least some of the holes were sampled over 6.1 m intervals. In 1984, 35 RC holes were drilled and sampled on 1.52 m intervals. One core hole was also drilled. Drilling was carried out principally in the Discovery Zone, defining gold mineralization that would later be mined in the B and B Extension pits. Drill-hole collar locations were surveyed by plane table by Ron Willden, with an unknown quantity of collar locations later surveyed by Desert West Land Surveys of Burley, Idaho, at the direction of Noranda.

6.5.7 Noranda 1986-1990

Noranda drilled 536 RC holes and four metallurgical core holes over four years, for a total of 51,611 m. Typically, one or two truck- or track-mounted RC drill rigs were utilized, depending on access road conditions. Some holes were drilled dry and others were drilled with water injection.

Boyles Bros. Drilling Company of Salt Lake City was the drilling contractor in 1987 for PQ-size core drilling. Eklund was the contractor for most of the 1988 drilling, with some RC drilling by Hard Rock Mineral Drilling Company of Fort Collins, Colorado at the end of the year. Dateline Drilling Inc. (Dateline) of Missoula, Montana provided some RC drilling in early 1989, followed by Modern International Inc. of Elko, Nevada, who used a track-mounted RC rig used for most of their 1989 drilling.

The locations of Noranda's holes, as well as some holes drilled earlier by other operators, were surveyed by Desert West Land Surveys of Burley, Idaho using a Lazer Theodolite survey instrument; Grey Eagles Surveys also surveyed some collars.

6.5.8 Pegasus 1990-1997

Pegasus drilled 51 holes in 1990, 88 holes in 1991, 237 holes in 1992, 284 holes in 1993, 240 holes in 1994, 103 holes in 1995, 73 holes in 1996, and six holes in 1997, for a total of 116,448 m. All were drilled with RC methods, except for 16 core holes. Samples were collected over 1.52 m intervals and assayed at the Black Pine mine laboratory. Little information is available about drill contractors used by Pegasus. Dateline and Hackworth Drilling Inc. of Elko, Nevada drilled the RC holes in 1992 and 1993. In 1995, O'Keefe Drilling Company of Elko, Nevada drilled wet RC holes using 14 centimetre (cm) hammer bits and 13.7 cm tricone bits.

6.5.9 Western Pacific 2011-2012

Western Pacific drilled 38 RC holes in two campaigns, for a total of 7,920 m. Drill logs and RC chip trays are available for holes 1 to 31, but logs for holes 32 to 35 are missing from the data files. Holes 36, 37, and 38 were not logged and no assay data for these holes are available. After completion of the holes, the collars were marked with stamped brass tags fastened onto a steel wire, and their locations were surveyed by an unknown method.

The drilling was conducted by Envirotech Drilling LLC of Winnemucca, Nevada. All drill samples were collected at the rig using a wet splitter.

6.5.10 Summary Statement – Historical Drilling

The predominant down-hole length of the historical drill samples in the resource database is 1.52 m (5 feet), with 96% of the historical sample intervals with gold analyses in the resource database having this length. Other sample intervals are predominantly 3.05 m (10 feet) or 6.1 m (20 feet) (<2% each), with the small percentage of the remaining intervals having varied lengths.

Although surveys of the historical drill hole collars are limited, Liberty Gold has carefully checked the transformed database locations against historical aerial photos and drill hole plan maps. MDA (Gustin et al, 2021) completed similar checks. Two holes were found to be mislocated, and these were corrected. While the locations of some of the historical holes in the resource database undoubtedly have errors, the verification steps undertaken by Liberty Gold serve to significantly limit the magnitude of these potential inaccuracies.

There is no down-hole survey data in the resource database for the historical holes. This lack is not unusual for projects drilled prior to the late 1990s, especially considering the shallow depths of most of the drilling. Only 5% of the historical holes were drilled at angles of -75° or shallower, with a similar percentage having down-hole depths in excess of 150 m. Hole deviations are typically limited for near-vertical holes, as well as for holes drilled to shallow depths.

Historical references to “percussion drilling” are not clear as to whether the holes were drilled by RC or conventional rotary methods. While both drilling methods can experience down-hole contamination issues, RC can be superior to conventional rotary under certain drilling conditions. This topic is further discussed in Section 10.0.

The QP is unaware of any drilling, sampling, or recovery factors that could materially impact the use of the historical drill-hole data in the estimation of the current project Mineral Resources.

6.6 Historical Resource and Reserve Estimates

A number of estimations of mineralized material at Black Pine were carried out by historical operators, only a few of which are summarized herein. Most of the mineralized material included in these historical estimates was subsequently mined. A qualified person has not done sufficient work to classify these historical estimates as current Mineral Resources or Mineral Reserves. As such, Liberty Gold is not treating these historical estimates as current Mineral Resources or Mineral Reserves, and the estimates should not be relied upon.

The classification terminology is presented as described in the original references. It is not known if this terminology conforms to the meanings ascribed to the Measured, Indicated, and Inferred Mineral Resource classifications, or the Proven and Probable Reserve classifications of the Canadian Institute of Mining, Metallurgy and Petroleum’s (CIM) “CIM Definition Standards - For Mineral Resources and Reserves, Definitions and Guidelines” (CIM Standards). All of the estimates were originally reported in Imperial units of measure, and these units are retained for historical accuracy.

6.6.1 Noranda Historical Reserve Estimates

Prochnau (1985) carried out a “reserve estimate” for Noranda in the course of evaluating the Black Pine property for potential acquisition. The Tallman Pit area was divided into three zones (Tallman Pit, South Ore Body and North Ore Body). Using a polygonal estimate with a cut-off grade of 0.03 oz Au/ton, a tonnage factor of 13 ft^3/ton, and no dilution, Prochnau (1985) estimated “reserves” of 434,000 tons at a grade of 0.068 oz Au/ton. Other key assumptions, parameters, and methods used to prepare this estimate are not known. The classification of these reserves differs from the CIM Standards, but the extent and nature of these differences is not known. This estimate provides some information as to the potential grade of small quantities of mineralized material at Black Pine. A qualified person has not done sufficient work to classify this historical estimate as current Mineral Resources or Mineral Reserves, and Liberty Gold is not treating this historical estimate as current Mineral Resources or Mineral Reserves. This historical estimate should not be relied upon. Noranda outlined “reserves” for various deposit areas at Black Pine as summarized in Table 6-3 (Noranda, 1989).

Table 6-3: Mid-1989 Noranda “Reserves”
Liberty Gold Corp. – Black Pine Project

Deposit	Classification	Tons	Grade (opt)	Gold (ounces)
Tallman, A, B	Proven	5,357,000	0.040	163,200*
Tallman, A, B	Probable	1,016,000	0.040	30,900*
C, D, E	Drill Indicated	3,597,000	0.057	155,900*
A-west	Proven**	2,753,000	0.025	68,800*

Deposit	Classification	Tons	Grade (opt)	Gold (ounces)
G, A-south, J	Drill Indicated	2,381,000	0.035	62,800*
Total		15,094,000	0.040	481,600*
Total in-ground				633,700

Notes:

* = recoverable gold ounces
** = “sub-economic”

6.6.2 Pegasus Historical Reserve Estimates

Pegasus produced a number of estimates of “reserves”, “mineralized material”, and “additional mineralized material” from 1991 through 1996 as summarized in Table 6-4. The key assumptions, parameters and methods used to prepare these estimates are not known. The classification of these estimates differs from the CIM Standards, but the extent and nature of these differences is not known. These estimates are not subject to upgrading to become current Mineral Resources or Mineral Reserves, because a significant quantity, if not all, of the estimated materials were subsequently mined out. These estimates are relevant because they represent Pegasus’ estimates of Black Pine mineralization during the historical open-pit mining operation. A qualified person has not done sufficient work to classify this historical estimate as current Mineral Resources or Mineral Reserves. Liberty Gold is not treating these historical estimates as current Mineral Resources or Mineral Reserves, and the estimates should not be relied upon.

Table 6-4: 1990s Pegasus Historical Reserve Estimates
Liberty Gold Corp. – Black Pine Project

Area	1991		1992		1993		1994		1995		1996	
	oz	opt Au	oz	opt Au	oz	opt Au	oz	opt Au	oz	opt Au	oz	opt Au
Tallman Pit	68,487	0.023										
B Pit	88,731	0.036	47,826	0.048	18,876	0.036						
A Pit	181,345	0.019	181,345	0.02	249,840	0.018	49,667	0.19				
E Pit			67,655	0.07	58,770	0.057	50,981	0.072				
B Extension			39,471	0.023	25,106	0.026						
C/D			125,600	0.022	61,600	0.027	155,700	0.016	94,768	0.015	6,539	0.014
A Basin			50,500	0.03								
J Anomaly					20,300	0.025						
I Pit									21,410	0.014		
NE Tallman											26,320	0.017
Internal Documents	**338,563**	**?**	**336,297**	**0.026**	**415,809**	**0.02**	**256,358**	**0.019**	**116,178**	**0.015**	**32,859**	**0.0165**
Annual Report			336,297	0.026	346,000	0.018	256,000	0.019	116,000	0.015	29,959	0.017
Mineralized Material[1]	271,839	0.023	242,878	0.022	32,950	0.023	41,000	0.016			24,702	0.0135
Mineralized Material[1] + Addl. Mineralized Material[2]	**271,839**	**0.023**	**242,878**	**0.022**	**32,950**	**0.023**	**421,000**	**?**	**420,417**	**0.013**	**443,802**	**0.013**
All Mineralization	**610,402**		**579,175**		**448,759**		**677,358**		**536,595**		**476,661**	

Notes:

1. Mineralized Material defined as "within a floating cone or whittle pit that is not included in the current mine plan, or that needs better sampling to better define the zone."
2. Additional Mineralization defined as "all material within the computer block model at the measured/indicated level of geologic confidence but outs ide the current defined pits used for reserve definition. At Black Pine, some of this mineralization is surrounding mined-out pits and has a very low chance of be coming a future reserve." (Pegasus Gold Interoffice Memorandum, January 23, 1997)

In February 1997, late in the Black Pine mine life, "reserves" were estimated to be 1.8 Mt with a grade of 0.58 g Au/t, with "additional mineralized material" that totalled 1.7 Mt at a grade of 0.46 g Au/t (Metals Economics Group Report, 2012, quoting a 2/19/97 Pegasus press release). Key assumptions, parameters, and methods used in these historical estimates are not known. The classification of these reserves differs from the CIM Standards, but the extent and nature of these differences is not known. These estimates are considered relevant because they represent the mine operator's estimation of materials that remained very late in the mine life. SLR has not done sufficient work to classify the historical estimates as current mineral resources or mineral reserves, and Liberty Gold is not treating these historical estimates as current mineral resources or mineral reserves. These estimates should not be relied upon.

6.6.3 Estimate of Remaining Gold in the Historic Heap Leach Pad

Powell (2012) of Tetra Tech, prepared an internal report for Western Pacific Resources, with an estimate of the remaining gold in the historic heap leach pad, based on production numbers (tonnage placed on the pad, head grade, recovery, total ounces produced, etc.) provided by Pegasus in annual reports and other sources. Powell's (2012) summary states *"the gold content remaining on the Black Pine reclaimed leach pad is estimated at 243,543 ounces. It is possible the above estimated metal content could be mis-calculated either high or low by 10 to 15%. This could have occurred through mining dilution, assay error, sample error, sample losses, or survey error. The writer has no clear understanding of the ore control procedures practiced at the mine during operations. Typical of the time would be some sort of blast hole assaying (fire assay) on 12 – 20 foot hole spacing and similar depth. This writer was unable to discover any geologic block model to reconcile back to the actual mine model (plan). Given the low grade nature of the ore body, it certainly was critical for the operators to accurately forecast and mine the ore zones as efficiently as possible. Tetra Tech recommends that given the limited historic column heap leach testing, the future heap leach recovery be set at no higher than 25%. This is, in no way, anything more than an educated guess by the author at this time based on very limited information currently available."*

Powell (2012) further estimates that 50,899 recoverable ounces may remain in the historic leach pad.

A qualified person has not done sufficient work to classify this historical estimate as current Mineral Resources or Mineral Reserves, and Liberty Gold is not treating these historical estimates as current Mineral Resources or Mineral Reserves. This estimate should not be relied upon.

Additional work to identify current Mineral Resources in the historic leach pad would include RC and Sonic drilling and column testing to identify what portion, if any, of the gold remaining in the leach pad is recoverable.

These Mineral Resource estimates are historical in nature, however, they are relevant as they indicate the mineralization on the Project. It is important to note that these historical Mineral Resources have been superseded by subsequent Mineral Resource estimates and that Liberty Gold is not treating any of these Mineral Resource estimates as a current Mineral Resource estimate.

6.7 Past Production

The Silver Hills, Ruth, Mineral Gulch, and Hazel Pine mines, all within the current property boundary, were located along the eastern edge of the Black Pine Mountains and operated between approximately 1915 and 1920, with the Silver Hills mine producing until 1932. Production was mostly on the order of a few tens to hundreds of tons from veins containing quartz, tetrahedrite, sphalerite, jamesonite, pyrite, and oxides of copper, zinc, antimony and iron (Anderson, 1931; Brady, 1984).

According to Prochnau (1985), the Virmyra Mining Company operated the Tallman pit from 1949 through 1955. Gold production from this operation was estimated to be 109,000 tons with an average gold grade of 5.14 g/t Au (Hefner et al., 1991). The rock was treated by cyanide vat leaching. The tailings from this operation contained an estimated 0.026 oz Au/ton (0.89 g/t Au), indicating recoveries of approximately 80% (Prochnau, 1985).

After acquiring the Black Pine property from Noranda in mid-1990, Pegasus constructed a cyanide heap-leach pad and gold recovery plant and began extraction of mineralized material from the Tallman pit in October 1991 (Pegasus 1993 Annual Report). The first gold was poured on January 9, 1992. Pegasus subsequently mined five additional pits through 1997. Material was mined from the open pits at a rate of approximately 37,000 tons (33,600 tonnes) per day and ROM was placed on a multiple-lift, valley-fill leach pad. Gold was recovered using carbon adsorption and doré bars were produced after solvent electrowinning. Approximately 26.5 Mt of waste rock and 31 Mt of ore were mined between 1991 and 1997 (Sawyer, undated).

Mining ceased at Black Pine in late 1997 and the heap-leach pad was subsequently rinsed and reclaimed (Sawyer, undated; Powell, 2012). Table 6-5 summarizes the production reported by Pegasus in annual reports and SEC filings, which differ slightly from similar information found in other reports (e.g., Pegasus internal reports, Intierra website, Sawyer, undated).

Table 6-5: 1990s Production Summary of the Black Pine Mine
Liberty Gold Corp. – Black Pine Project

	Units	1992	1993	1994	1995	1996	1997	1998	Totals
ROM ore mined[1]	000 t	2,850	3,270	5,810	7,050	8,730	2,650	-	30,360
Stripping ratio[1]		-	1.3	1.16	1.16	0.98	2.43	-	1.13
Average gold grade[1]	g/t Au	0.55	0.82	0.69	0.72	0.52	0.55	-	
Gold recovery percentage[1]	%	-	80%	54%	59%	60%	61%	-	
Gold to heap leach[2]	oz	109,080	88,438	130,270	164,316	147,186	26,320		665,610
Gold recovered[1]	oz	48,700	66,100	65,700	108,500	87,900	44,100	13,800	434,800
Calculated gold recovery	%								65%
Silver recovered[1]	oz	14,900	28,600	39,100	59,300	31,000	16,200	-	189,100

Notes:

1. from Pegasus Gold Annual Reports, SEC Form 10-K filings, and BPMI closure report by Sawyer et al.
2. from Pegasus Gold internal yearly production statements

7.0 GEOLOGICAL SETTING AND MINERALIZATION

The information presented in this section of the report is derived from multiple sources, as cited.

7.1 Regional Geology

The Black Pine property is located in the northeastern portion of the Basin and Range physiographic province, near the late Proterozoic rifted continental margin of North America. Rifting was followed by late Proterozoic and early Paleozoic subsidence, and accumulation of a thick sequence of continental margin siliciclastic and carbonate rocks ranging from near-shore sandstone and shale to offshore carbonate reef and lagoonal deposits (e.g., Cook, 2015).

Beginning in the middle of the Paleozoic era, plate collisions from the west led to a series of intra-plate contractional orogenic events, starting with the emplacement of the Roberts Mountains allochthon (RMA) in Late Devonian and Early Mississippian time. Although the RMA is located to the west of the Black Pine Mountains, it shed siliciclastic material into a foreland basin that stretched across much of what later became the eastern Great Basin, defined as the hydrographic region across the western United States that has no hydrologic connectivity to the ocean, including portions of Nevada, Oregon, Utah, California, Idaho, and Wyoming (e.g., Hintze, 1991).

In Pennsylvanian time, the Humboldt orogeny (Theodore et al., 1998) affected areas to the west of Black Pine. In the Middle to Late Jurassic, much of the area along the Nevada-Utah border was affected by an orogenic event known as the Elko orogeny, characterized by thrusting and attenuation faulting, with local areas of low-grade metamorphism (Thorman and Peterson, 2004). It is not clear whether some of the folding seen at Black Pine can be attributed to this orogenic event, although the presence of a phyllitic cleavage locally in sheared Mississippian strata indicates that some rocks were affected by low grade metamorphism.

Subsequently, the Late Cretaceous Sevier orogeny resulted in development of widespread, primarily thin-skinned, east-vergent folds and thrust faults throughout the eastern Great Basin (e.g., DeCelles, 2004). There is some evidence that the Laramide orogeny may also have affected this region in latest Cretaceous-Paleocene time.

In the early Eocene, contractional deformation gave way to extensional deformation and intermediate to felsic volcanism across the Great Basin. Throughout most of the Cenozoic, extension involved movement along low-angle normal faults, with up to 100 km of offset. Listric normal faults associated with these low-angle normal faults have tilted hanging wall strata as young as Miocene in age, generally in an eastward direction (e.g., Mueller et al, 1999).

The Black Pine Mountains lie in the hanging wall of the Raft River-Albion metamorphic core complex, located approximately 20 km to the southwest. In this area, high-grade metamorphic rocks are separated from weakly or unmetamorphosed strata along a series of low angle detachment faults with top to the east displacement and likely tens of km of movement. The Black Pine Mountains are interpreted to lie in the hanging wall of one of these faults (Konstantinou et al, 2012). The faults were active between approximately 14 and 8 million years ago, thus likely post-dating gold mineralization.

The latest manifestations of extension are “Basin and Range” style block faults that divide the Great Basin into its characteristic horsts and grabens. Some of these faults are still active today.

The Black Pine Mountains are predominantly underlain by Devonian to Permian sedimentary rocks, some of which are weakly metamorphosed. These occur in two major structural blocks, separated by a fault which transects the range from southwest to northeast (Figure 7-1). The southern block, which includes the Black Pine project, consists largely of structurally interleaved members of the Permo-Pennsylvanian Oquirrh Group, including limestone, sandstone, dolomite, and siltstone. The Oquirrh Group is a regionally significant unit that hosts mineralization elsewhere in the northeastern Great Basin, for example in the Bingham Canyon District (Shaddrick et al., 1991; Hintze, 1991). It is described in more detail below.

The southern block can be divided into three structural plates, bounded by low angle faults (Figure 7-1 and Figure 7-2). The lowest plate comprises the Devonian Jefferson Formation and the Upper Mississippian-Lower Pennsylvanian Manning Canyon Shale, the latter of which was deposited in the Antler orogenic foreland basin. The middle plate consists of structurally interleaved members of the Oquirrh Group, including limestone and minor dolomite, variably calcareous sandstone, siltstone, and quartzite, and it is of primary interest as a host rock for gold mineralization. The upper plate consists primarily of sandstone and siltstone of the upper portion of the Oquirrh Group. The lowermost plate is believed to structurally overlie a basement of weakly metamorphosed rocks of suspected Cambro-Ordovician age (Smith 1982; Figure 7-2).

The northern block is comprised of two thrust plates. The lower thrust plate consists of four informally-named stratigraphic units, ranging from Late Pennsylvanian to Early Permian in age, probably corresponding to the upper portion of the Oquirrh Formation. The upper plate consists of limestone and silicified limestone of Early Permian age.

Igneous rocks are widespread but not abundant in the Black Pine Mountains. The Paleozoic rocks have been intruded by narrow, altered, intermediate to mafic dikes and sills. Tertiary ash-flow tuff and a rhyolitic flow-dome overlie the Paleozoic rocks outside the property boundary (Smith, 1982; Brady, 1984).

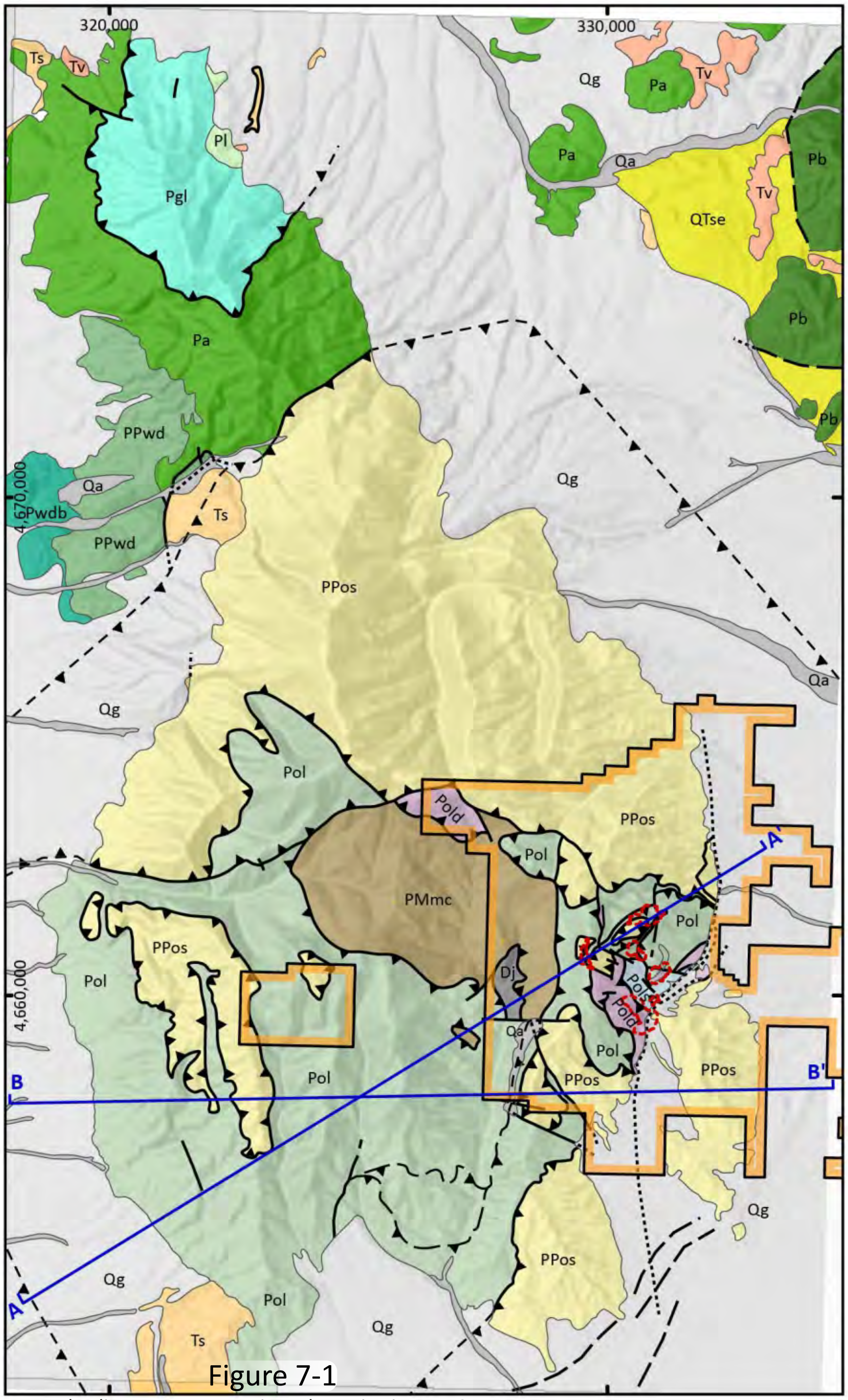


Figure 7-1

Note: Blue lines are cross-sections shown in Figure 7-2.

Description of Map Units

- Qa — Alluvium and colluvium (Holocene and Pleistocene)
- Qg — Gravel, sand and silt (Holocene and Pleistocene)
- QTse — Gravel, silt and colluvium (Holocene and Pleistocene) and tuffaceous sedimentary rocks (Quaternary, Pliocene? and Miocene)
- Ts — Sedimentary rocks (Miocene)
- Tv — Ash-flow tuff (Miocene)
- Ti — Intrusive rocks (Tertiary?)

Northern Block

- Pl — Silicified limestone, limestone and breccia (Lower Permian)
- Pgl — Dark gray limestone (Lower Permian)
- Pa — Unit A (Lower Permian)
- Pb — Unit B (Lower Permian)
- PPwd — Beds of West Dry Canyon (Lower Permian and Upper Pensylvanian)
- Pwdb — Lower part of Beds of West Dry Canyon (Upper Pennsylvanian)

Southern Block

- PPos — Oquirrh Formation, sandstone and siltstone member (Lower Permian to Middle Pensylvanian)
- Pol — Oquirrh Formation, limestone member (Middle to Lower Pennsylvanian)
- Pold — Oquirrh Formation, limestone and dolomite member (Middle and lower Pennsylvanian)
- Pols — Oquirrh Formation, limestone, sandstone and quartzite member (Middle and Lower Pennsylvanian)
- PMmc — Manning Canyon shale (Lower Pennsylvanian and Upper Mississippian)
- Dj — Jefferson Formation (Upper and Middle Devonian)

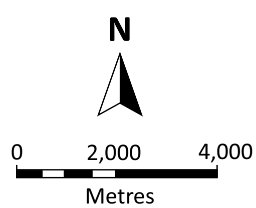
- Contact
- Fault - Defined
- Fault - Inferred
- Fault - Concealed
- Thrust Fault - sawteeth on upper plate
- Thrust Fault - Concealed
- Thrust Fault - Inferred
- Project Boundary
- As-Mined Pit Outlines

Liberty Gold Corp.

Black Pine Project

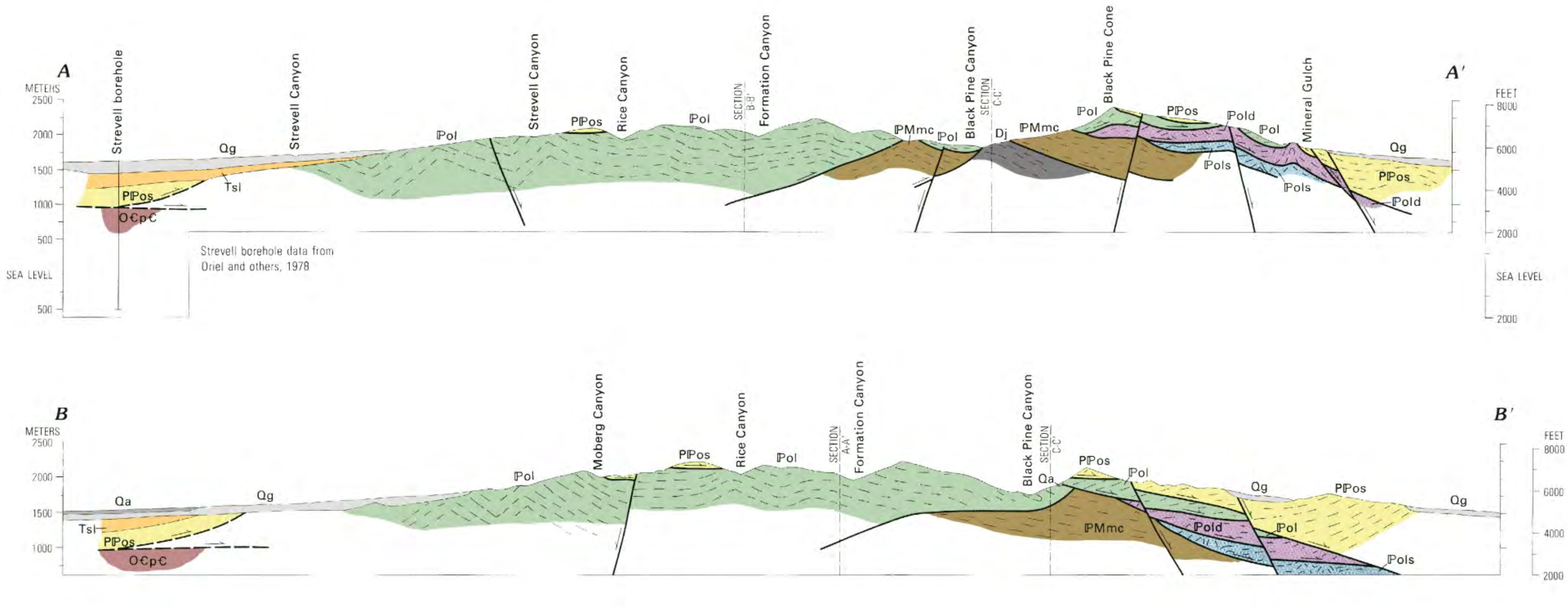
Idaho, USA

Regional Geology



March 2023

Source: Modified from Smith, 1982.



Description of Map Units

Qa	Alluvium and colluvium (Holocene and Pleistocene)
Qg	Gravel, sand and silt (Holocene and Pleistocene)
Ts	Sedimentary rocks (Miocene)
PPos	Oquirrh Formation, sandstone and siltstone member (Lower Permian to Middle Pensylvanian)
Pol	Oquirrh Formation, limestone member (Middle to Lower Pennsylvanian)
Pold	Oquirrh Formation, limestone and dolomite member (Middle and lower Pennsylvanian)
Pols	Oquirrh Formation, limestone, sandstone and quartzite member (Middle and Lower Pennsylvanian)
PMmc	Manning Canyon shale (Lower Pennsylvanian and Upper Mississippian)
Dj	Jefferson Formation (Upper and Middle Devonian)
OCpC	Metasedimentary Rocks (Upper Ordovician, Cambrian?, and Precambrian

Figure 7-2

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Schematic Cross Sections through the Black Pine Mountains

March 2023

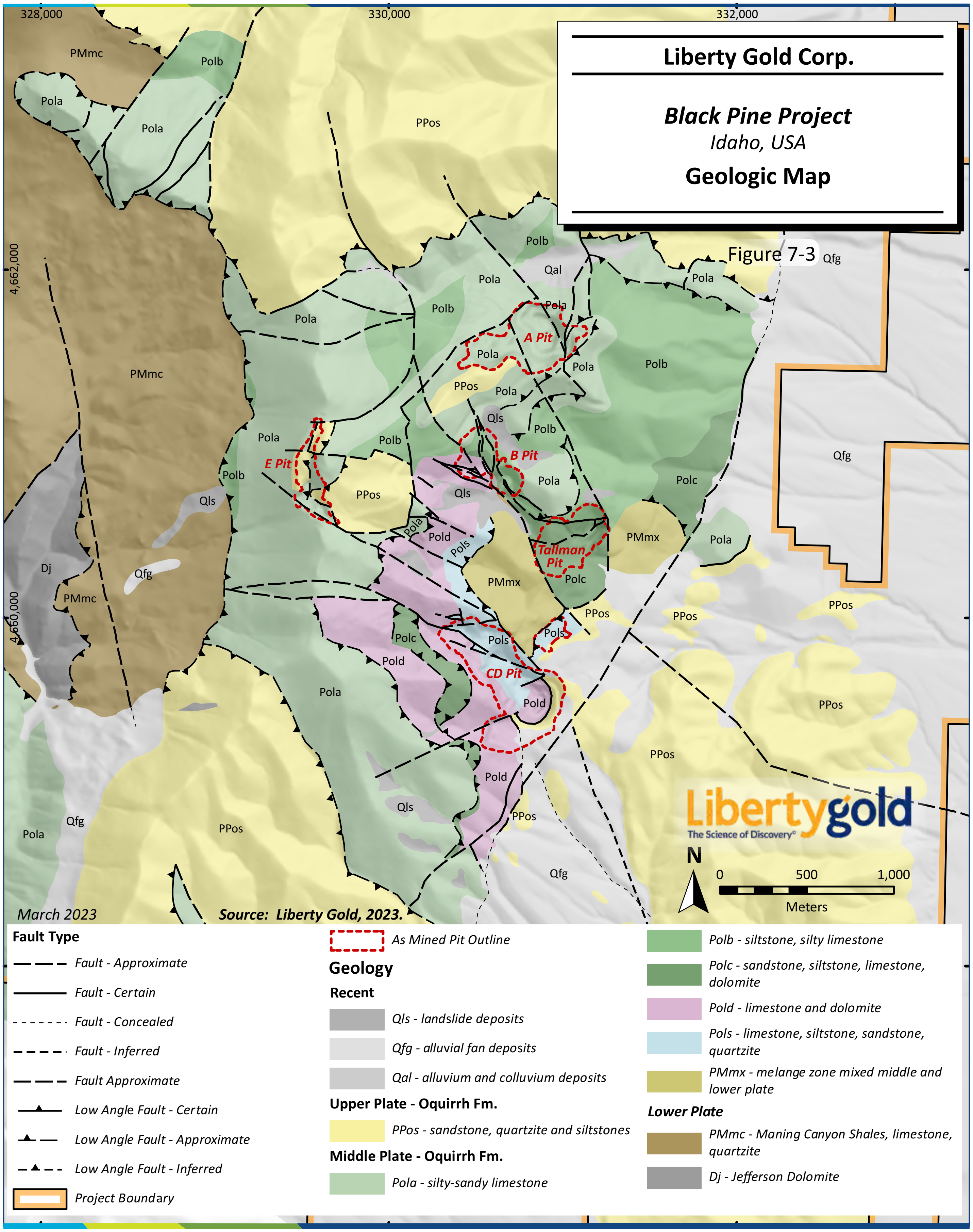
Source: Modified from Smith, 1982.

7.2 Property Geology

The Black Pine property is located within the southern structural block of the Black Pine Mountains where exposures consist of the lower plate units of the Jefferson Formation and Manning Canyon Shale, along with middle and upper plate units of the Oquirrh Formation, including weakly metamorphosed limestone and dolomite, silty and sandy limestone, calcareous sandstone and siltstone, quartzite, and shale (Figure 7-3).

The pre-Cenozoic strata shown in Figure 7-3 are strongly folded and cut by faults. Virtually all contacts between formations and units are interpreted or observed to be fault contacts (Smith, 1982, 1983; Smith et al., 2020; Liberty Gold internal files), making construction of a true stratigraphic sequence for the project area problematic, although fossil data do loosely constrain ages of the units (Smith, 1982, 1983).

SLR



Liberty Gold Corp.
Black Pine Project
Idaho, USA
Geologic Map
Figure 7-3
328,000
330,000
332,000
4,662,000
4,660,000
PMmc
Pola
Polb
PPos
Qal
Polc
Pold
Pols
PMmx
Qls
Qfg
Dj
A Pit
B Pit
E Pit
Tallman Pit
CD Pit
Libertygold
The Science of Discovery
N
0
500
1,000
Meters
March 2023
Source: Liberty Gold, 2023.
Fault Type
Fault - Approximate
Fault - Certain
Fault - Concealed
Fault - Inferred
Fault Approximate
Low Angle Fault - Certain
Low Angle Fault - Approximate
Low Angle Fault - Inferred
Project Boundary
As Mined Pit Outline
Geology
Recent
Qls - landslide deposits
Qfg - alluvial fan deposits
Qal - alluvium and colluvium deposits
Upper Plate - Oquirrh Fm.
PPos - sandstone, quartzite and siltstones
Middle Plate - Oquirrh Fm.
Pola - silty-sandy limestone
Polb - siltstone, silty limestone
Polc - sandstone, siltstone, limestone, dolomite
Pold - limestone and dolomite
Pols - limestone, siltstone, sandstone, quartzite
PMmx - melange zone mixed middle and lower plate
Lower Plate
PMmc - Maning Canyon Shales, limestone, quartzite
Dj - Jefferson Dolomite

7.2.1 Stratigraphy

The stratigraphy in the project area records the transition from the top of the Devonian shelf and platform, through foreland-basin sedimentation associated with the mid-Paleozoic Antler orogeny, to basin and platform conditions that persisted throughout much of the late Paleozoic era. Figure 7-4 illustrates a simplified stratigraphic section for the property based on Liberty Gold mapping and drilling.

Jefferson Formation (Dj): Strata assigned to the Jefferson Formation comprise the oldest stratigraphic unit exposed in the project area (Smith, 1983). It is Devonian in age, and consists of dolostone with minor sandstone and quartzite, representing very shallow water to intertidal conditions on the inner shelf, with some contribution of siliciclastic material from highlands to the east. It is found in the lower structural plate in the lowest-elevation areas in Black Pine Canyon in the western part of the property.

Manning Canyon Shale (PMmc): Strata assigned to the Manning Canyon Shale consist of up to 2,000 m of recessive-weathering, carbonaceous, dark grey to black argillite, shale, and siltstone with minor quartzite and limestone. It is Late Mississippian in age in the Black Pine area (Smith, 1982). The Manning Canyon Shale formed in response to emplacement of the RMA over areas to the west, reflecting foreland-basin sedimentation. It is present on surface in the lowest structural plate in the western part of the property, as well as in an area south of the historical Tallman and B pits. The upper contact of the Manning Canyon Shale is an important marker horizon in drilling, as it generally marks the bottom of the gold-bearing middle plate. In many locations, a weak phyllitic cleavage is present in shales along the upper (faulted) contact.

Oquirrh Group: The Oquirrh Group reflects complex sedimentation patterns established over a long period of time with terrigenous input into a shallow basin and carbonate platform setting. Rocks assigned to the Oquirrh Group are present over much of the northwestern part of Utah and locally into southern Utah. In more well-studied portions of the Oquirrh Group, thicknesses and rock types vary significantly between adjacent mountain ranges, as well as between thrust sheets. In general, however, it consists of a lower Pennsylvanian unit dominated by limestone, a middle Pennsylvanian unit that is a mixture of quartz sandstone, shale, and limestone, and an upper Pennsylvanian/lower Permian unit dominated by quartz sandstone. These have been divided into a number of formations and members, depending on location.

The Oquirrh Group may range up to 5,000 m thick in the Black Pine area, although interleaving and attenuation of the section by low-angle faults makes stratigraphic analysis extremely difficult. In the southern structural block in the Black Pine Mountains, Smith (1982), Loptien (1986), and Ohlin (1989) divided the Oquirrh Group into four informal members, three in the middle structural plate and one in the upper plate. Given that the rock descriptions and ages are overlapping, and the rocks are complexly interleaved along faults in and between the middle and upper structural plates (see Section 7.2.2), they may, in part, represent age-equivalent packages of rock that were subsequently brought into juxtaposition by faulting (Shaddrick, 2013).

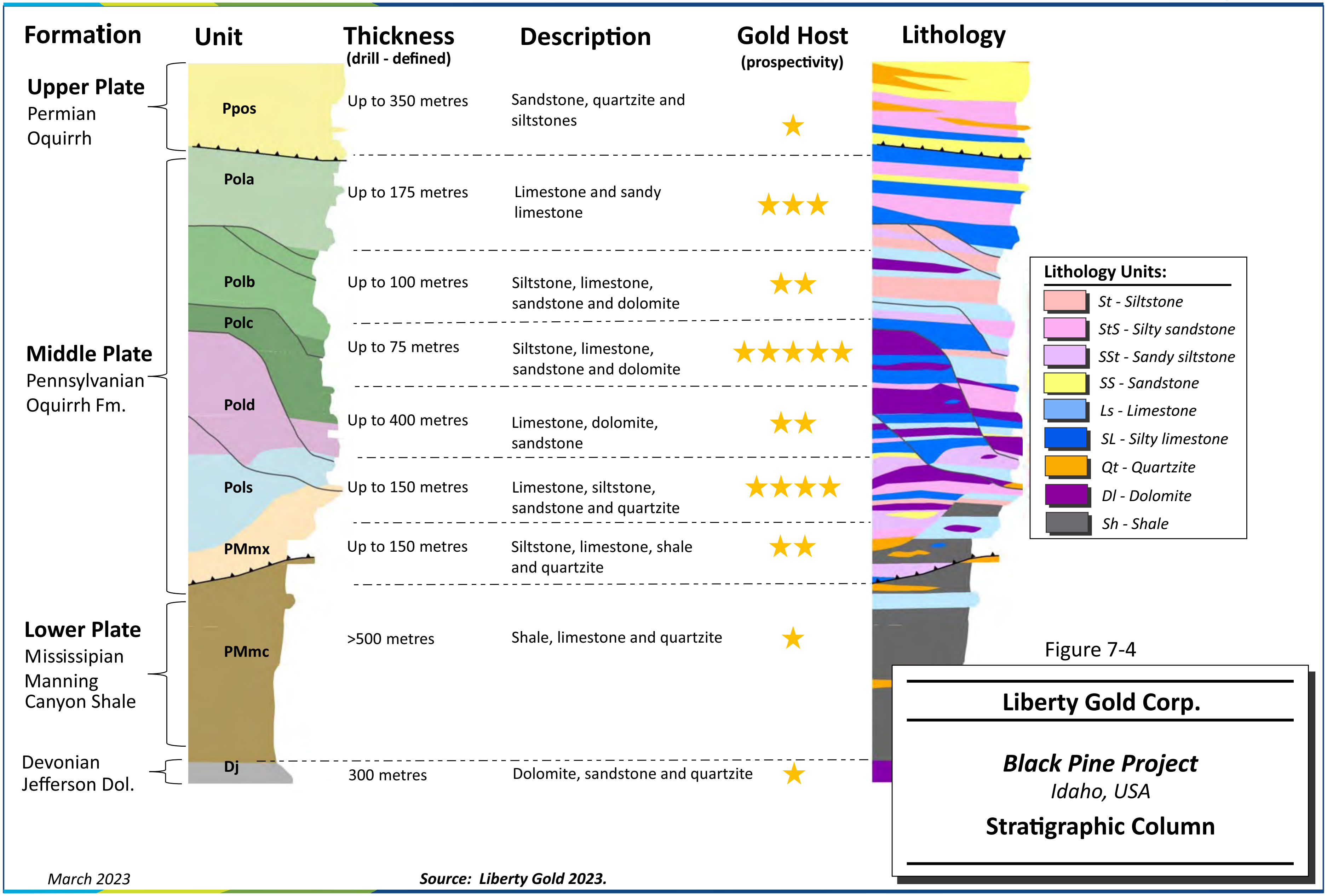


Figure 7-4

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Stratigraphic Column

Pol - Limestone Member: The Limestone Member of the Oquirrh Group is the thickest and most widespread of the three members of the middle structural plate. It forms the *structural* upper member of the middle plate and consists of a diverse assemblage of carbonate rocks, shale, siltstone, and sandstone. This unit may be overturned (Smith, 1982) or may be stratigraphically continuous with the underlying Pold (Hefner et al., 1991). It is distinguished from the middle member of the middle plate by the first appearance of siltstone or sandy siltstone with interbedded limestone lenses. In the northeastern portion of the Black Pine Mine area, Liberty Gold recognizes the following submembers of the Pol unit, from stratigraphic/structural top to bottom of the sequence:

- *Pola*: Pola consists largely of medium gray, sandy limestone whose sandy texture is easily differentiated from Polb but harder to differentiate from overlying limy portions of the PPos. This unit has a "dirty" appearance due to the irregular mottled oxidation pattern of detrital sand grains in the limestone. Pola is thickly to massively bedded, with silty interbeds and rare dolomitic beds. In pit walls, the massive bedding and alternating thin interbeds are readily apparent. Black, recrystallized wavy calcite veins are common. This unit is typically highly fractured and brecciated. A 15-20 m-wide fault and breccia zone normally separates this unit from the underlying Polb. The contact with the overlying PPos unit is often faulted, but may be stratigraphic, putting the Pola in the upper structural plate, rather than the middle plate.
- *Polb*: Polb is a diverse unit consisting mainly of calcareous to non-calcareous siltstone with thick to massive beds and lenses of limestone and dolostone. The non-calcareous siltstone is often a pale pinkish tan colour and strongly sheared. Overall, this unit contains more evidence of ductile deformation than Pola, Polc, or Pold (see structural geology section below). Where less affected by structural deformation, Polb can host homogenous intervals of siltstone up to 75 m thick. The base of the Polb unit often contains lenses of black, graphitic siltstone (logged as Poc; see below).
- *Polc*: Polc is the basal unit of the Pol member of the Oquirrh Group. Polc can include nearly all lithological types in the middle plate, including calcareous siltstone, limestone, dolomite, and sandstone, often in alternating, 1-10 m-thick beds. However, the dominant rock type is a brownish, massive calcareous siltstone.

The Pola, b, and c members in the southwestern portion of the Black Pine Mine area (south and west of the CD and I pits) have not been studied in as much detail, but the section appears to be much more homogeneous than in the northeastern area, and consisting of thin to medium bedded limestone with interbeds of calcareous siltstone, becoming thicker-bedded and more limestone-dominant (Pola?) up section.

- *Pold – Limestone and Dolomite Member*: This middle member of the middle structural plate is characterized by thick-bedded to massive, cliff-forming silty to sandy limestone and dolostone, limestone breccia, and local beds of sandstone and siltstone. The contact with the overlying Pol appears stratigraphic where exposed in roadcuts south of the CD pit, though elsewhere it is commonly faulted (Hefner et al., 1991); others believe that the contact is not conformable (Smith, 1982). The contact with the lower Pols member of the middle plate is faulted. The Pold member is up to 300 m thick in the southwestern part of the Mine area, but thins dramatically and is discontinuous to the north and east, reflecting attenuation along a low angle normal fault or faults.
- *Pols – Limestone, Sandstone and Quartzite Member*: This unit consists dominantly of thin-bedded to massive calcareous siltstone alternating with thick beds of silty and sandy limestone, with minor lenticular beds of calcareous sandstone and quartzite. Wavy bedding, crossbedding, and ripple marks characterize the limestone (Smith, 1982; Ohlin, 1989). The age is given as Early to

Middle Pennsylvanian. Where exposed, the top and bottom contacts of the Pols Member are faulted. It is not present everywhere, suggesting that it has been faulted out along the lower plate contact.

- *PPos – Sandstone and Siltstone Member*: This unit, comprising the upper structural plate, consists dominantly of poorly-sorted, quartz-rich, calcareous to non-calcareous sandstones and siltstones with minor silty, bioclastic limestone lenses. Calcite-cemented breccia zones and extensive fracturing are extremely common. It is brownish-weathering and relatively distinctive due to its structural position and relative lack of limestone, and appears to correlate with the upper, sandstone-dominated formations in the Oquirrh Group in more well-studied areas to the south (Smith, 1983). On this basis, it is assigned an age of Middle Pennsylvanian to Early Permian. This unit is at least several hundred m thick in the southern Black Pine Range and north of Mineral Gulch. It forms isolated klippe at the highest elevations in the central Mine area and flanks a dome of older rocks to the north, east and south of the Mine area.

In the Rangefront target area, the upper portion of the PPos unit contains a grey limestone unit with thin to thick bands of brown weathering sandy and silty limestone.

7.2.1.1 Rock Types Not Associated with Specific Stratigraphic Intervals

Several rock types are logged in RC chips that cannot necessarily be correlated with discrete stratigraphic units, either because, as defined, they occur more than once in the stratigraphic sequence or because they are partly structural and/or hydrothermal in nature. These include:

- P*oc:* A unit consisting of dark grey to black, carbonaceous, variably calcareous siltstone, shale, and limestone. This unit is commonly found at the base of the Polb unit, where it ranges in thickness from 0 to locally over 200 m in the northeastern part of the Black Pine Mine area. While carbonaceous material can be found throughout the stratigraphic section it often is logged near the base of the middle plate interleaved in the *PMmx* (see below).
- *PMmx – Shale, Siltstone, Sandstone, and Quartzite Mixed Member*: This unit, recognized through drilling and geochemical analysis, is interpreted as a fault mélange containing a mix of rock types, consisting of lower plate carbonaceous shales and middle plate siltstone, sandstone, quartzite, and limestone. A phyllitic cleavage is often noted. Zones of carbonaceous siltstone (Poc) are also present. This unit is discontinuous and is often similar in nature to the Manning Canyon Shale. However, the Manning Canyon Shale can be distinguished by the presence of elevated Cesium relative to the PMmx. PMmx often contains gold mineralization, whereas the underlying Manning Canyon Shale does not.
- *Calfm – "Calcite Formation"*: This designation is applied to massive zones of primarily white calcite up to tens of m thick. It can include massive coarse calcite, marble, and calcite breccia, often with two or more of these end members observed together. This unit designation is necessary given that most of the drilling is RC, where it is often difficult or impossible to discern the origin of the calcite.

7.2.1.2 Cenozoic Intrusive Rocks

Narrow dikes and sills 0.1 m to 2 m in width have intruded the middle plate rocks throughout the Black Pine project area. They are typically less than 1 m in width with chilled margins and range from aphanitic to finely porphyritic, with small phenocrysts of feldspar, hornblende, and biotite. Alteration typically consists of chlorite, sericite, and pyrite with some clay. At surface and in drill holes, the dikes are usually strongly oxidized to a deep orange-brown color and strongly sericitized. In outcrop, they can be seen as sills in the Pold unit in the C/D pit highwall, and as clasts in and cross-cutting a large collapse breccia body in the highwall of the A pit. A single whole rock analysis of a sample from one dyke returned an SiO_2 content of 46.9%, suggesting that the rock is a lamprophyre or other ultramafic rock. However, the rock is relatively low in in magnesium, chromium, and other elements that are normally elevated in lamprophyres. Additional whole rock analysis is necessary to further characterize these intrusive rocks and determine whether they represent one or more intrusive episode.

A sample was sent to the University of Arizona Laserchron Laboratory for U-Pb zircon analysis. 30 small zircons were analyzed with a 20 micron laser spot using an Element single-collector ICPMS. Grains ranged in age from 226 to 2,580 Ma, more characteristic of entrained detrital grains than igneous grains.

Fine-grained, pale grey-green intrusive rock has been noted in drill chips primarily hosted in lower plate shales in some locations. These dykes are strongly clay or sericite altered and may contain up to a few percent disseminated brassy pyrite. A sample was sent to the University of Arizona Laserchron Laboratory for U-Pb zircon analysis. 30 small zircons were analyzed with a 20 micron laser spot using an Element single-collector ICPMS. Grains ranged in age from 419 to 1,645 Ma, more characteristic of entrained detrital grains than igneous grains.

7.2.2 Structural Geology

As discussed above, there are three stacked structural plates at the Black Pine property: a lower plate, comprising the Jefferson Formation and Manning Canyon Shale; a middle plate comprising the Pol, Pold, and Pols units of the Oquirrh Group, and an upper plate consisting of the PPos member of the Oquirrh Group. Shale and siltstone in the lower plate are sheared, and strata in the middle plate are very complexly structurally interleaved. The middle plate in the project area is approximately 100 to 500 m in thickness, decreasing in thickness in all directions from a maximum thickness of approximately 500 m near the E pit. Rocks of the middle plate show evidence of at least two major deformation events, including thrust faults and folds, overprinted by low- to high-angle normal faults.

7.2.2.1 Mesozoic Contractional Event(s)

A polyphase, Mesozoic contractional event or events strongly affected rocks in the Black Pine Mountains.

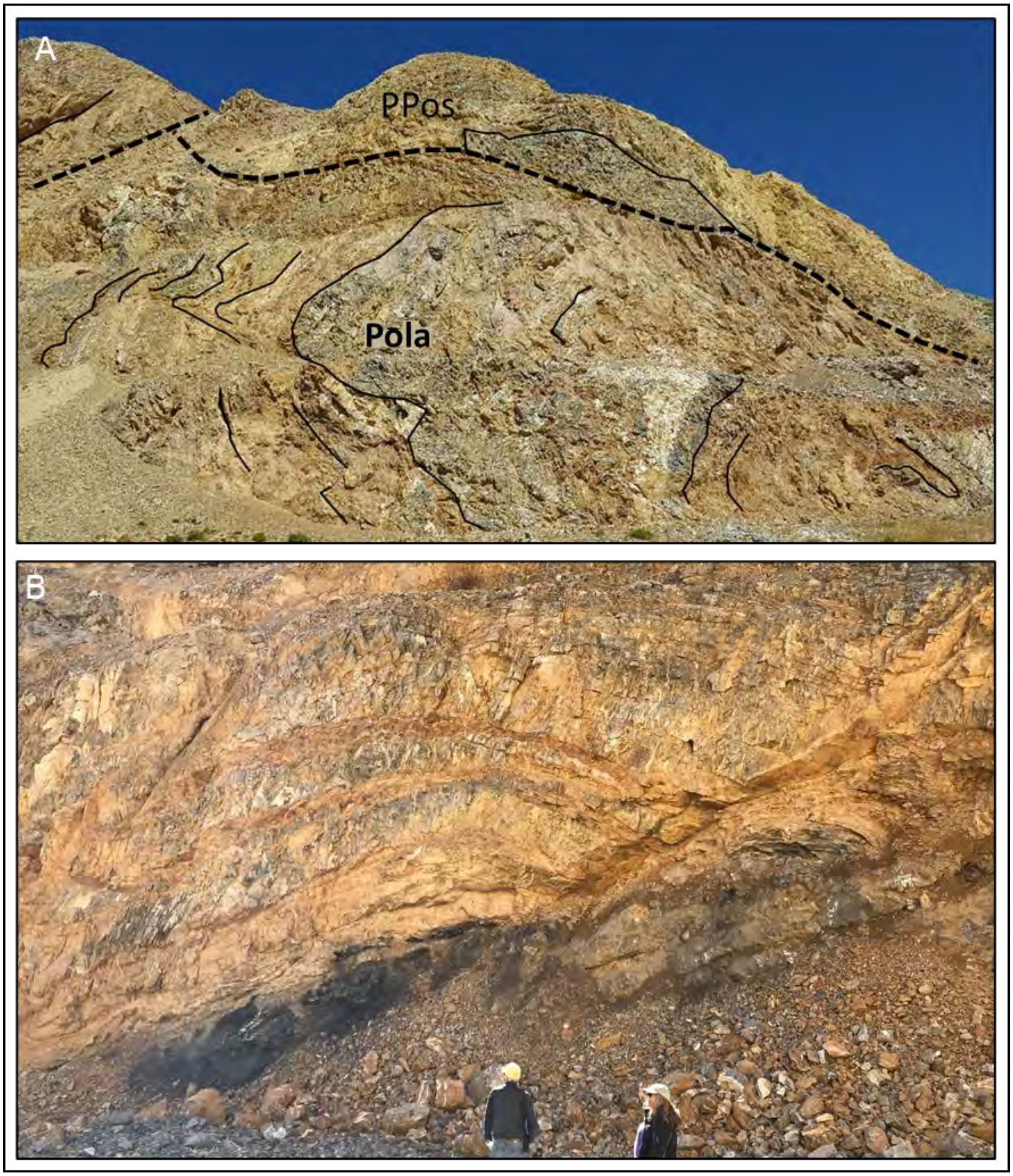
Two contractional events of presumed Mesozoic age are interpreted at the Black Pine Property (Figure 7-5). The first is manifested by: 1 to 30 m scale, generally east- to northeast-vergent recumbent folds; weak axial-planar slaty to (rarely) phyllitic cleavage in silty to shaly rocks; and low angle, semi-ductile faults with reverse motion (as deduced from shear sense indicators, etc.). Higher strain zones are associated with areas of dominantly calcareous siltstone, such as in the Polb, Pols, and upper PMmc units, whereas significantly less first-phase contractional deformation is recorded in more massive units such as the Pola and Pold.

The second phase of contractional deformation is manifested by open to tight, upright folds with rounded (in massive limestone) to chevron geometry (silty strata). Some folds appear to be drag folds located in the hanging walls of relatively flat, semi-brittle faults. Calcite veins perpendicular to beds are common in limestone, on a m- to cm-scale. Sense of vergence is inconsistent across the property, suggesting that some of the faults could be back-thrusts associated with an otherwise northeast-vergent system. Property-wide, this deformation appears to be most prevalent in the Polc unit as observed in pit walls.

It is not known whether the two events represent a continuum or separate events. It is possible that both are associated with the Late Cretaceous Sevier Orogeny, which affected rocks throughout the eastern

Great Basin and the Oquirrh Group in mountain ranges to the south and west of Black Pine. Another possibility is that the first event is associated with the mid-Jurassic Elko Orogeny (Thorman and Peterson, 2004) and the second with the Sevier orogeny.

On a property scale, middle plate strata dip southward in the southern part of the property and northward in the northern part of the property, forming an open dome that is apparent in outcrop due to the presence of an over-thickened package of resistant massive dolostone and limestone beds in the Pold unit, possibly a result of duplexing during the first phase of folding. Stratigraphic units in the middle plate are faulted out against the lower plate contact, which is relatively flat-lying except where cut and offset by Cenozoic normal faults.



Styles of Mesozoic folding at Black Pine. A) First-phase recumbent folds with axial planar cleavage in limestone and siltstone of the Pola(?) unit in the E Pit highwall. View to the east. The upper plate Ppos sandstone is faulted over the top. B) Second phase open, upright fold with axial planar calcite veins in the hanging wall of a small thrust fault in the Tallman Extension Pit. View is to the southeast. The fault may be a back thrust, as sense of motion is to the southwest.

Figure 7-5: Styles of Mesozoic Folding

7.2.2.2 Cenozoic Extension

Episodic extension in the Great Basin commenced in the Eocene and persists to present day, accompanied by intermediate to felsic volcanism. Several major episodes of extension affect the Black Pine area, including:

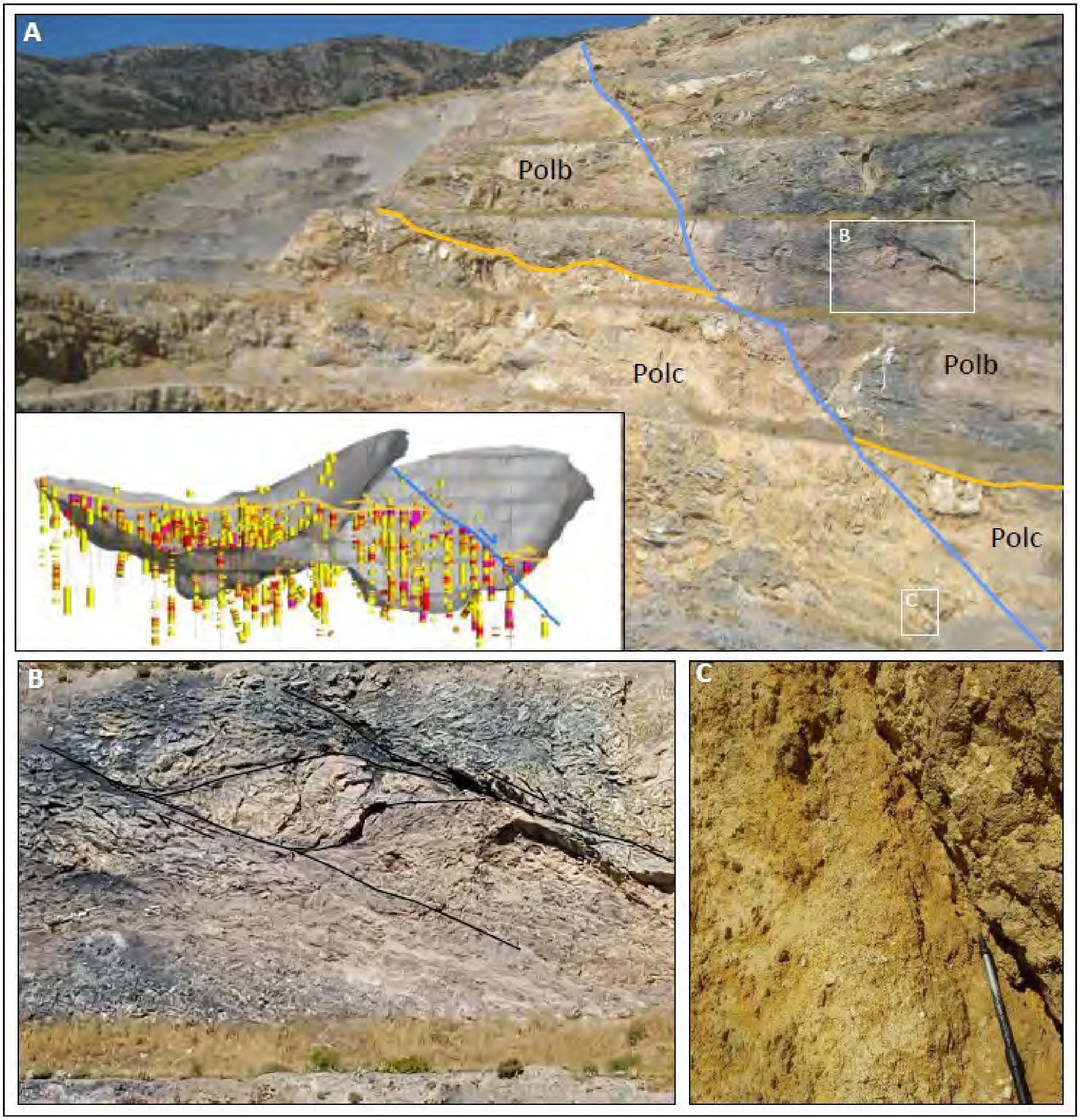
- Eocene listric normal faulting and volcanism (likely timing of gold mineralization)
- Oligocene extension, deep metamorphism and plutonism
- Miocene unroofing of the Albion-Raft River metamorphic core complex along low angle detachment faults
- Basin and Range block faulting

Elucidation of the structural framework of the mine area is hampered by a number of factors, including poor outcrop, almost exclusive use of RC drilling, relative lack of deep drill holes, lack of continuous marker beds, lack of fossils to constrain relative ages of rock units and a large number of overprinting, largely coaxial episodes of contraction and extension. The structural model continues to evolve as more mapping and drilling is carried out.

Eocene normal faults: The normal faults of possible Eocene age in the project area are low to moderate angle, semi-ductile to brittle in nature and overprint the earlier contractional deformation (Figure 7-6). These faults are interpreted to be listric in nature and appear to exert significant control on the distribution of mineralization.

Two listric normal faults are interpreted to control mineralization over a wide area. One fault hosts mineralization in the D-1 zone along a relatively shallow, moderately NW-dipping segment of the fault, extending from north of A Basin to the Tallman Extension Pit. It is interpreted to flatten to the northeast, underlying the D-2 zone. A second, north-south striking listric normal fault is interpreted to underlie the D-3 zone, and may extend as far south as the CD Pit. It is interpreted to join the D-1 listric fault to the north. The fault has a relatively steep orientation along the west side of the D-3 zone, then shallows to the east, eventually soling into the lower plate contact. This fault may be responsible for a dramatic thinning of the Pold unit to the east.

Oligocene – Miocene extension: The Black Pine area was affected by two or more episodes of post-mineral normal faulting, including movement on faults related to unroofing of the Raft River-Albion metamorphic core complex, located to the west. Up to several kilometres of top-to-the-east movement is postulated along one or more low angle detachment faults located between Black Pine and the Raft River Range, with related, down to the east listric normal faults tilting and extending strata in the hanging wall. It is possible that some of the normal faults in the Black Pine area may be related to this episode of extension, and that some or most of the movement along the middle plate – lower plate contact may be of this age. The latter would imply that the ultimate source of fluids for the gold mineralization may not be situated under the Black Pine Mine area at present, but may be located up to several tens of kilometres to the west.



View to the northwest in the Tallman Extension Pit. A) the Polb unit low angle faulted contact with the Polc unit along a relatively low angle contact, which in turn is offset along a higher-angle, post-mineral fault. Inset map shows the distribution of gold, almost entirely within the Polc unit, which contains a high degree of internal brittle deformation. B) Detail of the pit wall showing semiductile shears with down to the east or northeast displacement in the Polb unit. C) Detail of post-mineral normal fault showing brittle gouge zone. Gold mineralization in this location is probably the result of entrainment in a post-mineral fault.

Figure 7-6: Examples of Normal Faults in the Tallman Extension Pit

Pliocene-Recent extension: Basin and Range (Pliocene-Recent) faults are in evidence along the eastern range front. A large, steep to moderate east-dipping fault extends along the range front, bending southwest to extend along the southeastern edge of the C-D pit. This fault offsets stratigraphy in a down-to-the-east sense of displacement, and brittle, calcite- and silica-cemented breccias and gouge are in evidence in some locations. The fault is well-exposed in the south highwall of the CD Pit, cutting a lower-angle normal fault separating the upper and lower plates. A number of parallel faults are in evidence to the west of the fault in the Mineral Gulch area, and a number are inferred to exist to the east under gravel cover, as evidenced in ground gravity data (see section 9).

7.2.2.3 Breccias

Breccias are very common at Black Pine and are present on all scales, from centimetre- to pit wall-scale. Breccia types include:

Collapse breccias. Collapse breccias are widespread, and generally consist of angular, polymictic clasts ranging from cm-sized to large blocks of limestone, dolostone, siltstone, sandstone, altered intrusive rock, calcite vein material and earlier breccias (Figure 7-7). Matrix, where present, consists of orange-brown iron oxides and silty material. Abundant calcite cement is typically white and coarse-grained. Breccias range from clast supported to clasts floating in calcite cement and/or sandy matrix. Collapse breccias can be seen in pit walls and in drill holes on a cm to pit-wall scale. Collapse breccias are thought to be intimately related to hydrothermal alteration and gold mineralization through a process of “hydrokarst”, with progressive erosion and hollowing out of fault zones or stratigraphic contacts by acidic fluids, followed by collapse and cementation by calcite.

Tectonic breccias: Breccias are associated with late, low- to high-angle normal faults. These breccias contain milled clasts, are typically poorly indurated and accompanied by clay alteration and gouge (Figure 7-6, inset C). A second type of tectonic breccia is observed in upper plate rocks and consists of angular fragments of sandstone in a limy matrix. These breccias form north- to northeast-trending arrays throughout the Rangefront Zone.

Crackle and Mosaic breccias: Crackle and mosaic brecciation are almost ubiquitous throughout the Black Pine property, particularly in the PPos, Pola and Polc units. Fractures are cemented by calcite and iron oxide.

Calcite breccias: Breccias consisting almost entirely of clasts of white calcite and cemented by white calcite and variable amounts of iron oxide, are common at Black Pine. Clasts range from angular to rounded, with a milled appearance. The genesis of these breccias is uncertain. In many cases, they appear to form relatively flat sheets that may correspond to calcite-filled fault zones. In other cases, the clasts appear to resemble coarse, white, recrystallized marble. Additional observation and study are needed to describe and understand the genesis of these breccias.

A large collapse breccia body occupies the southeast portion of the A pit. Limestone and dolomite clasts in a matrix of sand and calcite cement, giving way to nearly all calcite near the top of the body. Reddish-brown, elongate zones are lamprophyre(?) dikes, which crosscut the breccia, but can also be found as clasts in it. Inset: detail of breccia with angular limestone clasts in a sandy, calcite cemented matrix.

Figure 7-7: Collapse Breccia in the A Pit

7.2.2.5 Strain Partitioning and Tectonostratigraphy

As the foregoing indicates, strain partitioning is observed within and between the different members and submembers of the Middle Plate, with each member or submember characterized by the presence or prevalence of different structural fabrics on a meso-scale:

Pola consists primarily of panels of massive to thick-bedded limestone beds that are cut and offset on low-angle thrust and normal faults. The limestone is also strongly fractured, often overprinted by a stockwork of calcite veins.

Polb consists largely of calcareous to non-calcareous siltstone with thick beds of limestone and dolomite. Polb is thus a relatively high-strain zone due to preponderance of “weak” siltstone. Recumbent folds are common in this unit, along with low angle thrust and normal faults. The dominant structural fabric is relatively low angle and ductile to semi-ductile in nature.

Polc, consisting of alternating beds of non-calcareous siltstone, limestone, and dolomite is characterized by the presence of low to moderate angle thrust faults with second phase folds, and brittle structures including moderate to high angle brittle normal faults, jointing, and widespread brecciation.

Pold consists largely of massive limestone and dolostone. Where the Pold member forms thick, resistant outcrops in the core of the Black Pine gold system, it is characterized by low-strain zones showing relatively little evidence of internal folding or faulting, with the exception of some bedding-parallel, low angle normal or reverse faults such as observed in the C-D Pit highwall.

Pols, consisting of silty limestones and calcareous siltstone, is rarely observed in outcrop, but where exposed in the C-D pit, it can be seen to contain tight, recumbent folds.

Gold mineralization can be found in all of the middle plate units but is particularly well-developed in the Pola and Polc members, both characterized by the presence of areas of significant brittle deformation.

7.3 Alteration

Strata throughout the Black Pine Mine area are weakly to strongly hydrothermally altered and contain widespread gold mineralization over the entire thickness of the middle plate, and over an area measuring at least 14 km^2. In general, the rock types with higher porosity, permeability, and geochemical reactivity, such as calcareous siltstone and sandstone, and a higher degree of brecciation, are more strongly altered.

Alteration types closely associated with gold mineralization include:

- *Decalcification:* Defined as the removal by dissolution of calcite from the matrix of a carbonate rock, some degree of decalcification is common within gold-mineralized rocks. The highest gold grades are found in calcareous siltstone and sandstone, where decalcification forms spongy, porous zones with relatively low specific gravity. Selective decalcification is present along bedding planes, fractures and breccias. Large bodies of collapse breccias are present in the B Pit, A Pit and A Basin area, the end result of dissolution of more massive limestones and dolomites along faults, etc. and subsequent collapse of the resulting cavities (Figure 7-7). Sanding is observed locally in dolomitized rocks, a result of removal of calcite cement around dolomite rhombs.
- *Silicification:* Silicification is present throughout the mineralized zones, but it rarely manifests as discrete zones of jasperoid. Silicification is far more common as areas of very weak, non-texture-destructive silicification in calcareous siltstone and sandstone, as small (dm-scale) patches of more well-developed silicification or jasperoid locally, or as networks of veinlets in dolomitic rocks.

- *Marblization:* Zones of bleaching and recrystallization of grey limestone to a medium to coarse-grained marble are present throughout the Mine area, but are most common in the northern Discovery Zone and A Basin area, apparently in relation to large, variably brecciated, calcite veins. The marbleized zones can be distinguished from calcite veins by the preservation of relict bedding in the marble. This phenomenon is not directly spatially related to gold mineralization, but these zones are often located adjacent to zones of mineralization.
- *Clay alteration:* Lithologic types such as siltstone and shale, or rocks containing a significant component of fine silt, are clay altered to some degree. The clay species have not been investigated, but it is likely that the clay is largely illite, based on analogy to other Carlin-type gold systems.
- *Carbon:* Carbonaceous material is present to some degree in all calcareous rock types, particularly those with a high component of silt, and is probably derived from organic material incorporated when the rocks were deposited. Carbonaceous material is notably present in the Poc unit at the base of the Polb submember, in the PMmx unit and in the lower plate shales, forming bedding-parallel, tabular lenses. Carbonaceous material is also present as irregular small lenses throughout the middle plate, particularly in high-strain areas, suggesting that the carbonaceous material was mobilized and deposited in these locations. The stratigraphic carbonaceous zones rarely contain significant gold, but the irregular lenses may contain gold mineralization.
- *Iron Oxide:* Virtually the entire rock mass in the middle and upper plates, with the exception of some massive limestones, contains at least some iron oxide, primarily "limonite" and goethite with minor hematite and jarosite, an indication of the original presence of pyrite and the degree to which most of the rock mass is thoroughly oxidized. Iron oxide ranges from disseminated in porous siltstones to fracture controlled in more massive rocks. Visually, the amount of iron oxide in the rock can be used as an indication of the presence of gold in the rock, with increasing amounts of iron oxide generally a favourable indicator of gold.
- *Calcite:* Coarse, white calcite is ubiquitous throughout the Black Pine Mine area as veins, veinlets, breccia cement and breccia clasts. In some cases, calcite forms both the clasts and cement in some breccias. While a large amount of calcite is generally associated with lower gold grades, its presence in large quantities is a good indication of gold in adjacent rocks. Preliminary study of calcite fluorescence suggests that there are several distinct phases of calcite veining.

7.4 Gold Mineralization

7.4.1 Style of Mineralization

Gold mineralization, consisting of finely disseminated, micron- and submicron-size gold particles, is hosted in middle plate, calcareous shale and siltstone, as well as fault and dissolution/collapse and tectonic breccias and zones of heavy fracturing developed in more massive limestone and dolomite. Gold mineralization is enhanced where these favourable stratigraphic units intersect, or lie along, large, pre- to syn-mineral, primarily listric normal faults. Gold was likely hosted within the lattice of arsenical pyrite rims on pyrite grains, but the mineralized rocks are now thoroughly oxidized, such that gold is present as "free" gold, associated with goethite, hematite, limonite, barite, calcite, quartz, and rare scorodite. Gold-bearing rocks are typically strongly decalcified and weakly clay altered, with areas of weak to (rarely) moderate silicification. Areas of calcite veining or calcite-cemented breccias are common, probably as a result of decalcification. Lenses of carbonaceous material, either remobilized or concentrated by decalcification, are locally present. The alteration, gold mineralization, host rocks, and geochemical associations are consistent with a Carlin-style deposit model.

Reflected-light microscopy has shown that native gold occurs in quartz and calcite veins, in hematite pseudomorphs after pyrite, and along grain boundaries (Hefner et al., 1991). In (rare) unoxidized material, an electron microscope is required to detect the gold grains, which are commonly less than 0.5 microns in diameter (Brady 1984). Gold is disseminated in clayey or silty matrix of clastic rocks and micrite groundmass of limestone. Carbon is locally present as both graphite and organic matter; gold is associated with organic matter in both clastic and carbonate sedimentary rocks.

Geochemically, gold shows an association with the typical Carlin pathfinder trace elements of arsenic, antimony, mercury, thallium, and tellurium, which are all elevated in the presence of elevated gold. However, while some samples with high gold grades do have a correspondingly high arsenic or antimony values, these elements do not always correlate strongly and sometimes even correlate negatively, possibly a result of mobility of the elements in the supergene environment. A correlation matrix between 117 Western Pacific and 694 Liberty Gold rock samples containing greater than 0.1 g Au/t and a suite of pathfinder elements (Figure 7-8) shows strong positive linear correlations between gold and tellurium, and weak to nearly negative correlations with arsenic, mercury, thallium, and antimony, typically strong Carlin-style pathfinder elements. There are no recognized alteration or spatial patterns to these positive or negative correlations between gold and the trace elements. Silver, copper, lead, and zinc are correlated with each other and with arsenic, antimony, mercury, and selenium. Areas of elevated silver, lead, zinc, and copper do not appear to be associated with gold mineralization.

	Au_ppm	*Ag_ppm*	*As_ppm*	*Ba_ppm*	*Bi_ppm*	*Cu_ppm*	*Hg_ppm*	*Pb_ppm*	*Sb_ppm*	*Se_ppm*	*Te_ppm*	*Tl_ppm*	*Zn_ppm*
Au_ppm	1												
Ag_ppm	0.100621	1											
As_ppm	0.16458	0.40097	1										
Ba_ppm	0.0365	0.078785	0.185666	1									
Bi_ppm	0.189322	0.391089	0.265943	0.099065	1								
Cu_ppm	0.05938	0.78932	0.349851	0.138848	0.29591	1							
Hg_ppm	0.143009	0.669556	0.40706	0.061599	0.414723	0.427059	1						
Pb_ppm	0.06105	0.501436	0.362811	-0.01368	0.255994	0.169467	0.672718	1					
Sb_ppm	-0.01513	0.187985	0.079821	0.00762	0.296976	0.04909	0.532696	0.0593	1				
Se_ppm	0.127681	0.500551	0.35509	-0.03425	0.353383	0.153344	0.516521	0.595799	0.021744	1			
Te_ppm	0.527426	0.116209	0.12909	-0.06327	0.301961	0.031905	0.165374	0.209305	0.013236	0.248856	1		
Tl_ppm	0.029998	0.104959	0.213028	0.07629	0.292789	0.03026	0.375538	0.054201	0.679786	0.003174	0.060604	1	
Zn_ppm	0.090712	0.468074	0.532172	0.124811	0.205097	0.341395	0.583356	0.65837	0.039366	0.52894	0.107934	0.032849	1

Source: Liberty Gold (2023)

Note. Western Pacific and Liberty Gold rock samples containing >0.1 g Au/t)

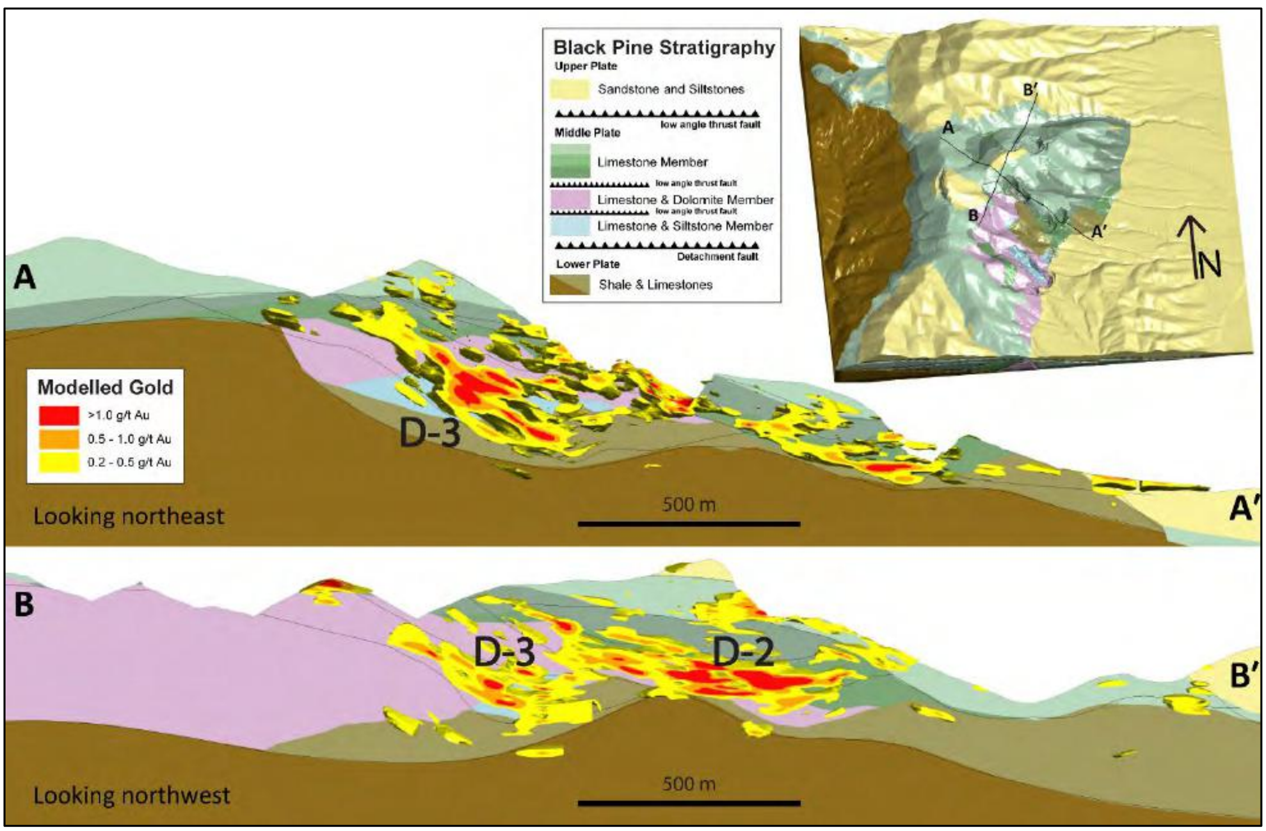
Figure 7-8: Geochemical Correlation Matrix

7.4.2 Location of Mineralization – Historical Pits and Vicinity

Silver and Base Metals: Silver and base-metal mineralization were historically mined on a small scale prior to the 1940s. These occurrences were located at Hazel Pine and along the Range Front, north of A Basin, northwest of D Pit, and in the Silver Hills (Back Range target; Figure 6-4) around the margins of the Black Pine gold system. This type of mineralization is associated with steep faults, brown iron-oxide-stained hematitic silicification and quartz veins (Ohlin 1988). Host rocks are typically thick-bedded limestone with massive white calcite replacement beds. Liberty Gold has sampled stockpiles from historical mining containing >10% Zn in iron-oxide-cemented breccia. Short intervals of elevated silver-lead-zinc are relatively common in and around zones of gold mineralization, but there is virtually no correlation between elevated gold and elevated silver, lead, and zinc. Therefore, it is likely that the two events are not closely related.

Gold: During the historical Pegasus mining operation, gold-mineralized material was extracted from six pits, including the Tallman pit, the B/B Expansion pit, A pit, E pit, I pit, and the C/D pit (Figure 6-4). Gold is distributed throughout the middle structural plate, but higher grades are focused in more favorable stratigraphic units such as calcareous siltstones, and in association with moderate- to high-angle faults. Favorable faults are brittle in nature and strike northwest in the Tallman, B, C, D, and E pits. Others strike northeast in the Tallman, C, D, A, and I pits and north in the E pit. Gold appears to be concentrated along and in the immediate footwall of some of these faults, where less favorable massive limestone, non-calcareous shale or sandstone are present in the hanging wall (Tallman NE and B Extension pits).

Gold is present in a large number of historical drill holes in unmined areas, particularly in areas adjacent to the historical open pits as shown in Figure 7-9. For example, historical "reserves" disclosed in Section 0 were defined to the north and west of the A pit, but these areas were never mined. Gold mineralization remains *in-situ* beneath and peripheral to the historical pits, as demonstrated in both historical and Liberty Gold drilling. The reader is referred to Section 10 of this report for descriptions and illustrations of the major zones of gold mineralization at Black Pine, defined through historical and Liberty Gold drilling.



Source: Liberty Gold (2021) modified from Loptien (1986).

Figure 7-9: Schematic Cross Section of Middle Structural Plate (looking south)

7.4.3 Gold Mineralization and Soil Anomalies

Throughout the exploration history of Black Pine, the presence of gold in soils in areas underlain by middle plate rocks over a roughly 12 km^2 area has been a reliable indicator of gold in the subsurface. Most of the original (mined) deposits were located at least partially through drill testing of high-amplitude (>100 ppb) soil anomalies. Subsequent drilling of the wider area of anomalous gold in soil led to the identification of smaller, unmined satellite deposits including the J, F, M, and Bobcat zones. With at least a cursory drill test of the larger, high-amplitude soil anomalies on the property largely complete, testing of more subtle anomalies in upper plate rocks, such as over portions of the Rangefront Zone, remain a priority.

8.0 DEPOSIT TYPES

Black Pine mineralization is best described to be in the class of sedimentary rock-hosted, Carlin-type gold deposits (CTGDs). While CTGDs are not unique to the eastern Great Basin, they exist in far greater numbers and total resource size in northern Nevada than anywhere else in the world. They are characterized by concentrations of very finely disseminated gold principally in silty, carbonaceous, and calcareous marine sedimentary rocks. The gold is present as micron-size and smaller disseminated grains, often internal to iron-sulfide minerals (arsenical pyrite is most common), or with carbonaceous material in the host rock. Free particulate gold, and particularly visible free gold, is not a common characteristic of these deposits except where strongly oxidized.

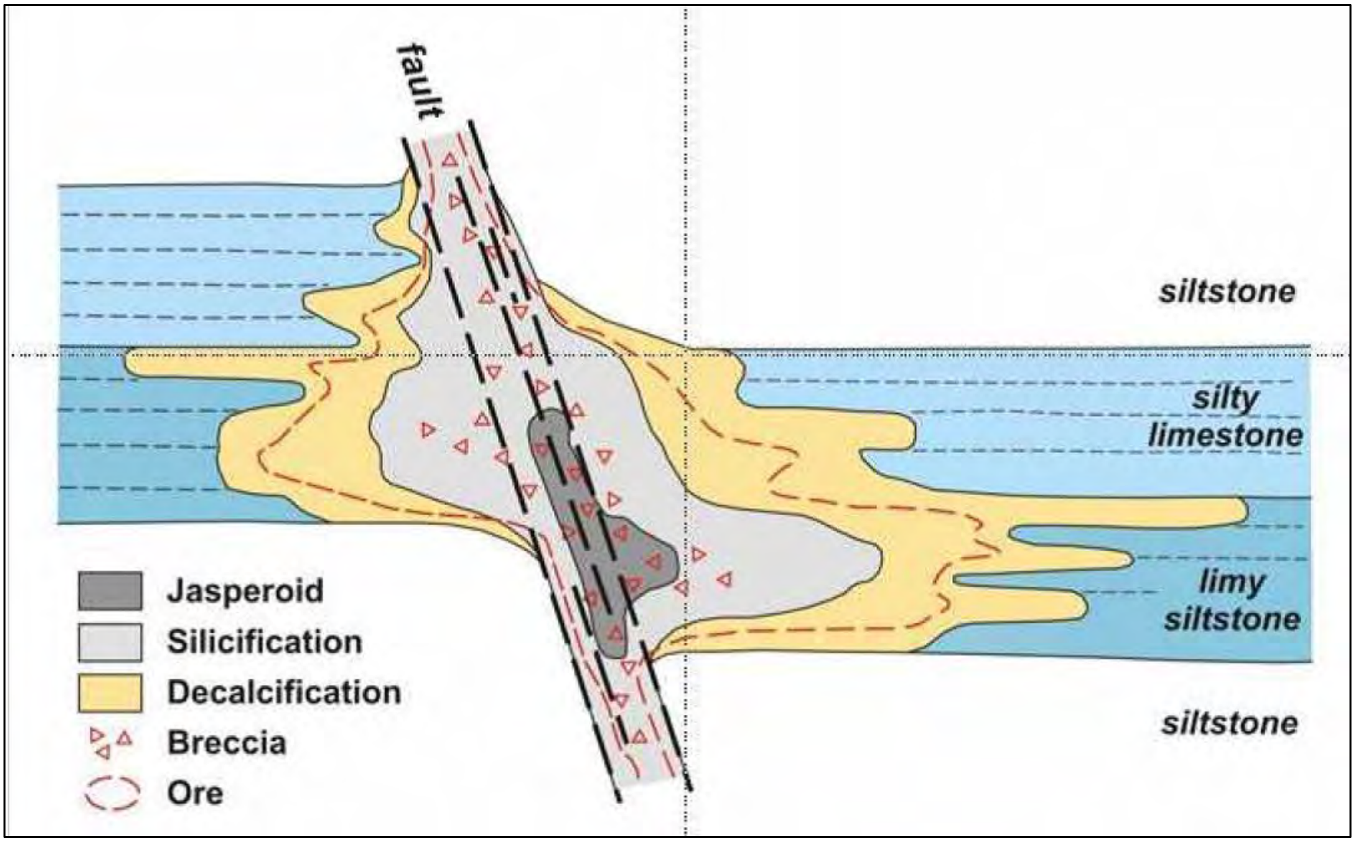
CTGDs in the Great Basin have some general characteristics in common, although there is a wide spectrum of variants (Cline et al., 2005; Cline, 2018). Anomalous concentrations of silver, arsenic, antimony, and mercury are typically associated with the gold mineralization. Elevated concentrations of thallium, tungsten, tellurium, and molybdenum can also be present in trace amounts. Alteration of the gold-bearing host rocks is typically manifested by decalcification, often with the addition of silica, fine-grained disseminated pyrite and marcasite, remobilization and/or the addition of carbon, and the deposition of late-stage barite and/or calcite veins. Small amounts of white clay (illite or kaolinite) are generally present. Decalcification of the host produces volume loss, with incipient collapse brecciation that enhances the pathways of the mineralizing fluids. Due to the small size of the gold grains, CTGDs generally do not have coarse-gold assay issues common in many other types of gold deposits.

Deposit configurations and shapes are quite variable. CTGDs are typically somewhat stratiform in nature, with mineralization largely confined within specific favorable stratigraphic units. Fault and solution-collapse breccias can also be primary hosts to mineralization (Figure 8-1).

The gold mineralization identified at Black Pine shares many of the characteristics of CTGDs, including:

- Stratigraphic control of mineralization, primarily in calcareous siltstone units within the Pennsylvanian Oquirrh Group.
- Structural control in and adjacent to low-angle to high-angle normal faults, and in tectonic, collapse, and hydrothermal breccias.
- Geochemical association with elevated arsenic, mercury, antimony, and thallium, as well as silver and tellurium; base metals are elevated around the north and east sides of the system.
- Gold is very fine grained, disseminated, and associated with decalcification, silicification, calcite and clay, as well as pyrite, arsenical pyrite, and their oxidized variants (limonite, goethite, hematite, etc.).

The Black Pine gold deposits also have characteristics that differ from typical CTGDs. The general location of the project is outside the major gold deposit trends in Nevada. There are multiple silver-lead-zinc occurrences within the Black Pine property, although the temporal association with the gold mineralization is not clear.



Source: Robert et al. (2007)

Figure 8-1: Cross-Section Model of a Carlin-Style Sedimentary Rock-Hosted Gold Deposit

9.0 EXPLORATION

This section summarizes exploration work carried out by Liberty Gold at the Black Pine project. Section 9.1 is excerpted from Gustin et al (2021).

9.1 Historical Data Compilation and Project Database Construction

Liberty Gold inherited several historical data packages from Western Pacific Resources. The historical database upon which Western Pacific based their exploration program contained primarily exploration and development data up to the 1989 sale of the project to Pegasus, including compiled digital and hardcopy records of surface rock and soil samples, geological mapping, exploration drill-hole locations, assays, surveys, geological logs, and copies of drill assay certificates. Also included were various internal and external memoranda and reports.

After the purchase of Black Pine from Western Pacific, a hard drive was conveyed to Liberty Gold containing .zip files created during the Pegasus mining operation, with file stamps dating principally from 1990 to 1997. The data comprises numerous Surpac, PC EXPLOR, PC MINE, and Gemcom project files, mine topography, and permitting design CAD files from throughout the mine life, as well as bench, road, and topographic survey files. Gemcom extraction files were recovered containing rock and soil sample databases and a compiled drill-hole database. This drilling database contains drill hole location and orientation data, gold and silver assays, lithological data, and carbon analyses for all historical drilling on the property, notably including 1,098 Pegasus drill holes. Blast-hole data for the E pit, A pit, and some of the C, D and I pits have been recovered, representing approximately 40% of the total. Very few hard copy files from the Pegasus operation have been recovered.

Liberty Gold's compilation and verification efforts as of the Effective Date of this report include:

- Assembly and verification of raw data export files of drill-hole data into a coherent Access database. Pegasus data files without column headers were re-organized and verified using assay certificates and drill logs from pre-1990 drill-hole data. Assay data reported in troy ounces per short ton were converted to grams per metric tonne using a conversion factor of 34.286. Laboratory assay certificates and drill logs were available for most Noranda holes and some earlier holes, and these were used to validate down-hole assays. Down-hole lithological and alteration data were obtained from the same raw files, which included a primary lithological unit abbreviation and a secondary lithology or alteration, sometimes including presence of carbon.
- Conversion of historical mine-grid coordinates into the UTM NAD 83, Zone 12 coordinate system. Historical drill hole collar coordinates, surface-sample locations, and topographic information were transformed using Western Pacific and 2010 Olympus aerial-survey data. The horizontal error ranged from less than one metre near the grid origin (near the C/D pit,) to 1.0 m about one kilometre away, to 3.0 m at the far edges of the project. This error range was determined by using 11 historical mine-grid control points that were found in the field and subsequently surveyed in UTM coordinates by Olympus Aerial Surveys, Western Pacific, BLM, and Liberty Gold. These survey results were then compared to the UTM locations of the control points as determined by the same transformation applied to the historical drill-collar locations.
- Verification of historical collar locations and surface samples after coordinate transformation. Air-photo disturbance images from 1992 and 1998, georeferenced drill hole maps from Noranda, and CAD maps from Pegasus were used to validate drill-collar locations following the coordinate transformation. This led to the identification of only two drill holes that were mis-located, and

the locations of these holes were corrected. Noranda road-cut rock samples from in the lower F zone and J anomalies were adjusted following coordinate transformation, with their correct locations apparent from sample distributions relative to present-day reclaimed road alignments and historical aerial photos, as well as geo-referenced sample maps.

- Creation of an as-mined bedrock surface topography through clipping and merging pre-mine topography beneath dumps. As-built pit topographic maps were merged, and as-mined pit topography maps were created by digitizing bench surveys in ArcGIS 3D. A pre-mining topographic surface was also created. For the as-mined topography compilation, CAD files in the local mine grid were imported into an ArcGIS Geodatabase using the coordinate transformation, and elevations in feet were converted to metres. Historically surveyed, as-mined topographic maps for the Tallman, B pit, I pit, and D-north pits, all currently partially back-filled, were used to create the as-mined topography. A 2010 Orthophoto digital elevation model (DEM) was to create the as-mined topography for the Tallman NE, B Extension, A, and C/D pits, as these pits were for the most part not backfilled. Pit-wall failures or partial back filling occurred in the E, C/D, and A-West pits. Portions of historical topographic data, consisting of either pit designs corroborated with blast-hole data or digitized bench surveys, were used to reconstruct an accurate as-mined bedrock surface for these pits.
- Recovery and compilation of surface geochemical data (soil and rock samples) from Pegasus database exports. Verification of soil-sample locations included comparisons to georeferenced maps of original soil grids and rock-sample locations, where available. As of the Effective Date of this report, a total of 12,453 soil samples and 4,516 rock samples within the Liberty Gold property boundary have been attributed with coordinates and gold assay data. Of these, 8,029 soil samples and 1,664 rock samples have both assay certificates and location data.
- Geologic map compilation. Surface geological maps created by Noranda were not updated significantly during the Pegasus operations. The Noranda map by Ohlin (1989) is still the best available historical property-scale geological map. Registration, digitization, and spot checking of Ohlin's map have been performed. Pit maps by Willis (2011) for Western Pacific have been registered and transformed into UTM NAD83, but these have not been used or extensively field-checked, although the mapping correlates well with down-hole lithology. USGS mapping by Smith (1982) provides geological information on a regional scale. These maps are gradually being amalgamated into a single geological map for the entire property, as the pit maps provide geological information that was not available prior to mining.
- Recovery of blast hole data. As of the Effective Date of this report, a database of 61,704 blast hole data points have been recovered, verified, and assembled. The blast holes are from E pit (12,987 - complete), A pit (36,398 – partial), C/D pit (7,418 – partial), and I pit (4,901 – partial). Also recovered are 63,861 blast hole intervals from C/D pit with corrupted coordinates (currently unusable). Liberty Gold is of the opinion that there is more blast hole data contained within the data files, and recovery efforts remain ongoing. Comparison of the complete set of blast hole data and exploration drill-hole assays within the E pit demonstrates the importance of the data density provided by the blast holes in modelling the complex, strongly structurally controlled gold mineralization at Black Pine.
- SLR conducted an additional review of the 'below detection limit' (BDL) of historical assay values. As laboratory technology improves, so do the detection limits that the equipment can measure. Common practice is to replace the BDL value with the value of the current detection limit or half of the detection limit. SLR identified multiple detection limits throughout the Project's drilling campaigns. Liberty Gold took a prudent approach in identifying any assays at the detection limits

prior to 1998 and replaced them with a value of 0.017 ppm. The total number of assays which were reduced in value is approximately 43,000 entries and reduced the entire database grade by 4% from 0.238 g/t Au to 0.229 g/t Au. This process will allow greater confidence in historical assays not artificially increasing grade in the Mineral Resource estimation.

9.2 Liberty Gold Rock Sampling

Liberty Gold has carried out a limited surface rock-sampling program to characterize mineralization and alteration on the Black Pine property on underexplored gold-in-soil anomalies beyond the limits of historical pits. Between 2017 and the Effective Date of this report, 694 rock samples were collected throughout the property, primarily as grab samples and chip/channel samples in prospective rocks along newly exposed road-cuts, including in the CD Zone SW Extension, F Zone, and Bobcat Zone (Figure 9-1). Gold assays range from below detection limit to a high of 3.01 g Au/t. Liberty Gold has interpreted that the rock-chip sampling indicates gold is most closely associated with iron oxide, decalcification, and argillization, primarily in deformed silty limestones and calcareous siltstones, and is spatially associated with faults.

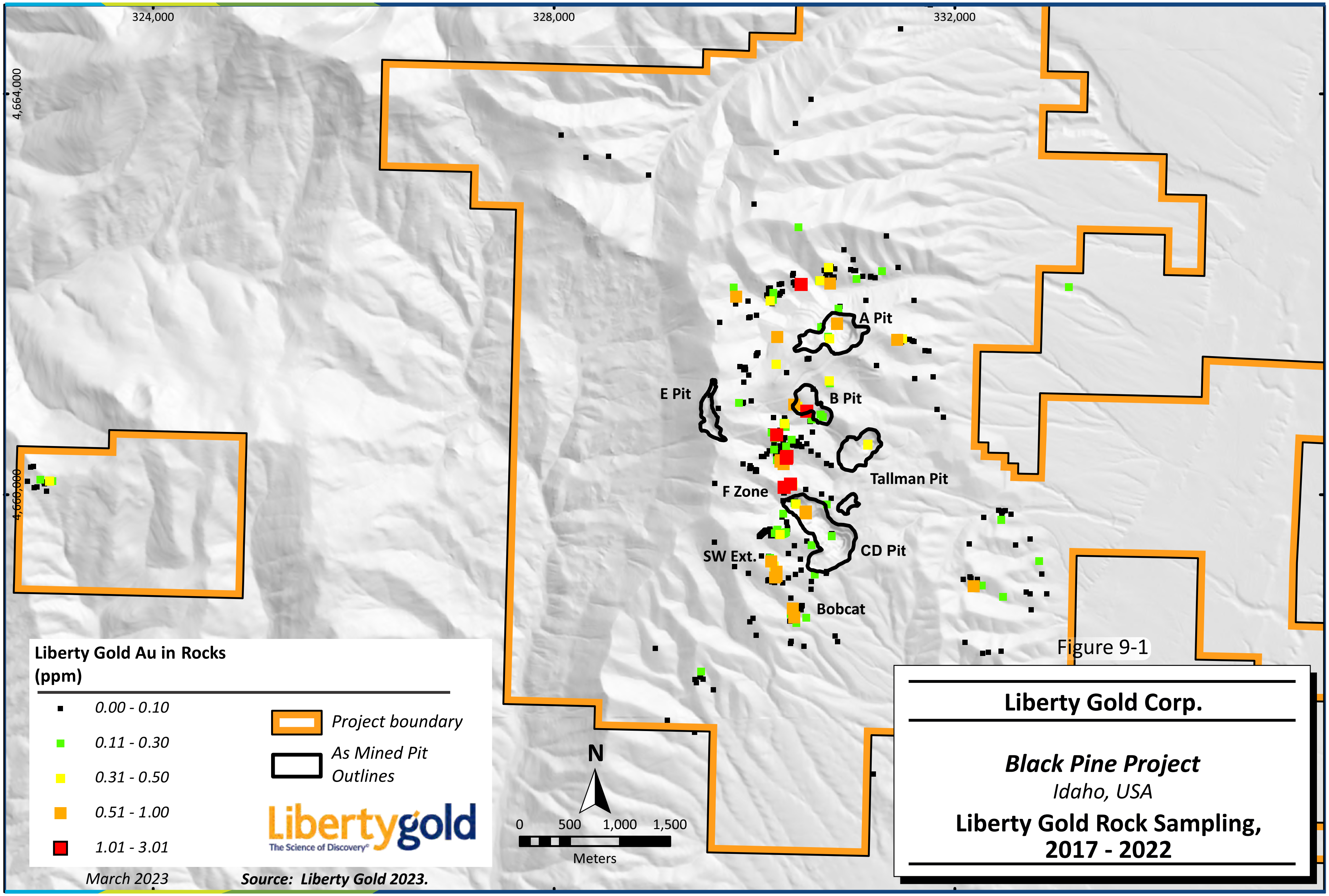


Figure 9-1

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Liberty Gold Rock Sampling, 2017 - 2022

9.3 Liberty Gold Geologic Mapping

Liberty Gold has carried out geologic mapping at various times throughout the life of the project, primarily by April Barrios, William Lepore, Randy Hannink, Moira Smith, and consulting geologist Tracy Dembrowski. Geologic mapping was facilitated using a combination of digital pads (ArcPad, etc.) and paper maps, and has been integrated by Liberty Gold geologist April Barrios into a master property map in ArcGIS that is used as a base for a number of figures in this report.

9.4 Ground Gravity Survey

A ground gravity survey was carried out in 2022 by MaGee Geophysical Services LLC, as summarized in Wright (2022). A total of 1,168 stations were acquired in two phases on 200 m and 400 m grids covering central and eastern parts of the property and adjacent areas, as well as widely spaced stations on public roads surrounding the grid. Relative gravity measurements were made with LaCoste & Romberg Model-G gravity meters and one Scintrex CG-5 meter. Topographic surveying was performed with Trimble Real-Time Kinematic and Fast-Static GPS units referenced to two base stations. Data processing was performed with the Xcelleration Gravity module of Oasis Montaj, V. 7.0. Additional processing methods are described in Wright (2022). All rock units in the area were represented by a density of 2.45 g/cc. Complete Bouguer anomaly data were produced and gridded using a kriging algorithm using a 50 m spacing. The data were further processed to produce residual gravity, first vertical derivative and horizontal gradient models.

The horizontal gradient model illustrates the rate of change in gravity response over horizontal distances, and clearly delineates the Rangefront Fault, as well as other likely faults to the east that are concealed by gravel cover (Figure 9-2). Of note is a north-south linear immediately to the east of the Rangefront Zone, as well as another approximately 3 km to the east. The residual gravity model reflects the relative depth of the (relatively less dense) gravel cover, with higher measurements reflecting areas with shallower gravel cover (Figure 9-3).

The gravity data will be reprocessed when sufficient drilling has been carried out in the subject area to generate a 3-D geology model.

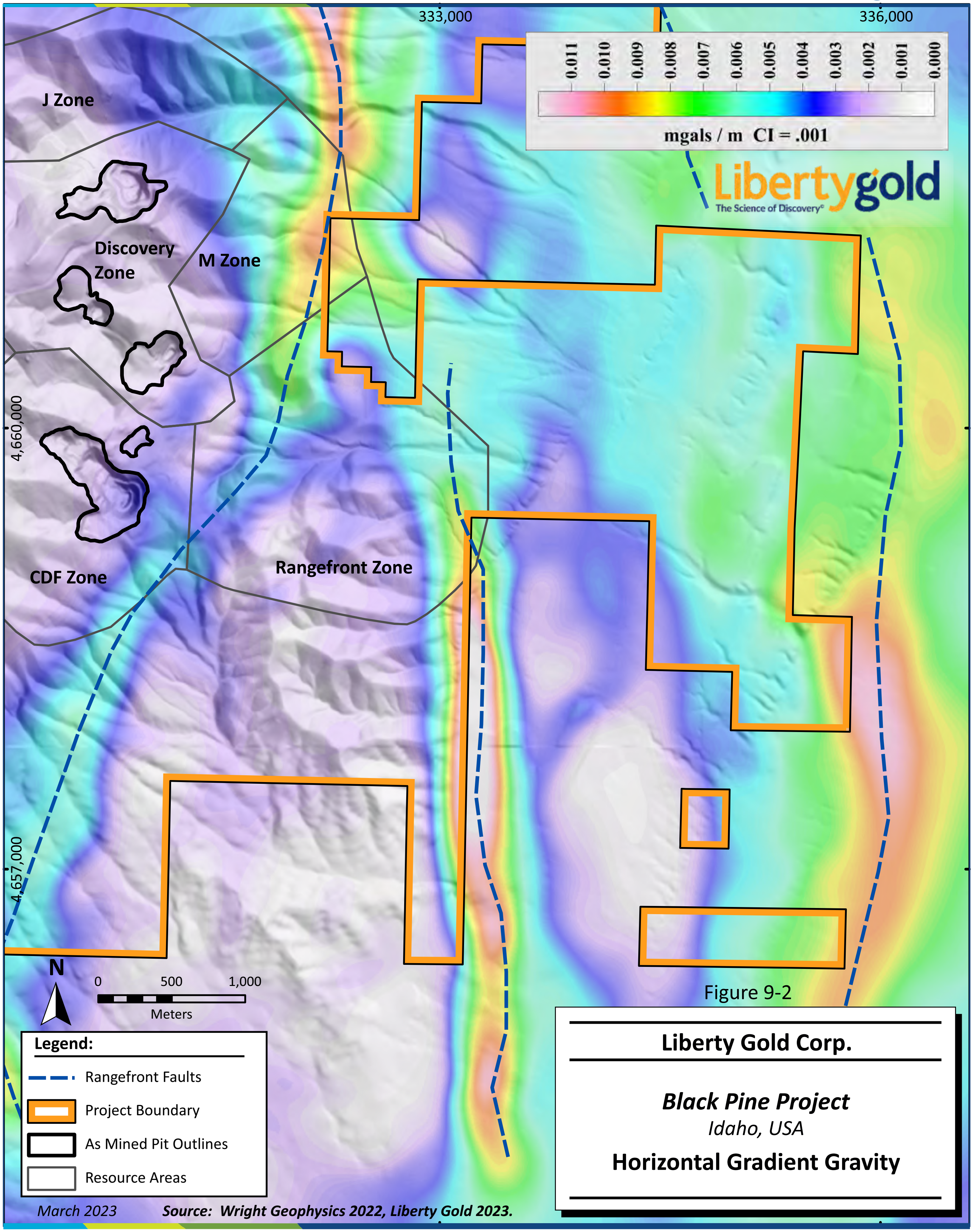


Figure 9-2

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Horizontal Gradient Gravity

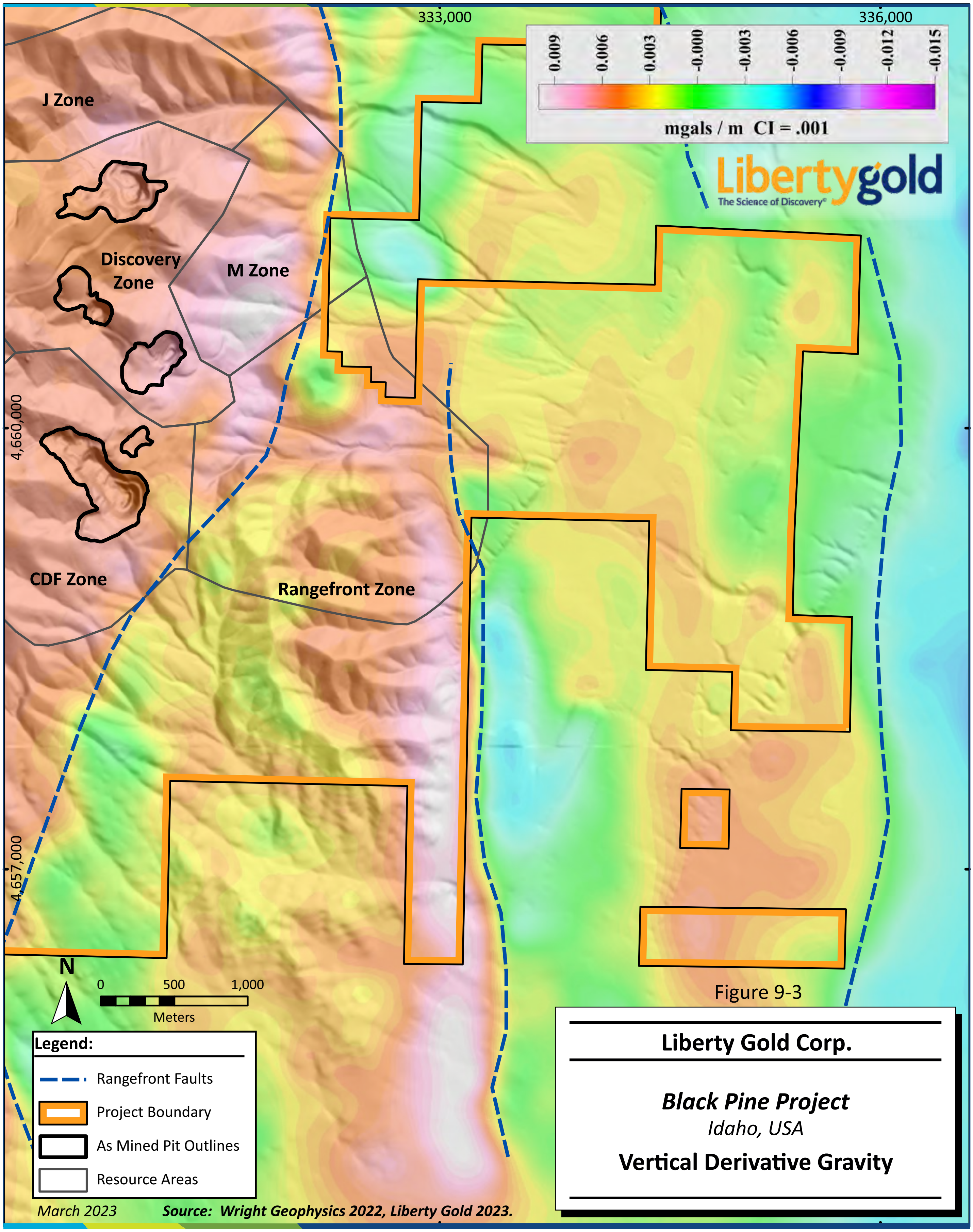


Figure 9-3

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Vertical Derivative Gravity

9.5 Three-Dimensional Modelling

Liberty Gold has created a three-dimensional geological model for the Black Pine property in Leapfrog, in order to integrate surface mapping, drilling and structural data, and interpretations. The model is subject to revision as new data becomes available and is the primary platform for real-time analysis of drill data and drill hole planning. The geological model also forms the basis for the resource estimate. The 3-D model includes fault surfaces and solids representing the primary stratigraphic units described in Section 7.0, as well as surficial deposits including alluvium, pit backfill, and waste dumps.

9.6 Geotechnical Study

Golder Associates USA Inc. (Novak and Pegnam, 2022) was commissioned to provide geotechnical services related to three core holes (LBP456C, LBP429CA and LBP489C) drilled in 2021 near the western margins of the Discovery and CD resource pits. Data collection included comprehensive geotechnical logging, point load testing, and optical and acoustic televiewer surveying, as appropriate. Geotechnical logging included recording of core recovery, rock quality designation, fracture count, alteration and weathering, joint condition, geological strength, identification of weak zones, and descriptions of discontinuities. Televiewer reconciliation was completed using Advanced Logic Technology WellCAD software, with manual identification of structural orientations.

9.7 Summary Statement

The QP has not analyzed the sampling methods, sample quality, sample representativity, or possible presence of bias related to the Black Pine surface samples at the Black Pine project because these data are superseded in relevance by the available drill data. Drill procedures and results are described in Section 10.0.

10.0 DRILLING

10.1 Summary

Liberty Gold carried out drilling programs in 2017 and 2019-2022 as tabulated in Table 10-1. Figure 10-1 shows the locations of all Liberty Gold drill hole collars within the Black Pine property by year, including holes that were abandoned at shallow depth due to adverse drilling conditions and water-related holes. Figure 10-2 shows all drill holes in the drill database relative to the outline of modelled gold mineralization.

Table 10-1: Summary of Liberty Gold Black Pine Project Drilling
Liberty Gold Corp. – Black Pine Project

Year	No. RC Holes[1]	RC (m)[2]	No. Core Holes[1]	Core (m)[2]	Total (Holes)[1]	Total (m)[2]
2017	14	2,274	0	0	14	2,274
2019	86	22,537	6	1,252	92	23,788
2020	160	43,874	10	2,352	170	46,227
2021	245	69,647	11	2,163	256	71,811
2022[3]	318	66,381	6	1,118	324	67,499
Total	**823**	**204,713**	**33**	**6,886**	**856**	**211,599**

Notes:

1. The number of holes includes both holes that were abandoned prior to reaching target and were re-drilled, resulting in an "A" designation for redrilled holes, and holes that were drilled well outside of the resource area. SLR did not use abandoned holes in the resource database.
2. Meterage includes metres drilled in abandoned holes.
3. 2022 drilling statistics include 27 holes that were drilled in 2022 but not assayed in time to be included in the resource estimate.

10.2 Drilling Description

The 2017 drilling contractor was Boart Longyear Company of Elko, Nevada. A track-mounted Foremost MPD 1500 drill rig was utilized with 14.0 cm diameter center-return bits. All drilling was done with water injection. Drill cuttings were split and sampled over 1.52 m (5 ft) intervals using a rotating wet "cyclone" vane-type splitter. The split samples fell directly into pre-labeled water-permeable cloth sample bags that were sealed. Excess water drained from the sample bags as they sat at the drill sites. Sample weights were generally in the range of three to 10 kg after drying.

The 2019 RC drilling was undertaken by Boart Longyear with two track-mounted Foremost MPD 1500 drill rigs that used 14.0 cm diameter center-return bits. Sample handling techniques were identical to that in 2017. The 2019 core drilling contractor was Timberline Drilling Inc. of Elko Nevada. Drilling was carried out using a track-mounted Atlas Copco CS14 using primarily PQ (85 cm diameter core) tools.

The 2020 to 2022 RC drilling contractor was Boart Longyear. Two or more track-mounted Foremost MPD 1500 drill rigs were utilized with 14.0m cm center-return bits, and one truck-mounted Atlas Copco Super 10 also with the same bits. Sample handling techniques were identical to that in 2019. The 2020 and 2021 core drilling contractor was Major Drilling of Salt Lake City, Utah. Drilling was carried out using a track-mounted LF90 and a truck-mounted LF230 to recover primarily PQ and some HQ (63.5 cm diameter) core.

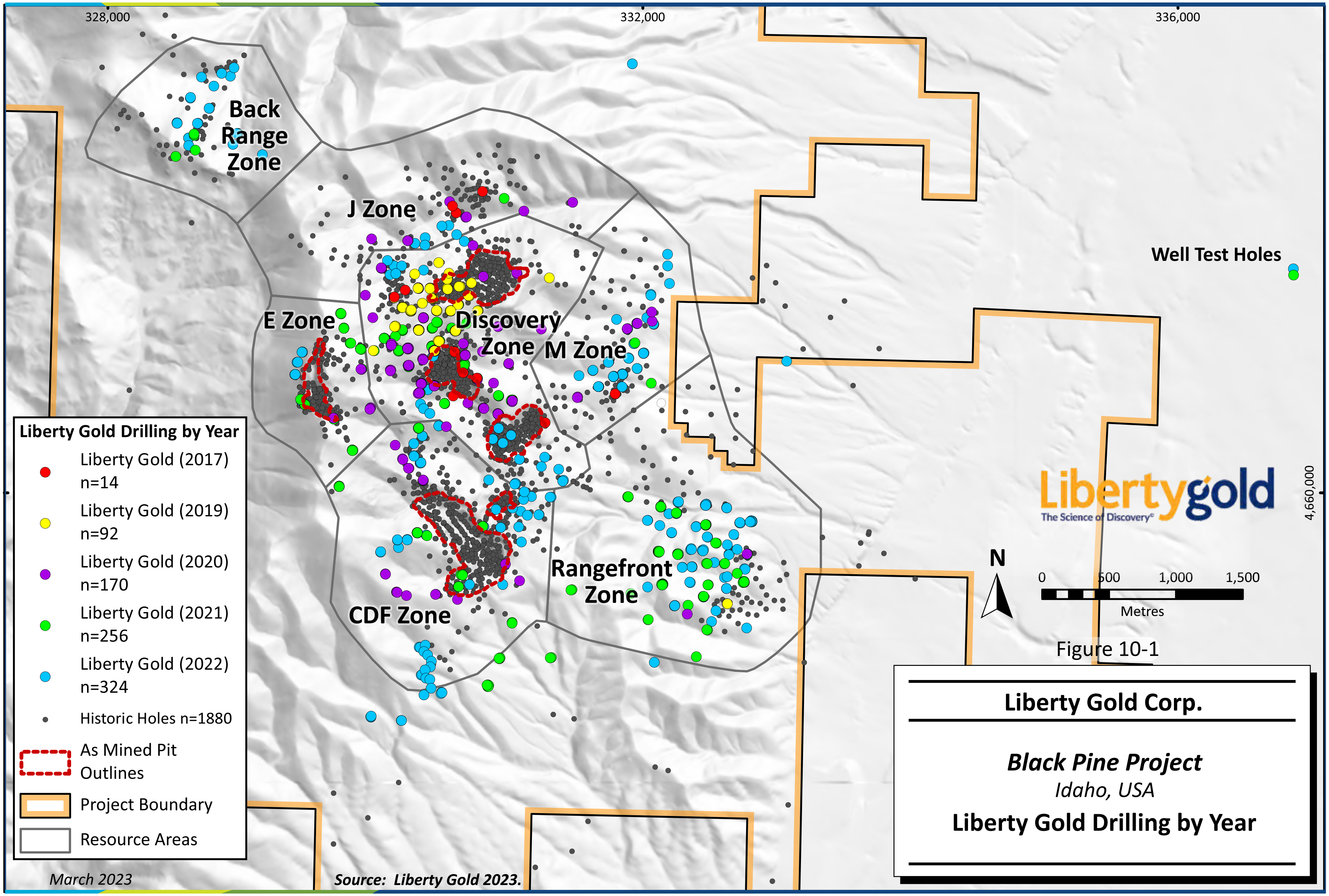

328,000
332,000
336,000
4,660,000
Back Range Zone
J Zone
E Zone
Discovery Zone
M Zone
CDF Zone
Rangefront Zone
Well Test Holes
Liberty Gold Drilling by Year
Liberty Gold (2017) n=14
Liberty Gold (2019) n=92
Liberty Gold (2020) n=170
Liberty Gold (2021) n=256
Liberty Gold (2022) n=324
Historic Holes n=1880
As Mined Pit Outlines
Project Boundary
Resource Areas
N
0
500
1,000
1,500
Metres
Libertygold
The Science of Discovery
March 2023
Source: Liberty Gold 2023.
Liberty Gold Corp.
Black Pine Project
Idaho, USA
Liberty Gold Drilling by Year

Figure 10-1

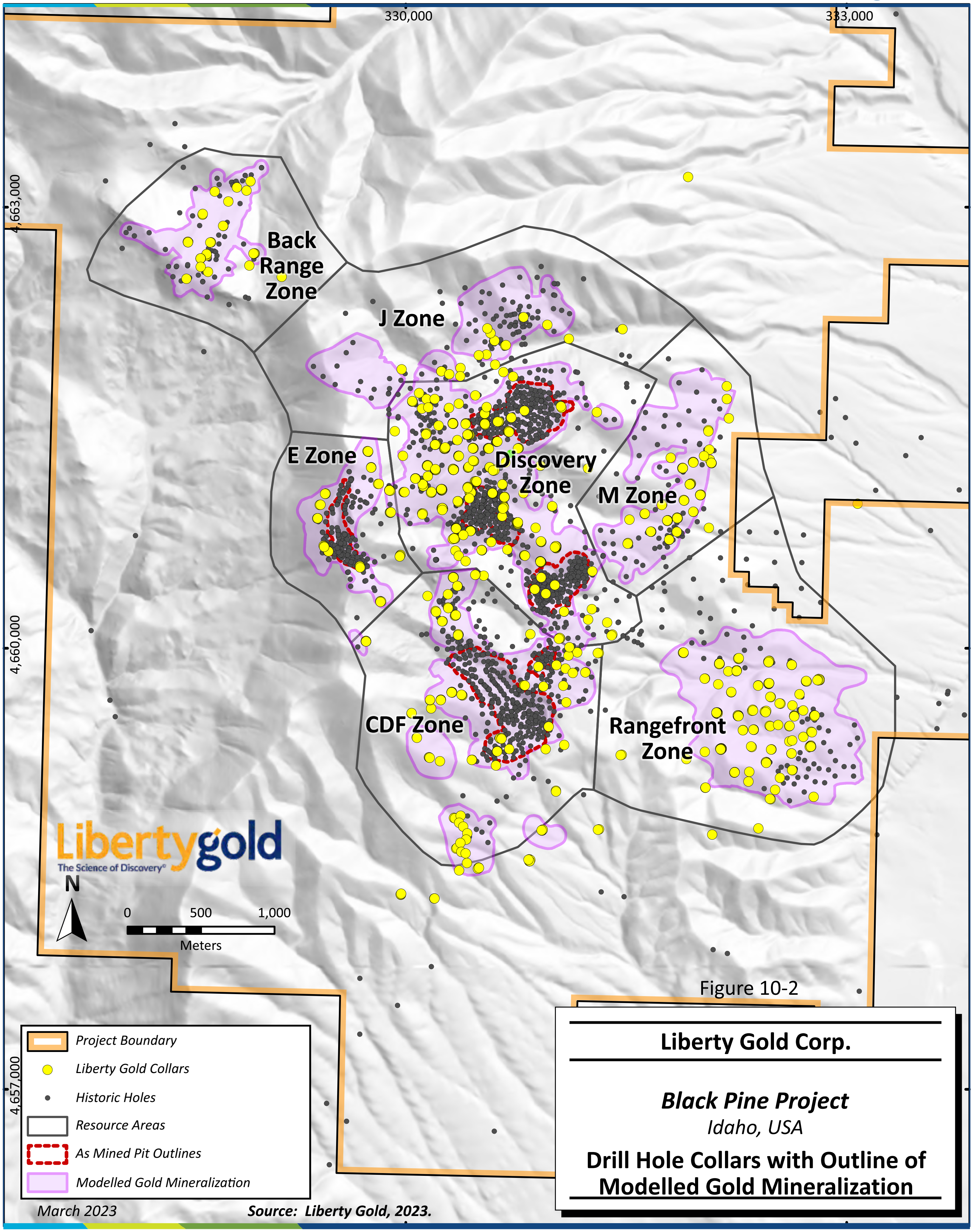


Figure 10-2

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Drill Hole Collars with Outline of Modelled Gold Mineralization

10.3 Drill-Hole Collar Surveys

For the 2017 and 2019 drill collars, locations were initially marked in the field by Liberty Gold personnel using a Trimble GeoXH hand-held GPS receiver with differential correction accuracy of 0.5 m horizontally and 1.0 m vertically. Drill holes were abandoned in accordance with the State of Idaho Rules for Exploration Operations and Required Reclamation (IAR 20.03.02.06) as well as Sawtooth National Forest policies. After completion of the holes, the collars were marked with stamped brass tags fastened to a steel wire, and their locations were surveyed by Liberty Gold personnel using the Trimble GeoXH GPS receiver.

From 2020 through 2022, drill collars were marked and abandoned in the same manner as the 2019 holes. A Juniper Systems Geode Sub-meter GPS receiver was used by Liberty Gold staff to survey the collar locations.

10.4 Down-Hole Surveys

For Liberty Gold's 2017 drilling, down-hole deviation surveys were carried out by International Directional Services (IDS) of Elko, Nevada. IDS utilized a truck-mounted surface-recording gyro (SRG) survey instrument for some holes, and a north-seeking gyro (NSG) instrument for other holes. Readings were taken at the bottom and top of the holes, as well as at intervals of 15.2 m along the lengths of each hole.

For Liberty Gold's 2019 drill program, downhole surveys were conducted using a north-seeking, solid state gyroscopic tool (Reflex EZ-Gyro) that was rented from Imdex Limited, along with a paired depth counter and a wireline winch mounted on a trailer. The tool was programmed to read at set depth intervals of 15.2 m as it traveled down the hole, with a second survey run at the same intervals on the way out of the hole. The downhole surveys were completed by Liberty Gold personnel, who then manually downloaded the data from the tool to a handheld device where the data was checked for accuracy before the hole was abandoned.

For Liberty Gold's 2020 through 2022 surveys, a north-seeking, solid-state gyro tool made by SPT was rented from IDS, along with a blue-tooth-paired depth counter and wireline winch. The tool reads continuous as it travels the hole, with the Gyromaster software programmed to export a reading at each 15.2 m interval. The downhole surveys were completed by Liberty Gold personnel, with specific protocol followed to verify precision of the survey before the hole was abandoned. The Gyromaster software compares the in-run and the out-run of each survey, and a threshold of <1.4% variance is met before any survey is considered complete. If needed, such as on deeper holes and holes steeper than -75 degrees, spring centralizers were installed on the tool to reduce rotation during the survey.

10.5 Sample Quality and Down-Hole Contamination

Down-hole contamination is always a concern with holes drilled by rotary (RC or conventional) methods. Contamination occurs when material originating from the walls of the drill hole above the bottom of the hole is incorporated with the sample being extracted at the bit face at the bottom of the hole. The potential for down-hole contamination increases substantially if significant water is present during drilling, whether the water is from in-the-ground sources or injected by the drillers. Conventional rotary holes, in which the sample is returned to the surface along the space between the drill rods and the walls of the drilled hole, are particularly susceptible to down-hole contamination.

While small areas of perched water have been intersected by Liberty Gold, no consistent groundwater table has been intersected Liberty Gold, and there are no records that indicate that the historical holes intersected significant water either. A Draft Environmental Impact Statement prepared for Pegasus states "Pegasus exploration wells did not encounter any measurable groundwater at depths between 300 and 700 feet [91 to 213 m] below the surface and there are no perennial or intermittent streams in the project area" (USDA Forest Service, 1993).

During the detailed explicit modelling of the gold mineral domains discussed in Section 14.0, none of the signs of potential down-hole contamination were recognized in any of the holes drilled by historical operators or Liberty Gold.

The lack of groundwater, coupled with the relatively shallow depths of the historical holes (average and median down-hole depths of 102 m and 92 m, respectively) played significant roles in the mitigation of material contamination issues at Black Pine. In addition, Liberty Gold required center-return bits to be used for all of their RC holes, except in cases where excellent ground conditions were encountered or exploratory drilling in areas without known mineralization. This method minimizes the distance between the bit face as it breaks the rock and the collection of the sample into the inner tube of the RC drill pipe, which thereby further minimizes the potential for contamination. In cases where a conventional hammer bit and interchange were used, care was taken to make sure the return sample stream was coming back clean to ensure that no material was flushing downhole after adding rods, prior to sampling. In nearly every RC drill hole, drillers pump a light-to-medium-weight mixture of bentonite between the drill rods and the walls of the drill hole, which greatly reduces hole caving and downhole contamination.

10.6 Liberty Gold Drilling Summary

Drilling prior to mid-2021 is described in detail in Gustin et al (2021), including tables of results for various target areas. The reader is also referred to numerous Liberty Gold press releases between 2017 and 2022 available on the Company website, with links to graphics and tables of results with collar locations, downhole information, and assay results for all holes drilled from the inception of drilling in 2017 through the 2022.

In late 2017, Liberty Gold drill-tested five target areas with 14 RC holes (B Pit Extension, Tallman Pit NE and A Basin (Discovery Zone), J Anomaly (J Zone), and Hazel Pine Mine (M Zone); Figure 10-2). The primary purposes of this drilling were to validate drilling carried out by previous operators and to familiarize Liberty Gold with both mineralized and unmineralized rock. As such, drill sites were sited either immediately adjacent to historical pits or in established target areas. The 2017 holes were drilled from sites permitted under Western Pacific's 2012 PoO. These site locations were designed by Western Pacific without the benefit of knowledge of over 1,300 historical drill holes, the data from which were obtained later. Consequently, sites were not always optimally located relative to drill targets. Hole LBP012 was lost in underground mine workings at a depth of 13.2 m and redrilled. All drill holes were inclined at angles ranging from -45° to -80°.

In 2019, after the receipt of a PoO that allowed access to most of the area of surface mineralization at Black Pine, Liberty Gold completed a larger drill program encompassing 86 RC holes and six core holes. The core program was designed to obtain large diameter core for metallurgical testing, as described in Section 13.0. The RC program was primarily designed to explore an area between the historical B Pit, historical A Pit and historical A Basin target, where 3D geological modelling had identified a large area thought to contain extensions of surface gold mineralization in the pit highwalls and A Basin beneath the limit of historical drilling. The 2019 drilling identified two significant zones of mineralization: "Discovery 1", or "D-1", a northwest-striking, moderately northeast-dipping zone of mineralization extending from the A Basin area to the historical B extension Pit; and "Discovery 2", or "D-2", a relatively flat-lying zone of mineralization extending in a north-easterly direction from the Discovery 1 zone to the A Pit highwall (Figure 10-2). This nomenclature was later abandoned in favour of “Discovery Zone” as the two zones eventually expanded and merged, and with the recognition that the D-2 zone was a down-dip extension of mineralization along a listric normal fault.

In 2020, RC drilling continued in the Discovery Zone, discovering a north-striking, moderately to steeply east-dipping zone of gold mineralization lying immediately west of, and eventually merging with, the Discovery Zone. This zone was named the “Discovery 3”, or “D-3” zone. This terminology was also later abandoned, and the mineralization lumped with the rest of the Discovery Zone, although it is still recognized as controlled by a separate listric normal fault with a more northerly orientation that continues southward through the F Zone and merges with the north end of the CD Zone. Other targets of RC drilling in 2020 included the:

- Southeast extension of the Discovery Zone between the B Extension Pit and the Tallman Pit
- Northwest extension of the Discovery Zone
- J Zone
- F Zone between the CD Pit and B Extension Pit
- M Zone
- Southwest Extension target west of the historic I Pit

Core drilling was carried out primarily for the purpose of obtaining samples for additional metallurgical testing in the Discovery, E, and CD Zone areas, as described further in Section 13.0.

In 2021, RC drilling resumed on April 1, targeting primarily infill drilling in the Discovery Zone for resource classification upgrade, expansion of known mineralization along the CD pit western margin, and exploratory drilling east of the Rangefront fault. In July 2021, gold mineralization was encountered in five holes drilled from a single site west of the 2021 Rangefront resource pits, leading to discovery of a zone of mineralization, briefly designated “D-4” in press releases from that time, that now encompasses a roughly 1 km^2 area. Infill and step-out drilling continued in the (expanded) Rangefront Zone throughout the remainder of the year.

Core drilling targeted areas not well covered by previous metallurgical drilling, including the newly defined Rangefront Zone, as well as the M, E, CD, and F zones.

Three core holes were drilled, including two in the Discovery Zone and one in the CD Zone for the primary purpose of collecting geotechnical data through use of a televiewer, point load tester, and geotechnical logging (see Section 7.0).

Core orientation was carried out subsequent to drilling by Golder Associates USA Inc. (Novak and Pegnam, 2022), who reconciled features in the drill core with the oriented televiewer data furnished by International Directional Services (IDS) out of Elko, Nevada.

In 2022, RC drilling commenced in early January and continued through mid-December. Drilling encompassed:

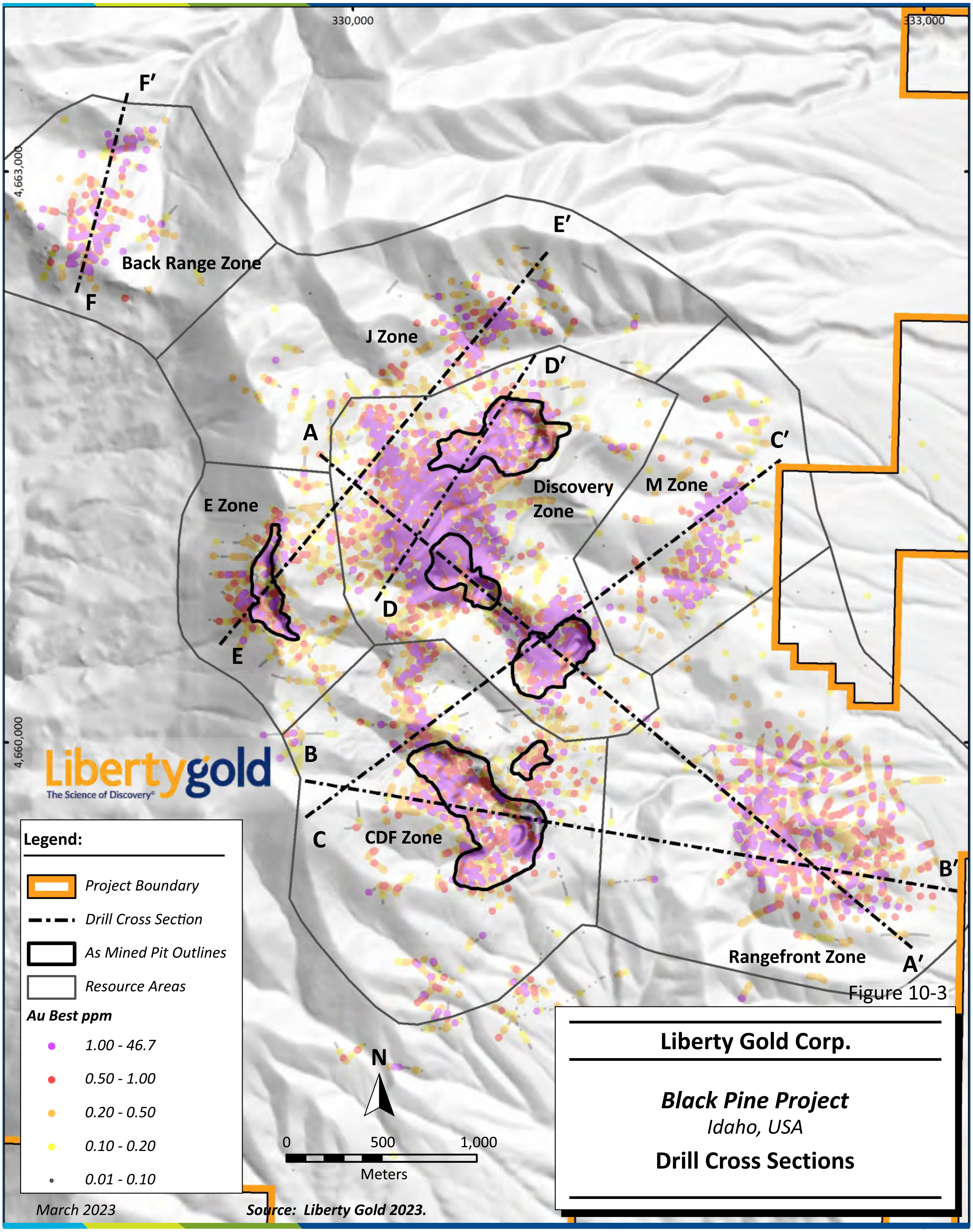
- Infill and step-out drilling in the Rangefront Zone for resource upgrade and expansion purposes.
- Targeting of areas of near-surface, above average grade that might favourably impact the first few years of a mining operation. Target areas included the M, F, and Back Range zones.
- Amalgamation of zones consisting of two or more small resource pits defined by primarily shallow historical drilling. Target areas included the M, F, and Back Range zones.

- Expansion drilling along the margins of existing zones, including the western margins of the CD and E zones.
- Identifying and defining areas of mineralization associated with surficial deposits, including waste rock storage areas and historic pit backfill.
- Testing of new targets including Bobcat, South Rangefront, Section 36, and Next Canyon Up targets.

10.7 Mineralized Zone Descriptions

Zones subject to Liberty Gold drilling are described in more detail below and illustrated in Figure 10-4Figure 10-3 through Figure 10-8. Zone descriptions reflect the most recent drilling and interpretations in these areas since the previous resource estimate (Gustin et al, 2021). Additional tables of drill results from 2017 – 2020, cross sections and zone descriptions can be found in Gustin et al (2021).

Over time, continued drilling by Liberty Gold demonstrated continuity between smaller zones of mineralization identified by previous operators, such that some zone and target names were expanded to include nearby named targets, with the older names abandoned. As well, the large size of the Black Pine gold system made modelling of the system as a single entity impractical. As such, zone and target names were grouped into seven primary zones as shown Figure 10-3. Figures 10-4 through 10-9 illustrate the major mineralized zones in cross section.


330,000
333,000
4,663,000
4,660,000
F′
F
Back Range Zone
E′
E
J Zone
D′
D
A
A′
B
B′
C
C′
Discovery Zone
M Zone
E Zone
CDF Zone
Rangefront Zone
Libertygold
The Science of Discovery
Legend:
Project Boundary
Drill Cross Section
As Mined Pit Outlines
Resource Areas
Au Best ppm
1.00 - 46.7
0.50 - 1.00
0.20 - 0.50
0.10 - 0.20
0.01 - 0.10
N
0
500
1,000
Meters
March 2023
Source: Liberty Gold 2023.
Figure 10-3
Liberty Gold Corp.
Black Pine Project
Idaho, USA
Drill Cross Sections

Looking Northeast

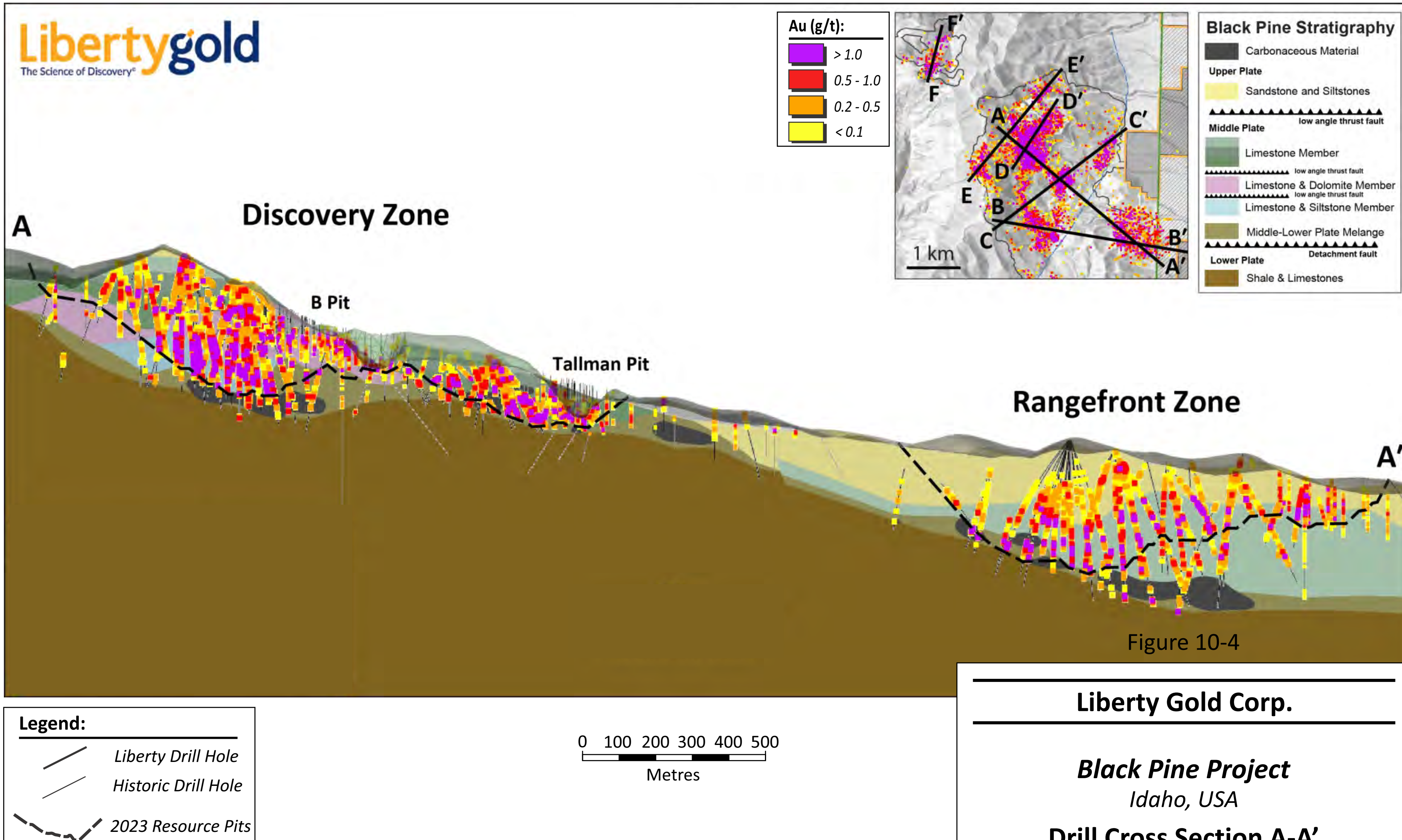


Figure 10-4

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Drill Cross Section A-A'

March 2023

Source: Liberty Gold, 2023.

Looking Northeast

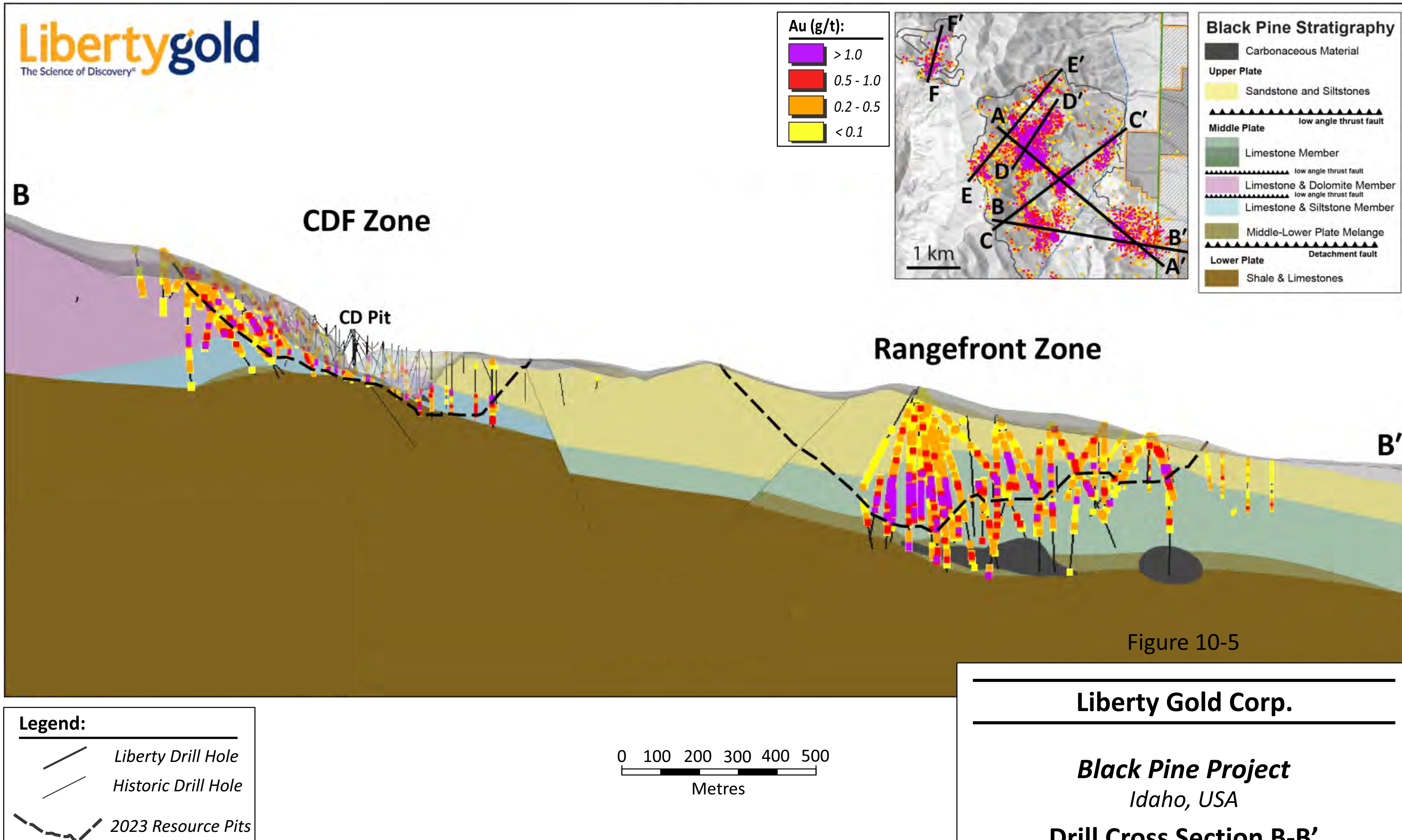


Figure 10-5

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Drill Cross Section B-B'

March 2023

Source: Liberty Gold, 2023.

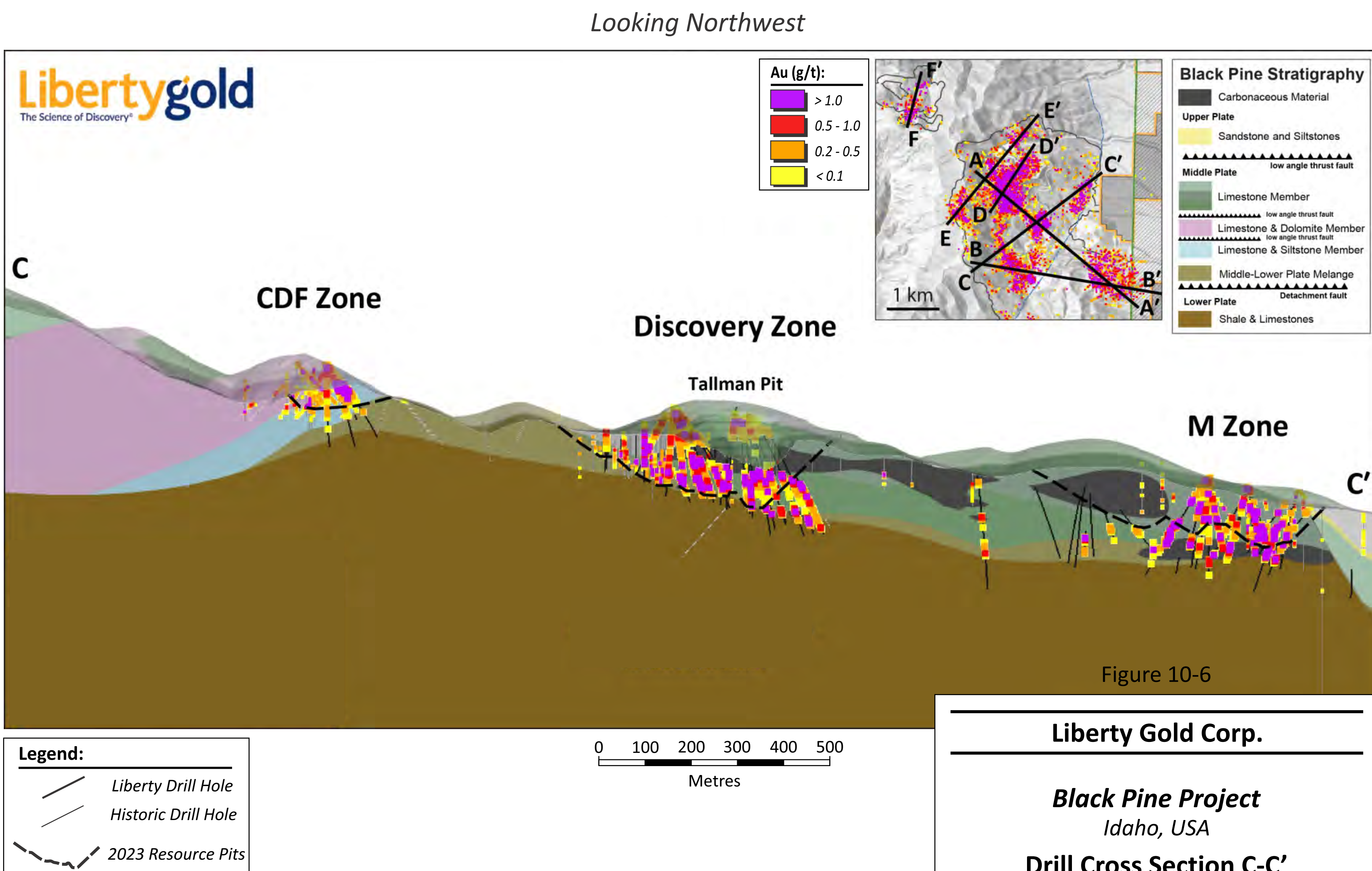


Figure 10-6

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Drill Cross Section C-C'

March 2023

Source: Liberty Gold, 2023.

Looking Northwest

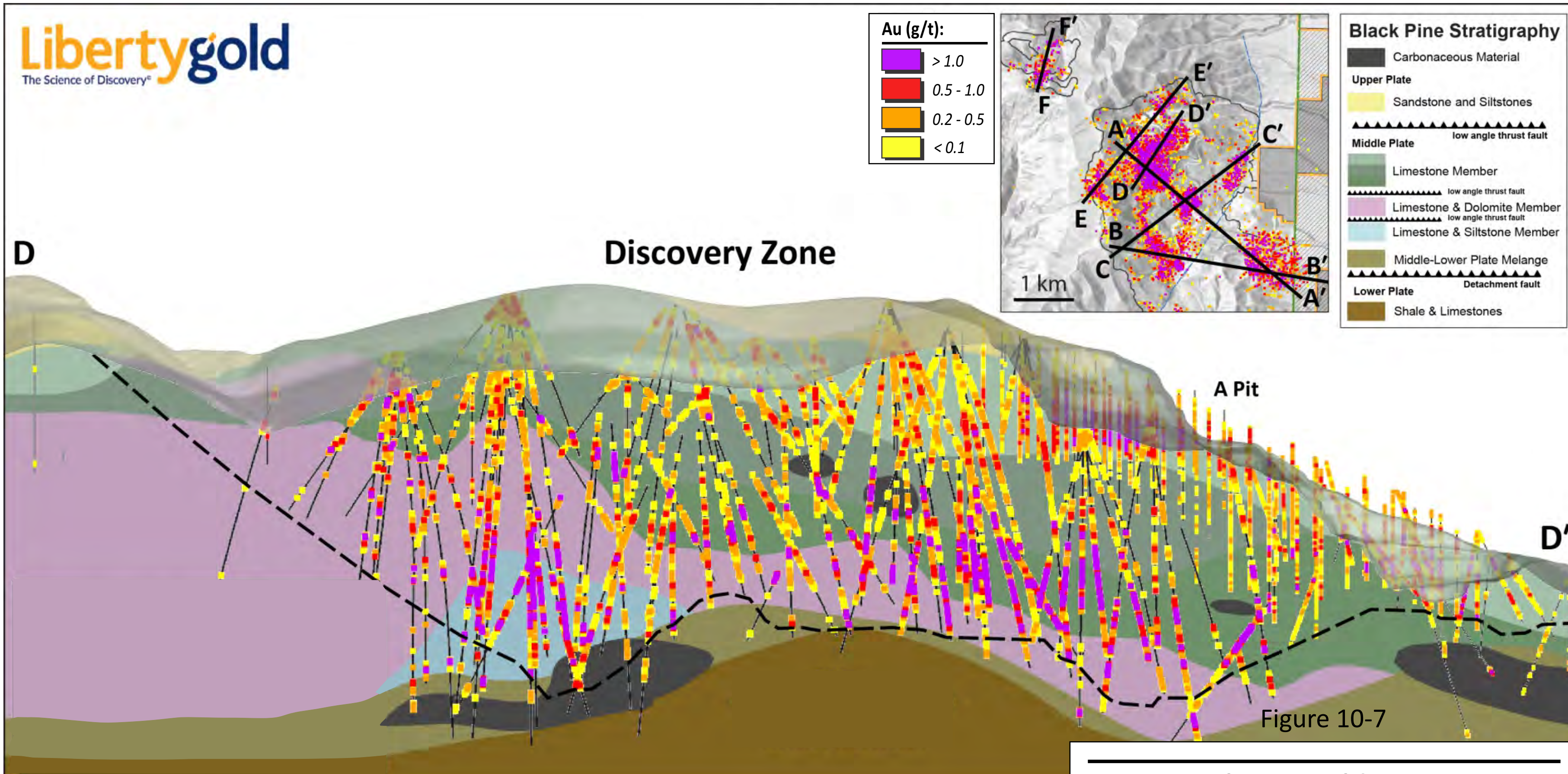


Figure 10-7

Legend:

Liberty Drill Hole

Historic Drill Hole

2023 Resource Pits

0 50 100 150 200

Metres

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Drill Cross Section D-D'

March 2023

Source: Liberty Gold, 2023.

Looking Northwest

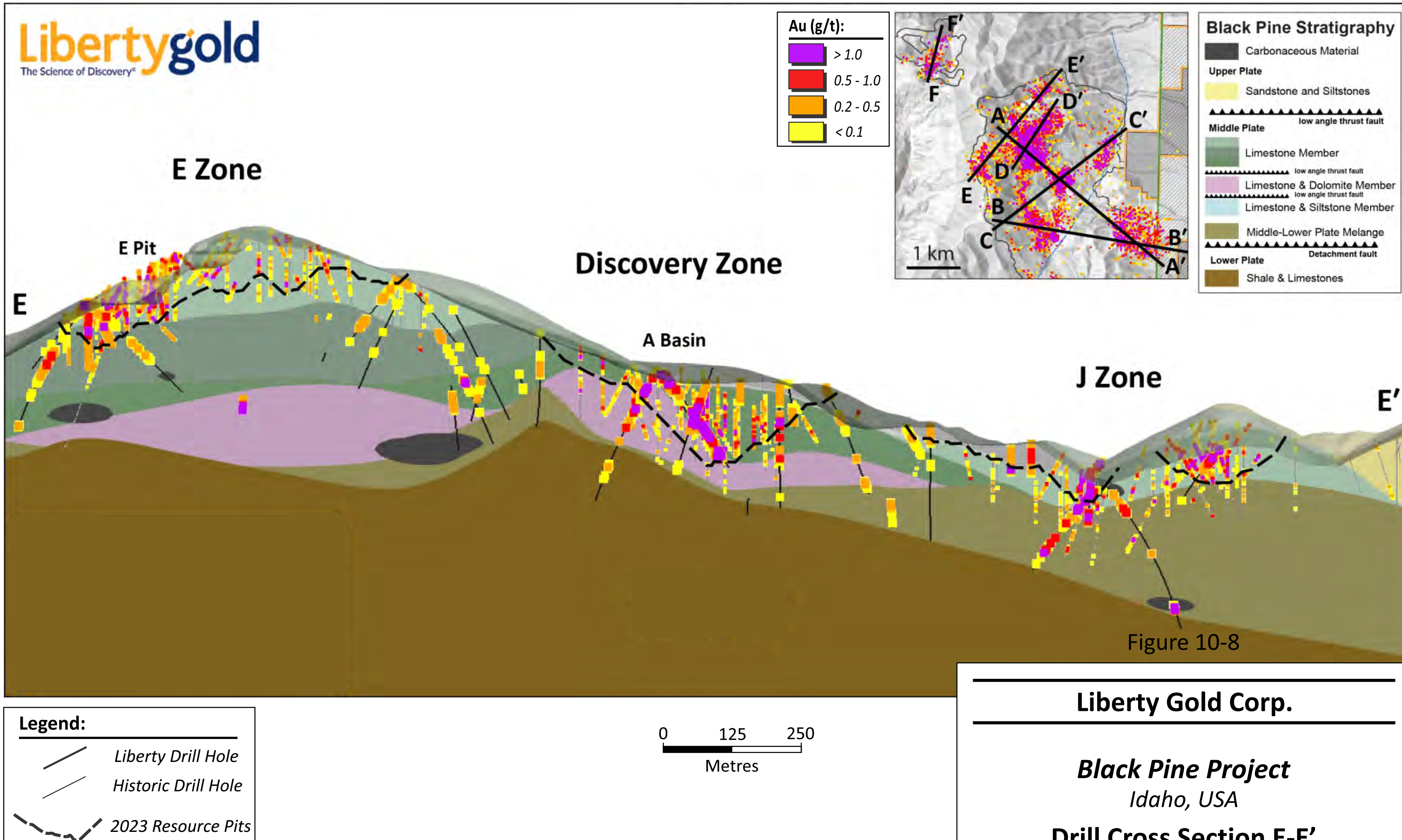


Figure 10-8

Liberty Gold Corp.

Black Pine Project

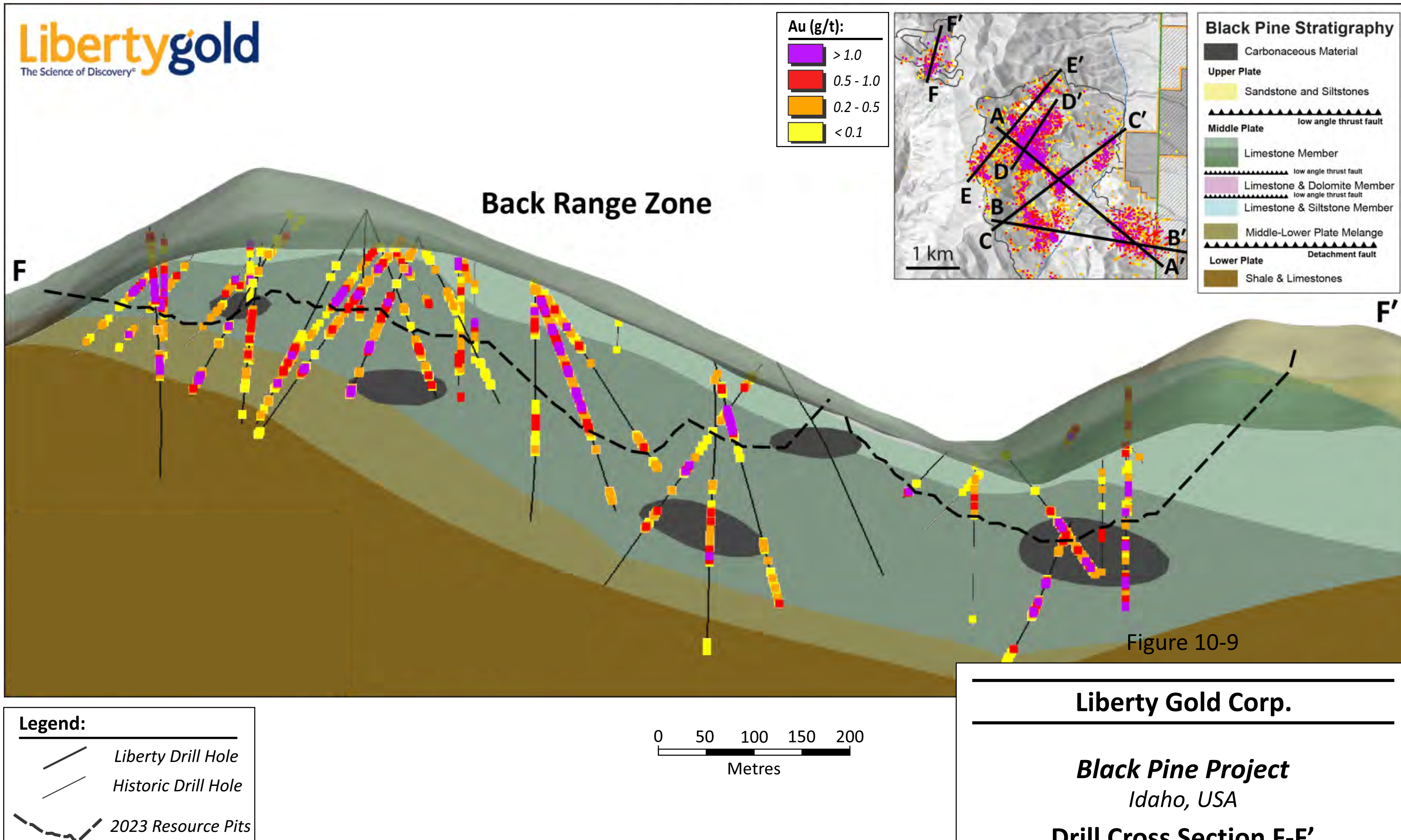
Idaho, USA

Drill Cross Section E-E'

March 2023

Source: Liberty Gold, 2023.

Looking Northwest



Liberty Gold Corp.

Black Pine Project

Idaho, USA

Drill Cross Section F-F'

March 2023

Source: Liberty Gold, 2023.

10.7.1 Discovery Zone

The D-1, D-2, and D-3 zones are referred to collectively as the "Discovery Zone", as they lie in close proximity, with the D-2 Zone interpreted as a down-dip extension of the D-1 zone in the immediate hanging wall of a listric normal fault, and the D-3 Zone interpreted as lying in the hanging wall of a second listric normal fault to the immediate west that may join into the D-1/D-2 structure at depth (Figure 10-4, 10-6, and 10-7).

Shallow historic drill holes defined mineralization along a ridge between the historic B and A pits and shallow mineralization in the A Basin area to the northwest. Deeper mineralization in the Discovery Zone was discovered in 2019 with hole LBP021, drilled in the 700 m gap between LBP002 in the A Basin area and the highwall of the B Pit. This hole returned a 47.2 m interval at an average grade of 1.78 g/t Au. Gold mineralized rocks are highly oxidized, and higher grades are associated with reddish brown, variably brecciated, and strongly decalcified calcareous siltstone of the Polc member of the middle plate of the Oquirrh Group. Drilling continued throughout 2019 and 2020, defining a relatively flat zone of mineralization underlying most of the area between the historic B and A pits, and a steeper, northeast-dipping zone of mineralization extending to the northwest and southeast, merging with remanent mineralization in the vicinity of the historic Tallman Pit. With further drilling, the steeper and flatter zones are now interpreted as mineralization in the hanging wall of a listric normal fault.

In 2021, a second listric normal fault with mineralization in the hanging wall was discovered through drilling targeting the up-dip extension of the D-1 Zone to the west. LBP127 intercepted 33.5 m grading 1.98 g/t Au and 30.5 m grading 1.11 g/t Au in the footwall below the intended target area. This zone is relatively steeply dipping and is interpreted to lie in the hanging wall of a north-striking, east-dipping listric normal fault that merges with the original Discovery Zone listric normal fault to the north and down dip to the east along the low-angle normal fault that separates the middle plate from the lower plate. Drilling in 2022 demonstrated that the second listric normal fault continue to the south through the F zone and CD Zone. Gold mineralization is hosted in brownish, oxidized, variably brecciated, and decalcified calcareous siltstone and limestone of the Pols and PMmx members of the middle plate of the Oquirrh Group.

As of the Effective Date of this report, a total of 811 historic RC and Rotary holes, 13 historic core holes, 346 Liberty Gold RC holes, and 16 Liberty Gold core holes have been drilled in the Discovery Zone, including the Tallman pit area and A Basin.

10.7.1.1 Discovery Zone Southeast Extension

Drilling in 2019 through 2021 in the area southeast of the main Discovery Zone demonstrated continuity of mineralization from the Discovery Zone through the B Extension Pit to the Tallman Extension Pit along the previously identified listric normal fault at the base of the Discovery Zone. This 400-metre-long area was historically tested with a very few, shallow holes. Gold mineralization extends from surface along the southeast side of the prominent ridge between the B and Tallman Extension pits northeastward, and it is remains open down-dip to the northeast. The host rock for oxidized mineralization consists of strongly decalcified calcareous siltstone suspected to be the Polc or Pols member of the middle plate. Some of the mineralization, particularly down dip to the northeast, is hosted in black, carbonaceous siltstone with variable, but generally low, cyanide solubility. The D-1 SE Zone is still open for expansion to the north and east, although poor cyanide solubility in this area limits economic upside.

10.7.1.2 Discovery Zone Northwest Extension

The Discovery Zone Northwest Extension, starting with drill hole LBP002 and extending northwest of the historic A Basin target along the postulated extension of the Discovery Zone listric normal fault, has been tested with several drill holes. Most drill holes contain shallow, relatively low-grade gold mineralization associated with abundant calcite veins and calcite-cemented breccia (Calfm). Mineralization in this area is still open to the northwest.

10.7.2 J Zone

The J Zone lies on the immediate north side of Mineral Gulch and was tested by a number of shallow historical holes. Liberty Gold followed up with two drill holes in 2017 and several holes in 2021. J Zone mineralization appears to lie partially within massive, brecciated, variably decalcified limestone underlain by carbonaceous, pyritic siltstone (PMmx). Shallow J Zone mineralization above the level of the floor of Mineral Gulch is thoroughly oxidized, while much of the mineralization below the valley floor is carbonaceous with sporadic areas of disseminated pyrite. The J Zone is still open for expansion to the west, east, and north, although it is overlain by a thick sequence of unmineralized upper plate rocks to the north.

10.7.3 CD-F Zone

The CD-F Zone comprises the area around the historic CD and I Pits, with a narrow zone of mineralization (F zone) extending northward to join the Discovery Zone.

The CD and I Pit areas are flanked on all sides by a rind of unmined gold mineralization defined by shallow historic drilling. Drilling by Liberty gold has extended mineralization down-dip to the southwest (CD Southwest Extension area), to the south around and under the I Pit, and down-dip to the east.

Historical drilling in the F Zone demonstrated that mineralization mined in the CD Pit continues to the north-northwest at shallow depth in the Pold and Pols units of the middle plate of the Oquirrh Group. Drilling beyond a few hundred metres north of the CD Pit is sparse due to steep terrain, but a series of historical holes drilled near the base of resistant outcrops of Pold returned shallow gold intercepts in what is interpreted as Pols siltstone and limestone overlying the PMmc. Drilling by Liberty Gold further to the west of these holes encountered scattered, relatively low-grade mineralization in the Pold unit, which appears to extend much deeper in this area than in the drill holes to the east. Drilling by Liberty Gold further to the south on a ridge separating the CD pit from the rest of the F zone to the north returned shallow mineralization up to 74.7 m thick. Drilling in 2022 demonstrated continuity of mineralization across the entire length of the F zone from the northwest edge of the CD pit to the southwest edge of the Discovery Zone along a moderately to steeply east-dipping fold limb.

The Bobcat Zone, a separate area of mineralization located to the south of the I Pit, was tested with a number of shallow historic holes. Follow-up drilling of 27 RC holes by Liberty Gold in 2022 identified shallow oxide gold mineralization over a 400 m by 200 m area, with mineralization primarily focused along the gently dipping contact between the Pold and Pol members.

The Southwest Extension is a large area to the southwest of the CD and I historic pits. In this area, a gold-in-soil anomaly extends for over one square kilometre, where an over-thickened section of Pold is overlain by a sequence of platy limestone and siltstone equivalent to the Pola-b-c sequence to the north. Drill holes in this area returned shallow intercepts of relatively low-grade gold mineralization, extending gold mineralization up to several hundred metres to the southwest of historic drilling.

10.7.4 Rangefront Zone

The Rangefront Zone lies immediately south of the Black Pine Mine access road along the mountain front (Figure 10--3, 10-4, and 10-5). In this area, the Ppos unit of the upper plate of the Oquirrh Group is exposed on surface. The unit is variably limy and brecciated, with widespread but relatively weak gold-in-soil anomalies. The eastern portion of what is now identified as the Rangefront Zone was tested by 92 shallow historical holes, revealing widespread shallow gold mineralization. In 2019, Liberty Gold drilled a shallow core hole (LBP093C) in the middle of the eastern Rangefront Zone, which returned 55.3 m at a grade of 0.49 g Au/t from a depth of 46.2 m. Mineralization appeared to start at the base of the Ppos unit at the contact of a limestone unit assigned to the Pola member of the middle plate. A small resource in two separate pits was estimated in this area by Gustin et al (2021).

Liberty Gold returned to the Rangefront area in 2021, drilling five holes from a site approximately 700 m to the west of the 2021 resource pits, and along trend with the modelled extension of the NW-trending listric normal fault at the base of the Discovery Zone. LBP356 and LBP358 hit long intervals of relatively high-grade oxide gold mineralization (**Table** 10-2). Drilling continued in late 2021 and throughout 2022 and identified a zone measuring approximately 1 km by 1 km in 188 holes drilled as of December 2022. Mineralization is still open to the north, east, and west.

The Rangefront Zone consists of gently east- to north-dipping anastomosing lenses of gold mineralization hosted in limy portions of the upper plate PPos member and middle plate Pola member over a vertical distance of up to 400 m. Mineralization at the base of the zone is transitional into the PMmx unit at the base of the middle plate and is locally carbonaceous with reduced cyanide solubility.

Table 10-2: Liberty Gold Discovery Holes in the Expanded Rangefront Zone
Liberty Gold Corp. – Black Pine Project

Hole ID (Az, Dip) (degrees)	From (m)	To (m)	Intercept (m)	Au (g/t)	Cut off Au (g/t)	Hole Length (m)
LBP356 (0, -55)	94.5	100.6	6.1	0.44	0.2	470.9
and	141.7	157	15.2	0.24	0.15	
and	253	339.9	86.9	0.91	0.15	
including	253	271.3	18.3	0.25	0.2	
including	285	339.9	54.9	1.32		
and including	286.5	309.4	22.9	2.15	1	
and including	315.5	318.5	3	2.83		
and including	289.6	291.1	1.5	5.75	5	
and	346	367.3	21.3	2.03	0.2	
including	349	365.8	16.8	2.52	1	
and including	352	353.6	1.5	5.15	5	
and	174.9	396.2	21.3	0.23	0.15	
LBP358 (45, -50)	222.5	251.5	29	0.22	0.15	434.3
including	225.5	230.1	7.6	0.33	0.2	

Hole ID (Az, Dip) (degrees)	From (m)	To (m)	Intercept (m)	Au (g/t)	Cut off Au (g/t)	Hole Length (m)
and	262.1	286.5	24.4	1.23	0.15	
including	263.7	281.9	18.3	1.58	0.2	
and including	266.7	281.9	15.2	1.85	1	
and	295.7	346	50.3	1.37	0.15	
including	295.7	339.9	44.2	1.54	0.2	
and including	295.7	297.2	1.5	2.65	1	
and including	307.9	330.2	22.9	2.37		
and including	324.6	326.1	1.5	6.75	5	

Source: Liberty Gold, 2023

10.7.5 M Zone

The M Zone is an area of shallow gold mineralization lying along the range front north of the historical heap leach pad (Figure 10-3-3 and Figure 10-6-6). The M Zone originally consisted of two separate zones (M Zone and Hazelpine, located approximately 0.5 km south of the original M Zone) defined by 83 historic RC and rotary holes. At Hazelpine, historic shallow workings mined zinc and silver in addition to gold. Subsequent drilling of 69 RC and 2 core holes by Liberty Gold in 2017 through 2022, including the area between the two zones amalgamated them into a single zone, designated the M Zone. Gold mineralization is present in the immediate footwall of the moderately east dipping Rangefront Fault in a zone that extends to the southwest. Shallower intervals, hosted in the Polc member, are strongly oxidized, while some deeper intervals, possibly hosted in the PMmx member, are hosted in black, carbonaceous siltstone. The M Zone is open to the southwest. Within the broader M zone, a number of en echelon, northeast-trending, higher-grade tabular bodies of mineralization have been identified. As the Effective Date of this report, the M Zone is still open to the north and west.

10.7.6 E Zone

A number of historical drill holes with shallow gold intercepts extend south, west, and north of the historical E Pit. Between 2020 and 2022, Liberty gold drilled 39 RC and 2 core holes in this area, primarily along the west side of the zone. While mineralization in most areas of the Black Pine deposit is overall gently east-dipping, mineralization in this area, as well as the controlling stratigraphy and faults, rolls over on the eastern edge of the E Pit and assumes a westerly dip, nearly parallel to the west side of the ridge bounding the east side of the Black Pine Creek drainage. Mineralization in this area is still open down-dip to the west. (Figure 10-3-3 and Figure 10-8-8).

10.8 Summary Statement

The overwhelming majority of sample intervals in the Black Pine resource database have a down-hole length of 1.52 m (five feet). The remaining sample lengths are appropriate for the style of the Black Pine mineralization.

The mineralization at Black Pine is predominated by gently dipping zones that mimic stratigraphic and low-angle, and structural controls, and the drill holes cut these zones at high to moderate angles. There are a few, relatively small areas where mineralized dips increase, and some holes cut this mineralization at acute angles that can yield exaggerated downhole widths. This effect is entirely mitigated by the explicit modelling techniques employed in the estimation of the current resources, which constrain all intercepts to lie within explicitly interpreted domains that appropriately respect the known and inferred geologic controls.

The QP is unaware of any sampling or sample-recovery factors that would materially impact the accuracy and reliability of the drill-hole data, and is of the opinion that the drill samples are of sufficient quality for the purposes used in this report.

11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY

This section summarizes all information known that relates to sample preparation, analysis, and security, as well as quality assurance/quality control (QA/QC) procedures employed and results obtained, that pertain to the Black Pine project. Historical information has been compiled from historical records in Liberty Gold's possession and is largely unchanged from Gustin et al (2021).

11.1 Sample Preparation and Analysis

11.1.1 Historical Surface and Drilling Samples

With the exception of Pegasus drill samples from 1990 through 1997, which were assayed at the Black Pine mine laboratory, all historical samples were analyzed at laboratories independent of the historical operators, and it is not known what, if any, certifications these laboratories held at the times they were used.

Newmont 1963 and 1964: Newmont submitted rock-chip samples to Union Assay for gold and silver analyses. Newmont's 1964 drilling samples were also sent to Union Assay for gold and silver by fire assay. MDA has no information on sample preparation procedures used by Union Assay on the Newmont samples.

Newmont 1974: Newmont submitted soil samples to Rocky Mountain Geochemical Corp. (Rocky Mountain) in Midvale, Utah. These were analyzed for gold, silver, lead, and zinc by atomic absorption (AA), and arsenic was determined calorimetrically. Cuttings from the initial 11 holes drilled in 1974 were sent to Rocky Mountain's laboratory in Salt Lake City, Utah for gold and silver assays by AA. Drill cuttings from the last nine holes drilled in 1974, as well as a few samples from the end of the last hole analyzed by Rocky Mountain, were sent to Skyline Labs (Skyline) of Tucson, Arizona for gold and silver fire assays.

Check assays on 38 drill samples from the 1974 program were performed by fire assay by Union Assay for gold and silver. One hole was also assayed for lead and zinc by Union Assay, but the method of analysis is not known. MDA has no information on procedures and methods used for sample preparation by Rocky Mountain, Skyline, and Union Assay.

There is evidence that the Rocky Mountain 1974 AA gold analyses were cyanide-soluble analyses. If true, the gold values in the resource database would represent only the cyanide-soluble portion of the total gold contents of the samples.

Gold Resources 1974 - 1976: Gold Resources submitted rock and soil samples to Rocky Mountain, and these were analyzed for gold, silver, arsenic, mercury, and copper; the methods of sample preparation and analysis are not known. The cuttings from their 1974 through 1976 drill holes and selected intervals of core were sent to Union Assay for fire assay analyses of gold and silver.

Kerr Addison Mines Ltd. 1975: Kerr Addison used Vangeochem Lab Ltd. of North Vancouver, B.C. for copper, zinc, and gold analyses.

Pioneer Nuclear 1979 - 1981: Pioneer's 1979 drill samples were sent to Rocky Mountain and analyzed for gold by fire assay. The 1980 drill samples were sent to Union Assay in Salt Lake City, Utah where gold and silver were analyzed by fire-assay methods. Gold and silver from the single hole drilled in 1981 were analyzed by fire assay at Cone Geochemical Inc. in Denver, Colorado. No additional information on the methods of sample preparation and analysis that were used by these laboratories is available.

Pegasus 1983 - 1985: Pegasus collected several hundred rock-chip and soil samples across the Black Pine Mountains and the future mine area. Assay certificates and sample locations are not available, but summary sheets indicate they were assayed for gold, silver, and mercury, with occasional antimony and arsenic analyses as well. Drill samples in 1983 were analyzed for gold by fire assay methods by Union Assay and Rocky Mountain, both at their Salt Lake City, Utah, laboratories. No records are available with respect to the assaying of the samples from the 36 holes drilled in 1984, and no other information is available on the sample preparation and analytical methods used.

Permian Exploration and Pegasus 1984: Drill samples were sent to Union Assay in Salt Lake City, Utah for fire assay of gold and silver with 30-gram aliquots. Some samples were also sent to Rocky Mountain in Salt Lake City, Utah. No other information is available on the sample preparation and analytical methods used.

Noranda 1986 - 1989: Noranda carried out extensive soil sampling across the property. In 1986 through 1989, soil samples were analyzed at Chemex Labs Inc. (Chemex) in Sparks, Nevada for gold by fire assay with an AA finish. In 1988 and 1989, Noranda's rock-chip samples were analyzed at Geochemical Services Inc. (GSI) in Torrance, California for silver, arsenic, gold, mercury, and antimony. No other information is available on the methods and procedures used for sample preparation and analyses.

Samples from Noranda's 1986 drilling were analyzed at several laboratories. Rocky Mountain in West Jordan, Utah determined gold and silver by fire assay on 30-gram aliquots. Samples from previously analyzed holes were sent to Assay Lab Inc. (Assay Lab) in West Jordan, Utah for 30-gram fire assay of gold and silver. Cuttings for at least 12 holes were sent to GSI for 30-gram fire assay with gravimetric finish. Samples from multiple holes were also sent to Chemex in North Vancouver, British Columbia, for 30-gram fire assays for gold. No other information is available on the methods and procedures used for sample preparation and analyses.

The 1987 and 1988 drilling samples were mainly sent to Analytical Services Inc. (ASI) in Elko, Nevada for 30-gram fire assay of gold with a gravimetric finish. For some samples, gold was determined by fire assay at GSI and Chemex. Some check assays for gold were also done by ASI, and others were conducted by Legend Metallurgical Laboratory Inc. (Legend) in Reno, Nevada and GSI using 30-gram fire assay with a gravimetric finish. No other information is available on the methods and procedures used for sample preparation and analyses.

All of the 1989 drill samples were analyzed for gold by Legend using a 30-gram fire assay procedure. No other information is available on the methods and procedures used for sample preparation and analyses in 1989.

Pegasus 1990 - 1997: Pegasus collected several thousand rock-chip samples across the Black Pine property. These were routinely analyzed for gold, silver, arsenic, barium, bismuth, antimony, and mercury, and occasionally for copper, lead, zinc, and molybdenum. No sample certificates are available and there is no information regarding assay laboratories, sample preparation, or analytical methods.

The Pegasus drill samples during this time period were assayed on-site at the Black Pine mine laboratory. Every sample was analyzed for gold by a hot cyanide leach (HCL) procedure. If the HCL analysis reported was greater than 0.005 oz Au/ton (0.17 g Au/t), the sample was also analyzed for gold by fire assay, and the fire assay value was entered into the historical drill-hole database. If runs of typically up to five to ten consecutive samples returned HCL values of 0.005 oz Au/ton or less, a fire assay was also completed irrespective of the HCL grade. The remaining four to nine samples returning HCL values of 0.001 to 0.005 oz Au/ton for which no fire assay was completed were factored to create an "estimated fire assay" value, based on HCL-to-fire-assay ratios obtained from nearby sample intervals. This factoring led to estimated values that either did not increase from the HCL values or were increased by 0.001 or 0.002 oz Au/ton (0.034 or 0.068 g Au/t). These factored values were then entered into the database. There is no record of whether laboratory personnel or exploration staff assigned these factored gold values. The factoring for low-grade HCL assays was referenced in 1992 through 1997 internal annual reports and evident in 1996 and 1997 assay worksheets from the Black Pine mine laboratory in the possession of Liberty Gold.

No other information is available on the methods and procedures used for sample preparation and gold assaying at the mine laboratory. The mine laboratory was not independent of Pegasus, and it is not known if the mine laboratory held any certifications.

Western Pacific 2011 - 2012: Drill samples were initially stored on site, then transported to the ALS Minerals sample preparation facility in Elko, Nevada by an ALS representative. No QA/QC samples were inserted.

Surface rock-chip and drilling samples were sent to the ALS Minerals (ALS) laboratory in Elko, Nevada for sample preparation. The pulps were analyzed at ALS' facilities in Reno, Nevada. Gold was analyzed using a 30-gram fire-assay fusion with an AA finish (ALS method code Au-AA23). Separate 1-gram aliquots of some samples were analyzed for 51 major, minor, and trace elements at the ALS laboratory in North Vancouver, B.C. using a combination of inductively-coupled-plasma atomic emission (ICP-AES) and mass spectrometry (MS) following an aqua-regia digestion (ALS method code ME-MS41).

There is no evidence that QA/QC samples were inserted for analysis along with the Western Pacific rock samples.

11.1.2 Liberty Gold Surface Samples

Between 2017 and the Effective Date of this report, a total of 694 rock samples were collected by Liberty Gold personnel and transported to the ALS sample preparation facility in Elko, Nevada. Sample weights were generally between 1 and 2 kilograms. The samples were crushed to 70% passing 2.0 mm, split to obtain a 250-gram subsample, and the subsample was pulverized to 85% passing 75 microns. The pulverized splits were shipped by ALS either to their assay laboratory in Reno, Nevada or North Vancouver, B.C., where in both cases gold was determined by 30-gram fire assay with an AA finish (method code Au-AA23). Separate 1.0-gram aliquots were analyzed for 51 major, minor, and trace elements by ICP-AES and MS following aqua-regia digestion (ALS method code ME-MS41).

ALS is independent of Liberty Gold. The ALS analytical facility in North Vancouver, British Columbia, is certified to ISO 9001:2008 standards and has received ISO/IEC 17025:2005 accreditation from the Standards Council of Canada. The ALS laboratory in Reno, Nevada, is certified to ISO 9001:2008 standards and has received ISO/IEC 17025:2005 accreditation.

11.1.3 Liberty Gold Drilling Samples

Prior to May 2021, RC drill samples were transported periodically by Liberty Gold personnel to the ALS laboratory in Elko, Nevada, or otherwise by ALS personnel or by a third-party contractor, Stott Trucking of Elko, Nevada. Subsequently, after ALS commissioned a new preparation laboratory in Twin Falls, Idaho, samples were transported to the new laboratory by Liberty Gold personnel, ALS personnel, or by either of George's Transfer of Twin Falls, Idaho or Bill Evans Trucking of Twin Falls, Idaho.

After drying and weighing, the samples were crushed to 70% passing 2.0 mm. The crushed material was riffle split to obtain a 250-gram subsample that was ring-mill pulverized to 85% passing 75 microns. In 2019 through 2022, depending on sample load at the Elko and Twin Falls facilities, samples were shipped at various times to prep labs in: Tucson, Arizona; Thunder Bay, Ontario; Reno, Nevada; Vancouver, British Columbia; or Hermosillo, Chihuahua, or Guadalajara, Mexico.

After logging on site, core samples were transported by Liberty Gold personnel to Liberty Gold's Elko office and core cutting facility for cutting by an independent contractor provided by Rangefront Mining Services of Elko, Nevada. After cutting the core into two halves lengthwise, one half was cut in half, and quarter core samples were placed in numbered sample bags and then picked up by ALS personnel for transport to the Elko preparation facility. Core samples were prepared for analysis by ALS with the same procedures as the RC samples.

The sample pulps were shipped by ALS to their assay laboratory in Reno, Nevada, where 30-gram aliquots were analyzed for gold by fire assay fusion with an AA finish (ALS method code Au-AA23). If the resulting fire assay exceeded 0.1 g/t Au, separate aliquots were also analyzed for cyanide-soluble gold by AA after a 1-hour agitated leach in a 0.25% NaCN solution (ALS method code Au-AA13). In 2020 through 2022, ALS' fire assay laboratories in Lima, Peru and Vancouver, Canada were also utilized. Silver in addition to 50 major, minor, and trace elements were analyzed for all samples by a combination of ICP-AES and MS using a 1-gram aliquot following an aqua-regia digestion (ALS method code ME-MS41) at the ALS laboratory in North Vancouver, British Columbia.

Drill samples returning results greater than 5.0 g Au/t were re-assayed using a new 30-gram aliquot and fire assay fusion followed by a gravimetric finish (ALS method code Au-GRA23).

Liberty Gold employed a blind numbering system for RC and core samples, such that the hole number and down-hole footage are not known to the assay laboratory.

11.2 Sample Security

No information is available concerning security measures used by historical operators for surface and drilling samples.

Drill samples were stored at the Black Pine drill sites for a few days prior to transport. In 2022, drill samples were also stored at the Company's exploration office until ready for shipment to the prep lab.

Liberty Gold's surface and RC samples were transported by Liberty Gold, ALS, Stott Trucking, George's Transfer or Bill Evans Trucking to the ALS sample preparation laboratories in either Elko, Nevada or Twin Falls, Idaho. Core samples were transported to the Elko office core cutting facility by Liberty Gold personnel. Cut core was transported from the Elko Office to the ALS Elko prep lab by ALS. Chain of custody forms from the lab are archived at the Liberty Gold Elko Office.

All pulps were returned to Liberty Gold and are stored in Liberty Gold's secure warehouse. A selection of coarse rejects are stored in the warehouse, or (since 2021) at the Liberty Gold exploration office adjacent to the Black Pine property.

11.3 Quality Assurance/Quality Control

11.3.1 Historical QA/QC Procedures

This section is derived from Gustin et al (2021). Historical records in the possession of Liberty Gold indicate that QA/QC procedures used by at least some of the historical operators involved check assays and, in certain cases, the submission of analytical standards, RC rig duplicates, and/or duplicates prepared from the coarse rejects of the original samples (preparation duplicates).

As a check on sampling procedures, Newmont collected coarse and fine materials that were not captured in the rotary or RC drill samples sent for assay (Hardie, 1964). These coarse and fine materials from 530 feet of drilling from seven of the 17 holes drilled in 1964 were sampled at the same five-foot intervals as the drill samples sent for assay. The fine materials consisted of "*dust-sized particles caught in the cyclone dust collector*", while the coarse materials were comprised of "*particles caught between the dust collector and the sample collector.*" The fine and coarse samples were sent along with the standard drill samples to Union Assay Office, Inc. of Salt Lake City, Utah (Union Assay) for gold assay. The results of Newmont's study are described in an untitled, anonymous memo and summarized in Table 11-1.

Newmont noted that both the fines and coarse materials that were collected to check the sampling methodology are representative of only small quantities of material that are not sampled relative to the original samples. Newmont further commented that the results of the study indicate that no serious downgrading or upgrading in gold grades are indicated, and therefore the original samples were sufficiently representative, in terms of gold grade, of the full volume of cuttings that were returned to the surface.

Table 11-1: Newmont Evaluation of Black Pine Project Drilling
Liberty Gold Corp. – Black Pine Project

Hole ID	From (ft)	To (ft)	Original (opt Au)	Fines (opt Au)	Coarse (opt Au)
BP-5	285	330	0.011	0.007	0.008
BP-6	80	100	0.007	0.007	0.006
BP-8	250	300	0.022	0.027	0.021
	30	95	0.016	0.015	0.017
BP-11	110	185	0.009	0.008	0.006
	210	240	0.013	0.010	0.011
BP-13	55	70	0.030	0.039	0.034
BP-14	50	120	0.027	0.029	0.028
BP-15	100	260	0.003	0.005	0.004

In 1974, Newmont sent 38 drill-sample pulps from five of the holes drilled in 1974 to Union Assay for gold and silver check fire assays. While the means of the original and check analyses differ by only 3%, the dataset is small. In addition, the original analyses of the 21 drill samples were done by Rocky Mountain and the remainder by Skyline, complicating an evaluation of the results. In 1985 and 1986, Permian had check assays done at Rocky Mountain on 48 pulps from 38 holes drilled in 1983 by Pegasus. No further information is available. The Newmont and Permian/Pegasus check assays represent approximately 3% and 2% of the drilling assays of these operators in 1974 and 1988, respectively.

Noranda analyzed duplicates each year using "selected secondary splits stored at the drill sites." In 1986, an unknown number of samples from 1.52 m intervals were sent to ASI for "check assays" of gold and silver to allow comparisons with 6.1 m drill samples originally analyzed at Rocky Mountain. For the 1987 drilling, a total of 23 "check assays" of 1.52 m samples from one hole were completed. In 1988, a total of 113 pulps and coarse rejects were analyzed. No further information is available concerning possible QA/QC procedures implemented by Noranda.

Records are incomplete, but 1996 and 1997 assay worksheets from the Black Pine mine laboratory refer to inserted standards for samples analyzed by the HCL procedure. The rate of standard insertion and the expected gold values for the standards are not known.

11.3.2 Liberty Gold QA/QC

The QA/QC program instituted by Liberty Gold for drilling in 2017 through the Effective Date of this report included the insertion of coarse blanks, certified reference materials (CRMs or "standards"), and RC field duplicates into the RC sample stream. A minimum of one CRM, one blank, and one field duplicate was inserted into the sample stream for every 36 drill samples, which is the number of samples in each ALS analytical batch. The results of these inserted control samples are summarized below.

11.3.3 QA/QC Results

11.3.3.1 Certified Reference Materials

CRMs were used to monitor and evaluate the analytical accuracy and precision of the Liberty Gold drill sample assays performed at ALS (Table 11-2). The insertion of CRMs can also be useful for detecting sample switches and numbering issues that can occur with primary drill samples.

A total of 13 CRMs has been used at Black Pine as of the Effective Date of this report. Seven CRMs were prepared by Minerals Exploration and Environmental Geochemistry (MEG) of Carson City and Lamoille, Nevada, using drill samples from Liberty Gold. Three of these were prepared from samples from the Kinsley sedimentary rock-hosted gold deposit in eastern Nevada ("PG" prefixes in Table 11-2). Three CRMs are derived from Black Pine drill samples (LG 19001, LG.21.01, and LG.21.02), and one is from drill samples from Fronteer Gold's Long Canyon sedimentary rock-hosted Gold Project in eastern Nevada (FGS2011A). An additional two commercial standards, Au-19.01 and Au-21.01, were purchased from MEG. One CRM (CDN-GS-P6A) was purchased from CDN Resource Laboratories of Langley, B.C. Three CRMS (OxH66, SG40 and SJ53) were purchased from Rocklabs Ltd. of Auckland, New Zealand.

A total of 2,956 CRMs were inserted into the drill sample stream between 2017 and late 2022.

Table 11-2: Liberty Gold Certified Reference Materials
Liberty Gold Corp. – Black Pine Project

CRM	Source	Certified Value (g/t Au)	Standard Deviation	No. of ALS Standard Analyses	No. of Failures	Comments
PG14001X	MEG	0.328	0.017	505	2	Kinsley custom std
PG13001X	MEG	1.873	0.075	394	5	Kinsley custom std
PG13002X	MEG	2.188	0.087	354	8	Kinsley custom std
LG19001	MEG	0.698	0.030	568	20	BP custom standard
FGS2011A	MEG	7.13	0.373	51	1	Long Cyn custom std
LG.21.01	MEG	0.408	0.014	724	24	BP custom standard
LG.21.02	MEG	1.098	0.042	540	8	BP custom standard

CRM	Source	Certified Value (g/t Au)	Standard Deviation	No. of ALS Standard Analyses	No. of Failures	Comments
Au-21.01	MEG	0.407	0.023	58	9	Commercial, doped, siliceous matrix
Au-19.10	MEG	0.813	0.036	59	2	Commercial, siliceous
CDN-GS-P6A	CDN	0.738	0.027	110	3	Commercial, volcanic
OxH66	Rocklabs	1.285	0.032	35	1	Commercial, volcanic
SG40	Rocklabs	0.976	0.022	2	0	Commercial, volcanic
SJ53	Rocklabs	2.637	0.048	61	1	Commercial, volcanic
Totals				2956	82	

In the case of normally distributed data, 95% of the CRM analyses would be expected to lie within two standard-deviations (SD) of the certified value, while only 0.3% of the analyses are expected to lie outside of the three SD limits. Note, however, that most assay datasets from metal deposits are positively skewed.

CRM analyses outside of three SD limits defined by the CRM are typically considered to be failures. As it is statistically unlikely that two consecutive analyses of standards would lie between the two and three SD limits, such samples are also considered to be failures unless further investigations suggest otherwise. All potential failures should trigger investigation, possible laboratory notification of potential problems, and possible re-analysis of all samples included with the failed standard result.

ALS's performance with respect to assaying PG13001X is shown on Figure 11-1. The certified value of the CRM (gray line) along with one, two, and three SD limits (dark blue, light blue, and red lines, respectively) for the CRM are shown, as are the ALS analytical results of the CRM (red dots). The x-axis plots the ALS certificate numbers by increasing dates.

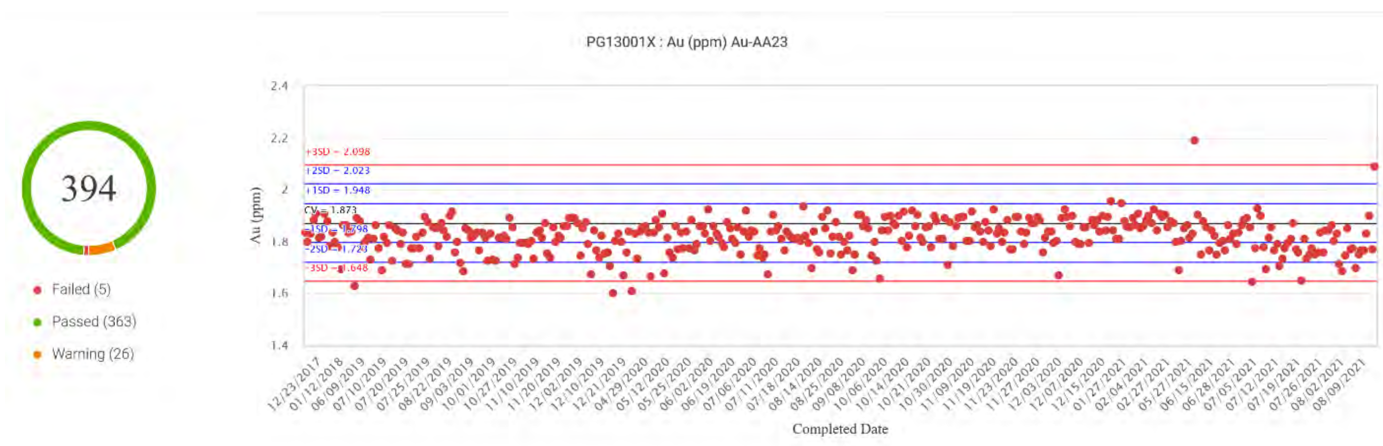


Figure 11-1: Graph of ALS Analyses of CRM PG13001Xs – 2017 through 2021 Drill Programs

The PG13001X chart documents a consistent low bias in the ALS gold assays relative to the certified value. Similar results are seen in the PG13002X, FGS2011A, and, to a less consistent extent, LG19001 CRMs. PG13001X, PG13002X, and FGS2011A are the three highest-grade CRMs utilized at the project.

Approximately 1% of the PG13001X standards failed low, with a significant number below two SDs. The same trend was noted with the LG19001 standard. The ALS performance improved in late 2020 in LG19001 and, to some extent, PG13001X, worsening again in mid-2021, suggesting that instrument drift at the lab may have been a factor.

The chart for LG.21.01 (Figure 11-2) shows six samples that are extremely out of range, both high and low, with most of the failures recorded in October 2021 and late May 2022. Investigation by Liberty Gold and ALS determined that the failures were the result of sample switches at the lab or loss of the sample prill rather than any deficiency in assaying or related to the CRMs themselves. The large number of sample switches that were revealed by insertion of the CRMs is a concern.

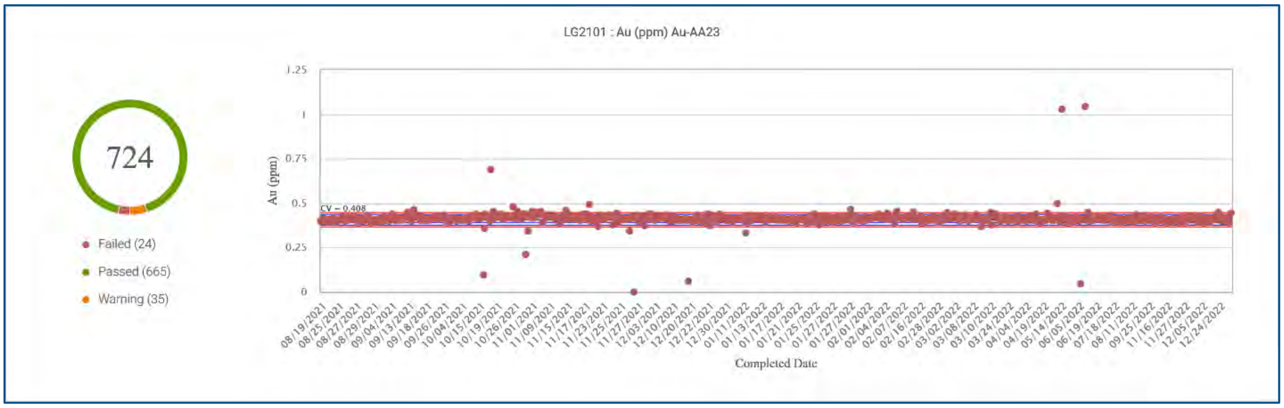


Figure 11-2: Graph of ALS Analyses of CRM LG.21-01 – 2021 Through 2022 Drill Programs

Near the end of November 2022, some CRMs labeled "LG21.02" began returning from ALS with gold values well outside of the expected mean value of 1.08 ppm gold. These samples returned values ranging from 0.38-0.42 ppm, within the error limits for CRM LG21.01. The multi-element geochemistry associated with these CRMs was a close match for LG21.01 CRMs. Liberty Gold hypothesized that some of the LG21.02 CRMS were mislabeled as LG21.02 during preparation at MEG (they were prepared during the same time period). Audits were made at all stages, aided by photo evidence and duplicate labels, to eliminate the possibility of mislabeling by Liberty Gold field staff. Subsequently, all standards that were labeled as LG21.02 but were determined to be LG21.01 (40 samples from 11/29/2022 – 12/31/2022), were changed to LG21.01.

A total of 82 failures were identified out of the 2,956 ALS analyses of the CRMs, or approximately 2.8%. However, a significant number of the failures are attributable to the low bias of the analysis. In other words, absent the low bias that characterizes the ALS analyses of some of the standards, many of these analyses, and perhaps more, would not be considered to have failed.

The PG13002X, PG14001X, LG19001, LG.21.01 and SJ53 standards each produced one or more very low value, and the CDN-GS-P6A and LG.21.01 standards one or more very high value, all of which were determined to be caused by sample switches at the lab. The number of issues determined to be such sample switches is a concern, and this issue needs to be investigated further.

All CRM failures were reported to the lab, triggering an investigation. If the failure was determined to be a sample switch or loss of the gold prill, the situation was remedied. If the cause of the failure was not determined to be a mechanical failure such as a sample switch, and if the failure occurred in an interval with a reportable interval of gold mineralization, the failure triggered a rerun of the standard and the ten drill samples analyzed immediately before and after the failed standard. Reruns typically fell within acceptable (SD) limits, but the associated drill samples typically returned results similar to the original analyses. To the extent that the ‘failures’ are actually caused by the low bias, the lack of change in the rerun analyses of drill samples is actually expected.

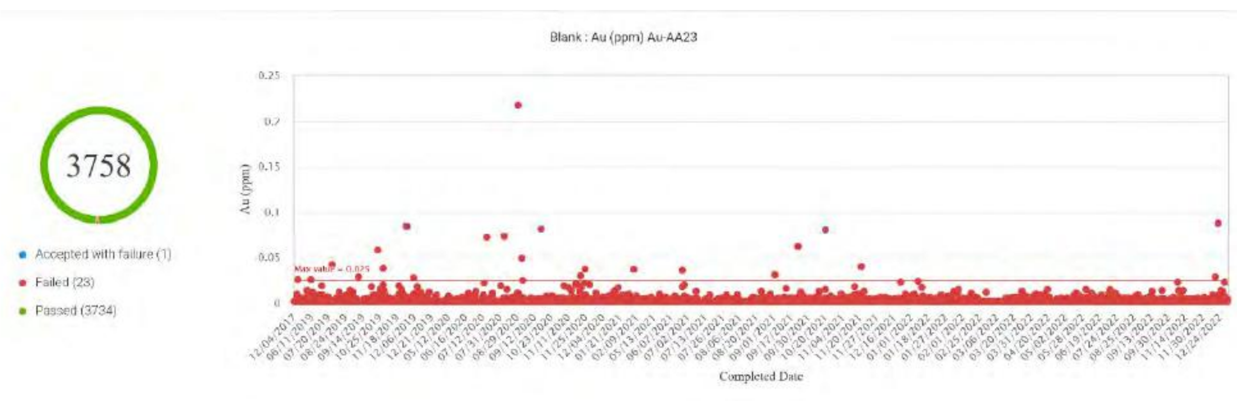
The QP has reviewed the performance and protocols of the CRMs and finds them to be to industry standards. The QP is of the opinion that the results of the CRMs allow for the associated assays to be acceptable for use in the Resource Estimation.

11.3.3.2 Coarse Blanks

Coarse blanks are samples of barren material that are used to monitor for possible contamination during sample preparation stages in the laboratory, and they are also useful for detecting sample switches and numbering issues. The detection limit of the ALS fire assay with AA finish is 0.005 g Au/t; blanks with assays in excess of 0.025 g Au/t (five times the lower detection limit) were therefore considered failures requiring investigation.

Liberty Gold’s blanks consisted of Vigoro brand “pond pebbles”, which are coarse enough to require primary and secondary crushing and thereby allows for the monitoring of the entire sample-preparation process applied to the drill samples. Blanks were inserted every approximately 36 samples, except in drill-core samples from intervals judged unlikely to be mineralized based on rock type or lack of macroscopically visible alteration. Where possible, the blanks were inserted within core intervals that were judged to have the potential to be mineralized.

A total of 3,758 blanks were inserted in the sample stream for the 2017 through 2022 programs. Of these, 24 ALS analyses of the blanks returned values in excess of 0.025 ppm Au, with 10 of these exceeding 0.050 g Au/t; vast majority of analyses were below the detection limit Figure 11-3. Of the 10 samples exceeding 0.050 g/t Au, one returned a value of 0.218 ppm Au. ALS flagged it as a sample swap and reran this interval, as well as samples above and below it, with the resulting value returning below detection gold. As expected, the samples that failed were generally in intervals with relatively high-grade gold in adjacent samples. Without special protocols (e.g., crushing unmineralized quartz between drill-sample crushing), ALS accepts any blank that contains <1% of the metal content of the preceding samples. Using this metric, all of the failed (above 0.025 ppm) samples are acceptable.



Source: Liberty Gold 2023

Note: dashed red line is upper acceptable limit

Figure 11-3: Coarse Blank Analyses – 2017-2022 Drilling Program

In the case of a failure, an internal review takes place, but for RC holes, no further action is taken because, in the case of RC chips, the entire drill sample is crushed, making it impossible to replicate all stages of sample preparation if a new pulp was prepared for re-analysis.

The QP has reviewed the performance and protocols of the blank samples and finds them to be to industry standards. The QP is of the opinion that the results of the blank samples allow for the associated assays to be acceptable for use in the Mineral Resource estimate.

11.3.3.3 RC Field Duplicates

RC field duplicates are second splits of the RC chips collected at the sample splitter at the same time as the original sample splits during active drilling. Field duplicates are mainly used to assess geologic variability and sub-sampling variance. The field duplicate samples were submitted to ALS at the same time as their associated drill samples.

The cyclone discharge of the RC drill rig used by Liberty Gold was set up with a “Y” splitter. The primary samples were consistently collected from the same outlet of the “Y” splitter throughout the drilling campaign, while the field duplicates were collected separately from the other outlet of the Y splitter, simultaneously with the primary sample. The field duplicates were collected approximately every 36 samples throughout the entirety of each drill hole, which resulted in a large number of duplicates of unmineralized intervals. A total of 3,066 of the RC field duplicates collected were paired with an original drill sample that assayed in excess of 0.01 ppm Au/t in the course of the 2017 through 2022 drill programs. The data set excludes one extreme outlier that is likely due to a sample switch at the lab.

Figure 11-4 shows two graphs that plot the gold assay values of the original RC drill sample versus those of the duplicate samples, using arithmetic and log scales; the log scale shows more detail in the lower-grade range. Trend lines are shown for both sets, and 30% variance lines are shown on the arithmetic chart.

Of the 3,066 samples, 159 pairs differ by more than 30%. While no bias is evident in the data, several data pairs in the RC subset (in addition to the outlier that was excluded) show substantial differences, most of which are suspected to be sample switches based on multielement signatures. As with the sample switches determined by the CRM and blank analysis, this is a concern and needs to be investigated further with ALS.

The average of the duplicate samples is 0.51% higher than the average of the original samples, while overall, the percent difference between the original sample and the duplicate is 2.6%.

The QP has reviewed the performance and protocols of the RC field duplicates and finds them to be to industry standards. The QP is of the opinion that the results of the RC field duplicates allow for the associated assays to be acceptable for use in the Mineral Resource estimate.

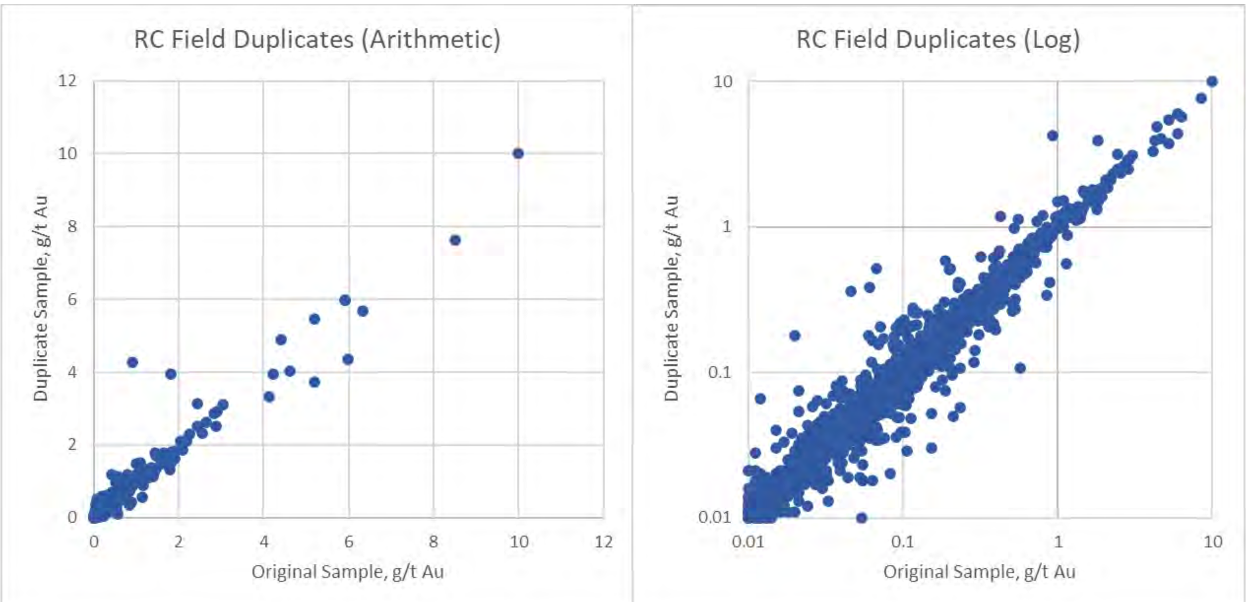


Figure 11-4: RC Field Duplicate Data – Liberty 2017-2022 Drilling Programs

11.3.3.4 Core Field Duplicates

A total of 92 core duplicates were collected during the 2019 through 2022 programs, by quartering the half core and submitting one quarter as the primary sample and one quarter as the duplicate sample. Data are summarized Figure 11-5.

A number of sample pairs returned >30% variance, with the highest variance encountered in the lowest-grade samples. No extreme outliers were noted. The average of the duplicate samples is 0.54% lower than the average of the original samples, while overall, the average percent difference between the original and duplicate samples is 2.0%.

The QP has reviewed the performance and protocols of the core field duplicates and finds them to be to industry standards. The QP is of the opinion that the results of the core field duplicates allow for the associated assays to be acceptable for use in the Resource Estimation.

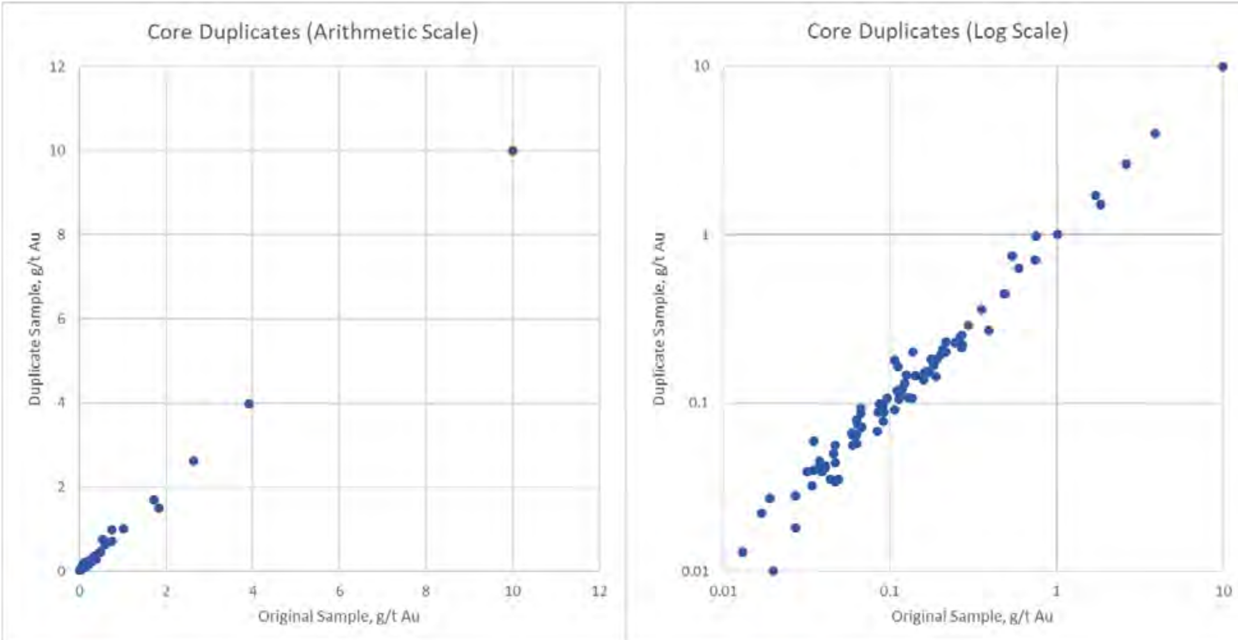


Figure 11-5: Core Field Duplicate Sample Comparison, Liberty 2019-2022 Drilling

11.3.3.5 Check Assays

As a further check on analytical accuracy, Liberty Gold selected a portion of the original drill-sample pulps prepared and analyzed by ALS from the 2017,2019 and 2020 drill programs, and these pulps were sent to Inspectorate/Bureau Veritas Laboratories (BV) for re-assaying of gold content by fire assay with an AA finish. Check assays for the 2022 program were not available at the time of this report. BV is an ISO 17025 accredited, independent laboratory located in Sparks, Nevada. The procedure for selection of check assays consisted of querying all drill samples that returned greater than 0.1 g/t Au and assigning these a random number. The selection was then sorted on the random number and approximately 7% of these were selected for re-assay, for a total of 774 RC sample pulps and 23 core sample pulps. CRMs were also submitted to BV along with the ALS pulps. BV analyzed the samples by a method similar to that used by ALS. No issues were noted in the control sample results.

The BV pulp-check analyses are compared to the original ALS assays in Figure 11-6, with 15 outlier RC pairs removed representing sample pairs with >40% variance, for a total of 782 check assay pairs.

The mean of all of the BV analyses is slightly higher than the original ALS assays (0.611 ppm versus 0.608 ppm, respectively). However, Figure 11-6 shows the BV analyses have a consistent positive bias (BV assays greater than ALS) at lower gold concentrations. The percent relative difference of pairs between 0.1 and 0.4 g/t Au is 2.7%; between 0.4 and 1.0 g/t is 1.24%; and between 1.0 and 14.0 g/t Au is 0.17%. This low bias, particularly in the lower grade ranges, is consistent with the low bias seen in assay results from control samples.

The QP has reviewed the performance and protocols of the check assays and finds them to be to industry standards. The QP is of the opinion that the results of the check assays allow for the associated assays to be acceptable for use in the Mineral Resource estimate.

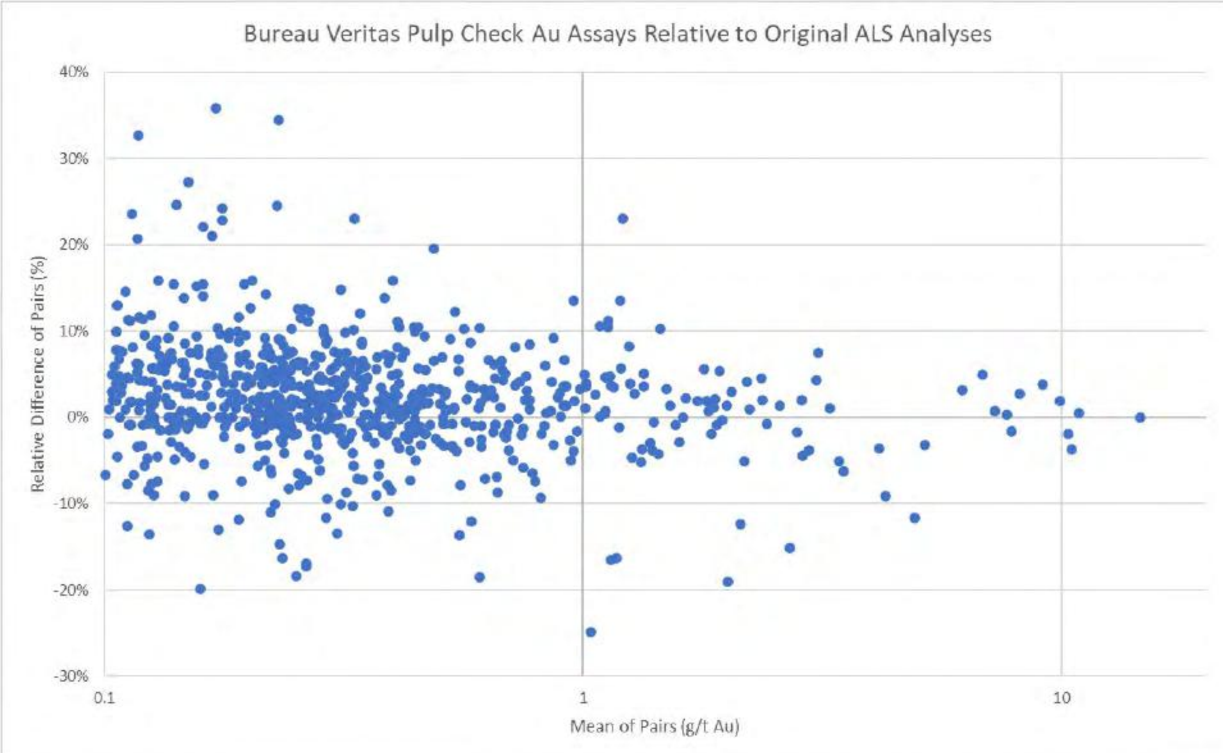


Figure 11-6: Check Assay Data Analysis

11.4 Cyanide Soluble Gold Assay Investigation

In August 2021, it was noticed that results for cyanide soluble (AuCN) assaying of some pulps were lower than expected based on previous assaying of similar material. This led to an internal investigation by Liberty Gold examining the possible causes of the anomalous results, including elevated preg-robbing carbon not detected in visual logging, elevated and possibly preg-borrowing clay, etc. After several months, no clear indication of the nature of the low AuCN results was identified, and Liberty Gold began to suspect a laboratory error. At this time, data was returned from a core twin of an RC hole in the Rangefront Zone. AuCN results were materially higher for the core hole (prepped in Elko) than for the RC hole (prepped in Twin Falls). The ALS QA/QC manager was engaged and began an investigation. They noted that some of the equipment and protocols were slightly different between the two prep labs, and between the Reno and Vancouver assay labs, but the slight differences were not sufficient to account for the large differences in AuCN results between the core and RC twin holes.

By mid-2022, the matter was elevated to the North American QA/QC manager, who quickly identified that the operators in the Twin Falls laboratory had been adding stearic acid well in excess of recommended amounts during the pulping step, which in turn had a strongly negative impact on the AuCN results.

As of the Effective Date of this report, coarse rejects from approximately 250 holes with 25,000 samples have either been rerun or are in the process of being rerun for AuCN, with additional samples pending.

A follow-up investigation testing whether any amount of stearic acid might suppress AuCN results was carried out, with the conclusion that even small amounts of stearic acid, consistent with ALS protocols, has a deleterious effect on recovery of gold by cyanidation. With the coarse rejects from earlier holes that were prepped in this manner having been discarded, the AuCN results were removed from the database.

As of the Effective Date of this report, AuCN analyses are not used for resource estimation, nor are they used to derive equations for gold recovery (see Section 13.0, Metallurgy).

11.5 Summary Statement

The independent laboratories used to analyze the primary drill samples of the historical operators prior to the open-pit mining operation at the Black Pine project include ASI, Chemex, GSI, Legend, Rocky Mountain, Skyline, and Union Assay. All of these laboratories were independent of the historical operators, widely known, and commonly used by the exploration and mining industry at the time. During the mining operation, the Pegasus drill samples were analyzed at the on-site mine laboratory.

While documentation is incomplete for the methods and procedures used for historical sample preparation, analyses, and sample security, as well as for the QA/QC procedures and results, it is important to note that the historical sample data were used to develop a successful commercial mining operation that produced more than 400,000 ounces of gold.

Liberty Gold's sample preparation and analyses were performed at a certified laboratory, and their sample security and QA/QC procedures were consistent with industry norms.

Despite ongoing issues with sample swaps and other issues at the lab identified through monitoring of CRMs and blanks, the QP is of the opinion that the Black Pine drill hole assay data is reliable and can be used to support the current resources, interpretations, and conclusions summarized in this report.

12.0 DATA VERIFICATION

Data verification is the process of confirming that data has been generated with proper procedures, transcribed accurately from its original source into the project database, and is suitable for use as described in this technical report.

12.1 Verification of Historical Drill Data

Liberty Gold's construction and initial verification of the historical database is described in Section 9.1. The process Liberty Gold used to compile the project data was actively reviewed during this process by MDA, who also provided guidance (Gustin et al, 2021).

SLR has reviewed the verification process of the historical drilling data and concludes that the historical data is properly identified, and the handling of the data is properly applied to the database.

12.2 Verification of Liberty Gold Data

12.2.1 Software Validation and Audit of Drill Hole Database

SLR conducted a number of digital and visual queries on the resource database. SLR inspected the drill hole traces, reviewed the drill hole traces in 3D, level plan, and vertical sections and found no unreasonable geometries. SLR also confirmed that there are no duplicate sample numbers and that sample numbers are available for every assayed interval.

SLR compared approximately 127,000 (~53%) of the gold assays in the databases for Black Pine to the provided assay certificates from ALS. No discrepancies were found.

12.3 Site Inspection

The QP visited the Black Pine project site on November 9, 2022. The site visit included inspections of the historical open pits, traverses outside of the pits, and detailed discussions with Liberty Gold technical staff. Mineralization from open-pit exposures was examined, as were numerous unaltered and altered (and possibly mineralized) outcrops beyond the limits of the open pits. Various active core and RC drill sites were visited during the visit. RC drill chips and drill core from representative areas of the deposit were reviewed with Dr. Smith.

The QP experienced no limitations with respect to data verification activities related to the Black Pine project. In consideration of the information summarized in this and other sections of this report, the QP has verified that the project data is acceptable as used in this report, most significantly to support the estimation and classification of the Mineral Resource Estimation.

12.3.1 Drill Hole Collars

The QP visited a number of the Liberty Gold drill pads. The locations of the drill pads were confirmed using a detailed topographic map showing drill roads. While many of the drill collars have been buried or destroyed by subsequent traffic, tags with hole numbers were found for at least one of the holes sited on the pads. GPS coordinates were recorded for holes which tags were inspected and confirmed against the collar coordinates in the database.

In the QP's opinion, the Black Pine database is adequate for Mineral Resource estimation.

12.4 Summary Statement

The modelling of the Black Pine resources is based on a database that includes 1,848 historical RC holes, 26 historical core holes, and 823 RC and 33 core holes drilled by Liberty Gold.

In the QP's opinion, the Black Pine database is adequate for Mineral Resource estimation.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

This section has been prepared under the supervision of Mr. Gary Simmons based on historical and Liberty Gold test results as cited. The term “ore” is used in this section to refer to mineralized material used for test process feed and has no economic significance. Historical test parameters and results originally reported in imperial units have not been converted to metric units and in some cases the author prefers to use a mixture of imperial and metric units throughout the text.

13.1 Metallurgical Work Completed Prior to Mining Operations

A significant number of historical reports are available that document metallurgical testing completed prior to the Pegasus mining operations that began in 1991. The reports reviewed by the authors as of the Effective Date of this report are summarized in chronological order below.

- **Potter (1974):** The U.S. Bureau of Mines Salt Lake City Metallurgy Center carried out column-percolation cyanidation tests on two samples (BP7 and BP9) with calculated head assays of 2.71 g Au/t and 6.75 g Au/t, respectively. A total of 5 kg of minus 2-inch material from sample BP7 and 8 kg of minus 2-inch material from BP9 were leached in glass columns. BP7 was leached for 191 hours, recovering 87.4% of the gold to activated carbon. BP9 was leached for 701 hours, with 80.2% extracted to activated carbon.
- **Ennis (undated – 1975?):** Gold Resources commissioned Newport Minerals, Inc. of Cripple Creek, Colorado to carry out crush-leach testing on a 136 kg composite sample with a head grade of approximately 15 g Au/t. Five tests were done at various particle sizes, including “as received”, 1-inch, ¾-inch, ½-inch, and 3/8-inch. Samples were leached “in a barrel” for seven days. The “as received” sample showed “approximately 70%” extraction, with 73% for the 3/8-inch sample.
- **Dawson (1980):** Pioneer commissioned Dawson Metallurgical Laboratories, Inc. of Murray, Utah to carry out a 48-hour leach of a “composite of samples” ground to 90% passing 200 mesh. The conclusion was that “an appreciable portion of the gold does not leach”, possibly “due to carbonaceous matter” in the tested sample.
- **Dix (1984):** Kappes, Cassiday & Associates (KCA) of Reno, Nevada carried out cyanide leach tests on three samples from the Tallman mine. Sample BP1 had a grade of 7 g Au/t; BP2 assayed 1.37 g Au/t, and BP3 had a gold content of 0.21 g Au/t. Two 58-day leach tests were carried out on minus 4-inch and minus ½-inch material from BP1, with gold extractions of 75% and 81%, respectively. Agitated cyanide tests were run for 24 hours on portions of pulverized head samples. The average extraction for BP1 and BP2 was 93%. BP3 was found to contain strongly “preg-robbing” carbonaceous material.
- **Defilippi (1988):** The KCA report (KCA-1988a) is of particular interest as KCA tested a series of samples from four large diameter core holes and three bulk samples taken from historical pit locations and some core extending below the historical Black Pine pits mined by Pegasus. The materials sampled represent material types that will be mined in future operations. A typical log-normal plot of the various test feed sizes (P_{80}) vs. gold and silver extraction is shown in Figure 13-1 and Figure 13-2, for Noranda Core Hole BP87-93.

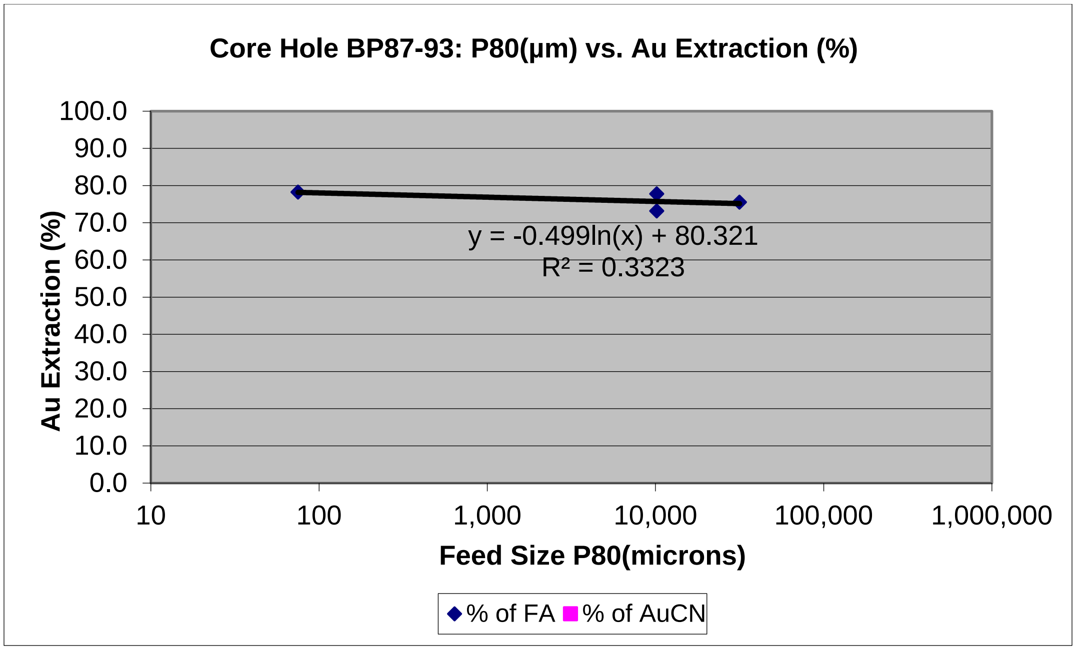


Figure 13-1: Plot of 1988 Column P_{80} (microns) vs. Gold Extraction (%)

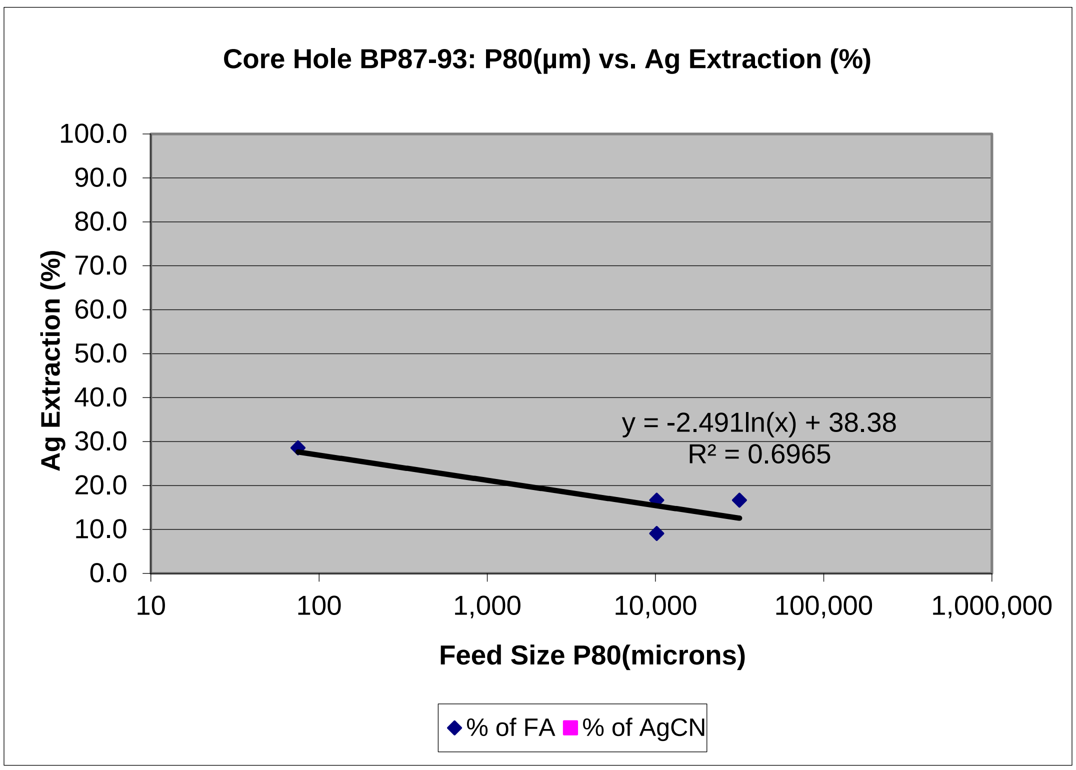


Figure 13-2: Plot of 1988 Column P_{80} (microns) vs. Gold Extraction (%)

The test results derived from the KCA-1988 report were included with the more recent Liberty Gold testing by KCA in 2020 to develop gold and silver recovery models for Black Pine.

KCA also carried out tests on a composite sample of Black Pine carbonaceous mineralization, made up of 34.14 m of drill core and a total weight of 372.2 kg. The sample was subjected to double oxidation, chlorination with hypochlorite, thiourea leaching, carbon-in-leach (CIL), and roast/cyanide leach tests. Most techniques did not significantly increase extractions over those obtained from direct cyanidation. However, "straight oxidation with hypochlorite gave gold recoveries of 88% with the addition of 320 pounds (145 kg) of calcium hypochlorite per ton of ore" and "roasting the ore at 540 degrees C for two hours followed by straight cyanidation gave gold recoveries of 80%."

- **Yernberg (1988)**: According to a copy of a report by Senior Metallurgist W.R. Yernberg of KCA that is missing the first 18 pages and some details and results, eight bottle-roll tests were carried out on 500 g of pulverized material that was agitated for 24 or 48 hours in different sets of tests. With one exception, gold extractions ranged from 78.3 to 89.7%. A single sample had an extraction of 50% and was found to be moderately preg-robbing.

  Continuously drained drip-leach column tests were carried out with backhoe samples and drill core. Backhoe samples included splits of three samples processed at minus 3-inch and minus 1-inch particle sizes, and these were leached for 60 days. Five core samples were crushed to 1.5 inch (37.5 mm) and 0.5 inch (12.5 mm) and were leached for 40 or 60 days in separate tests. Two of the 0.5 inch (12.5 mm) columns required agglomeration. Tailings screen analyses were employed to look at the effectiveness of leaching in different size fractions within the samples. Leaching was significantly more effective for the smaller size fractions than the larger ones.

- **Clemson (1988):** This study provided an in-depth look at the distribution of gold in oxidized and unoxidized mineralized materials in the Black Pine deposits. Extremely fine-grained native gold was noted in oxidized samples, averaging two microns in diameter, associated with hematite, quartz, and calcite. Some silica encapsulation was noted.

  The report describes bottle-roll testing undertaken at Lakefield Research of Peterborough, Ontario, Canada. Samples of drill chips were ground to minus 20 mesh and screened at minus 35, 100, 200, and 500 mesh, and the various screen fractions were assayed for gold. No enrichment of gold in any of the size fractions was noted. Ten samples were used for the study, with results for the minus 200 mesh fraction reported for all samples. Gold extractions for seven of the ten samples ranged from 81.9% to 92.4%. Three of the samples yielded very low recoveries; these samples contained preg-robbing carbonaceous material. A number of techniques were applied to these samples in an attempt to improve extraction: grinding to 86% passing minus 400 mesh, roasting at 600 degrees C, and then leaching was found to be the most effective method.

- **Dix (1990):** KCA performed 4-hour agitated cyanide-leach tests on ten 1 kg "as received" chip samples (nominally ¼-inch [6.25 mm] particle size), and the data were compared to conventional fire assays. Gold extractions ranged from 78.1% to 97.5% and averaged 87.5%.

13.2 Metallurgical Work Completed by Pegasus

Liberty Gold has no historical records documenting metallurgical testing that Pegasus may have carried out. However, Western Pacific Resources acquired the Black Pine Project in October 2012 and produced a summary report documenting Pegasus gold production records on December 13, 2012, titled: *Report on Heap Leach Production and Recovery - Black Pine Mine, Idaho*. Production records from the Pegasus operation indicate that from 1991 through 1998, the average gold recovery by ROM heap leaching was 64.1% (Table 13-1) These numbers do not include additional ounces recovered from wash/rinse closure and reclamation activities, as these were carried out after Pegasus ceased to be operator.

Table 13-1: Pegasus Heap Leach Production Summary
Liberty Gold Corp. – Black Pine Project

Year	Material to Leach Pad			Reported Prod		HL Feed	HL Pad Remaining	Calc. HL Pad Grade	Annual Rec.	Cumulative Recovery
	Tonnage (000 t)	Head Grade (g/t)	Contained Metal (kg Au)	(oz Au)	Rec (%)	(oz Au)	(oz Au)	(opt Au)	(%)	(%)
1991	0	0.000	0	0	0	0	0	0	0	0
1992	2,850	1.200	3,420.0	48,700	65.0	109,947	61,247	0.0195	44.3	44.3
1993	3,270	0.820	2,681.4	66,100	80.0	86,202	81,349	0.0121	76.7	58.5
1994	5,810	0.690	4,008.9	65,700	54.0	128,879	144,527	0.0110	51.0	55.5
1995	7,050	0.720	5,076.0	108,500	59.0	163,184	199,211	0.0095	66.5	59.2
1996	8,730	0.520	4,539.6	87,900	60.0	145,940	257,251	0.0084	60.2	59.4
1997	2,572	0.534	1,373.7	44,080	--	44,172	257,343	0.0077	99.8	62.1
1998	0	0.000	0.0	13,800	--	0	243,543	0.0073	--	64.1
Totals	30,282		21,099.6	434,780		678,324	243,543	0.0073	64.1	64.1

Source: Compiled by Western Pacific Resources, Dec 13, 2012, and published in Gustin et al, 2021.

Western Pacific Resources speculated in their report that the total leach cycle may also have been compromised and an additional 50,899 recoverable ounces remained in the pad. If correct, this would have resulted in an increase of the overall expected gold recovery to 71.6%.

13.3 Liberty Gold 2019-2020 Bulk Sample Bottle-Roll and Column Leach Testing

In 2019 Liberty Gold initiated bottle-roll and column-leach testing at KCA on six backhoe extracted bulk samples taken from existing pit walls and benches from five of the historical Black Pine open pits and one road cut through the F Zone resource area (KCA 2020a).

Bulk Sample pit locations where metallurgical samples were extracted are as follows:

1. A Pit
4. Tallman Pit
5. Upper BX Pit
6. Lower F Zone
7. C/D Pit
8. I Pit

A map showing more precise locations of the Liberty Gold 2019 bulk samples (including the location of the Noranda bulk samples (Defilippi, 1988) and large diameter core) is shown in Figure 13-3.

The Liberty Gold bulk samples were collected in new 55-gallon steel drums and the average weight was 1,000 kg each. All composites were subjected to bottle-roll leach testing at target P_{80} sizes of 75 µm and 1,700 µm, and to column-leach testing at 75.0 mm crush size. The main objective of the tests was to evaluate the laboratory-scale leachability character of the Black Pine resources in terms of gold extraction, extraction rate, reagent consumption, and sensitivity to feed size.

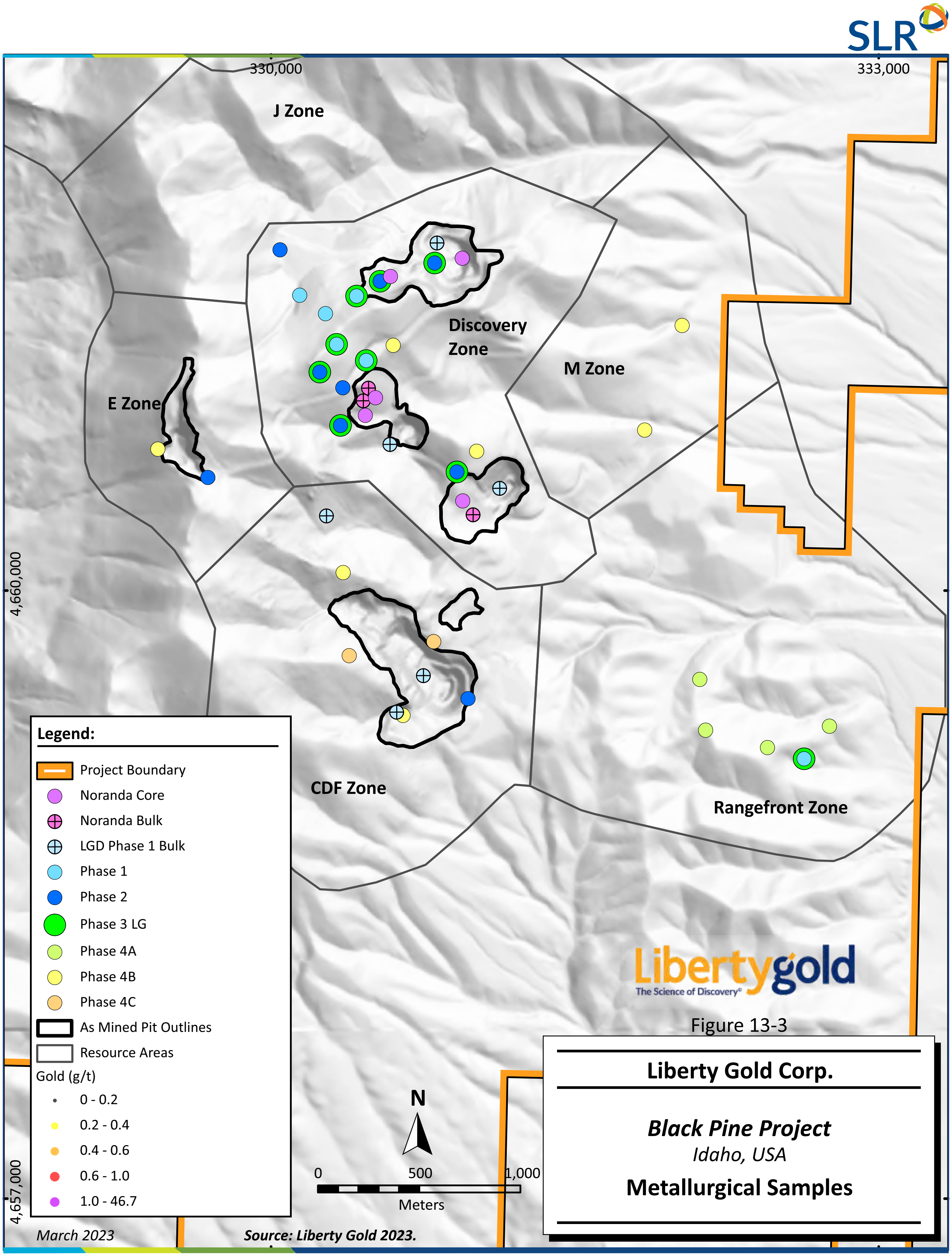


Figure 13-3

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Metallurgical Samples

13.3.1 2019–2020 Black Pine Bulk Sample Head Assays

Head assays and geo-metallurgical characterization were obtained for the six bulk samples using a combination of four separate laboratories: KCA, ALS, University of British Columbia (UBC) and FL Schmidt (FLS). The head assays and geo-metallurgical characterization data are tabulated in Table 13-2. A summary of findings is provided below:

- Gold grade ranged from 0.23 ppm to 4.04 ppm and averaged 1.82 ppm.
- Silver grade ranged from 0.63 ppm to 9.92 ppm and averaged 3.62 ppm.
- Organic carbon ranged from 0.06% to 0.12% and averaged 0.08%.
- Sulfide sulfur ranged from <0.01% to 0.03% and averaged 0.02%.
- Preg robbing analysis ranged from 2.6% to 9.9% and averaged 4.5%. There is indication of minor clay borrowing and preg-robbing in some samples, but it does not appear to materially affect gold or silver extraction.
- Copper values by ICP were very low, ranging from 9 ppm to 465 ppm and averaged 95 ppm.
- Cyanide solubility of gold ranged from 51.9% to 86.1% and averaged 75.8%.
- Concentrations of the deleterious elements by ICP were: 9 ppm selenium; mercury ranged from 4.0 ppm to 14.9 ppm; and arsenic was low at 31 ppm to 1,105 ppm and averaged 271 ppm.
- Concentrations of the primary cyanide consumers were low and suggest minimum potential for affecting cyanide-consumption rates. Copper averaged 95 ppm, nickel averaged 98 ppm, and zinc averaged 250 ppm.
- Silica (SiO_2) content ranged from 9.8% to 45.0% (by whole-rock analysis) and averaged 28.0%.

13.3.2 2019-2020 Bulk Sample Bottle-Roll Test Results

Bottle-roll leach cyanidation testing was conducted on six bulk composites to evaluate the leachability character of the Black Pine historical pit resources at fine to coarse particle size. Bottle-roll testing was conducted at two targeted feed sizes: 80% passing (P_{80}) 75 µm (200 mesh) and 80% passing 1,700 µm (10 mesh). Retention times were 72 hours for the 75 µm bottle-roll tests and 144-hrs for the 1,700 µm tests. A second P_{80} = 75 µm CIL bottle-roll test was conducted to evaluate preg-robbing potential. The 75 µm bottle-roll and CIL testing followed a standard procedure outlined detail in the final KCA report (KCA 2020a). The 75 µm direct leach and CIL bottle-roll test procedure was the same as for the 1,700 µm bottle-rolls, except the retention time was reduced from 144 to 72 hours. The 75 µm and 1,700 µm bottle-roll test results (along with the column leach test results – discussed later in this section) are shown in Table 13-2.

Three of the six bulk samples; A Pit, Upper BX Pit, and Lower F Zone, contained significant -75 µm fines (200 mesh), 12.5%, 17.7%, and 10.9%, respectively, and were agglomerated with 2.0 kg/t of cement. The three remaining bulk composites, with lower fines content, were leached without agglomeration.

Table 13-2: 2019-2020 Bulk Sample Head Assays
Liberty Gold Corp. – Black Pine Project

KCA Sample No.	Mine Area	KCA Analysis											ALS Analysis											
		Au & Ag Assays					Sulfur and Carbon Species									Preg Robbing Analysis			Sulfur and Carbon Species					
		AuFA ppm	AuCN ppm	AuCN %	AgFA ppm	Cu ppm	C (tot) %	C (org) %	C (inorg) %	S (total) %	S (sulfide) %	S (sulfate) %	AuFA ppm	AuCN ppm	AuCN %	Au-AA31 w/spike	Au-AA31a w/o spike	Au PR %	C (tot) %	C (org) %	C (inorg) %	S (total) %	S (sulfide) %	S (sulfate) %
2019 Black Pine Bulk Samples																								
87201B	A Pit	1.182	0.82	69.4	5.23	30	5.91	0.26	5.65	0.07	<0.01	0.07	1.200	0.82	68.3	4.09	0.79	3.8	5.97	0.09	5.88	0.06	0.01	0.05
87202B	Tallman Pit	2.160	1.80	83.3	3.77	36	6.52	0.19	6.33	0.03	<0.01	0.03	2.270	1.80	79.3	5.17	1.90	4.7	6.60	0.09	6.51	0.02	0.01	0.01
87203B	BX Pit	4.040	3.48	86.1	9.92	465	3.30	0.17	3.13	0.03	<0.01	0.03	4.010	3.48	86.8	6.53	3.44	9.9	3.37	0.12	3.25	0.03	<0.01	0.04
87204B	F Zone	0.775	0.62	80.0	1.25	20	7.38	0.22	7.16	0.01	0.01	0.01	1.220	0.62	50.8	4.04	0.70	2.6	7.46	0.08	7.38	0.01	<0.01	0.02
87205B	CD Pit	0.231	0.12	51.9	0.90	9	6.59	0.30	6.30	0.01	<0.01	0.01	0.238	0.12	50.4	3.54	0.21	2.9	6.71	0.06	6.65	0.02	0.02	<0.01
87206B	I Pit	2.552	2.14	83.9	0.63	12	10.40	0.22	10.18	0.03	<0.01	0.03	2.770	2.14	77.3	5.65	2.32	2.9	10.75	0.06	10.70	0.04	0.03	0.01

The following is a summary of the findings from the bottle-roll test results.

13.3.2.1 75 µm (200-Mesh) Bottle-Roll Results

- Gold head grades for the bulk samples ranged from 0.22 ppm to 3.77 ppm Au (average = 1.77 ppm Au).
- Gold extraction results ranged between 64.6% and 91.3% (weight average = 81.8%).
- Silver head grades ranged from 0.50 ppm to 8.92 ppm Ag (average = 3.15 ppm Ag).
- Silver extraction results ranged from 25.3% to 69.8% (weight average = 56.6%).
- Cyanide consumption averaged 0.13 kg/t and lime consumption averaged 0.67 kg/t.

13.3.2.2 75 µm (200-Mesh) CIL Bottle-Roll Results

- Gold head grades for the bulk samples ranged from 0.26 ppm to 4.03 ppm Au (average = 1.91 ppm Au).
- Gold extraction results ranged between 76.6% and 93.3% (weight average = 85.8%).
- Silver head grades for the bulk samples ranged from 0.44 ppm to 9.78 ppm Ag (average = 3.56 ppm Ag).
- Silver extraction results ranged from 29.9% to 72.3% (weight average = 61.3%).
- Cyanide consumption averaged 0.67 kg/t and lime consumption averaged 0.75 kg/t.

The weighted average gold extraction percent for the 75 µm CIL bottle-roll tests was 85.8% vs. 81.8% for the direct leach 75 µm bottle-roll test, indicating mild preg-borrowing or preg-robbing potential.

13.3.2.3 1,700 µm (10-Mesh) Bottle-Roll Results

- Gold head grades for the bulk samples ranged from 0.25 ppm to 3.74 ppm Au (average = 1.81 ppm Au).
- Gold extraction results ranged between 64.5% and 90.1% (weight average = 79.1%).
- Silver head grades for the bulk samples ranged from 0.98 ppm to 9.50 ppm Ag (average = 3.88 ppm Ag).
- Silver extraction results ranged from 10.2% to 59.4% (weight average = 39.8%).
- Cyanide consumption averaged 0.18 kg/t and lime consumption averaged 0.71 kg/t.

13.3.3 2019-2020 Bulk Sample Column-Leach Program

Column-leach cyanidation testing was conducted on six Black Pine bulk composites to evaluate laboratory-scale leachability characteristics of historical pit resources, at coarse particle size, in terms of gold/silver extraction, extraction rate and reagent consumption (KCA 2020a). Column testing was conducted at a target P_{80} (feed size) of 75 mm. Laboratory column charges were leached for 100 days with dilute sodium cyanide solution.

The 75 mm column-leach testing followed a standard procedure outlined detail in the final KCA-2020a report. The column-leach test results are shown in Figure 13-4. The column leach test parameters are presented in Table 13-3.

KCA Sample No.	Description	Test No	Geology		Feed Size		Leach Time (days/Hrs)	Au Balance		Ag Balance		Reagents		
			Mine Area	F-Form	Target P80 (µm)	Screen P80 (µm)		Au Ext %	Calc Hd Au (ppm)	Ag Ext %	Calc Hd Ag (ppm)	NaCN kg/t	Lime kg/t	Cement kg/t
2019 Liberty Bulk Samples														
87201B	Bulk Sample	87212	A Pit	Polc	75,000	58,600	100d	**79.8**	1.161	**30.7**	5.27	0.46	0.00	2.1
	Bulk Sample	87207 A	A Pit	Polc	1,700	1,960	144	**74.6**	1.170	**27.3**	6.49	0.16	0.75	
	Bulk Sample	87230 A	A Pit	Polc	75	97	72	**76.0**	1.083	**47.6**	4.58	0.03	0.75	
	Bulk Sample	87232 A	A Pit	Polc	75CIL	97	72	**79.6**	1.162	**49.7**	4.61	0.58	0.75	
87202B	Bulk Sample	87215	Tallman Pit	Polc	75,000	74,400	100d	**79.7**	1.995	**29.1**	3.71	0.60	0.75	0.0
	Bulk Sample	87207 B	Tallman Pit	Polc	1,700	1,640	144	**79.5**	2.247	**36.0**	3.97	0.15	0.75	
	Bulk Sample	87230 B	Tallman Pit	Polc	75	88	72	**78.9**	2.151	**48.6**	3.33	0.15	0.75	
	Bulk Sample	87232 B	Tallman Pit	Polc	75CIL	88	72	**86.0**	2.294	**58.3**	3.86	0.68	0.75	
87203B	Bulk Sample	87218	Upper BX Pit	Polc	75,000	55,900	100d	**92.8**	3.377	**56.2**	9.25	0.76	0.00	2.0
	Bulk Sample	87207 C	Upper BX Pit	Polc	1,700	1,520	144	**90.1**	3.736	**59.4**	9.50	0.50	0.75	
	Bulk Sample	87230 C	Upper BX Pit	Polc	75	104	72	**91.3**	3.733	**69.8**	8.92	0.38	0.75	
	Bulk Sample	87232 C	Upper BX Pit	Polc	75CIL	104	72	**93.3**	4.033	**72.3**	9.78	1.10	1.00	
87204B	Bulk Sample	87221	Lower F Zone	Pols	75,000	51,300	100d	**78.2**	0.803	**8.5**	1.18	0.53	0.00	1.9
	Bulk Sample	87208 A	Lower F Zone	Pols	1,700	1,480	144	**79.3**	0.777	**12.6**	1.27	0.12	0.75	
	Bulk Sample	87230 D	Lower F Zone	Pols	75	102	72	**80.7**	0.787	**25.3**	0.95	0.08	0.75	
	Bulk Sample	87232 D	Lower F Zone	Pols	75CIL	102	72	**82.5**	0.819	**29.9**	0.87	0.58	0.75	
87205B	Bulk Sample	87224	C/D Pit	Pols	75,000	71,900	100d	**76.8**	0.233	**28.6**	0.49	0.60	0.76	0.0
	Bulk Sample	87208 B	C/D Pit	Pols	1,700	1,580	144	**64.5**	0.245	**14.8**	1.08	0.03	0.75	
	Bulk Sample	87231 A	C/D Pit	Pols	75	114	72	**64.6**	0.223	**40.7**	0.59	0.07	0.50	
	Bulk Sample	87233 A	C/D Pit	Pols	75CIL	114	72	**76.6**	0.261	**44.1**	0.59	0.54	0.75	
87206B	Bulk Sample	87227	I Pit	Pold	75,000	56,100	100d	**60.9**	2.677	**17.6**	0.51	0.60	0.75	0.0
	Bulk Sample	87208 C	I Pit	Pold	1,700	1,740	144	**66.7**	2.663	**10.2**	0.98	0.14	0.50	
	Bulk Sample	87231 B	I Pit	Pold	75	107	72	**74.8**	2.670	**34.0**	0.50	0.09	0.50	
	Bulk Sample	87233 B	I Pit	Pold	75CIL	107	72	**79.3**	2.888	**50.0**	0.44	0.54	0.50	

Source: GL Simmons Consulting LLC, 2019, published in Gustin et al, 2021

Figure 13-4: Summary Bottle-Roll, CIL, and Column Leach Test Results on 2019 Liberty Gold Bulk Samples

Table 13-3: 2019-2020 Bulk Sample Column-Leach Test Parameters
Liberty Gold Corp. – Black Pine Project

KCA Sample No.	KCA Test No.	Description	Crush Size (mm)	Column Diameter (m)	Initial Charge Height (m)	Charge Weight (kg)
87201 B	87212	A Pit	87.5	0.305	2.743	277.04
87202 B	87215	Tallman Pit	87.5	0.305	2.921	308.83
87203 B	87218	Upper BX Pit	87.5	0.305	2.553	283.44
87204 B	87221	Lower F Zone	87.5	0.305	2.896	285.96
87205 B	87224	C/D Pit	87.5	0.305	2.565	288.75
87206 B	87227	I Pit	87.5	0.305	2.597	282.84

13.3.3.1 Column-Leach Test Extractions

Gold extractions ranged from 60.9% to 92.8% based on calculated head grades, which ranged from 0.23 ppm to 3.38 ppm Au (Figure 13-5). The sodium cyanide consumptions ranged from 0.46 kg/t to 0.76 kg/t. The material utilized in leaching was blended with 0.75 kg/t or 0.76 kg/t hydrated lime, with three of the composites agglomerated with 1.86 kg/t to 2.08 kg/t cement. Column test extraction results are based upon carbon assays vs. the calculated head (carbon assays + tail screen assays). The solution balance gold extraction profiles are presented graphically in Figure 13-5.

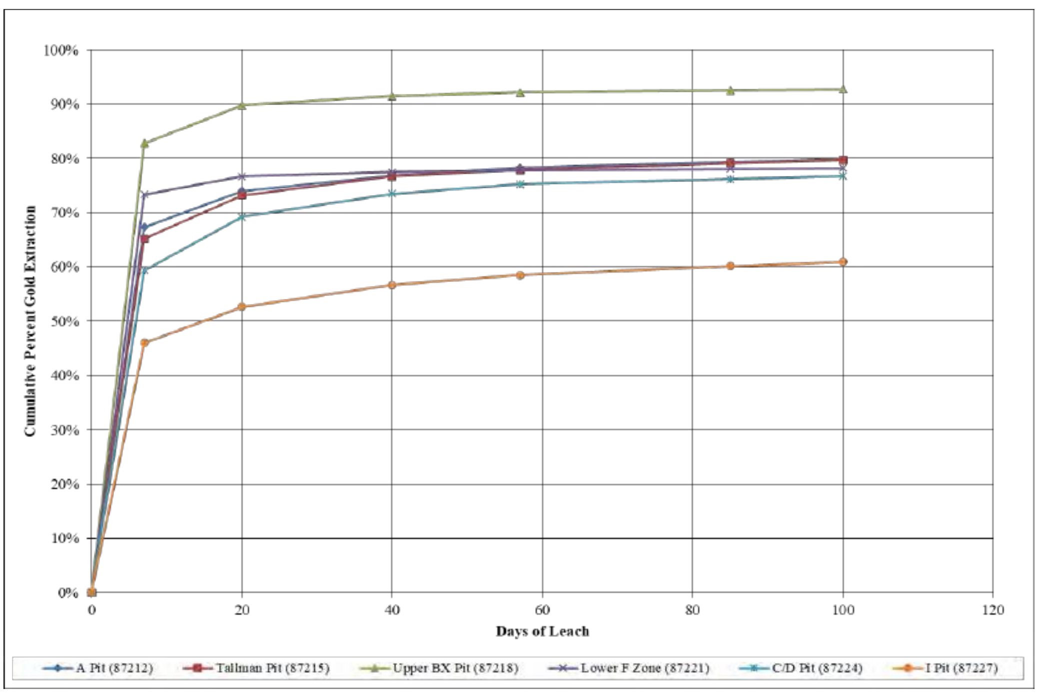


Figure 13-5: 2019-2020 Column-Leach Test Work, Gold Extraction vs. Days of Leach

13.3.3.2 Head vs. Tails Screen Analysis

Tails screen assays demonstrate that gold extraction for all six of the Black Pine bulk samples are not sensitive to feed particle size. Figure 13-6 is a typical example of results for the A Pit bulk sample.

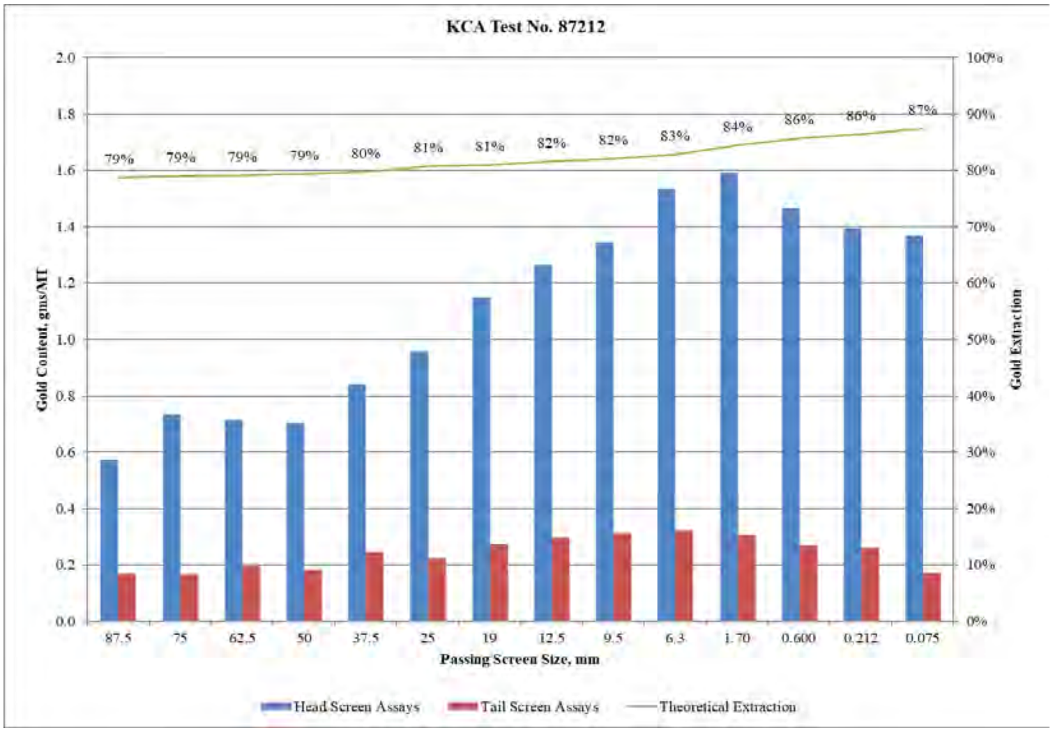


Figure 13-6: A Pit Head vs. Tail Screen Analyses and Gold Extraction by Size Fraction

13.4 2020 Phase 1 Variability Composite Testing

In 2019 Liberty Gold initiated bottle-roll and column-leach testing at KCA on 29 variability composites selected from six large diameter PQ metallurgical core holes, selected from Discovery Zone 1, Discovery Zone 2, and the Rangefront resource locations (KCA 2020b). The large diameter metallurgical core hole collar locations are shown on Figure 13-3-3.

Splits from eleven of the 29 composites were selected and shipped to Hazen Research, Inc. (Hazen) in Golden, Colorado, for SAG mill comminution (SMC) testing (SMC Test®) and Bond Abrasion index (Ai) testing. Comminution and abrasion final test results are documented in a letter report from Stepperud (Hazen) to KCA (Stepperud, 2020).

One composite from the 2019 bulk sample program (the I Pit composite) and four variability composites from the 2019 PQ core drilling program (BP73-7, BP73-10, BP78-12, and BP87-25) were selected for gold deportment mineralogy study and were shipped to AMTEL Ltd in Canada (AMTEL) and are reported in AMTEL (2020).

Splits of all 29 composite heads were delivered to three separate laboratories for additional geo-metallurgical and environmental characterization analysis:

1. ALS for ICP and gold cyanide solubility analysis
2. FLS for “XRD” and “Whole Rock” analysis

3. Western Environmental Testing Laboratories (WETLAB) for environmental characterization of solids and aqueous solutions

With reference to Section 7 of this technical report, the bulk sample and PQ core metallurgical composites reasonably sampled materials from the Pola, Polb, Polc, with minimal samples coming from PPos, Pold, and Pols, all members of the Oquirrh Group. A 2020 metallurgical PQ core drilling program was designed to fill major resource material gaps that were minimally sampled in 2019 (Polc, Pold and Pols).

13.4.1 2020 Black Pine Variability Composite Head Assays

Head assay details and geo-metallurgical characterization results are in the KCA 2020b report. A high-level summary of the geo-metallurgical characterization is presented below for gold, silver, copper, cyanide gold solubility, carbon and sulfur species, preg-rob analysis, as well as ICP multi-element analyses, whole-rock analyses, and QXRD analyses. Select composite summary results for gold, silver, copper, carbon and sulfur speciation, and preg-rob analysis, are detailed in Table 13-4:

- Gold grades ranged from 0.20 ppm to 5.67 ppm and averaged 0.86 ppm.
- Silver grades ranged from 0.85 ppm to 4.0 ppm and averaged 1.9 ppm.
- Organic carbon ranged from 0.07% to 0.20% and averaged 0.11%.
- Sulfide sulfur ranged from <0.01% to 0.01% and averaged <0.01%.
- Preg-robbing analyses ranged from 0.7% to 19.0% and averaged 4.9% (using a 1 ppm spike). Preg-robbing values <10% are considered within the error band of the test procedure and are classified as non-preg-robbing by KCA. Only two composites (BP78-13 and BP78-15) were >10% at 19.0% and 13.3% respectively.
- Copper values were very low, ranging from 10 ppm to 78 ppm and averaged 34 ppm.
- Gold cyanide solubility ranged from 24.9% to 96.8% and averaged 83.4%.
- Concentrations of the deleterious elements were: selenium averaged 19 ppm; mercury ranged from 2.0 to 26.5 ppm with an average of 5.6 ppm; and arsenic levels were low, ranging from 49 to 404 ppm with an average of 155 ppm.
- Concentrations of the primary cyanide consumers were low and suggest minimum potential for affecting cyanide consumption rates. Copper averaged 34 ppm, nickel averaged 73 ppm, and zinc averaged 229 ppm; and
- Whole-rock silica content ranged from 15.5% to 80.2% and averaged 47.8 %.

Table 13-4: 2019 Black Pine Variability Composite Head Assays by KCA and ALS
Liberty Gold Corp. – Black Pine Project

KCA Sample No.	Composite ID	Head Assays																	
		ALS			KCA												ALS (Preg-robbing)		
		AuFA ppm	AuCN ppm	AuCN %	AgFA ppm	AgCN ppm	AgCN %	Cu ppm	CuCN ppm	CuCN %	C(tot) %	C(org) %	C(inorg) %	S(total) %	S(sulfide) %	S(sulfate) %	AA31 w/spike	AA31a w/o	Au PR %
2019 Phase 1 Variability Core Composites																			
87234A	BP67-1	0.384	0.270	70.3	1.64	0.600	36.6	32	6.84	21.4	4.26	0.09	4.17	0.03	<0.01	0.03	1.143	0.153	1.0
87235A	BP67-2	0.346	0.150	43.4	2.29	1.353	59.1	30	5.24	17.5	0.90	0.20	0.70	0.09	<0.01	0.09	1.067	0.103	3.7
87236A	BP67-3	0.761	0.460	60.4	2.14	1.227	57.4	20	6.04	30.2	5.97	0.11	5.86	0.02	<0.01	0.02	1.113	0.207	9.3
87237A	BP67-4	5.860	5.670	96.8	4.01	1.387	34.6	24	5.73	23.9	2.43	0.14	2.29	0.08	<0.01	0.08	3.737	2.807	7.0
87238A	BP67-5	1.825	1.560	85.5	2.23	0.920	41.3	35	8.89	25.4	3.33	0.13	3.20	0.03	<0.01	0.03	1.650	0.710	6.0
87239A	BP67-6	1.285	1.030	80.2	2.33	1.073	46.2	22	7.60	34.5	6.15	0.14	6.15	0.05	<0.01	0.05	1.443	0.487	4.3
87240A	BP73-7	0.241	0.060	24.9	1.94	0.633	32.6	18	7.37	41.0	5.50	0.12	5.50	0.03	<0.01	0.03	0.943	0.030	8.7
87241A	BP73-8	0.381	0.170	44.6	2.53	1.067	42.2	38	14.21	37.4	5.20	0.12	5.20	0.04	0.01	0.03	0.993	0.070	7.7
87242A	BP73-9	0.273	0.140	51.3	2.23	1.007	45.2	36	7.69	21.4	3.09	0.15	3.08	0.02	<0.01	0.02	1.083	0.100	1.7
87243A	BP73-10	2.440	2.110	86.5	2.05	0.940	45.9	23	15.25	66.3	7.19	0.10	7.19	0.03	<0.01	0.03	1.970	1.003	3.3
87244A	BP73-11	0.533	0.460	86.3	0.85	0.393	46.2	10	10.43	104.3	10.10	0.11	9.99	0.09	<0.01	0.09	1.220	0.237	1.7
87245A	BP78-12	0.810	0.590	72.8	1.83	0.367	20.0	62	20.57	33.2	2.80	0.11	2.69	0.04	<0.01	0.04	1.270	0.300	3.0
87246A	BP78-13	0.436	0.290	66.5	1.37	0.400	29.2	23	8.19	35.6	9.20	0.09	9.11	0.03	<0.01	0.03	0.870	0.060	19.0
87247A	BP78-14	0.354	0.300	84.7	1.59	0.440	27.7	41	13.69	33.4	9.13	0.07	9.06	0.07	0.01	0.06	1.093	0.137	4.3
87248A	BP78-15	2.610	1.960	75.1	2.41	0.567	23.5	26	13.68	52.6	7.59	0.10	7.49	0.07	<0.01	0.07	1.890	1.023	13.3
87249A	BP82-16	0.405	0.310	76.5	1.60	0.307	19.2	41	14.93	36.4	4.80	0.07	4.73	0.03	<0.01	0.03	1.050	0.123	7.3
87250A	BP82-17	0.367	0.260	70.8	1.16	0.440	37.9	34	13.71	40.3	6.95	0.09	6.86	0.01	<0.01	0.01	1.123	0.133	1.0

KCA Sample No.	Composite ID	Head Assays																	
		ALS						KCA									ALS (Preg-robbing)		
		AuFA ppm	AuCN ppm	AuCN %	AgFA ppm	AgCN ppm	AgCN %	Cu ppm	CuCN ppm	CuCN %	C(tot) %	C(org) %	C(inorg) %	S(total) %	S(sulfide) %	S(sulfate) %	AA31 w/spike	AA31a w/o	Au PR %
87251A	BP82-18	0.317	0.130	41.0	2.09	0.980	46.9	78	31.50	40.4	4.45	0.11	4.34	0.01	<0.01	0.01	0.990	0.067	7.7
87252A	BP82-19	0.203	0.120	59.1	1.19	0.527	44.3	69	37.00	53.6	5.80	0.06	5.74	0.01	<0.01	0.01	1.043	0.060	1.7
87253A	BP82-20	0.835	0.730	87.4	1.41	0.473	33.7	49	29.74	60.7	5.23	0.09	5.14	0.03	<0.01	0.03	1.303	0.327	2.3
87254A	BP82-21	0.495	0.370	74.7	1.11	0.593	53.5	38	22.58	59.4	6.74	0.10	6.64	0.02	<0.01	0.02	1.110	0.153	4.3
87255A	BP87-22	0.251	0.110	43.8	1.73	0.613	35.5	53	12.89	24.3	4.99	0.09	4.90	0.01	<0.01	0.01	1.027	0.073	4.7
87256A	BP87-23	0.301	0.210	69.8	1.53	0.373	24.5	27	10.49	38.8	6.06	0.12	5.95	0.03	<0.01	0.03	1.063	0.100	3.7
87257A	BP87-24	0.204	0.060	29.4	3.34	0.713	21.4	57	17.43	30.6	2.60	0.12	2.48	0.02	<0.01	0.02	0.983	0.037	5.3
87258A	BP87-25	1.420	1.180	83.1	4.05	1.800	44.5	23	5.56	24.2	5.97	0.11	5.86	0.04	<0.01	0.04	1.560	0.567	0.7
87259A	BP93-26	0.332	0.280	84.3	1.36	0.587	43.1	24	7.45	31.1	3.53	0.09	3.44	0.04	0.01	0.03	1.120	0.137	1.7
87260A	BP93-27	0.361	0.330	91.4	0.82	0.280	34.0	10	4.31	43.1	4.71	0.14	4.58	0.03	<0.01	0.03	1.130	0.143	1.3
87261A	BP93-28	0.722	0.620	85.9	1.18	0.293	24.9	12	6.47	53.9	4.31	0.11	4.21	0.04	<0.01	0.04	1.263	0.283	2.0
87262A	BP93-29	0.279	0.220	78.9	1.62	0.493	30.4	19	10.29	54.2	5.20	0.08	5.12	0.03	<0.01	0.03	1.073	0.103	3.0

13.4.2 Acid-Base Accounting

A portion of the pulverized head material for each individual sample was submitted to WETLAB for Acid-Base Accounting (ABA) testing. ABA is a static test to determine the acid producing or acid neutralizing potential of a material. It is a general analysis for the elements of acid generation and does not indicate the potential rate at which generation or neutralization may occur.

It is generally accepted that a net neutralization potential (NNP) value greater than 20 is indicative of a non-acid producing material (acid neutralizing material), and that an NNP value less than -20 is an acid generating material. All of the 29 Black Pine composites tested had NNP values >20 and are therefore considered to be non-acid producing.

13.4.3 Bottle-Roll and Column Leach Testing

Coarse and fine milled bottle-roll leach tests were completed on each of the 29 samples. A portion of the head material for each individual sample was subjected to bottle-roll leach testing at target P_{80} sizes of 75 µm and 1,700 µm, and to column-leach testing at either 12.5 mm or 25.0 mm crush sizes (Table 13-5). A second CIL bottle-roll test was conducted at the 75 µm feed size to evaluate the potential for preg-borrowing clays and/or preg-robbing organic carbon. The main objective of these tests was to evaluate the laboratory-scale leachability character of the Black Pine resources in terms of gold extraction, extraction rate, reagent consumption, and sensitivity to feed size.

Table 13-5: 2020 Nominal P_{80} for Bottle-Roll and Column Leach Tests
Liberty Gold Corp. – Black Pine Project

Bottle-Rolls			Columns	
75 µm	75 µm (CIL)	1,700 µm	12.5 mm	25 mm
n = 29	n = 29	n = 29	n = 9	n = 20

The bottle-roll testing used standard procedures that are described in the final laboratory report (KCA 2020b), using 144 hours of retention time for 1,700 µm tests, and 72 hours for 75 µm direct leach and CIL tests.

Column-leach tests were conducted utilizing material crushed to their target P_{80} sizes and placed in columns of 10 cm and 15 cm diameters. During testing the material was leached between 77 to 80 days with a dilute NaCN solution. After leaching, each column was washed/rinsed for four days with water. A portion of the leached and washed material (“tailings”) from each column was assayed for “tail screen” analyses by size fraction.

Tailings material from all 29 columns was utilized for compacted permeability test work. Additionally, tailings material from 19 columns was submitted to WETLAB in Sparks, Nevada, for ABA and meteoric-water mobility tests (MWMT).

The following is a summary of the findings from the KCA 2020b report on bottle-roll and column test results.

13.4.4 Direct Leach and CIL Bottle-Roll Tests on 75 µm Composite Samples

Fine milled bottle-roll leach tests were completed on each of the 29 composites. The milled slurry was utilized for direct bottle-roll leach testing as well as CIL bottle-roll testing. The bottle-roll test procedures and results are described in detail in KCA 2020b.

- The direct leach gold head grades for the composites ranged from 0.21 ppm to 5.78 ppm Au, with an average of 0.83 ppm Au. Gold extraction from this material ranged from 37.7% to 92.7%, with a weight average of 81.4%.
- The CIL leach gold head grades for the composites ranged from 0.18 ppm to 6.15 ppm Au, with an average of 0.87 ppm Au. Gold extraction from this material ranged from 42.1% to 93.2%, with a weight average of 84.1%.
- The direct leach silver head grades for the composites ranged from 0.47 ppm to 3.9 ppm Ag, with an average of 1.8 ppm Ag. Silver extraction from this material ranged from 11.3% to 59.0%, with a weight average of 26.0%.
- The CIL silver head grades for the composites ranged from 0.83 ppm to 4.1 ppm Ag, with an average of 1.9 ppm Ag. Silver extraction from this material ranged from 3.9% to 57.3%, with a weight average of 26.8%.
- Cyanide consumption for the direct leach bottle-roll tests averaged 0.15 kg/t and lime consumption averaged 0.71 kg/t.
- Cyanide consumption for the CIL bottle-roll tests averaged 0.73 kg/t and lime consumption averaged 0.60 kg/t.

13.4.5 Direct Leach Coarse Bottle-Roll Tests on 1,700 µm Composite Samples

Coarse bottle-roll leach tests were completed on each of the 29 composites. The coarse bottle-roll test procedure and results are described in detail in KCA 2020b.

- Gold head grades for the composites ranged from 0.20 ppm to 6.25 ppm Au and averaged 0.86 ppm Au. Gold extraction ranged from 35.8% to 87.2%, with a weight average of 78.8%.
- Silver head grades for the composites ranged from 0.8 ppm to 4.1 ppm Ag and averaged 2.0 ppm Ag. Silver extraction ranged from 6.3% to 41.5%, with a weight average of 16.4%.

13.4.6 Column-Leach Tests on Composite Samples

All 29 composites were subjected to laboratory column-leach testing at KCA. Nine columns were tested at a target P_{80} = 12.5 mm and twenty composites at a target P_{80} = 25 mm (KCA 2020b). Column test procedures are described in detail in KCA 2020b. Column test extraction results are based upon carbon assays versus the calculated head (carbon assays + tail assays) and test result details are located in Figure 13-7.

- Calculated gold head grades ranged from 0.214 ppm to 5.44 ppm and averaged 0.84 ppm. Gold extractions ranged from 42.0% to 94.5%, with a weight average of 89.2%.
- Calculated silver head grades ranged from 0.80 ppm to 3.83 ppm and averaged 2.1 ppm. Silver extractions ranged from 4.8% to 41.1%, with a weight average of 15.0%.
- Cyanide consumptions ranged from 0.29 to 0.90 kg/t and averaged 0.56 kg/t. Based upon KCA's experience with clean non-reactive ores, cyanide consumption in commercial production heaps would range between 25% to 33% of the laboratory column test consumptions.

- Lime consumption ranged from 0.99 kg/t to 1.52 kg/t. One column charge (BP67-2) was agglomerated with 4.0 kg/t of cement and did not require any lime.

Gold extraction plotted versus days under leach is shown graphically in Figure 13-7 and are based upon column solution balances.

KCA Sample No.	Comp ID	Test No	Pilot Gold		Feed Size					NaCN (g/l)	Leach Time (days)	Au Balance		Ag Balance		Reagents		
			Structure	F-Form	Target P80 (µm)	Screen P80 (µm)	% - 200M	Load Perm Tests	Cement kg/t			Au Ext %	Calc Hd Au (ppm)	Ag Ext %	Calc Hd Ag (ppm)	NaCN kg/t	Lime kg/t	Cement kg/t
2019 Variability Core Composites																		
87234A	BP67-1	87278	Fz>Bx	Pola	37,500	23,140	16.5	Fail 75m	0.0	0.5	79d	**81.8**	0.550	**19.5**	2.26	0.64	1.00	0.0
87235A	BP67-2	87281	Fz>Bx	Polb	37,500	13,780	32.2	Fail 50m	4.0	0.5	79d	**71.3**	0.418	**41.1**	2.65	0.56	0.00	4.0
87236A	BP67-3	87284	Bx>Fz	Polc	37,500	24,500	5.6	Pass	0.0	0.5	79d	**69.1**	0.836	**27.0**	2.59	0.53	1.00	0.0
87237A	BP67-4	87287	Fz>Bx	Polc	37,500	23,160	16.6	Pass	0.0	0.5	78d	**94.5**	5.438	**11.7**	3.83	0.55	0.99	0.0
87238A	BP67-5	87290	Fz	Polc	37,500	24,780	20.1	Fail 100m	0.0	0.5	78d	**86.9**	1.693	**16.5**	2.31	0.56	1.51	0.0
87239A	BP67-6	88101	Fz,Bx	Polc	37,500	25,190	6.5	Pass	0.0	0.5	78d	**79.3**	1.330	**12.4**	2.42	0.58	1.52	0.0
87240A	BP73-7	88104	FZ/Bx	Polb,FZ	37,500	22,760	24.5	Pass	0.0	0.5	78d	**42.0**	0.264	**11.7**	2.13	0.45	1.50	0.0
87241A	BP73-8	88107	Bx	Polb	19,000	12,400	14.0	Pass	0.0	0.5	78d	**54.9**	0.384	**20.0**	2.45	0.53	1.44	0.0
87242A	BP73-9	88110	Fz	Polb	19,000	11,110	21.9	Pass	0.0	0.5	78d	**83.5**	0.278	**18.5**	2.27	0.69	1.50	0.0
87243A	BP73-10	88113	Bx,Fz	Polc	37,500	23,280	11.0	Pass	0.0	0.5	78d	**86.7**	2.423	**28.2**	1.74	0.48	1.49	0.0
87244A	BP73-11	88116	0	Polc	19,000	12,360	5.2	Pass	0.0	0.5	77d	**87.1**	0.464	**18.8**	0.85	0.41	1.48	0.0
87245A	BP78-12	88119	Fz	Polb	37,500	20,490	15.7	Fail 100m	0.0	0.5	77d	**72.8**	0.817	**7.0**	2.30	0.57	1.50	0.0
87246A	BP78-13	88112	0	Polc	37,500	26,010	1.5	Pass	0.0	0.5	80d	**82.6**	0.455	**4.9**	1.83	0.29	1.50	0.0
87247A	BP78-14	88125	Bx	Pold	37,500	23,900	4.2	Pass	0.0	0.5	80d	**79.2**	0.380	**8.8**	1.59	0.31	1.34	0.0
87248A	BP78-15	88128	Bx	Pold	19,000	11,830	8.2	Fail 100m	0.0	0.5	80d	**89.1**	2.245	**9.0**	3.01	0.49	1.50	0.0
87249A	BP82-16	88131	Fz,Bx	Pola	19,000	12,190	17.2	Pass	0.0	0.5	80d	**79.2**	0.380	**14.8**	1.89	0.59	1.00	0.0
87250A	BP82-17	88134	Fz	Pola	19,000	12,240	19.6	Fail 50m	0.0	0.5	80d	**77.5**	0.351	**25.0**	1.44	0.70	1.01	0.0
87251A	BP82-18	88137	Fz	Fz/Pola	37,500	24,390	24.9	Fail 50m	0.0	0.5	79d	**56.8**	0.331	**24.0**	2.33	0.69	1.01	0.0
87252A	BP82-19	88140	Fz	Polb	37,500	23,660	15.6	Pass	0.0	0.5	79d	**63.1**	0.214	**7.6**	1.57	0.55	1.02	0.0
87253A	BP82-20	88143	0	Polc	37,500	23,720	8.9	Pass	0.0	0.5	79d	**81.7**	0.798	**5.1**	1.58	0.60	1.13	0.0
87254A	BP82-21	88146	Fz=Bx	Polc	37,500	25,190	19.0	Fail 100m	0.0	0.5	79d	**72.6**	0.453	**11.4**	1.32	0.57	1.01	0.0
87255A	BP87-22	88149	Fz,Bx	Pola	19,000	14,310	19.3	Fail 50M	0.0	0.5	79d	**69.4**	0.258	**23.3**	1.89	0.90	1.00	0.0
87256A	BP87-23	88152	Fz	Polb	37,500	23,940	13.4	Fail 75m	0.0	0.5	79d	**69.2**	0.338	**8.9**	1.58	0.62	1.00	0.0
87257A	BP87-24	88155	Fz	Polb	19,000	10,570	27.2	Fail 75m	0.0	0.5	79d	**60.3**	0.237	**10.0**	3.80	0.75	1.02	0.0
87258A	BP87-25	88158	Fz>Bx	Polc	37,500	25,650	6.2	Psss	0.0	0.5	79d	**85.5**	1.331	**12.6**	3.81	0.52	1.00	0.0
87259A	BP93-26	88161	Fz	PPos,FZ	37,500	24,340	14.6	Pass	0.0	0.5	79d	**77.9**	0.330	**13.9**	1.15	0.80	1.02	0.0
87260A	BP93-27	88164	Bx=Fz	PPos	37,500	22,970	13.2	Pass	0.0	0.5	79d	**81.1**	0.338	**4.8**	1.26	0.47	1.00	0.0
87261A	BP93-28	88167	Bx=Fz	Pola	37,500	22,560	20.5	Fail 75	0.0	0.5	79d	**81.5**	0.601	**9.2**	1.31	0.44	1.01	0.0
87262A	BP93-29	88170	Bx	Pola	37,500	25,370	8.7	Pass	0.0	0.5	79d	**58.8**	0.272	**9.8**	1.63	0.51	1.01	0.0

Source: GL Simmons Consulting LLC, 2020, published in Gustin et al 2021

Figure 13-7: 2020 Variability Column Test Results

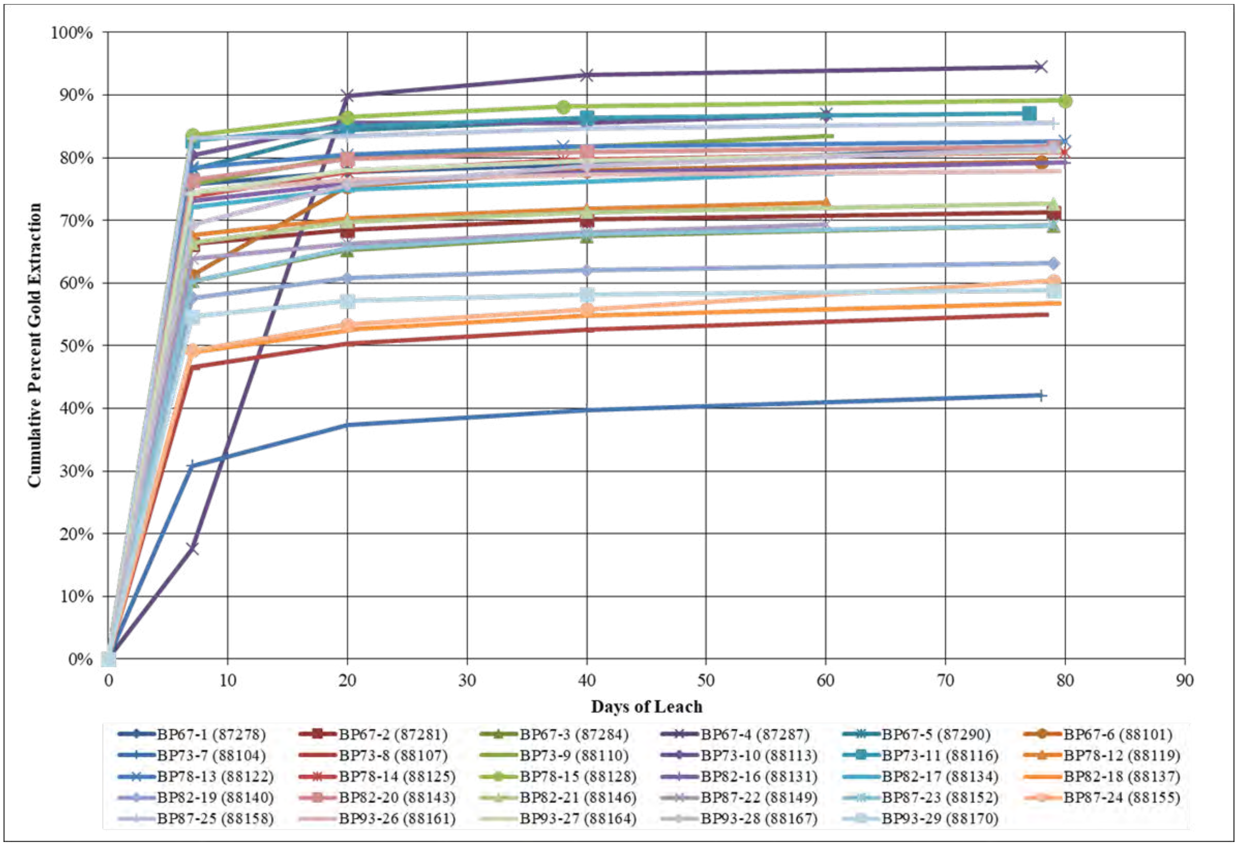


Figure 13-8: 2020 Gold Extraction vs. Days Under Leach for Column-Leach Tests

13.4.7 Comminution Characterization at Hazen

Portions of the head material for 11 composite samples were stage crushed to 100% passing 37.5 mm and submitted to Hazen Research, Inc. in Golden, Colorado for semi autogenous grinding (SAG) mill comminution (SMC), and Ai testing. Details of the comminution testing procedures and test results are reported in Stepperud (2020).

A summary of the Ai test work is presented in Table 13-6 and the SMC comminution characterization in Table 13-7.

Black Pine Ai test results can be characterized as having low to very mild abrasion characteristics, indicating low wear rates on mine ground engaging equipment and process related crushing, screening, and conveying equipment.

Table 13-6: Bond Abrasion Testing Results
Liberty Gold Corp. – Black Pine Project

HRI No.	Client ID	Ai (g)
55324-1	87234 A	0.0564
55324-2	87238 A	0.0269
55324-3	87240 A	0.0216

HRI No.	Client ID	Ai (g)
55324-4	87243 A	0.0078
55324-5	87248 A	0.0510
55324-6	87252 A	0.0386
55324-7	87254 A	0.0178
55324-8	87255 A	0.0114
55324-9	87258 A	0.0956
55324-10	87260 A	0.0396
55324-11	87261 A	0.0206

Table 13-7: SMC Comminution Characterization Test Results
Liberty Gold Corp. – Black Pine Project

HRI No.	Client ID	Black Pine Project – SMC Comminution Characterization										
		sg	A	b	A x b	Dwi kWh/m3	Dwi %	Mia kWh/t	Mih kWh/t	Mic kWh/t	ta	SCSE kWh/t
55324-1	87234 A	2.50	57.8	1.00	57.80	4.33	21	14.8	10.1	5.2	0.60	8.29
55324-2	87238 A	2.35	55.8	1.34	74.77	3.14	11	12.2	7.8	4.0	0.82	7.65
55324-3	87240 A	2.56	60.1	1.28	76.93	3.32	13	11.7	7.5	3.9	0.78	7.46
55324-4	87243 A	2.52	60.6	1.15	69.69	3.60	15	12.7	8.3	4.3	0.72	7.73
55324-5	87248 A	2.67	59.0	1.08	63.72	4.17	20	13.5	9.1	4.7	0.62	8.05
55324-6	87252 A	2.51	59.6	1.00	59.60	4.20	20	14.4	9.7	5.0	0.61	8.19
55324-7	87254 A	2.59	59.9	1.24	74.28	3.48	14	12.0	7.8	4.0	0.74	7.55
55324-8	87255 A	2.42	59.0	1.25	73.75	3.28	12	12.2	7.8	4.1	0.79	7.62
55324-9	87258 A	2.65	63.3	0.81	51.27	5.19	31	16.2	11.4	5.9	0.50	8.78
55324-10	87260 A	2.57	57.5	1.09	62.68	4.12	19	13.9	9.3	4.8	0.63	8.04
55324-11	87261 A	2.60	61.8	0.89	55.00	4.74	26	15.4	10.9	5.5	0.55	8.48

SMC Parameters:

A = maximum breakage
b = relation between energy and impact breakage
A x b = overall AG-SAG hardness
Dwi = drop weight index
Mia – coarse particle component
Mic = crusher component
Mih = high-pressure grinding roll component
SCSE = SAG circuit specific energy
sg = specific gravity of sample
ta = low energy abrasion component of breakage

The eleven composites were subjected to the modified SMC Test at Hazen to generate data for SAG mill comminution parameters and crushing index (M_{ic}) by JKTech (Stepperud, (2020). The 2020 SMC Test® results for the 11 samples are given in Table 13-7. This table includes the average rock specific gravity, A x b (a measure of resistance to impact breakage) and drop-weight index (Dwi) values that are the direct result of the SMC Test® procedure. The values determined for the M_{ia}, M_{ih} and M_{ic} parameters, and the definitions provided by SMCT, are also presented in Table 13-7.

The DW_i ranged from 3.14 kWh/m^3 to 5.19 kWh/m^3, indicating soft materials, by comparing with the Dwi% column, which ranks the samples in terms of energy required in the SMC worldwide database, 0% being the lowest and 100% being the highest.

M_{ic} (kWh/t) is the SMC crusher component energy required and is used to assist in design and selection of conventional crushing circuits. The Black Pine samples tested can be considered amenable to conventional, multi-stage crushing and screening circuit design. M_{ic}, the SMC crusher component value, with an average of 4.7 kWh/t, would be ranked in the lower mid-range of the SMC worldwide database.

13.4.8 Load Permeability Test Work on Column Tailings

A portion of tailings material from each column-leach test was utilized for load permeability test work. The purpose of the load permeability test work was to examine the permeability of the crushed material under compaction loading equivalent to heap heights of 25 m, 50 m, 75 m, and 100 m.

The test cell utilized for modelling the permeability of stacked material, at various heap heights, was a steel column or cell. Staged axial (vertical) loading of the test material was utilized to simulate the incrementally increased pressure obtained when loading the heap. Drainage layers were installed at the top and at the base of the column. External load was applied to the charge of material in the column utilizing a perforated steel plate that moved freely within the walls of the column. A detailed description of the load permeability equipment, test procedure, and evaluation criteria is given in KCA (2020).

All 29 columns were tested by KCA. Twelve of the columns failed at loading heights between 50 m and 100 m. Only one of the 12 columns was agglomerated with cement (BP67-2). Review of the column residue screen analysis show that 15 of the columns contained >15% of 75 µm (200 mesh) fines in the column feed. Of these 15 columns, 10 failed load permeability testing (Figure 13-9).

It is recommended that future column-leach test programs include additional agglomeration testing and evaluation to devise methods to identify material types that will require ROM blending and/or crushing/agglomeration, before being placed on a heap leach pad. One approach may be to consider that materials containing <15% of 200 mesh fines are suitable for ROM blending on the leach pad, whereas materials containing >15% of 200 mesh fines may require crushing and agglomeration prior to being placed on the pad for leaching.

KCA Sample No.	Comp ID	Test No	Pilot Gold Geology		Feed Size				
			Structure	F-Form	Target P80 (µm)	Screen P80 (µm)	% - 200M	Load Perm Tests	Cement kg/t
2019 Variability Core Composites									
87234A	BP67-1	87278	Fz>Bx	Pola	37,500	23,140	16.5	Fail 75m	0.0
87235A	BP67-2	87281	Fz>Bx	Polb	37,500	13,780	32.2	Fail 50m	4.0
87236A	BP67-3	87284	Bx>Fz	Polc	37,500	24,500	5.6	Pass	0.0
87237A	BP67-4	87287	Fz>Bx	Polc	37,500	23,160	16.6	Pass	0.0
87238A	BP67-5	87290	Fz	Polc	37,500	24,780	20.1	Fail 100m	0.0
87239A	BP67-6	88101	Fz,Bx	Polc	37,500	25,190	6.5	Pass	0.0
87240A	BP73-7	88104	FZ/Bx	Polb,FZ	37,500	22,760	24.5	Pass	0.0
87241A	BP73-8	88107	Bx	Polb	19,000	12,400	14.0	Pass	0.0
87242A	BP73-9	88110	Fz	Polb	19,000	11,110	21.9	Pass	0.0
87243A	BP73-10	88113	Bx,Fz	Polc	37,500	23,280	11.0	Pass	0.0
87244A	BP73-11	88116	0	Polc	19,000	12,360	5.2	Pass	0.0
87245A	BP78-12	88119	Fz	Polb	37,500	20,490	15.7	Fail 100m	0.0
87246A	BP78-13	88112	0	Polc	37,500	26,010	1.5	Pass	0.0
87247A	BP78-14	88125	Bx	Pold	37,500	23,900	4.2	Pass	0.0
87248A	BP78-15	88128	Bx	Pold	19,000	11,830	8.2	Fail 100m	0.0
87249A	BP82-16	88131	Fz,Bx	Pola	19,000	12,190	17.2	Pass	0.0
87250A	BP82-17	88134	Fz	Pola	19,000	12,240	19.6	Fail 50m	0.0
87251A	BP82-18	88137	Fz	Fz/Pola	37,500	24,390	24.9	Fail 50m	0.0
87252A	BP82-19	88140	Fz	Polb	37,500	23,660	15.6	Pass	0.0
87253A	BP82-20	88143	0	Polc	37,500	23,720	8.9	Pass	0.0
87254A	BP82-21	88146	Fz=Bx	Polc	37,500	25,190	19.0	Fail 100m	0.0
87255A	BP87-22	88149	Fz,Bx	Pola	19,000	14,310	19.3	Fail 50M	0.0
87256A	BP87-23	88152	Fz	Polb	37,500	23,940	13.4	Fail 75m	0.0
87257A	BP87-24	88155	Fz	Polb	19,000	10,570	27.2	Fail 75m	0.0
87258A	BP87-25	88158	Fz>Bx	Polc	37,500	25,650	6.2	Psss	0.0
87259A	BP93-26	88161	Fz	PPos,FZ	37,500	24,340	14.6	Pass	0.0
87260A	BP93-27	88164	Bx=Fz	PPos	37,500	22,970	13.2	Pass	0.0
87261A	BP93-28	88167	Bx=Fz	Pola	37,500	22,560	20.5	Fail 75	0.0
87262A	BP93-29	88170	Bx	Pola	37,500	25,370	8.7	Pass	0.0

Source: GL Simmons Consulting LLC 2020, published in Gustin et al 2021

Note. Magenta color – correlation between % -200 Mesh and Load Permeability Pass/Fail Test Results

Figure 13-9: Black Pine: % -200 Mesh vs. Pass/Fail Load Permeability Testing

13.5 Mineralogy

Five column feed samples were selected for gold deportment mineralogy study and shipped to AMTEL in London, Ontario, Canada, including one sample from the Liberty Gold bulk sample program (I Pit) and four from the Phase 1 Variability testing program (BP73-7, BP73-10, BP78-12, and BP87-25) (AMTEL 2020). Select head assays for the five Black Pine mineralogy samples are provided in Table 13-8.

Table 13-8: Select Head Assays for Black Pine Mineralogy Samples
Liberty Gold Corp. – Black Pine Project

Sample ID	g Au/t		Fe (%)		TOC (%)		Stot (%)	S_{SO4} (%)	Ctot (%)
	Independent	Site	Independent	Site	Independent	Site			
BP73-7	0.264 ±0.004	0.23	1.4	1.2	0.08	0.05-0.08	0.02	<0.01	4.8
BP73-10	2.012 ±0.028	2.47	1.5	1.6	0.05	0.04-0.08	0.02	<0.01	7.4
BP78-12	0.789 ±0.009	0.83	2.6	2.7	0.03	0.04-0.04	0.035	<0.01	2.8
BP87-25	1.290 ±0.013	1.33	1.1	0.9	0.02	0.00-0.04	0.04	0.02	5.8
I Pit	2.070 ±0.020	2.55	0.2	0.6	0.01[1]	0.06 –nd	0.015	<0.01	10.8

Notes:

1. Independent assays by ALS Laboratories, Vancouver, Canada
2. Gold represents the average of triplicate 30g fire assays –AAS finish
3. Fe is the average of ICP & XRF assays
4. TOC independent method C-IR06a; comparable to site's upper range.

The I Pit sample was selected due to its high gold grade and lower gold extraction than all other higher-grade samples. The other four composite samples were selected based upon their variability in gold grade, clay, and organic carbon content (potential for preg-robbing).

13.5.1 Mineralogy Summary

Five samples were received for gold deportment analysis. The samples are oxide composites showing variable gold extractions. The scope of the examination was to identify and quantify all gold forms/carriers in order to understand the factor(s) limiting gold recovery.

The samples were received coarsely crushed and were milled to P_{80} of approximately 100 µm for analysis. Selected assays of the samples are given in Table 13-8. They compare well generally with site assays, except the gold grades for BP73-10 and I Pit samples that are approximately 20% lower than site. TOC assays are somewhat variable; grade discrepancies are attributed to low TOC content close to the method's detection limit.

General Mineralogy

- In all five samples the principal rock minerals are: quartz, carbonates, and clays/mica. The abundance of these minerals is highly variable in the five samples.
- Carbonates are calcite and dolomite with no iron content.
- Clay/mica minerals are essentially illite/muscovite with lesser kaolinite and very minor biotite. No other clay minerals are present.
- Iron is mostly as oxide/oxyhydroxide minerals such as hematite and goethite. Combined they are termed FeOx. The FeOx content of the samples ranges from 0.2-3.4wt%.
- FeOx is present as massive particles, generally free, and fine-grained particles disseminated in rock. Disseminated FeOx is preferentially found with quartz/clay particles and lesser carbonates.
- Sulphide minerals are very insignificant, consisting of trace pyrite and very rare chalcopyrite and covellite. The latter is too rare to impact cyanide consumption.

13.5.2 Gold Occurrence:

Gold grains:

- Are free milling gold particles >0.5 µm; and
- Are readily cyanidable; recovery is controlled by exposure versus locking in rock.

Colloidal-gold particulates:

- Are particulates <0.5 µm; they formed during weathering by coalescing gold atoms originally in solid solution form in pyrite.
- Colloidal particulates are associated with the FeOx or in their near vicinity in rock.
- Colloidal gold is cyanidable. Recovery is ultimately controlled by exposure from rock.

13.5.3 Gold Deportment:

13.5.3.1 Exposed Gold:

At P_{80} of 90-100 µm, 46% to 87.5% of the gold is exposed and cyanidable. The least exposed gold is in BP73-7 and the most in BP73-10 and BP87-25. Exposed gold is in the form of

- Free gold grains characterized by:
  - Contribute 37-51% of the head grade of the five ores.
  - Composition: gold grains are gold-silver alloys with generally low silver content. The average silver content of gold particles is 7 wt% in BP73-7 and 2-3 wt% in the other four samples.
  - Grain size: gold grains are predominantly very small, generally <10 µm. Gold grains >10 µm are in quantifiable quantity in BP87-25 and the I Pit sample.
- Attached colloidal particulates and gold grains:
  - Attached gold contributes 9% to 44% of the head grades of the five samples; the least in BP73-7.
  - With the exception of I Pit, in the other four samples most of the attached gold is contributed by colloidal particulates with the FeOx. In the I Pit sample, gold is also associated with rock.

13.5.3.2 Enclosed Gold:

- Enclosed gold is mostly in the form of tiny gold grains not yet liberated.
- With the exception of the I Pit sample, enclosed gold is minor, carrying 0.02-0.08 g Au/t. In the I Pit sample, enclosed gold is substantial, representing approximately 0.3 g Au/t or 13% of the head grade.
- In the I Pit ore, the quantity of enclosed gold is a function of the grind fineness. With finer grinding, enclosed gold is reduced, gradually liberating from carbonates and largely liberated from quartz at grinds finer than 45 µm.

13.5.3.3 Refractory Gold:

- Ranges from 9% to 49% of the gold in the ores examined.

- Refractory gold comprises colloidal gold particulates that are not cyanidable even after ultra-fine grinding. These are the tiniest colloidal particulates and are associated with the smallest and most disseminated FeOx.

13.5.3.4 Gold Preg-robbing by C-matter:

- C-matter occurs as very tiny 'specks' disseminated in quartz which liberate in the slimes. The tiny C-matter has high surface area, hence increased capacity to preg-robbing gold.
- To determine C-matter ability to preg-rob gold an independent CN test with and without gold spike was performed and, when possible, C-matter was picked for direct analysis.
- It was determined that:
    - AMTEL's spike test compares closely with KCA's under similar gold spiking concentration.
    - C-matter from all five ores is preg-robbing. Even a very small TOC content causes measurable preg-robbing.
    - CIL reduced preg-robbing but it did not prevent it entirely.

13.5.3.5 Gold Preg-borrowing by Clays:

- To determine the ability of clay to preg-borrow gold, a clay-rich fraction was separated from the slimes (<10 µm). The clay fraction was measured by TOF-RIMS after contact with gold in solution, and in the absence and presence of free cyanide and activated carbon.
- It was determined that clays are minor preg-borrowers. They release the gold when free cyanide is present. In CIL, clays do not preg-borrow gold.

The relative contributions of the different modes of occurrence of gold to each sample is illustrated graphically in Figure 13-10.

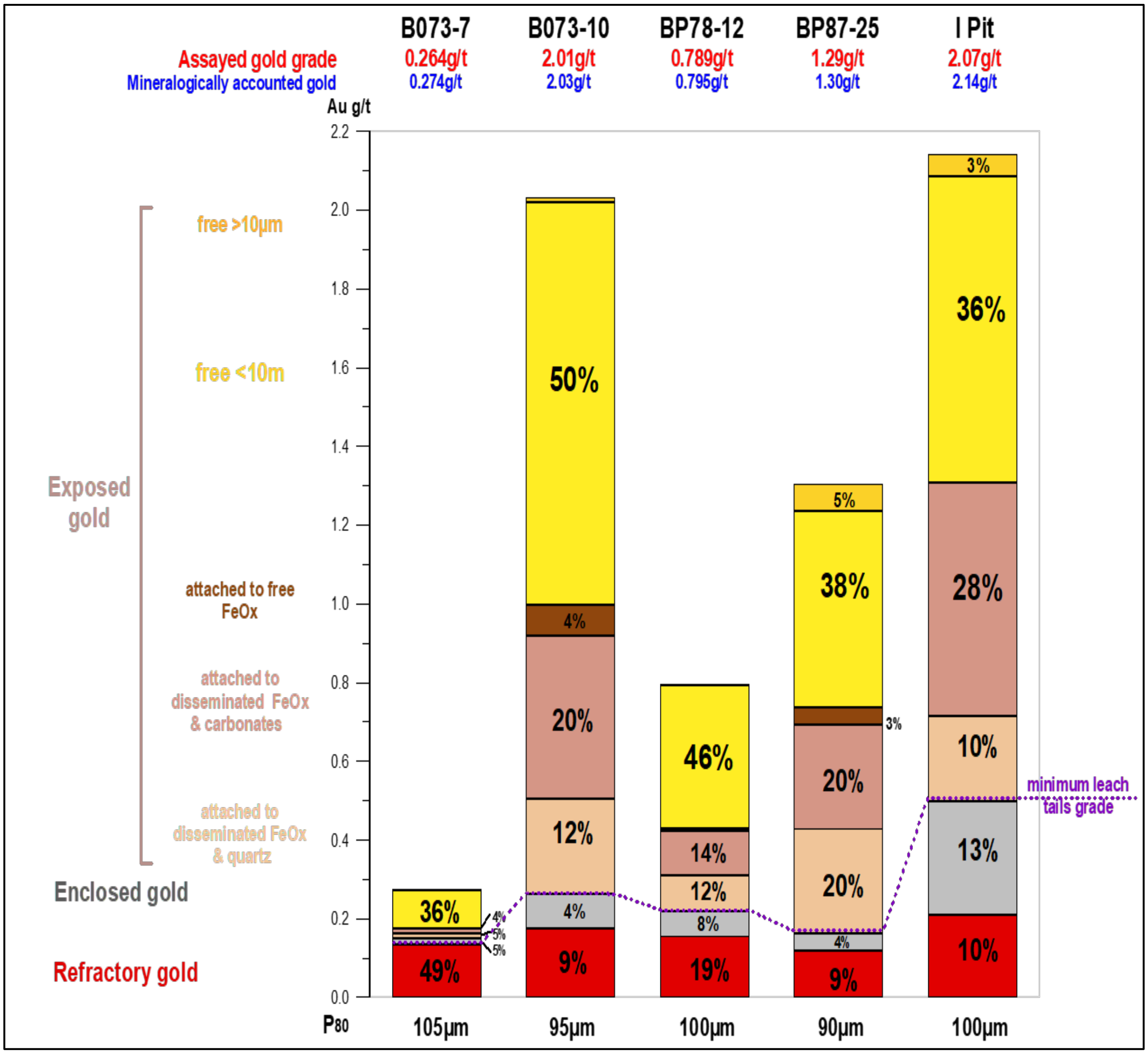


Figure 13-10: Gold Deportment from a Leach Perspective

13.5.4 AMTEL Mineralogy Conclusions

- Gold is present as tiny gold grains and even smaller colloidal particulates. The small size of gold grains and colloidal particulates contributes to fast leach kinetics.
- Gold grains are generally free. Colloidal gold particulates are largely associated with FeOx, especially the fine-grained disseminated type.
- Gold liberation as a function of grind fineness is not an issue except for with respect to the I Pit sample. KCA test work for the four other samples determined only minor improvement in recovery by crushing from 10 mesh down to 200 mesh.
- Material refractoriness is the main factor limiting gold extraction. Refractoriness is attributed to very small colloidal gold particles carried by the highly disseminated FeOx in quartz (formerly disseminated pyrite deposited during silicification events).

- An attempt to determine if increased FeOx dissemination/material refractoriness correlates with the silica content or silica/alumina ratio in the material was unsuccessful.
- No other mineralogical indicators were identified to use as predictive tools for the lower-extraction samples. Samples' location within the geological domains may be more telling.
- C-matter affinity to preg-rob gold is an added problem. C-matter from all five samples showed preg-robbing capabilities. Under CIL conditions preg-robbing is reduced but not entirely eliminated. The TOC content of other future materials should be monitored.
- Gold preg-borrowing by clays is not an issue under CIL conditions.
- Predicted vs. achieved gold extraction in bottle-roll tests is tabulated below in Table 13-9. CIL test work performed at KCA is very well optimized, with the limitation of some preg-robbing taking place in cyanide leach bottle-roll tests.

Table 13-9: Predicted vs. Achieved Gold Extraction
Liberty Gold Corp. – Black Pine Project

	Predicted Extraction @ P_{80} of 100µm		KCA Attained Extraction @ P_{80} of 75µm	
	CIL Tails	Recovery	CN	CIL
BP73-7	0.148	45.9	29.5	42.1
BP73-10	0.261	87.2	82.3	87.4
BP78-12	0.218	72.6	71.7	74.2
BP87-25	0.163	87.5	83.8	85.8
I Pit	0.496	76.8	74.8	79.3

13.6 2021 Phase 2 Variability Testing

In February 2021 Liberty Gold delivered 45 individual Black Pine variability composites from ten large diameter PQ core holes to KCA for geo-metallurgical characterization, bottle-roll and column leach testing. All preparation, assaying, and metallurgical studies were performed utilizing accepted industry standard procedures, the same as used for Phase 1, and are documented in KCA-2022a Final Report. The variability composites represent resource materials from Discovery Zone 1, Discovery Zone 2, Discovery Zone 3, C/D Pit, E-Pit and F-Zone. The large diameter metallurgical core hole collar locations are shown on Figure 13-3-3.

Splits of all 45 composite heads were delivered to three separate laboratories for additional geo-metallurgical and environmental characterization analysis:

1. ALS for ICP and gold cyanide solubility analysis,
2. FLS for "XRD" and "Whole Rock" analysis and
3. WETLAB for environmental characterization of solids and aqueous solutions.

The Phase 2 - 2021 metallurgical PQ core drilling program was designed to fill major resource gaps that were minimally sampled in Phase 1.

13.6.1 2022 Black Pine Variability Composite Head Assays

Head assay details and geo-metallurgical characterization results are in the KCA 2022a report. A high-level summary of the geo-metallurgical characterization is presented below for gold, silver, copper, gold cyanide solubility, carbon and sulfur species, preg-robb analysis, as well as ICP multi-element analyses, whole-rock analyses, and QXRD analyses. Select composite summary results for gold, silver, copper, carbon and sulfur speciation, and preg-robb analysis, are detailed in Table 13-4:

- Gold grades ranged from 0.21 ppm to 5.54 ppm and averaged 1.25 ppm.
- Silver grades ranged from 0.34 ppm to 7.3 ppm and averaged 2.1 ppm.
- Organic carbon ranged from <0.01% to 0.32% and averaged 0.10%.
- Sulfide sulfur ranged from <0.01% to 0.04% and averaged <0.01%.
- Preg-robbing analyses ranged from 0.0% to 56.4% and averaged 3.9% (using a 1 ppm spike). Preg-robbing values <10% are considered within the error band of the test procedure and are classified as non-preg-robbing by KCA. Only three composites (BP207-47, BP222-58 and BP231-65) were >10%.
- Copper values were very low, ranging from 2 ppm to 60 ppm and averaged 25 ppm.
- Gold cyanide solubility ranged from 24.3% to 95.8% and averaged 71.6%. Note: A number of composites are considered to be transitional and sulfide in nature and were tested to help determine the limit of cyanide solubility that can economically be placed on a heap leach.
- Concentrations of the deleterious elements were: selenium averaged 13 ppm; mercury ranged from 1.9 ppm to 24.2 ppm with an average 6.9 ppm; and arsenic levels were low, ranging from 9 ppm to 222 ppm with an average of 95 ppm.
- Concentrations of the primary cyanide consumers were low and suggest minimum potential for affecting cyanide consumption rates. Copper averaged 25 ppm, nickel averaged 50 ppm, and zinc averaged 161 ppm.
- Whole-rock quartz content ranged from 14.7% to 80.6% and averaged 39.8%.

Table 13-10: 2021 Black Pine Variability Composite Head Assays by KCA and ALS
Liberty Gold Corp. – Black Pine Project

KCA Sample No.	Composite ID	Head Assays																	
		ALS		KCA															
		AuFA (ppm)	AuCN (ppm)	AuCN (%)	AgFA (ppm)	AgCN (ppm)	AgCN (%)	Cu (ppm)	CuCN (ppm)	CuCN %	C(tot) (%)	C(org) %	C(inorg) (%)	S(total) %	S(sulfide) %	S(sulfate) %	Au-w/spike	Au-w/o spike	Au PR (%)
88826 A	BP190-30	0.213	0.120	56.5	2.40	1.080	45.0	30	6.28	20.9	3.46	0.23	3.23	0.01	<0.01	0.01	0.060	0.99	7.9
88827 A	BP190-31	0.463	0.240	51.9	2.40	0.520	21.7	28	4.76	17.0	5.99	0.11	5.88	0.02	<0.01	0.02	0.120	1.09	4.0
88828 A	BP190-32	0.614	0.540	88.0	1.65	0.480	29.2	38	6.04	15.9	6.54	0.06	6.48	0.04	<0.01	0.04	0.270	1.31	0.0
88829 A	BP190-33	0.487	0.360	73.9	2.30	0.540	23.5	38	6.00	15.8	5.69	0.12	5.57	0.02	<0.01	0.02	0.180	1.21	0.0
88830 A	BP190-34	0.727	0.440	60.5	1.51	0.480	31.8	7	2.24	32.0	7.57	0.11	7.46	0.04	<0.01	0.04	0.220	1.21	2.0
88831 A	BP190-35	0.360	0.320	88.9	2.78	0.640	23.0	13	4.84	37.2	8.15	0.02	8.13	0.05	<0.01	0.05	0.160	1.19	0.0
88832 A	BP190-36	3.233	3.020	93.4	2.98	1.340	44.9	15	3.48	23.2	5.87	0.10	5.77	0.05	<0.01	0.05	1.510	2.71	0.0
88833 A	BP197-37	1.406	0.760	54.1	0.96	0.360	37.5	2	1.44	72.0	9.36	0.13	9.23	0.03	<0.01	0.02	0.380	1.29	9.9
88834 A	BP197-38	0.396	0.320	80.8	1.03	0.240	23.3	3	1.86	62.0	8.85	0.07	8.78	0.02	<0.01	0.02	0.160	1.15	2.0
88835 A	BP197-39	0.662	0.620	93.7	1.89	0.420	22.3	14	2.56	18.3	6.96	0.07	6.89	0.04	<0.01	0.04	0.310	1.38	0.0
88836 A	BP197-40	2.019	1.700	84.2	1.47	0.280	19.0	12	3.90	32.5	6.69	0.09	6.60	0.01	<0.01	0.01	0.850	1.98	0.0
88837 A	BP197-41	0.530	0.440	83.1	1.20	0.240	20.0	7	3.36	48.0	8.07	0.07	8.00	0.01	<0.01	0.01	0.220	1.23	0.0
88838 A	BP197-42	1.203	1.040	86.4	2.13	0.560	26.3	32	8.52	26.6	3.70	0.08	3.62	0.01	<0.01	0.01	0.520	1.59	0.0
88839 A	BP197-43	0.432	0.240	55.6	0.79	0.160	20.3	15	1.86	12.4	5.73	0.06	5.67	0.03	<0.01	0.03	0.120	1.08	5.0
88840 A	BP207-44	0.247	0.180	72.9	2.13	0.900	42.3	9	2.18	24.2	9.08	0.04	9.04	0.04	<0.01	0.04	0.090	1.10	0.0
88841 A	BP207-45	1.392	0.940	67.5	6.17	3.320	53.8	26	3.58	13.8	4.18	0.06	4.12	0.03	<0.01	0.03	0.470	1.48	0.0
88842 A	BP207-46	0.885	0.440	49.7	1.95	0.860	44.0	23	3.28	14.3	5.35	0.11	5.24	0.02	<0.01	0.02	0.220	1.16	6.9
88843 A	BP207-47	2.657	0.660	24.8	2.78	1.060	38.2	15	5.04	33.6	7.04	0.26	6.78	0.04	<0.01	0.04	0.330	0.77	56.4

KCA Sample No.	Composite ID	Head Assays																	
		ALS						KCA											
		AuFA (ppm)	AuCN (ppm)	AuCN (%)	AgFA (ppm)	AgCN (ppm)	AgCN (%)	Cu (ppm)	CuCN (ppm)	CuCN %	C(tot) (%)	C(org) %	C(inorg) (%)	$S_{(total)}$ %	$S_{(sulfide)}$ %	$S_{(sulfate)}$ %	Au-w/spike	Au-w/o spike	Au PR (%)
88844 A	BP207-48	4.173	3.280	78.6	2.57	0.760	29.6	13	2.00	15.4	6.66	0.09	6.57	0.02	<0.01	0.02	1.640	2.71	0.0
88845 A	BP207-49	1.358	1.000	73.7	1.92	0.520	27.1	26	1.70	6.5	6.43	0.23	6.20	0.03	<0.01	0.03	0.500	1.54	0.0
88846 A	BP214-50	0.295	0.200	67.8	1.61	0.760	47.2	30	4.30	14.3	7.11	0.04	7.07	0.06	<0.01	0.06	0.100	1.11	0.0
88847 A	BP214-51	0.298	0.260	87.2	3.50	1.180	33.7	60	5.90	9.8	0.04	0.04	<0.01	0.04	<0.01	0.04	0.130	1.17	0.0
88848 A	BP214-52	0.970	0.500	51.5	1.71	0.840	49.0	41	3.44	8.4	4.74	0.17	4.57	0.03	<0.01	0.03	0.250	1.20	5.0
88849 A	BP214-53	1.155	0.460	39.8	2.19	0.380	17.3	25	5.04	20.2	8.46	0.16	8.30	0.02	<0.01	0.02	0.230	1.26	0.0
88850 A	BP214-54	5.541	5.060	91.3	3.05	1.300	42.6	42	3.92	9.3	3.57	0.32	3.25	0.06	<0.01	0.06	2.530	3.73	0.0
88851 A	BP214-55	3.854	3.540	91.9	7.27	5.560	76.5	74	8.58	11.6	2.83	0.12	2.71	0.27	0.02	0.25	1.770	2.94	0.0
88852 A	BP214-56	2.229	1.580	70.9	3.05	1.940	63.6	36	8.54	23.7	4.15	0.09	4.06	0.26	0.04	0.22	0.790	1.84	0.0
88853 A	BP222-57	0.470	0.380	80.9	0.51	0.300	58.3	33	3.30	10.0	6.50	0.01	6.49	0.03	<0.01	0.03	0.190	1.21	0.0
88854 A	BP222-58	0.261	0.100	38.4	0.69	0.200	29.2	19	2.52	13.3	8.70	0.17	8.53	0.02	<0.01	0.02	0.050	0.88	17.0
88855 A	BP222-59	0.298	0.140	46.9	1.34	0.500	37.4	29	5.56	19.2	7.49	0.09	7.40	0.04	<0.01	0.04	0.070	0.99	8.0
88856 A	BP222-60	0.645	0.340	52.7	1.01	0.240	23.7	22	2.26	10.3	6.88	0.06	6.82	0.02	<0.01	0.02	0.170	1.11	6.0
88857 A	BP222-61	3.727	3.200	85.9	4.01	1.500	37.4	41	6.24	15.2	7.19	0.18	7.01	0.07	<0.01	0.07	1.600	2.89	0.0
88858 A	BP222-62	1.872	1.440	76.9	1.82	0.560	30.8	58	5.34	9.2	7.63	0.11	7.52	0.02	<0.01	0.02	0.720	1.82	0.0
88859 A	BP222-63	0.432	0.320	74.1	1.61	0.680	42.2	29	2.34	8.1	6.71	0.09	6.62	0.05	<0.01	0.05	0.160	1.18	0.0
88860 A	BP231-64	0.254	0.120	47.3	0.99	0.320	32.2	13	1.60	12.3	11.00	0.10	10.90	0.05	0.01	0.04	0.060	0.98	8.0
88861 A	BP231-65	0.329	0.080	24.3	0.34	0.160	46.7	14	3.56	25.4	9.73	0.12	9.61	0.01	<0.01	0.01	0.040	0.84	20.0
88862 A	BP231-66	0.710	0.520	73.3	2.19	0.480	21.9	41	5.64	13.8	3.99	0.10	3.89	0.03	<0.01	0.03	0.260	1.26	0.0
88863 A	BP231-67	0.669	0.540	80.8	1.27	0.460	36.3	24	1.52	6.3	7.34	0.04	7.30	0.04	<0.01	0.04	0.270	1.31	0.0
88864 A	BP231-68	2.623	2.440	93.0	2.95	0.680	23.1	38	4.52	11.9	1.90	0.06	1.84	0.01	<0.01	0.01	1.220	2.35	0.0

KCA Sample No.	Composite ID	Head Assays																	
		ALS						KCA											
		AuFA (ppm)	AuCN (ppm)	AuCN (%)	AgFA (ppm)	AgCN (ppm)	AgCN (%)	Cu (ppm)	CuCN (ppm)	CuCN %	C(tot) (%)	C(org) %	C(inorg) (%)	$S_{(total)}$ %	$S_{(sulfide)}$ %	$S_{(sulfate)}$ %	Au-w/spike	Au-w/o spike	Au PR (%)
90915 A	BP242-69	1.186	1.080	91.1	2.63	0.760	28.9	36	4.10	11.4	3.94	<0.01	3.94	0.04	<0.01	0.04	0.540	1.56	0.0
90916 A	BP242-70	3.200	3.020	94.4	2.94	0.780	26.6	14	3.68	26.3	5.16	<0.01	5.16	0.03	<0.01	0.03	1.510	2.67	0.0
90917 A	BP247-71	0.299	0.260	87.0	2.01	0.900	44.7	10	2.60	26.0	3.17	0.05	3.12	0.03	<0.01	0.03	0.130	1.09	4.0
90918 A	BP247-72	0.441	0.340	77.1	2.01	0.480	23.9	23	8.06	35.0	7.23	0.01	7.22	0.03	<0.01	0.03	0.170	1.09	8.0
90919 A	BP251-73	0.616	0.520	84.4	1.29	0.120	9.3	7	5.34	76.3	8.12	<0.01	8.12	0.12	<0.01	0.12	0.260	1.25	1.0
90920 A	BP251-74	0.383	0.367	95.8	1.06	0.160	15.1	2	5.96	N/A	9.39	0.07	9.32	0.03	<0.01	0.03	0.183	1.16	2.7

13.6.2 Acid-Base Accounting

A portion of the pulverized head material for each individual sample was submitted to WETLAB for ABA testing. ABA is a static test to determine the acid producing or acid neutralizing potential of a material. It is a general analysis for the elements of acid generation and does not indicate the potential rate at which generation or neutralization may occur.

It is generally accepted that an NNP value greater than 20 is indicative of a non-acid producing material (acid neutralizing material), and that an NNP value less than -20 is an acid generating material. All of the 29 Black Pine metallurgical composites tested had NNP values >20 and are therefore considered to be non-acid producing.

13.6.3 **Bottle-**Roll and Column Leach Testing

Coarse and fine milled bottle-roll leach tests were completed on each of the 45 composites. A split of the head material, for each composite, was subjected to bottle-roll testing at target P_{80} sizes of 75 µm and 1,700 µm, and to column-leach testing at target P80's of 12.5 mm or 25.0 mm crush sizes (Table 13-5). A second series of CIL bottle-roll tests were conducted at the 75µm feed size to evaluate the potential for preg-borrowing clays and/or preg-robbing organic carbon. The main objective of these tests was to evaluate the laboratory-scale leachability character of the Black Pine resources in terms of gold extraction, extraction rate, reagent consumption, and sensitivity to feed size.

Table 13-11: Summary Black Pine Phase 2 Bottle-Roll and Column Leach Tests
Liberty Gold Corp. – Black Pine Project

Bottle-Rolls			Columns	
75 µm	75 µm (CIL)	1,700 µm	12.5 mm	25 mm
n = 45	n = 45	n = 45	n = 24	n = 21

The bottle-roll testing used standard procedures that are described in the final laboratory report (KCA 2022a), using 144 hours of retention time for 1,700 µm tests, and 72 hours for 75 µm direct leach and CIL tests.

Column-leach tests were conducted utilizing material crushed to their target P_{80}'s and placed in columns of 10 cm and 15 cm diameters. During testing the material was leached between 82-99 days with a dilute NaCN solution. After leaching, each column was washed/rinsed for four days with water. A portion of the leached and washed material ("tailings") from each column was assayed for "tail screen" analyses by size fraction.

Tailings material from 39 columns was utilized for compacted permeability test work. Additionally, tailings material from 16 columns was submitted to WETLAB in Sparks, Nevada, for ABA and MWMT.

The following is a summary of the findings from the KCA (2022a) report on bottle-roll and column test results.

13.6.4 Direct Leach and CIL Bottle-Roll Tests on 75 µm Composite Samples

Fine milled bottle-roll leach tests were completed on each of the 45 variability composites. The milled slurry was utilized for direct bottle-roll leach testing and CIL bottle-roll testing. The bottle-roll test procedures and results are described in detail in KCA 2022a.

- The direct leach gold head grades for the composites ranged from 0.22 ppm to 4.95 ppm gold, with an average of 1.25 ppm. Gold extraction from this material ranged from 32.6% to 93.9%, with a weight average of 80.1%.
- The CIL leach gold head grades for the composites ranged from 0.24 ppm to 5.77 ppm gold, with an average of 1.32 ppm. Gold extraction from this material ranged from 59.3% to 94.0%, with a weight average of 85.4%.
- Cyanide consumption for the direct leach bottle-roll tests averaged 0.12 kg/t and lime consumption averaged 0.52 kg/t; and
- Cyanide consumption for the CIL bottle-roll tests averaged 0.74 kg/t and lime consumption averaged 0.51 kg/t.

13.6.5 Direct Leach Coarse Bottle-Roll Tests on 1,700 µm Composite Samples

Coarse bottle-roll leach tests were completed on each of the 45 composites. The coarse bottle-roll test procedure and results are described in detail in KCA 2020b.

- Gold head grades for the composites ranged from 0.22 ppm to 5.51 ppm gold and averaged 1.24 ppm. Gold extraction ranged from 28.2% to 94.3%, with a weight average of 78.8%.

13.6.6 Column-Leach Tests on Composite Samples

All 45 composites were subjected to laboratory column-leach testing at KCA. Twenty-four columns were tested at a target P_{80} = 12.5 mm and 21 composites at a target P_{80} = 25 mm. Column test procedures are described in detail in KCA 2022a. Column test gold and silver extractions are based upon loaded carbon assays and tails screen assays and are located in Figure 13-11.

- Calculated gold head grades ranged from 0.183 ppm to 5.86 ppm and averaged 1.24 ppm. Gold extractions ranged from 44.5% to 94.8%, with a weight average of 80.8%.
- Calculated silver head grades ranged from 0.32 ppm to 6.84 ppm and averaged 1.9 ppm. Silver extractions ranged from 3.5% to 71.1%, with a weight average of 26.6%.
- Cyanide consumptions ranged from 0.55 kg/t to 1.13 kg/t and averaged 0.78 kg/t. Based upon KCA's experience with clean non-reactive ores, cyanide consumption in commercial production heaps would range between 25% to 33% of the laboratory column test consumptions.
- Lime consumption ranged from 0.00 kg/t to 1.04 kg/t and averaged 0.91 kg/t. Four columns (BP190-36, BP214-51, BP-231-66, and BP247-71) were agglomerated with 4.0, 4.5, 5.9 and 2.0 kg/t cement respectively and did not require any lime.

Gold extraction plotted versus days under leach is shown graphically in Figure 13-12 and are based upon column solution balances.

KCA Sample No.	Comp ID	Test No	Pilot Gold Geology		Feed Size					NaCN (g/l)	Leach Time (days)	Au Balance		Ag Balance		Reagents		
			Structure	F-Form	Target P80 (µm)	Screen P80 (µm)	% - 200M	Load Perm Tests	Cement kg/t			Au Ext %	Calc Hd Au (ppm)	Ag Ext %	Calc Hd Ag (ppm)	NaCN kg/t	Lime kg/t	Cement kg/t
88826 A	BP190-30	88876	Msv	Pola	12,500	11,300	13.6	Pass		0.5	99d	**47.4**	0.211	**29.0**	2.86	1.11	1.01	
88827 A	BP190-31	88879	Mix	Pola	25,000	24,000	3.2	Pass		0.5	99d	**70.5**	0.400	**11.5**	1.88	0.66	0.84	
88828 A	BP190-32	88882	Bx,Msv	Pola	12,500	12,600	5.0	Pass		0.5	99d	**82.7**	0.660	**14.5**	1.79	0.89	1.00	
88829 A	BP190-33	88885	Mix	Polb	12,500	12,500	14.3	Pass		0.5	99d	**89.0**	0.463	**24.1**	2.12	1.09	1.01	
88830 A	BP190-34	88888	Msv,Bx	Polc	25,000	23,800	3.0	Pass		0.5	99d	**78.5**	0.763	**16.3**	1.47	0.71	1.01	
88831 A	BP190-35	90701	CaBx,Bx,Fz	Polc	25,000	23,900	5.4	Pass		0.5	99d	**80.9**	0.383	**32.4**	0.82	0.74	1.00	
88832 A	BP190-36	90704	Mix	Polc	12,500	10,900	16.2	Pass/close	4.0	0.5	98d	**87.0**	3.987	**38.3**	1.75	0.78	0.00	4.0
88833 A	BP197-37	90707	Mc,Msv	Pold	25,000	27,900	1.0	Pass		0.5	98d	**78.4**	1.308	**13.0**	1.15	0.59	1.00	
88834 A	BP197-38	90710	Mc,>Bx	Pold	25,000	24,500	1.8	Pass		0.5	98d	**76.7**	0.236	**8.6**	0.99	0.56	1.01	
88835 A	BP197-39	90713	Bx,Fz	Pold	25,000	22,500	8.1	Pass		0.5	98d	**85.3**	0.688	**14.0**	1.43	0.69	1.01	
88836 A	BP197-40	90716	Bx=Fz,Mc	Pols	12,500	13,700	8.2	Pass		0.5	98d	**88.9**	2.012	**10.2**	1.18	0.90	1.00	
88837 A	BP197-41	90719	Bx=Mc	Pols	25,000	24,200	2.3	Pass		0.5	98d	**72.7**	0.509	**5.3**	0.86	0.64	0.95	
88838 A	BP197-42	90722	Msv	Pols	12,500	11,800	5.8	Pass		0.5	98d	**86.5**	1.156	**11.4**	1.40	0.74	1.00	
88839 A	BP197-43	90725	Msv,Bx,Fol	Pols	25,000	22,600	6.6	Pass		0.5	98d	**76.1**	0.335	**31.3**	0.32	0.77	1.00	
88840 A	BP207-44	90728	Bx,CaBx	Pola	12,500	12,600	5.9	Pass		0.5	98d	**62.6**	0.246	**28.3**	1.59	0.80	1.04	
88841 A	BP207-45	90731	Fz,Bx	Polb	25,000	22,100	9.5	Pass		0.5	96d	**80.2**	1.350	**53.5**	5.68	1.15	1.01	
88842 A	BP207-46	90734	Fz,Msv	Polb	9,500	8,900	23.6	N/A		0.5	96d	**82.5**	0.733	**36.6**	2.02	1.01	1.00	
88843 A	BP207-47	90737	Msv	Polc	12,500	12,500	6.3	Pass		0.5	96d	**44.5**	2.768	**37.4**	2.14	0.82	1.00	
88844 A	BP207-48	90740	Msv	Polc	25,000	24,700	1.5	N/A		0.5	96d	**80.4**	4.750	**7.3**	2.75	0.69	1.00	
88845 A	BP207-49	90743	Msv	Polc	25,000	24,300	4.9	Pass		0.5	96d	**80.2**	1.469	**10.0**	1.40	0.70	1.00	
88846 A	BP214-50	90746	Msv,Bx	Pold	12,500	11,600	7.1	Pass		0.5	96d	**76.0**	0.283	**18.6**	1.72	0.86	1.00	
88847 A	BP214-51	90749	Fz	Polb	9,500	240	72.2	N/A	4.5	0.5	95d	**70.9**	0.323	**26.2**	4.35	1.13	0.00	4.5
88848 A	BP214-52	90752	Fz,Msv	Polb	25,000	23,500	15.6	Pass		0.5	95d	**67.1**	0.920	**29.2**	1.71	1.00	1.01	
88849 A	BP214-53	90755	Msv	Polb	12,500	12,000	10.3	Pass		0.5	95d	**66.8**	1.251	**61.4**	0.78	0.86	1.00	
88850 A	BP214-54	90758	Bx,Fz,Msv	Polc	12,500	11,100	23.2	Pass		0.5	95d	**92.2**	5.856	**33.7**	3.01	0.74	1.01	
88851 A	BP214-55	90761	Fz,Bx	Polc	12,500	11,300	23.0	Fail 100		0.5	95d	**93.2**	3.046	**71.1**	6.84	0.97	1.02	
88852 A	BP214-56	90764	Msv,Bx	Polc	12,500	12,500	8.7	Pass		0.5	95d	**76.1**	2.222	**49.5**	2.89	0.74	0.99	
88853 A	BP222-57	90767	Bx,Fz	Pola	12,500	12,100	11.0	Pass		0.5	95d	**78.1**	0.424	**24.1**	0.83	0.63	1.00	
88854 A	BP222-58	90770	Msv,Mc	Polb	25,000	25,300	1.7	Pass		0.5	95d	**51.3**	0.277	**25.9**	0.54	0.65	1.00	
88855 A	BP222-59	90773	Msv,Bx	Polc	25,000	25,100	2.4	Pass		0.5	95d	**72.8**	0.268	**13.1**	1.37	0.67	1.01	
88856 A	BP222-60	90776	Mc,Msv,FZ	Pold	12,500	11,200	12.2	Pass		0.5	93d	**91.7**	0.663	**14.5**	1.66	0.63	1.00	
88857 A	BP222-61	90779	Fz=Bx=Mc	Pols	12,500	12,000	10.5	Pass		0.5	93d	**83.1**	3.484	**17.3**	3.98	0.65	1.00	
88858 A	BP222-62	90782	Mix	Pols	25,000	23,400	3.2	Pass		0.5	93d	**78.2**	1.820	**11.3**	1.77	0.65	1.00	

KCA Sample No.	Comp ID	Test No	Pilot Gold Geology		Feed Size					NaCN (g/l)	Leach Time (days)	Au Balance		Ag Balance		Reagents		
			Structure	F-Form	Target P80 (µm)	Screen P80 (µm)	% - 200M	Load Perm Tests	Cement kg/t			Au Ext %	Calc Hd Au (ppm)	Ag Ext %	Calc Hd Ag (ppm)	NaCN kg/t	Lime kg/t	Cement kg/t
88859 A	BP222-63	90785	Fz,CaBx,Mc	Pols	25,000	22,900	6.4	Pass		0.5	93d	**78.7**	0.422	**11.5**	1.91	0.66	1.00	
88860 A	BP231-64	90788	Mc	Polb	25,000	23,200	2.4	Pass		0.5	93d	**49.1**	0.291	**17.2**	1.16	0.55	1.00	
88861 A	BP231-65	90791	Bx	Pold	25,000	28,100	4.8	Pass		0.5	93d	**83.4**	0.308	**27.3**	0.66	0.66	1.00	
88862 A	BP231-66	90901	Fz,Pold	Pold	25,000	21,400	30.2	Pass/close	5.9	0.5	93d	**83.5**	0.714	**7.8**	1.93	0.55	0.00	5.9
88863 A	BP231-67	90904	Fz,CaBx,Mc	Pols	25,000	23,700	8.5	Pass		0.5	93d	**90.0**	0.730	**7.8**	1.02	0.67	1.01	
88864 A	BP231-68	90907	Bx	Pols	12,500	10,600	17.9	Pass/close		0.5	93d	**94.8**	2.594	**5.8**	3.26	0.72	1.01	
90915 A	BP242-69	90943	Fz,Bx	Pola	12,500	12,200	9.0	N/A		0.5	82d	**70.5**	1.156	**3.5**	2.23	0.79	1.00	
90916A	BP242-70	90946	Fz,Bx	Pola	12,500	14,700	5.8	N/A		0.5	82d	**87.1**	2.973	**5.7**	1.96	1.12	1.00	
90917 A	BP247-71	90949	Msv,Fol	Polb	12,500	13,700	5.7	Pass	2.0	0.5	82d	**66.8**	0.284	**25.1**	0.86	0.91	0.00	2.0
90918 A	BP247-72	90952	Mc,Fol,Bx	Pold	12,500	14,000	3.0	N/A		0.5	82d	**67.3**	0.183	**13.4**	1.19	0.80	1.00	
90919 A	BP251-73	90955	Bx,Mc	Pold	25,000	13,900	2.5	Pass		0.5	82d	**54.5**	0.599	**9.0**	0.58	0.88	1.00	
90920 A	BP251-74	90958	Mc,	Pold	12,500	12,300	6.3	Pass		0.5	82d	**66.7**	0.358	**35.8**	0.67	0.74	1.00	

Source: GL Simmons Consulting LLC, 2023

Figure 13-11: 2021 Variability Column Test Results

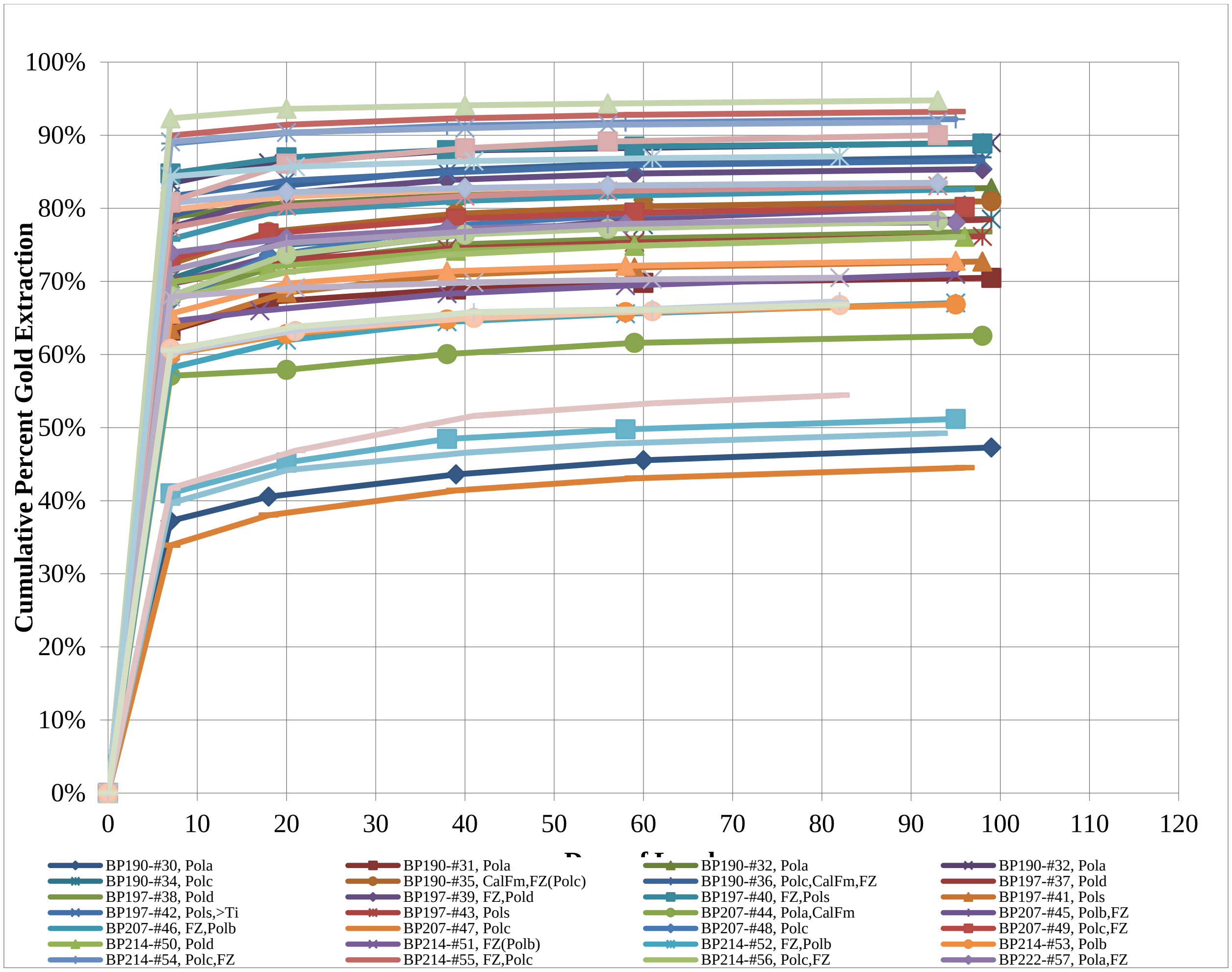


Figure 13-12: 2021 Gold Extraction vs. Days Under Leach for Column-Leach Tests

13.6.7 **Comminution** Characterization at Hazen

Portions of the head material for nine composite samples were stage crushed to 100% passing 37.5 millimetres and submitted to Hazen Research, Inc. in Golden, Colorado for SMC and Ai testing. Details of the comminution testing procedures and test results are reported in Stepperud (2021).

A summary of the Ai test work is presented in Table 13-12 and the SMC comminution characterization in Table 13-13.

Table 13-12: 2021 Bond Abrasion Test Results
Liberty Gold Corp. – Black Pine Project

HRI No.	Client ID	Composite ID	Ai (grams)
55234-12	88827 A	BP190-31	0.0167
55234-13	88831 A	BP190-35	0.0325
55234-14	88833 A	BP197-37	0.0617
55234-15	88837 A	BP197-41	0.0778

HRI No.	Client ID	Composite ID	Ai (grams)
55234-16	88841 A	BP207-45	0.0507
55234-17	88845 A	BP207-49	0.0055
55234-18	88848 A	BP214-52	0.0045
55234-19	88859 A	BP222-63	0.0401
55234-20	88861 A	BP231-65	0.0220

Table 13-13: SMC Comminution Characterization Test Results
Liberty Gold Corp. – Black Pine Project

HRI No.	Client ID	Composite ID	Black Pine Project - Comminution Characterization										
			sg	A	b	A x b	Dwi kWh/m^3	DWi %	M_{ia} kWh/t	M_{ih} kWh/t	M_{ic} kWh/t	t_a	SCSE kWh/t
55234-12	88827 A	BP190-31	2.55	57.8	0.86	49.7	5.13	30	16.6	11.7	6	0.5	8.81
55234-13	88831 A	BP190-35	2.63	60.3	0.73	44	5.96	41	18.2	13.2	6.8	0.43	9.35
55234-14	88833 A	BP197-37	2.71	72.7	0.43	31.3	8.61	75	23.7	18.4	9.5	0.3	11.12
55234-15	88837 A	BP197-41	2.63	62	0.68	42.2	6.22	44	18.8	13.7	7.1	0.42	9.53
55234-16	88841 A	BP207-45	2.57	57	1.35	77	3.32	13	11.7	7.5	3.9	0.78	7.46
55234-17	88845 A	BP207-49	2.57	58.8	0.67	39.4	6.54	49	20.1	14.8	7.6	0.4	9.75
55234-18	88848 A	BP214-52	2.47	55	1.58	86.9	2.84	9	10.7	6.7	3.5	0.91	7.18
55234-19	88859 A	BP222-63	2.63	54.6	1.29	70.4	3.72	16	12.5	8.2	4.2	0.69	7.72
55234-20	88861 A	BP231-65	2.64	59.6	1.31	78.1	3.37	13	11.5	7.4	3.8	0.77	7.44

A = maximum breakage
b = relation between energy and impact breakage
A x b = overall AG SAG hardness
DWi = drp(-weight index)
M_{ia} = coarse particle component
M_{ic} = crusher component
M_{ih} = high-pressure grinding roll component
SCSE = SAG circuit specific energy
sg = specific gravity of sample
t_a = low energy abrasion component of breakage

13.6.8 Load Permeability Test Work on Column Tailings

A portion of tailings material from forty (40) column leach residues were utilized for load permeability test work. The purpose of the load permeability test work was to examine the permeability of the crushed material under compaction loading equivalent to heap heights of 25 m, 50 m, 75 m, and 100 m.

All of the 40 column leach residues passed load permeability testing up to 100 meters height, except for one (1) composite (BP214-#55,FZ,Polc), which failed at 100 meters.

Refer to Section 13.4.8 in this report for a description of the Load Permeability test apparatus and testing procedures and (KCA 2021a) report for complete details.

13.7 2022 Phase 3 Low-Grade Composite Variability Testing

In October 2021, Liberty Gold delivered fifteen (15) Black Pine low-grade variability composites to the laboratory facility of Kappes, Cassiday and Associates (KCA) in Reno, Nevada. The received material represented fifteen (15) individual composites. The received samples were utilized for metallurgical test work.

All preparation, assaying and metallurgical studies were performed utilizing accepted industry standard procedures. The same as what is described in the original Phase 1 (KCA 2020a) and Phase 2 (KCA 2020b) final reports.

The low-grade variability composites were retrieved from existing Black Pine Phase1 and Phase 2 core that was not tested in the original programs.

Splits of all 15 composite heads were delivered to three separate laboratories for additional geo-metallurgical and environmental characterization analysis:

1. ALS for ICP and gold cyanide solubility analysis,
2. FLS for “XRD” and “Whole Rock” analysis and
3. WETLAB for environmental characterization of solids and aqueous solutions.

The Phase 3 program was designed to test the lower-end (mining cut-off gold grade range) resources to better define the lower end of the head-grade vs. gold recovery models.

13.7.1 2022 Black Pine Low-Grade Variability Composite Head Assays

Head assay details and geo-metallurgical characterization results are in the KCA 2022b report. A high-level summary of the geo-metallurgical characterization is presented below for gold, silver, copper, gold cyanide solubility, carbon and sulfur species, preg-rob analysis, as well as ICP multi-element analyses, whole-rock analyses and QXRD analyses. Select composite summary results for gold, silver, copper, carbon and sulfur speciation and preg-rob analysis, are detailed in Figure 13-13:

- Gold grades ranged from 0.122 ppm to 0.169 ppm and averaged 0.146 ppm.
- Silver grades ranged from 0.13 ppm to 1.69 ppm and averaged 1.07 ppm.
- Organic carbon ranged from 0.12% to 0.84 % and averaged 0.28%.
- Sulfide sulfur showed no variation and averaged <0.01%.
- Preg-robbing analyses ranged from 0.0% to 23.7% and averaged 3.9% (using a 1 ppm spike). Preg-robbing values <10% are considered within the error band of the test procedure and are classified non-preg-robbing by KCA. Only one composites (BP067-5) was >10%.
- Copper values were very low, ranging from 14 ppm to 68 ppm and averaged 35 ppm.
- Gold cyanide solubility ranged from 47.3% to 100.0% and averaged 77.4%.
- Concentrations of the deleterious elements were: selenium averaged 19 ppm; mercury ranged from 4.9 ppm to 11.5 ppm with an average 6.7 ppm; and arsenic levels were low, ranging from 27 ppm to 112 ppm with an average of 59 ppm.

- Concentrations of the primary cyanide consumers were low and suggest minimum potential for affecting cyanide consumption rates. Copper averaged 35 ppm, nickel averaged 72 ppm, and zinc averaged 177 ppm.
- Whole-rock quartz content ranged from 22.9% to 71.8% and averaged 38.5%.

		Head Assays																	
KCA Sample No.	Composite ID	ALS			KCA														
		AuFA ppm	AuCN ppm	AuCN %	AgFA ppm	AgCN ppm	AgCN %	Cu ppm	CuCN ppm	CuCN %	C(tot) %	C(org) %	C(inorg) %	$S_{(total)}$ %	$S_{(sulfide)}$ %	$S_{(sulfate)}$ %	Au-w/spike	Au-w/o spike	Au PR %
93001 A	BP067-75	0.169	0.080	47.3	1.79	1.26	70.2	68	15.06	22.1	4.62	0.27	4.35	0.03	<0.01	0.03	0.76	0.02	23.7
93002 A	BP067-76	0.159	0.100	62.9	0.69	0.50	72.3	43	6.04	14.0	7.70	0.17	7.53	0.02	<0.01	0.02	0.92	0.02	7.2
93003 A	BP067-77	0.136	0.100	73.5	1.96	1.32	67.3	44	15.28	34.7	9.14	0.23	8.91	0.05	<0.01	0.05	0.90	0.03	10.3
93004 A	BP067--78	0.143	0.110	76.9	0.40	0.44	110.0	36	5.16	14.3	6.74	0.14	6.60	0.03	<0.01	0.03	1.02	0.04	0.0
93005 A	BP082-79	0.160	0.090	56.3	2.69	0.76	28.3	57	6.66	11.7	0.87	0.84	0.03	0.02	<0.01	0.02	1.01	0.04	0.0
93006 A	BP087-80	0.122	0.100	82.0	1.22	0.44	36.0	52	8.22	15.8	5.32	0.81	4.51	0.03	<0.01	0.03	0.95	0.03	5.2
93007 A	BP093-81	0.153	0.150	98.0	0.26	0.28	106.5	26	4.92	18.9	2.59	0.12	2.47	0.07	<0.01	0.07	1.06	0.06	0.0
93008 A	BP190-82	0.131	0.090	68.7	0.29	0.42	147.0	24	3.78	15.8	6.70	0.19	6.51	0.31	<0.01	0.31	0.98	0.03	2.1
93009 A	BP197-83	0.139	0.150	100.0	0.13	0.14	111.4	14	2.28	16.3	8.37	0.17	8.20	0.03	<0.01	0.03	1.05	0.06	0.0
93010 A	BP197-84	0.142	0.110	77.5	0.41	0.32	78.9	29	4.24	14.6	7.00	0.13	6.87	0.04	<0.01	0.04	1.08	0.05	0.0
93011 A	BP197-85	0.127	0.120	94.5	0.49	0.24	48.8	17	3.12	18.4	7.02	0.29	6.73	0.01	<0.01	0.01	0.98	0.03	2.1
93012 A	BP207-86	0.162	0.120	74.1	1.89	0.86	45.6	25	5.38	21.5	7.16	0.10	7.06	0.08	<0.01	0.08	0.99	0.04	2.1
93013 A	BP214-87	0.137	0.100	73.0	1.91	1.86	97.5	26	6.08	23.4	7.72	0.25	7.47	0.78	<0.01	0.78	1.08	0.04	0.0
93014 A	BP207-88	0.163	0.130	79.8	0.93	0.56	60.5	22	5.38	24.5	7.89	0.21	7.68	0.08	<0.01	0.08	1.05	0.05	0.0
93015 A	BP222-89	0.145	0.140	96.6	1.00	0.32	32.0	35	3.88	11.1	5.51	0.25	5.26	0.02	<0.01	0.02	0.94	0.03	6.2

Source: Gary Simmons Consulting LLC, 2023

Figure 13-13: 2022 Black Pine Low Grade Variability Composite Head Assays by KCA and ALS

13.7.2 Bottle-Roll and Column Leach Testing

Coarse and fine milled bottle-roll leach tests were completed on each of the 15 composites. A split of the head material was subjected to direct leach (DL) and CIL bottle-roll testing at target P_{80} sizes of 75 µm and 1,700 µm, and to column-leach testing at target P80's of 12.5 mm or 25.0 mm crush sizes. Because of the very low-grade gold in these composites and the inherent low-level preg-borrowing clays present in some of the Black Pine materials, CIL bottle-roll tests were conducted at the 75µm and 1,700 µm feed size. The main objective of these tests was to evaluate the laboratory-scale leachability character of the Black Pine low-grade resources in terms of gold extraction, extraction rate, reagent consumption, and sensitivity to feed size.

The bottle-roll testing used standard procedures that are described in the final laboratory report (KCA 2022b), using 144 hours of retention time for 1,700 µm tests and 72 hours for 75 µm tests.

Column-leach tests were conducted utilizing material crushed to their respective target P_{80}'s and placed in columns of 10 cm and 15 cm diameters. During testing the material was leached for 97 days with a dilute NaCN solution. After leaching, each column was washed/rinsed for four days with water. A portion of the leached and washed material ("tailings") from each column was assayed for "tail screen" analyses by size fraction.

Tailings material from ten of the fifteen composites was utilized for compacted permeability test work.

The following is a summary of the findings from the KCA 2022b report on bottle-roll and column test results.

13.7.3 Low-Grade Direct Leach and CIL Bottle-Roll Tests on 75 µm Composite Samples

Fine milled bottle-roll leach tests were completed on each of the 15 variability composites. The milled slurry was utilized for direct bottle-roll leach testing and CIL bottle-roll testing. The bottle-roll test procedures and results are described in detail in KCA 2022b.

- The direct leach gold head grades for the composites ranged from 0.12 ppm to 0.21 ppm gold, with an average of 0.16 ppm. Gold extraction from this material ranged from 36.5% to 77.8%, with a weight average of 55.4%.
- The CIL leach gold head grades for the composites ranged from 0.13 ppm to 0.20 ppm gold, with an average of 0.16 ppm. Gold extraction from this material ranged from 50.1% to 78.2%, with a weight average of 66.9%.
- Cyanide consumption for the direct leach bottle-roll tests averaged 0.20 kg/t and lime consumption averaged 0.88 kg/t.
- Cyanide consumption for the CIL bottle-roll tests averaged 1.05 kg/t and lime consumption averaged 0.60 kg/t.

13.7.4 Low-Grade Direct Leach and CIL Coarse Bottle-Roll Tests on 1,700 µm Composite Samples

Coarse bottle-roll leach tests were completed on each of the 15 composites. The coarse bottle-roll test procedure and results are described in detail in KCA 2022b.

- The direct leach gold head grades for the composites ranged from 0.10 ppm to 0.20 ppm gold and averaged 0.15 ppm. Gold extraction ranged from 41.9% to 73.6%, with a weight average of 57.9%.

- The CIL leach gold head grades for the composites ranged from 0.10 ppm to 0.18 ppm gold, with an average of 0.15 ppm. Gold extraction ranged from 51.9% to 76.8%, with a weight average of 65.2%.
- Cyanide consumption for the direct leach bottle-roll tests averaged 0.13 kg/t and lime consumption averaged 1.10 kg/t.
- Cyanide consumption for the CIL bottle-roll tests averaged 1.63 kg/t and lime consumption averaged 0.53 kg/t.

13.7.5 Low-Grade Column-Leach Tests on Composite Samples

All 15 composites were subjected to laboratory column-leach testing at KCA. Six columns were tested at a target P_{80} = 12.5 mm and nine composites at a target P_{80} = 25 mm. Column test procedures are described in detail in KCA 2022b. Column test gold and silver extractions are based upon loaded carbon assays and tails screen assays and are located in Figure 13-14.

- Calculated gold head grades ranged from 0.119 ppm to 0.183 ppm and averaged 0.149 ppm. Gold extractions ranged from 50.8% to 80.3%, with a weight average of 65.2%.
- Calculated silver head grades ranged from 0.42 ppm to 2.58 ppm and averaged 1.35 ppm. Silver extractions ranged from 6.4% to 55.0%, with a weight average of 25.9%.
- Cyanide consumptions ranged from 0.36 kg/t to 0.67 kg/t and averaged 0.44 kg/t. Based upon KCA's experience with clean non-reactive ores, cyanide consumption in commercial production heaps would range between 25% to 33% of the laboratory column test consumptions.
- Lime consumption ranged from 0.00 kg/t to 1.02 kg/t and averaged 0.87 kg/t. Two columns (BP067-75 and BP093-81) were agglomerated with 2.0 kg/t and 4.0 kg/t cement respectively and did not require any lime.

Gold extraction plotted versus days under leach is shown graphically in Figure 13-15 and are based upon column solution balances.

KCA Sample No.	Comp ID	Test No	Pilot Gold Geology		Feed Size					NaCN (g/l)	Leach Time (days)	Au Balance		Ag Balance		Reagents		
			Structure	F-Form	Target P80 (µm)	Screen P80 (µm)	% - 200M	Load Perm Tests	Cement kg/t			Au Ext %	Calc Hd Au (ppm)	Ag Ext %	Calc Hd Ag (ppm)	NaCN kg/t	Lime kg/t	Cement kg/t
2022 Phase 3 - LG Variability Core Composites																		
93001 A	BP067-75	93026	Bx,FZ	Pola,FZ	12,500	12,100	21.3	N/A	2.0	0.5	97d	**50.8**	0.183	**45.9**	1.830	0.67	0.00	2.0
93002 A	BP067-76	93029		Polc	12,500	14,200	3.1	N/A		0.5	97d	**51.7**	0.172	**25.7**	1.010	0.39	1.02	
93003 A	BP067-77	93032		Pold	25,000	24,800	1.8	Pass		0.5	97d	**77.3**	0.132	**39.1**	1.690	0.40	1.00	
93004 A	BP067--78	93035	Bx,	Pola	12,500	14,000	9.5	N/A		0.5	97d	**53.2**	0.139	**30.6**	0.850	0.48	1.00	
93005 A	BP082-79	93038	Fz	FZ,Polb	25,000	3,300	42.3	Fail 25m		0.5	97d	**65.5**	0.177	**23.4**	2.560	0.60	1.02	
93006 A	BP087-80	93041	Bx,Fz	Polb,FZ	25,000	24,600	10.2	Pass		0.5	97d	**69.8**	0.139	**12.3**	2.030	0.57	1.00	
93007 A	BP093-81	93044	Fz,	Ppos,FZ	25,000	22,100	21.0	Pass	4.0	0.5	97d	**79.0**	0.167	**21.9**	0.730	0.36	0.00	4.0
93008 A	BP190-82	93047	Msv,Fz	Polc,FZ	25,000	28,500	7.5	Pass		0.5	97d	**57.5**	0.127	**20.8**	1.010	0.36	1.00	
93009 A	BP197-83	3050	Mc,Fol	Pold	25,000	29,300	1.6	Pass		0.5	97d	**72.0**	0.164	**11.9**	0.420	0.36	1.01	
93010 A	BP197-84	93053	Bx,Mc,Msv	Pols.FZ	25,000	24,700	4.5	Pass		0.5	97d	**52.3**	0.149	**9.4**	0.640	0.39	1.01	
93011 A	BP197-85	93056	Fz>Bx	Pola	12,500	14,000	4.4	N/A		0.5	97d	**68.9**	0.119	**16.3**	0.800	0.39	1.00	
93012 A	BP207-86	93059	Bx	Pola	25,000	24,600	2.8	Pass		0.5	97d	**65.6**	0.151	**14.7**	1.900	0.42	1.01	
93013 A	BP214-87	93062	FZ/Bx	Polb,FZ	12,500	12,800	3.0	N/A		0.5	97d	**80.3**	0.132	**55.0**	2.090	0.40	1.02	
93014 A	BP207-88	93065	Bx,CaBx	Pold,CalFn	25,000	24,700	2.7	Pass		0.5	97d	**73.6**	0.148	**15.7**	1.530	0.37	1.01	
93015 A	BP222-89	93068	Msv	Polb	25,000	28,200	3.2	Pass		0.5	97d	**65.4**	0.133	**6.4**	1.100	0.44	1.01	

Source: Gary Simmons Consulting LLC, 2023

Figure 13-14: 2022 Low-Grade Variability Column Test Results

A somewhat unique characteristic of the Black Pine lower grade heap leach resources is that they commonly demonstrate clay and/or smoky carbon preg-borrowing characteristics. The CIL bottle-roll tests commonly have higher gold extractions than direct leach tests, a normal characteristic of preg-robbing. The column leach test gold extractions can be higher than the direct leach bottle-roll tests and the column leach profiles demonstrate a longer duration tail, demonstrating that the preg-borrowed gold is given back over time as the preg grade drops.

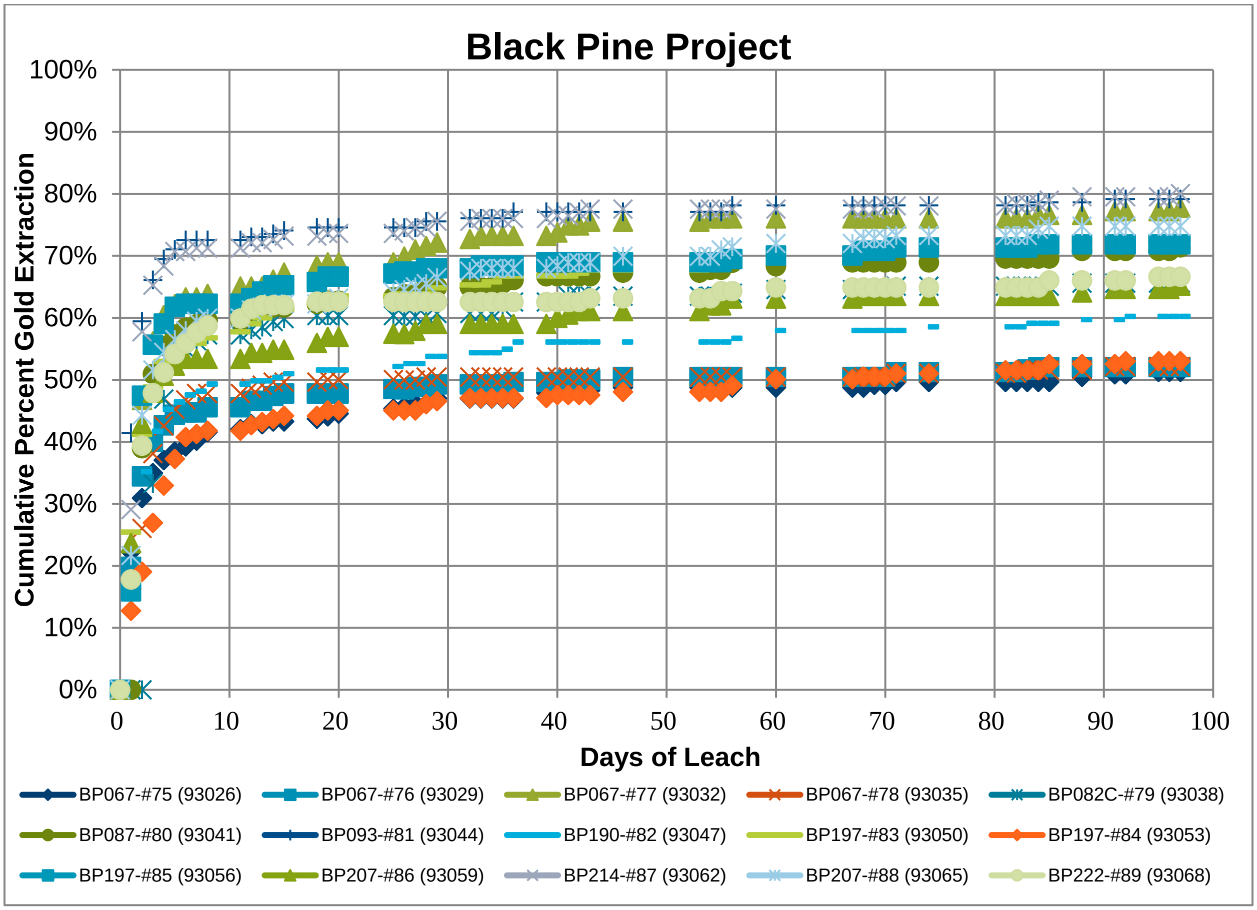


Figure 13-15: 2022 Low-Grade Variability Composites Gold Extraction vs. Days Under Leach for Column-Leach Tests

13.7.6 Load Permeability Test Work on Low-Grade Column Tailings

Ten of the 15 column leach residues were utilized for load permeability test work. The purpose of the load permeability test work was to examine the permeability of the crushed material under compaction loading equivalent to heap heights of 25 m, 50 m, 75 m, and 100 m.

All of the ten column leach residues passed load permeability testing up to 100 m height, except for one composite (BP082-79), which failed at 25 m.

Refer to KCA (2022b) report for a details on the Load Permeability test apparatus and testing procedures.

13.8 Gold Recovery Methodology and Commercial Scale Recovery Models

13.8.1 Gold and Silver Recovery Methodology

The following is a brief description of the methodology used to derive the Black Pine gold-recovery models. Six steps are used in developing final commercial-scale gold recovery models:

- **Step 1**: Determining the gold extraction for each variability composite, using a combination of fine grind/crush bottle-rolls and medium/coarse crush column tests.
- **Step 2**: Develop head grade versus tails grade models to use in final development of the gold recovery equations.
- **Step 3**: Build a database of the laboratory solution-to-ore (S/O) ratio data at various percentages of total extractable gold. A correction factor is applied to each laboratory S/O ratio data point to scale up the laboratory data to commercial scale. Typical laboratory S/O ratio data is tabulated for the following percentages of total extractable gold: 60%, 70%, 80%, 90%, 95%, and 99%.
- **Step 4**: Estimate solution losses at the end of economic gold recovery operations/closure.
- **Step 5**: Determine operational scale-up inefficiencies for the heap leach flowsheet selected.
- **Step 6**: Incorporating steps 1-5 into final recovery models that reflect modelled test data met balances, commercial scale inefficiencies and deductions for solution losses, plus application of cumulative S/O rates over the life of the project to predict timing of gold recovery.

The six steps used in the recovery methodology summarized above are described in detail in Gustin et al (2021).

13.8.2 Gold and Silver Oxide Recovery Model Equations for an ROM Heap Leach (P80 = 150 mm)

13.8.2.1 Oxide Gold and Silver Recovery Equations

Oxide material types are defined as having head assay gold cyanide solubility >60%. Commercial scale oxide gold recovery equations are show in Table 13-14Table 13-14. There are two equations for each material type, one for gold head grades <0.40 g/t and one for head grades >0.40 g/t.

Table 13-14: Black Pine – ROM (P_{80} = 150 mm) Oxide Gold Recovery Equations
Liberty Gold Corp. – Black Pine Project

Geo met Recovery Zone	Equation	Gold Recovery, %	Range
Pola	1	=13.219*ln(HG) + 77.887	Au HG < 0.40 g/t
	2	=6.761*ln(HG) + 72.832	Au HG ≥ 0.40 g/t
Polb	3	=4.9353*ln(HG) + 71.408	Au HG < 0.40 g/t
	4	=3.484*ln(HG) + 70.283	Au HG ≥ 0.40 g/t
Polc	5	=9.295*ln(HG) + 77.756	Au HG < 0.40 g/t
	6	=5.265*ln(HG) + 74.631	Au HG ≥ 0.40 g/t
Pold	7	=2.855*ln(HG) + 75.17	Au HG < 0.40 g/t

Geo met Recovery Zone	Equation	Gold Recovery, %	Range
Pols	8	=2.074*ln(HG) + 74.529	Au HG ≥ 0.40 g/t
	9	= 13.343*ln(HG) + 83.172	Au HG < 0.40 g/t
	10	=6.155*ln(HG) + 77.473	Au HG ≥ 0.40 g/t
PPos	11	=1.143*ln(HG) + 74.556	Au HG < 0.40 g/t
	12	=0.175*ln(HG) + 73.684	Au HG ≥ 0.40 g/t

Note: There is minimal variability composite data to accurately model/predict gold recovery for PPos. Additional testing is currently ongoing to fill this gap. There are no Rangefront-specific recovery equations in the current resource model as data was unavailable as of the effective date of this report. Global Pola and Polc equations were used for Rangefront recovery in the pit model.

Black Pine silver head grades are low. Therefore, silver recoveries were modelled by combining all material types (in one model) in the same manner as for gold. Oxide silver recovery equations are shown in Table 13-15. There are two equations for each material type, one for silver head grades <0.60 g/t and one for silver head grades >0.60 g/t.

Table 13-15: Black Pine – ROM (P80 = 150 mm) Oxide Silver Recovery Equations
Liberty Gold Corp. – Black Pine Project

Geo met Recovery Zone	Equation	Silver Recovery, %	Range
All Zones	1	=11.485*ln(HG) + 7.075	Au HG < 0.60 g/t
	2	=9.523*ln(HG) + 9.278	Au HG ≥ 0.60 g/t

13.8.3 Transition Gold and Silver Recovery Model Equations for an ROM Heap Leach (P80 = 150 mm)

Transition material types are defined as having head assay gold cyanide solubility between 40% and 60%. Commercial scale transition gold and recovery equations are show in Table 13-16.

Table 13-16: Black Pine – ROM (P80 = 150 mm) Transition Gold and Silver Recovery Equations
Liberty Gold Corp. – Black Pine Project

Geo met Recovery Zone	Equation	Silver Recovery, %	Range
Gold (Au) Transition	1	=3.791*ln(HG) + 52.668	Au HG < 0.40 g/t
	2	=0.580*ln(HG) + 49.674	Au HG ≥ 0.40 g/t
Silver (Ag) Transition	3	2.934*ln(HG) + 8.991	Ag HG < 0.60 g/t
	4	0.144*ln(HG) + 12.088	Ag HG≥ 0.60 g/t

13.9 Reagent Consumptions

Reagent consumptions and requirements, including cyanide, lime, and cement were estimated by KCA based on metallurgical test work completed to date for the Black Pine materials and are summarized below.

13.9.1 Cyanide Consumptions

For the crushed ore, using average cyanide consumptions of the column tests at the nearest crush sizes and converting from lab result to field estimate, cyanide consumption is estimated at 0.14 kg/t. Typically lab column tests results are much higher than field consumption. Actual field cyanide consumption is typically 25% to 33% of column test results, depending upon the silver content.

Cyanide consumption for ROM ore is provisionally estimated at the same 0.14 kg/t.

13.9.2 Lime Consumptions

Based upon the tests to date, the hydrated lime requirement for pH control is 0.98 kg/t. Converting to field quicklime requirements, 0.88 kg/t is estimated for both ROM and crushed ore pH control.

13.9.3 Cement Consumptions

There are fairly high amounts of minus 200 mesh fines present in all of the crushed ore column tests to date (12.2% average), with some as high as 30.2%. This alone implies that cement agglomeration is probably needed for crushed ore. Additionally, some of the load-permeability tests showed insufficient percolation rates at simulated stacking heights of 50 m and 75 m (with no cement), further supporting the conclusion that at least some of the crushed ore would benefit from cement agglomeration.

For crushed ore, it is recommended that the minimum equivalent of cement (2.6 kg/t) be substituted for lime for pH control and agglomeration. Additional cement agglomeration test work should eventually be done to confirm and optimize cement addition at the nominated crush size.

13.10 Summary

The QP is of the opinion that samples tested are sufficiently representative to support the conclusions summarized herein. Metallurgical testing is ongoing and is designed in part to continue to evaluate all types and styles of mineralization.

14.0 MINERAL RESOURCE ESTIMATE

14.1 Summary

Mineral Resources for the Black Pine project were estimated in accordance with NI 43-101 guidelines. The modelling and estimation of the Mineral Resources was completed between May 2022 and January 2023 by or under the supervision of the SLR QP. The Effective Date of the Resource Estimate is January 21, 2023. The Mineral Resource estimate presented here supersedes any previously stated Mineral Resources for the Black Pine Property

For each area, domains representing gold mineralization were defined in Leapfrog Geo software, while sub-block model estimates were completed within Leapfrog Edge software, using 3.048 m capped composites and a multi-pass inverse distance cubed (ID^3) interpolation approach. Blocks were classified considering local drill hole spacing. Class groupings were based on criteria developed using continuity models (variograms) and modified to reflect geological understanding and to ensure cohesive classification shapes.

Wireframe and block model validation procedures including wireframe to block volume confirmation, statistical comparisons with composite and nearest neighbour (NN) estimates, swath plots, visual reviews in 3D, longitudinal, cross section, and plan views were completed for all zones.

The Black Pine Project Mineral Resource Estimate is presented in Table 14-1 and is prepared in accordance with CIM Standards for Mineral Resources and Mineral Reserves dated May 10, 2014 (CIM (2014) definitions).

The QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

Table 14-1: Summary of Mineral Resources for the Black Pine Project – January 21, 2023
Liberty Gold Corp. – Black Pine Project

Class	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (koz Au)
Indicated	157,267	0.52	2,613
Measured + Indicated	**157,267**	**0.52**	**2,613**
Inferred	35,150	0.43	483

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a gold cut-off grade of 0.20 g/t.
3. Mineral Resources are estimated using a long-term gold price of US$1,800 per ounce.
4. Mineral Resources are estimated using a variable recovery derived from metallurgical studies.
5. Bulk density is variable by rock type.
6. There are no Mineral Reserves at the Black Pine Project.
7. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
8. Mineral Resources are reported within conceptual open pit shells.
9. Rounding as required by reporting guidelines may result in apparent discrepancies between tonnes, grades, and contained gold content.
10. The effective date of the Mineral Resource estimate is January 21, 2023.

11. The estimate of mineral resources may be materially affected by geology, environment, permitting, legal, title, taxation, sociopolitical, marketing, or other relevant issues.

14.2 Comparison to Previous Resources

A previous resource for the Black Pine Project was estimated by Gustin et al. (2021). Table 14-2 presents a comparison of the previous and current Mineral Resource estimates. Overall, Mineral Resources have increased in tonnes, grade, and gold ounces across the Project.

Some of the differences in the Mineral Resource estimate can be attributed to better understanding of the geology and mineralization, refining the methodology for wireframing from polygonal modelling to 3D solids, large expansions of the Rangefront and M zone areas due to additional drilling, and local extension of mineralization in other areas, improved understanding of the carbonaceous material scattered throughout the Project; and infill drilling in areas facilitating a conversion from Inferred to Indicated Mineral Resources.

Table 14-2: Comparison of Previous and Current Mineral Resource Estimates
Liberty Gold Corp. – Black Pine Project

Class	2021			2023			Difference		
	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (koz Au)	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (koz Au)	Tonnage (%)	Grade (%)	Contained Metal (%)
Indicated	105,075	0.51	1,715	157,267	0.52	2,613	+50%	+2%	+52%
Measured + Indicated	**105,075**	**0.51**	**1,715**	**157,267**	**0.52**	**2,613**	**+50%**	**+2%**	**+52%**
Inferred	31,211	0.37	370	35,150	0.43	483	+13%	+16%	+31%

14.3 Resource Database

As of the Effective Date of this report, Liberty Gold and its predecessors have completed 2,675 holes (1,854 historical RC holes, 26 historical core holes, and 823 RC and 33 core holes drilled by Liberty Gold). Various data and interpretations derived from these holes, as well as digital surfaces of the project area, were provided to SLR by Liberty Gold. The project drill-hole database is in UTM Zone 12 NAD83 coordinates (in metres).

A total of 279 historic drill holes were previously identified as including some composited sample intervals of up to 6.096 m (20 ft). This practice is understood to have been executed as a cost-saving measure whereby these original long sample intervals were replaced with 1.524 m (5 ft) samples upon return of a gold grade above a certain threshold, and therefore, the maintained long samples are typically low grade. More thorough discussion regarding these assays can be found in Gustin, et. al. (2021). In the previous Mineral Resource estimate (Gustin et. al, 2021), these assays were ignored. SLR has adopted a revised approach in which the original values are maintained in the supporting assay database when further than 25 m from a modern drill hole. Where within 25 m of a modern drill hole, these long, composited samples have been ignored. This has resulted in 1,061 assays being ignored from the compositing process. Table 14-3 describes the drilling and meterage used for the Mineral Resource update.

Table 14-3: Summary of Drill Holes supporting the Block Model Estimation by Company
Liberty Gold Corp. – Black Pine Project

Company	Core Holes	Metres (m)	RC Holes	Metres (m)
Gold Resources	3	135	13	1,083
Newmont Mining			37	3,119
Noranda	4	245	532	51,366
Pegasus Mining	17	1,230	1,205	124,692
Pioneer Nuclear			28	2,458
Western Pacific Resources			38	7,920
Historic Total	**23**	**1,523**	**1,854**	**190,725**
Liberty Gold	30	6,724	768	191,991
Project Total	**53**	**8,247**	**2,622**	**382,716**

14.4 Topographies

Three digital topographic surfaces were provided to SLR: a pre-mining surface; a surface that represents the 'as mined' topography; and a present-day topography. SLR reviewed the topographies with Liberty Gold geologists and agreed that they represent the property well. The as mined topography was used with the present-day topography to accurately create solid volumes which represent the backfill dumps and waste dumps placed by previous operators of the Black Pine mine. The topographies were used to code the block models so that the Mineral Resources were limited to in-situ material, or remobilized material within the backfill dumps and waste dumps.

14.5 Geological and Mineralization Models

14.5.1 Geological Model

Gold at Black Pine occurs primarily as stratabound mineralization that, with the exception of the Rangefront Zone which hosts mineralization in the upper plate, almost exclusively occurs within the middle structural-plate units. In aggregate, favourable host stratigraphy of the middle plate comprise a gently east-dipping section of Pennsylvanian carbonate rocks up to 400 m thick that is extensively folded and faulted. The mineralization often occurs at, or subparallel to, stratigraphic contacts, along which strata-parallel structural movement of uncertain extent is evident. While less common, local examples of solution breccia-hosted mineralization are also considered as a mineralization control.

Gold is distributed throughout the middle structural plate, but the most extensive mineralization is focused within more favorable stratigraphic units, such as calcareous siltstones, in association with decalcification and/or low- to moderately dipping faults.

Liberty Gold provided SLR with digital fault surfaces and lithologic wireframe solids of the various units in the upper, lower, and middle structural plates, all of which were created using Leapfrog software with extensive explicit controls applied. This geological modelling covers the full extents of the mineralization at Black Pine. The digital surfaces and solids were used extensively as guides for the modelling of the mineral domains that served as the primary constraint on the estimation of project Mineral Resources. SLR reviewed and accepted the geologic model provided.

14.5.2 Mineral Domains

The Project was divided into a total of seven different zones to allow for easier handling of the wireframing process. The zones were chosen based on historical activities and concentrations of mineralization. Figure 14-1 shows the different zones in relation to the whole project.

Within each zone, mineralized domains were separated into high- and low-grade domains. Due to the nature of a lower mean grade at the Rangefront zone, a lower cut-off grade (0.3 g/t Au) was used for the high-grade domains. The grade ranges of the low-grade and high-grade domains are listed in Table 14-4.

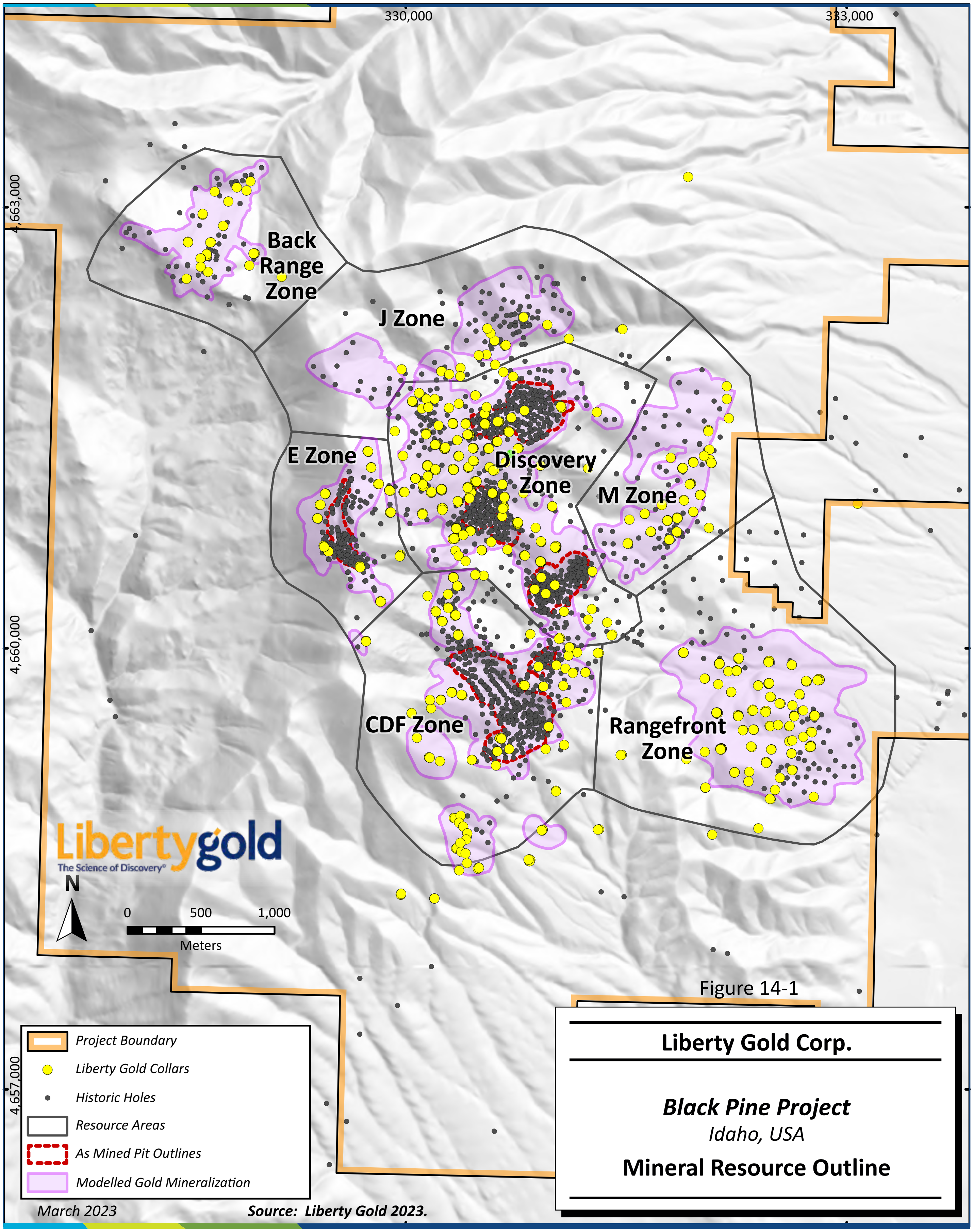


Figure 14-1

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Mineral Resource Outline

Table 14-4: Grade Ranges of Mineralized Domains
Liberty Gold Corp. – Black Pine Project

Area	Domain	(g/t Au)
Rangefront	Low	0.1 to 0.3
	High	≥0.3
All other Areas	Low	0.1 to 0.5
	High	≥0.5

Liberty Gold geologists completed a first-pass wireframe model of the Black Pine gold mineralization in Leapfrog Edge. The mineral domains were interpreted to respect the drill-hole assay data within the context of the Liberty Gold lithological and structural modelling. Receptive lithologies, contacts between lithologies in general, and low-angle faults were the primary controls on the modelling of the gold domains, with the latter two often coinciding.

SLR reviewed and completed small revisions on the resultant wireframes. SLR's process of refining and finalizing the gold domains utilized the same lithological, structural, and grade-shell guides as described.

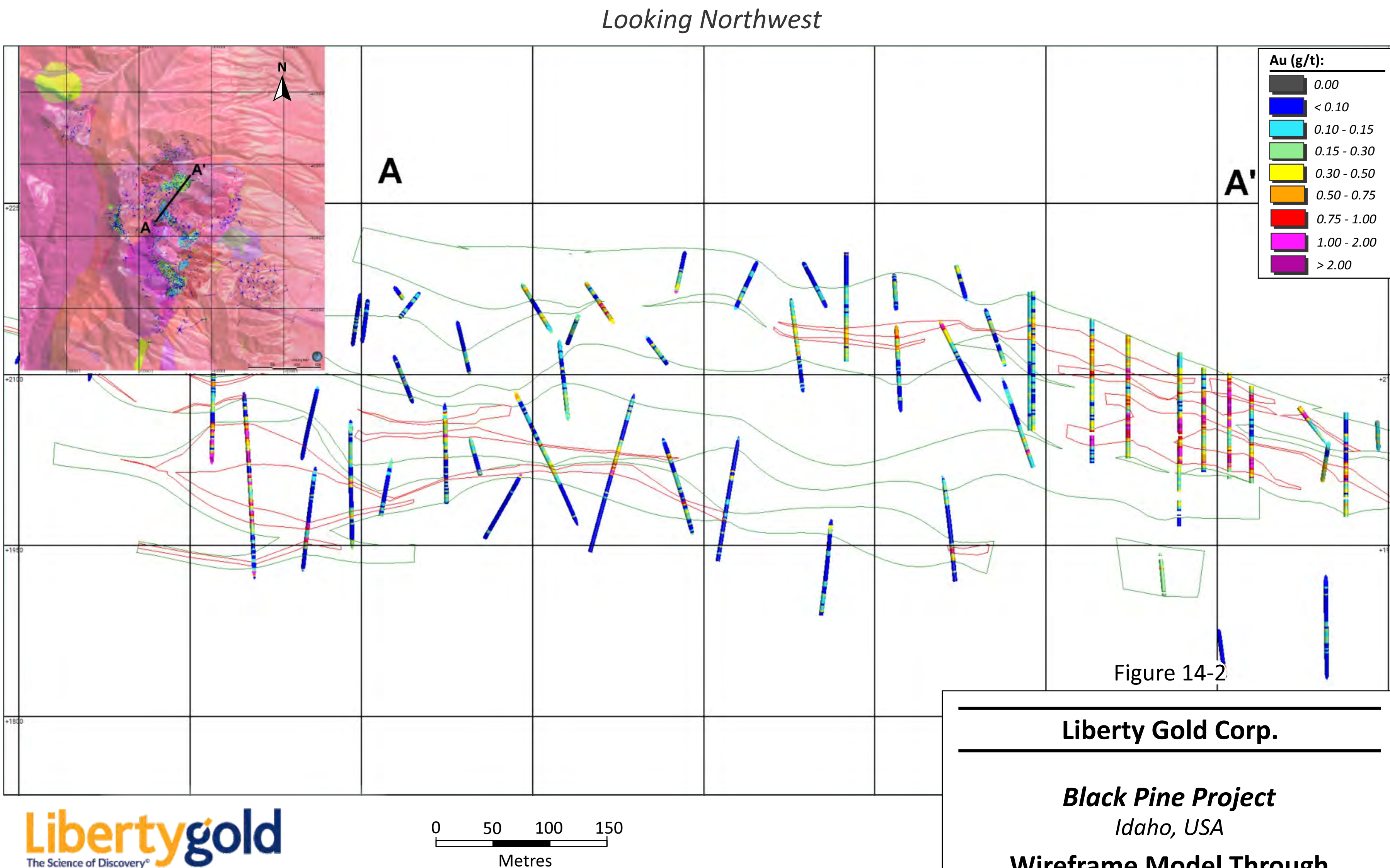
While the modelled mineralization overwhelmingly lies within the bounds of the middle structural-lithological plate, minor volumes of the mineral domains were also modelled within the upper and lower plates, close to their structural contacts with the middle plate. Deposit-wide, approximately 88% of the modelled gold mineralization is hosted within middle-plate units.

The high-grade domains form relatively thin, elongated zones that typically lie along or close to lithologic contacts and/or low-angle structures that parallel or transgress lithologic boundaries at acute angles. In strongly mineralized areas, this domain has strong continuity both along strike and dip. Low-grade mineralization both encompasses the higher-grade domains and extends outwards and terminate along the same low-angle structures and lithologic contacts.

The modelled mineralization at Black Pine extends discontinuously over a northwest extent of about 6,300 m, a maximum northeast-southwest extent of 3,700 m, and an elevation range of 1,100 m, although the maximum true width of the mineralization is approximately 400 m.

A total of 253 individual wireframes were created for the Project. Cross-sections showing examples of the gold mineral-domain modelling are shown in Figure 14-2 and Figure 14-3.

SLR



Libertygold
The Science of Discovery®

March 2023

Source: SLR, 2023.

Figure 14-2

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Wireframe Model Through Discovery Zone

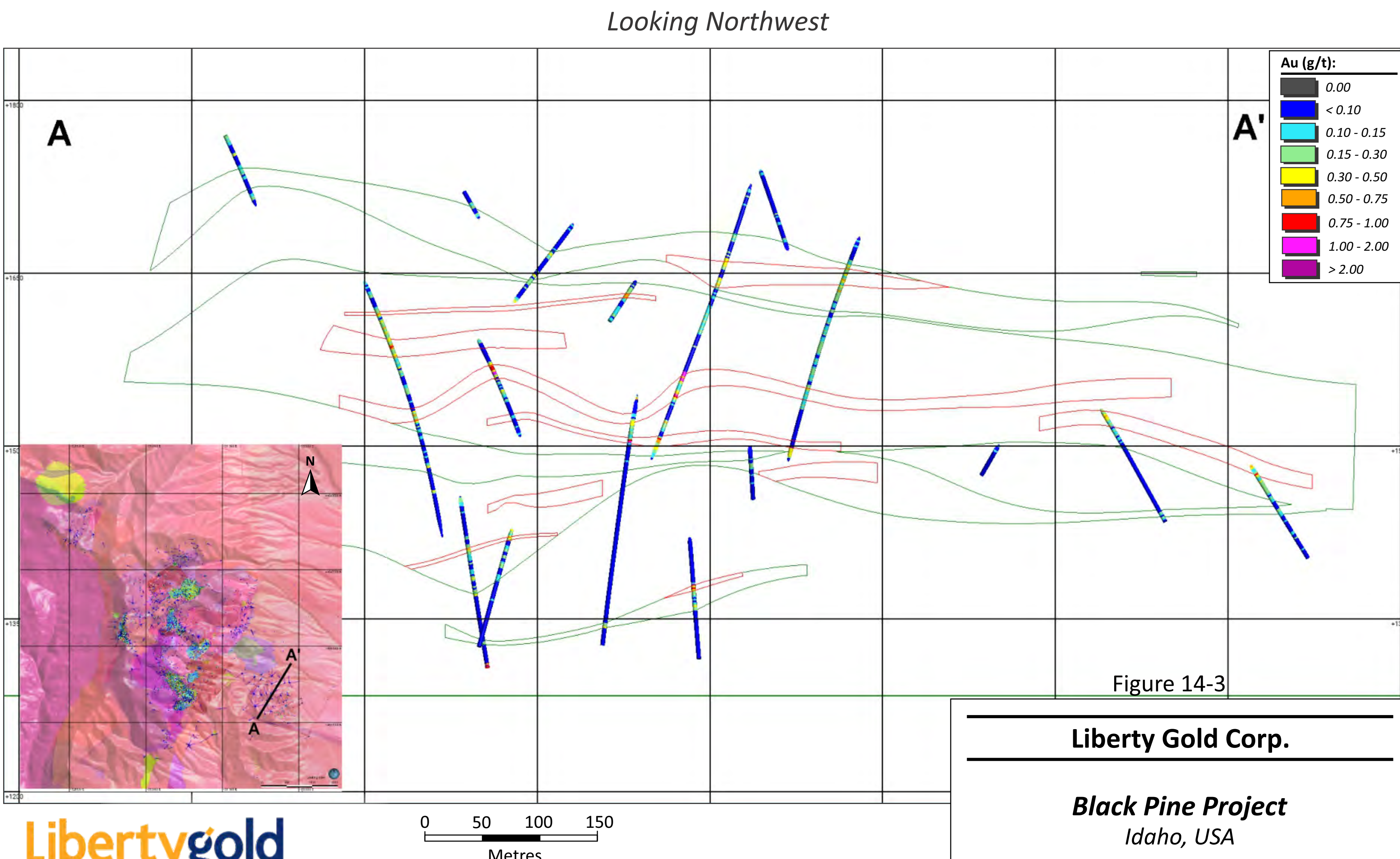


Figure 14-3

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Wireframe Model Through Rangefront Zone

Libertygold
The Science of Discovery®

March 2023

Source: SLR, 2023.

14.5.3 Oxidation and Modelling of Carbonaceous Material

Gold mineralization intersected by drilling is overwhelmingly oxidized, although irregularly distributed bodies of unoxidized mineralization do occur in various middle-plate stratigraphic units and are typically associated with zones of black carbonaceous shale or siltstone. These zones are characterized by very low cyanide-soluble to fire-assay gold ratios and current metallurgical test work confirms that these materials are preg-robbing, which is consistent with historical reports from Pegasus' mining operation. While typically of limited extents within mineralized zones, much larger bodies of unoxidized carbonaceous rock have been intersected by drillholes in areas adjacent to mineralized zones. Exposures of carbonaceous rock can be seen in the walls of some of the historical open pits.

The unoxidized carbonaceous zones were modelled by Liberty Gold as part of the geological model created in Leapfrog as solids that were used to code recovery in the resource block model. All areas identified by these solids were coded with 0.1% recoveries and are excluded from the Mineral Resource statement.

Some areas of mineralization, most notably in the Polb unit, show cyanide gold solubilities that are somewhat lower than the adjacent Pola and Polc units and have little to no associated sulphides or carbonaceous materials. At present, these low-cyanide-solubility occurrences are hypothesized to be related to the presence of clays that inhibit the extraction of gold, indicated by the cyanide shake-leach analyses performed routinely by ALS on the drill samples. While these occurrences are not explicitly modelled, they do influence the metallurgical recoveries of the Polb unit that are coded into the model. Figure 14-4 shows the carbon (modelled in gray) along with the high- and low-grade domains, and the lithology model.

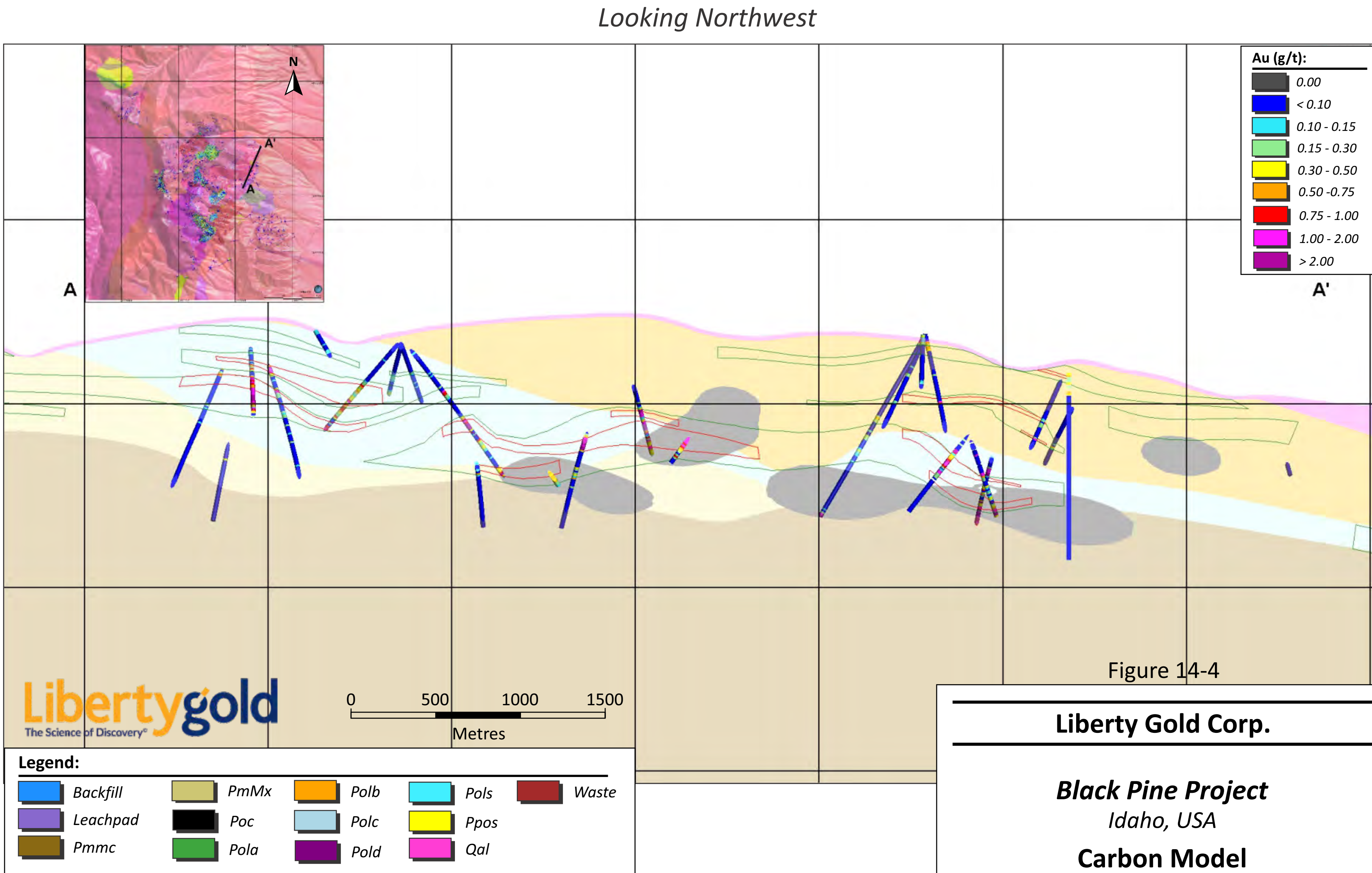


Figure 14-4

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Carbon Model

March 2023

Source: SLR, 2023.

14.5.4 Waste Indicator Domains

A common concern with low grade disseminated gold deposits is the influence of mineralized samples smearing into localized areas of little to no mineralization that get captured by the wireframes which model the overall mineralization trends. To address this, SLR used the 'Indicator RBF Interpolant' tool within the Leapfrog software to create waste domains. The results are solids which are then used to code the corresponding blocks in the model with a grade value of 0 g/t Au. Figure 14-5 is an example of the waste indicator domains contained within the low-grade domains.

Looking Northwest

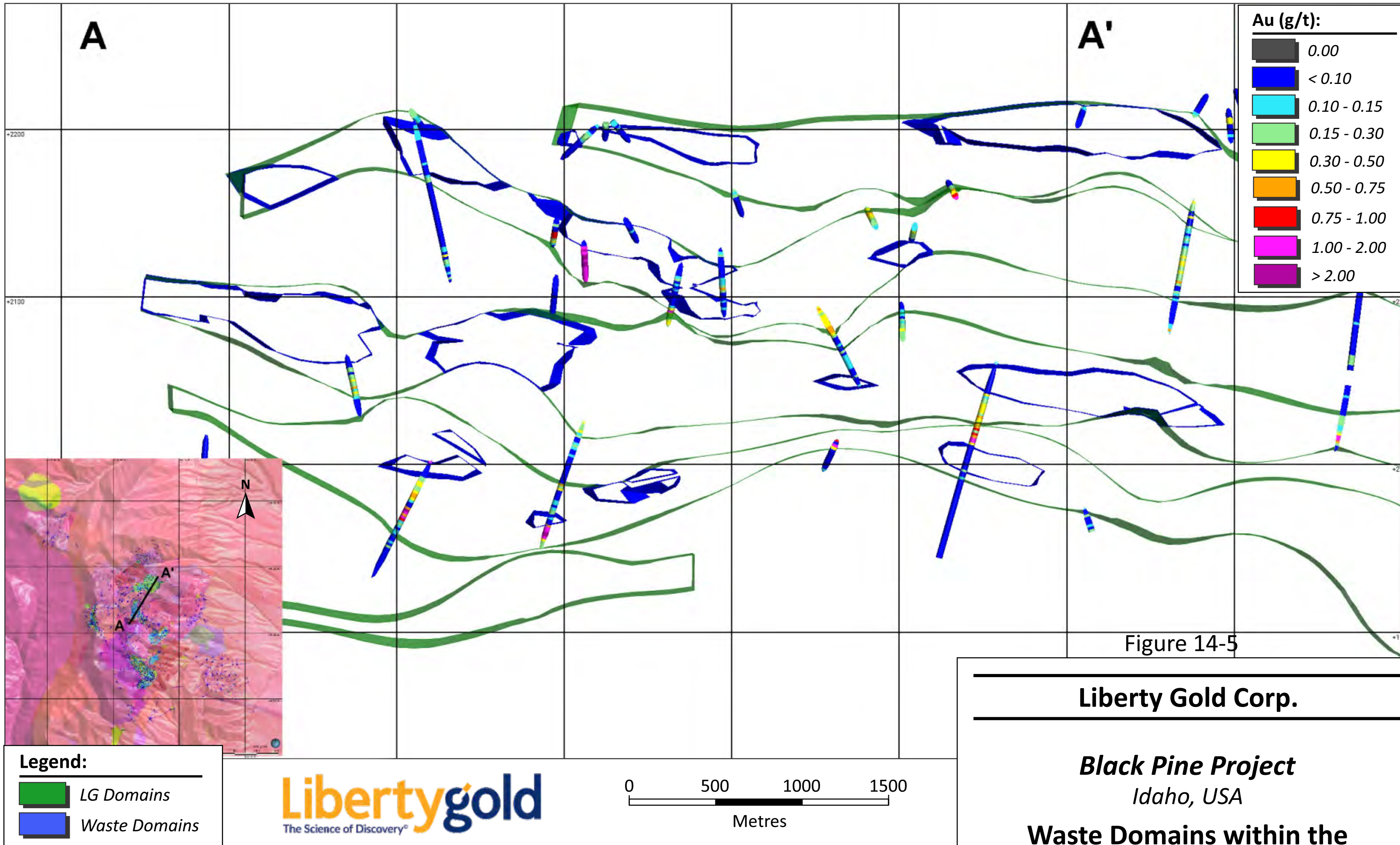


Figure 14-5

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Waste Domains within the Low-Grade Domains

March 2023

Source: SLR, 2023.

14.5.5 Backfill and Waste Dumps

Liberty Gold's geologist provided solids as part of the geologic model that reference backfill and waste dumps scattered throughout the property, which were placed by the previous operators of the Black Pine mine. A drilling program was designed and executed by Liberty Gold to better understand the grade of the material contained withing these remnant dumps. A total of 137 drill holes (81 waste dumps, 56 backfill dumps) were drilled. These drill holes allowed for a grade estimation into the blocks contained within the volumes of the solids provided and coded into the block model. Figure 14-6 shows the waste dumps.

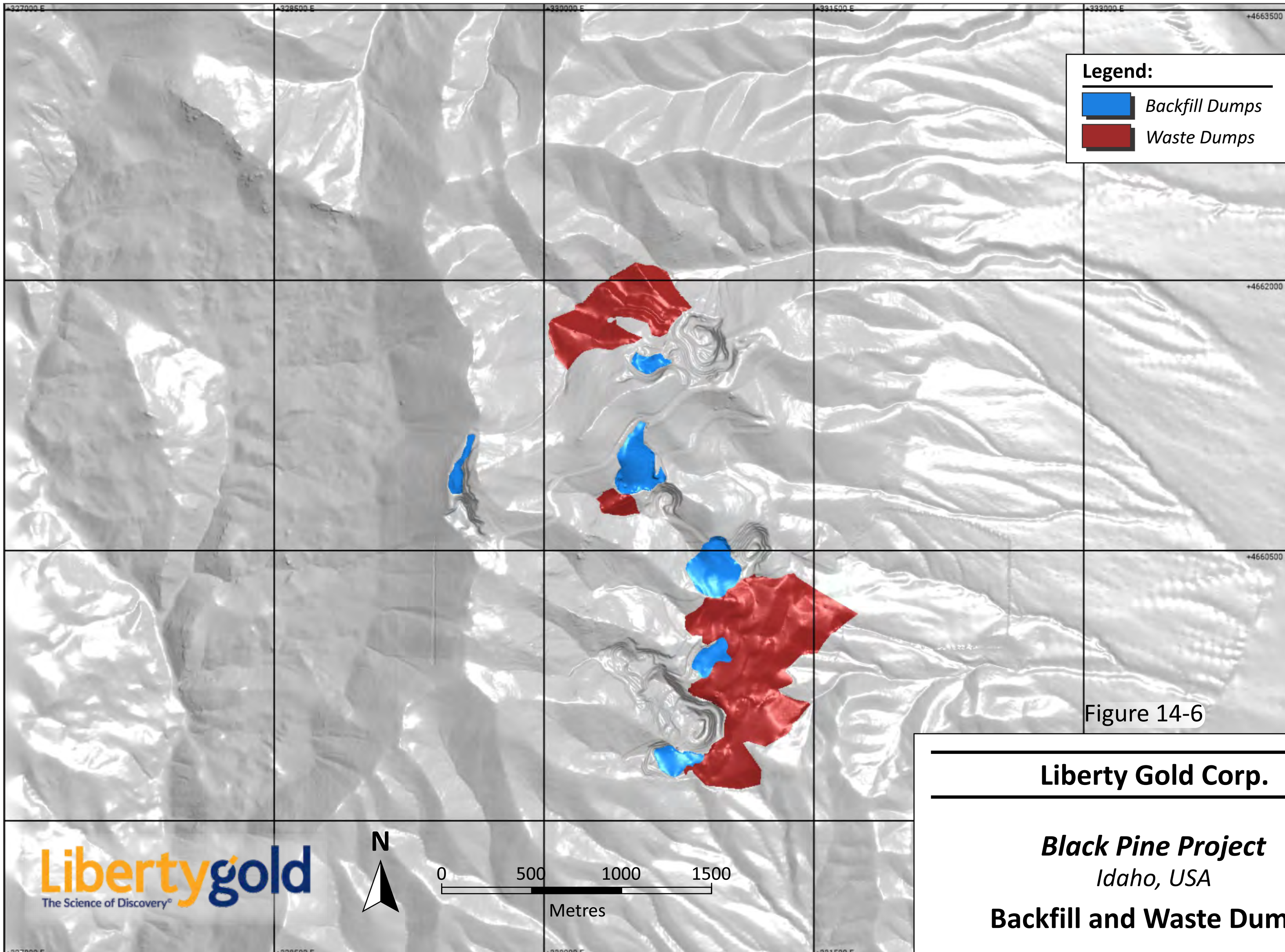


Figure 14-6

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Backfill and Waste Dumps

March 2023

Source: SLR, 2023.

14.6 Capping

Where the assay distribution is skewed positively or approaches log-normal, erratic high grade assay values can have a disproportionate effect on the average grade of a deposit. One method of treating these outliers to reduce their influence on the average grade is to cut or cap them at a specific grade level.

The SLR QP is of the opinion that the influence of high-grade gold assays must be reduced or controlled and uses a number of industry best practice methods to achieve this goal, including capping of high grade values. SLR employs a number of statistical analytical methods to determine an appropriate capping value including preparation of frequency histograms, probability plots, decile analyses, and capping curves. Using these methodologies, the SLR QP examined the selected capping values for the mineralized domains for the Project.

During this process it was noted that there were two high-grade domains (3200 and 3201) from the E Pit zone which had significantly higher assay populations and were analyzed separately from the other high-grade domains within the E Pit zone.

Examples of the capping analysis are shown in Figure 14-7 and Figure 14-8 as applied to the data set for the mineralized domains. Capped assay thresholds by high-grade and low-grade zones within the respective areas are summarized in Table 14-5.

Capped assay statistics by zones are summarized in Table 14-6 and compared with uncapped assay statistics.

In the SLR QP's opinion, the selected capping values are reasonable and have been correctly applied to the raw assay values for the Black Pine Mineral Resource estimate.

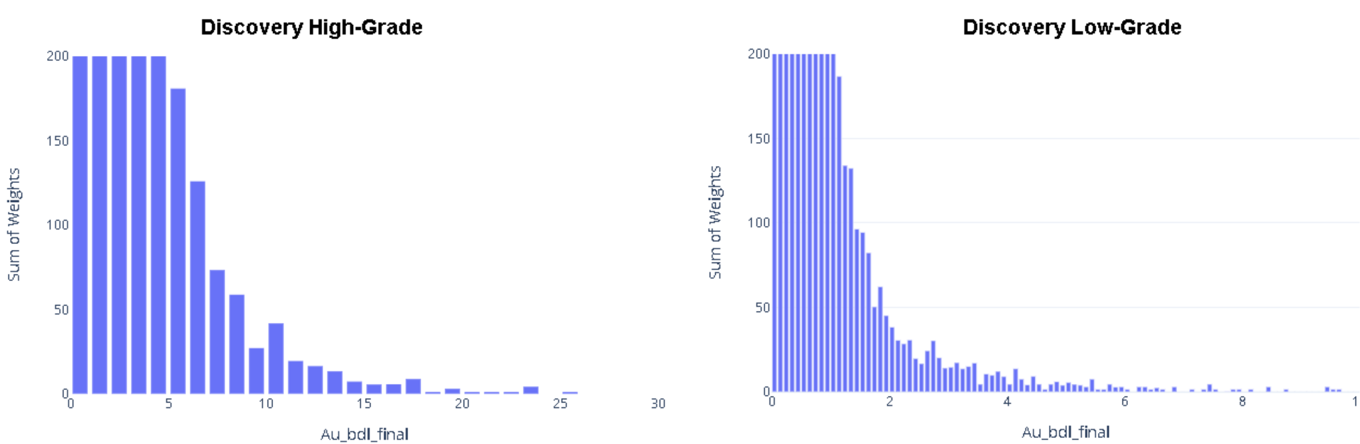
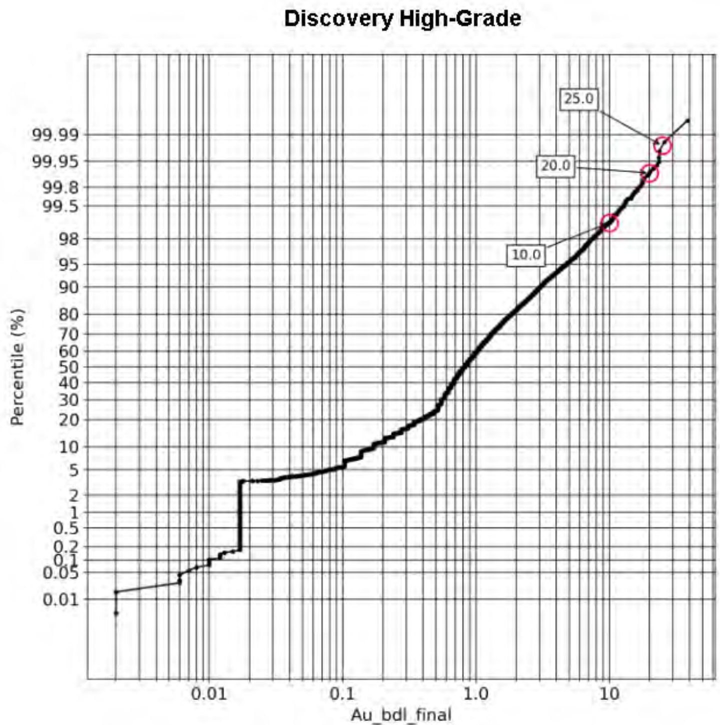


Figure 14-7: Histogram for Discovery Assays (zoomed in on y-axis)



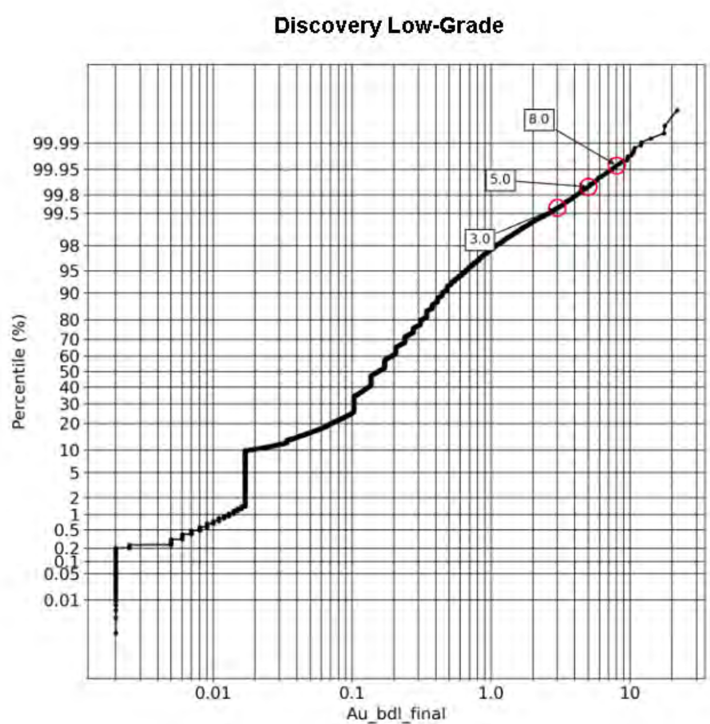


Figure 14-8: Log Probability Plots for Discovery Assays

Table 14-5: Gold Assay Caps by Mineral Domain
Liberty Gold Corp. – Black Pine Project

Area	Low Grade Cap (g/t Au)	High Grade Cap (g/t Au)
Back Range	-	8
CDF	2	8
Discovery	5	20
E Pit	3	5
E Pit_3201	-	25
E Pit_3200	-	25
J Zone	2	-
M Zone	3	8
Rangefront	1	5

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Table 14-6: Descriptive Statistics of Uncapped vs Capped Assays
Liberty Gold Corp. – Black Pine Project

Zone	HG/LG	Assays	Descriptive Statistics						
			Number of Samples	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	SD (g/t Au)	CV	Number of Caps
Back Range	HG	Au	391	0.02	12.89	1.22	1.33	1.08	
		Au Cap		0.02	8.00	1.21	1.22	1.01	2
Back Range	LG	Au	1,263	0.00	2.23	0.22	0.23	1.03	
		Au Cap		0.00	2.23	0.22	0.23	1.03	-
CDF	HG	Au	3,525	0.02	25.27	0.90	1.08	1.19	
		Au Cap		0.02	8.00	0.89	0.83	0.94	10
CDF	LG	Au	16,054	0.00	2.43	0.19	0.15	0.79	
		Au Cap		0.00	2.00	0.19	0.15	0.78	3
Disco	HG	Au	10,363	0.00	38.26	1.31	1.85	1.42	
		Au Cap		0.00	20.00	1.30	1.80	1.38	9
Disco	LG	Au	46,018	0.00	19.15	0.21	0.38	1.78	
		Au Cap		0.00	5.00	0.21	0.30	1.44	45
E Pit	HG	Au	371	0.02	21.12	1.10	1.40	1.28	
		Au Cap		0.02	5.00	1.05	0.92	0.88	4
E Pit_3200	HG	Au	167	0.02	46.70	4.53	6.69	1.48	

Zone	HG/LG	Assays	Number of Samples	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	SD (g/t Au)	CV	Number of Caps
				Descriptive Statistics					
		Au Cap		0.02	25.00	4.29	5.57	1.30	3
E Pit_3201	HG	Au	394	0.02	35.52	2.96	4.74	1.60	
		Au Cap		0.02	25.00	2.91	4.44	1.53	3
E Pit	LG	Au	5,592	0.00	7.16	0.20	0.26	1.32	
		Au Cap		0.00	3.00	0.19	0.23	1.16	8
J Zone	HG	Au	464	0.02	9.12	0.95	1.00	1.05	
		Au Cap		0.02	9.12	0.95	1.00	1.05	-
J Zone	LG	Au	2,535	0.02	4.56	0.20	0.23	1.18	
		Au Cap		0.02	2.00	0.19	0.21	1.07	4
M Zone	HG	Au	506	0.02	14.81	1.44	1.53	1.06	
		Au Cap		0.02	8.00	1.41	1.35	0.96	4
M Zone	LG	Au	2,148	0.01	3.50	0.20	0.21	1.09	
		Au Cap		0.01	3.00	0.20	0.21	1.08	1
Rangefront	HG	Au	3,796	0.00	11.15	0.63	0.79	1.26	
		Au Cap		0.00	5.00	0.62	0.70	1.13	25
Rangefront	LG	Au	16,222	0.00	9.18	0.14	0.14	0.99	
		Au Cap		0.00	1.00	0.14	0.11	0.78	24

14.7 Compositing

Composites were created from the capped, raw assay values using the downhole compositing function of Leapfrog's modelling software package. The composite lengths used during interpolation were chosen considering the predominant sampling length, the minimum mining width, style of mineralization, and continuity of grade.

The capped assays were composited at 3.048 m (10-foot) down-hole intervals, respecting the mineral domain boundaries. The composite length is equal to twice the average sample length of the assays. A small number of unsampled and missing sample intervals were ignored. Residual composites were maintained in the dataset. The composite statistics by domains are in Table 14-7.

Table 14-7: Summary of Gold Composite Data by Domain
Liberty Gold Corp. – Black Pine Project

Zone	HG/LG	Count	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	SD (g/t Au)	CV
Back Range	HG	216	0.02	7.06	1.18	1.02	0.87
Back Range	LG	723	0.01	2.06	0.23	0.21	0.92

Zone	HG/LG	Count	Min (g/t Au)	Max (g/t Au)	Mean (g/t Au)	SD (g/t Au)	CV
CDF	HG	2,014	0.02	8.00	0.86	0.70	0.81
CDF	LG	8,371	0.00	1.53	0.19	0.13	0.69
Disco	HG	5,616	0.00	20.00	1.28	1.61	1.26
Disco	LG	24,124	0.00	5.00	0.21	0.28	1.30
E Pit	HG	206	0.02	4.35	1.05	0.79	0.75
E Pit_3200	HG	84	0.02	24.33	4.19	5.24	1.25
E Pit_3201	HG	212	0.02	25.00	2.78	3.92	1.41
E Pit	LG	3,053	0.01	3.00	0.19	0.19	0.99
J Zone	HG	251	0.04	5.68	0.93	0.78	0.84
J Zone	LG	1,364	0.02	1.88	0.19	0.18	0.94
M Zone	HG	274	0.02	6.86	1.38	1.12	0.81
M Zone	LG	1,165	0.01	1.90	0.20	0.18	0.89
Rangefront	HG	1,978	0.01	5.00	0.62	0.64	1.03
Rangefront	LG	8,426	0.00	1.00	0.14	0.09	0.68

14.8 Trend Analysis

SLR generated experimental semi-variograms using the 3.048 m gold composited values located within selected individual mineralized domains. The major and semi-major directions were fit in the plane of the mineralization, which was defined with consideration to a series of progressively higher gold grade shells generated within each domain. Experimental semi-variograms were fit with a nugget and one to two structures as required. Downhole variograms were used to model the nugget effect and to fit the across-strike variogram models. The variograms were used to support search ellipsoid distances, linear trends observed in the data, and Mineral Resource classification decisions.

Figure 14-9 shows the results of the experimental variograms for the 203 domains within the Discovery Zone.

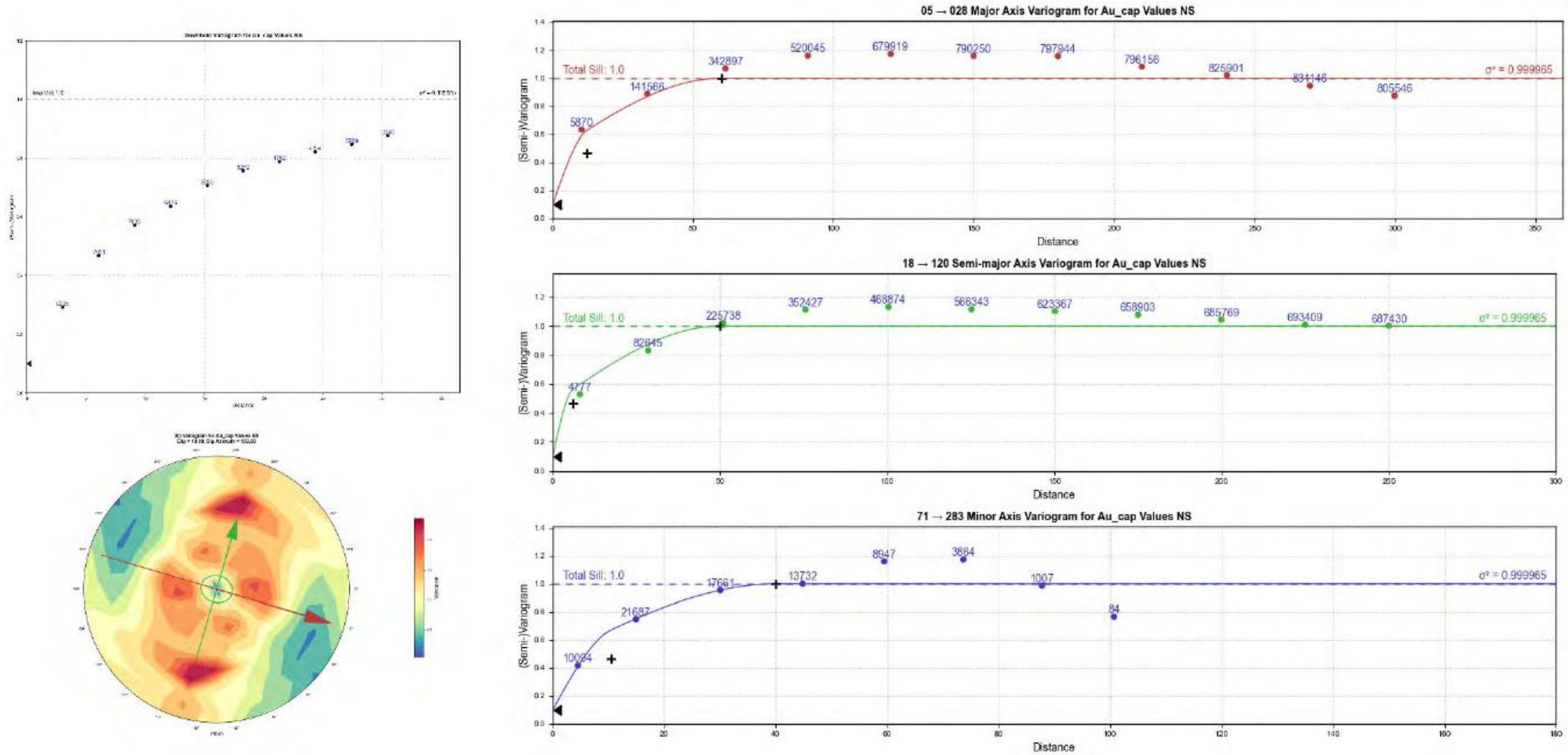


Figure 14-9: Variogram for Discovery Zone

14.9 Search Strategy and Grade Interpolation Parameters

Grade interpolation used ID^3 and three passes of increasing search ellipse dimensions and relaxed composite restrictions to estimate gold grades into the block models. In SLR's opinion, the estimation strategies are appropriate for this type of deposit.

Search ellipses for grade interpolation were oriented using dynamic anisotropy, with the longest axis parallel to the strike of mineralization and in line with grade trends, and a narrow across strike dimension to limit lateral smoothing Search distances increase with each pass and are described in Table 14-8. An NN estimation as well as an ID^2 were prepared for comparison purposes.

Table 14-8: Grade Interpolation Parameters
Liberty Gold Corp. – Black Pine Project

Type	Pass	Ellipse Size (m)	Min Comps	Max. Comps	Max per DH
	1	80x80x10	3	12	2
Mineralized Domain	2	160x160x15	3	12	2
	3	320x320x20	1	12	2
	1	60x60x10	3	20	2
Backfill/Waste Dump	2	90x90x15	3	20	2
	3	90x90x15	1	20	2

14.10 Block Models

A total of seven different sub-blocked block models were created across the Black Pine Project to allow for easier data handling. After the models were finalized, one large sub-blocked model was created through the combining of the models using Geovia Surpac software. Table 14-9 describes the model dimensions for all the models, including the combined final model. SLR considers the block model sizes to be appropriate for the mining methods and dip of the mineralized zones. SLR notes that the combined block model was re-blocked prior to pit optimization and reporting.

Table 14-9: Black Pine Block Sizes and Origins
Liberty Gold Corp. – Black Pine Project

Deposit	Block Model Type	Parent (sub-block) Block Size			Origin			Rotation Z-axis (°)
		X-axis (m)	Y-axis (m)	Z-axis (m)	X-axis (m)	Y-axis (m)	Z-axis (m)	
Back Range	Sub-blocked	10 (2.5)	10 (2.5)	5 (1.25)	4,662,300	327,900	1,900	0
CDF	Sub-blocked	10 (2.5)	10 (2.5)	5 (1.25)	4,658,400	329,500	1,500	0
Discovery	Sub-blocked	10 (2.5)	10 (2.5)	5 (1.25)	4,659,900	329,800	1,700	0
E Pit	Sub-blocked	10 (2.5)	10 (2.5)	5 (1.25)	4,660,200	329,100	2,100	0
J Zone	Sub-blocked	10 (2.5)	10 (2.5)	5 (1.25)	4,661,500	329,100	1,700	0

Deposit	Block Model Type	Parent (sub-block) Block Size X-axis (m)	Parent (sub-block) Block Size Y-axis (m)	Parent (sub-block) Block Size Z-axis (m)	Origin X-axis (m)	Origin Y-axis (m)	Origin Z-axis (m)	Rotation Z-axis (°)
M Zone	Sub-blocked	10 (2.5)	10 (2.5)	5 (1.25)	4,660,400	331,200	1,500	0
Rangefront	Sub-blocked	10 (2.5)	10 (2.5)	5 (1.25)	4,658,800	331,500	1,250	0
Combined Final	**Sub-blocked**	**10 (2.5)**	**10 (2.5)**	**5 (1.25)**	**4,658,400**	**327,900**	**1,250**	**0**
Combined Final	**Re-Blocked**	**10**	**10**	**5**	**4,658,400**	**327,900**	**1,250**	**0**

14.11 Bulk Density

Bulk specific-gravity (SG) measurements were performed on a total of 1,292 core samples to understand the various densities of the Project. Samples were taken from waste and mineralized intervals in holes drilled in 2019 through 2022 from across the project. The data indicates that the densities are influenced primarily by lithology, with secondary effects related to the intensity of gold mineralization. Drill hole logging entries indicate that gold grades tend to increase as porosity increases due to decalcification of receptive lithologies, and decalcification can lead to measurable decreases in densities.

Table 14-10 lists the lithologic units coded into the resource block model and their assigned density values.

Table 14-10: Block Model Densities by Lithology and Gold Domain
Liberty Gold Corp. – Black Pine Project

Lith Unit	Waste Domain (g/cm^3)	Waste Domain Count	Mineralized Domain (g/cm^3)	Mineralized Domain Count
Poc	2.43	44	2.45	16
PPos	2.46	29	2.44	65
Pola	2.53	35	2.48	238
Polb	2.43	86	2.43	139
Polc	2.53	51	2.44	180
Pold	2.62	83	2.57	148
Pols	2.59	20	2.50	114
PmMx	2.59	29	2.53	13
Pmmc	2.63	2	2.6	-
QAL	1.8	-	1.8	-
Waste	1.8	-	1.8	-
Backfill	1.8	-	1.8	-

14.12 Reasonable Prospects of Eventual Economic Extraction

14.12.1 Cut-off Grade

Metal prices used for the Mineral Resource estimation are based on consensus, long term forecasts from banks, financial institutions, and other sources.

The marginal ROM leach cut-off grade of 0.07 g/t Au for the Black Pine property is based on a US$1,800/oz Au price for Mineral Resources with a metallurgical recovery of 75%. The block model is coded with metallurgical recovery equations based on rock type and gold content. The marginal cut-off grade excludes mining costs. Table 14-11 summarizes parameters used in the calculation of the cut-off grade used for the Mineral Resource estimation.

Table 14-11: Black Pine Resource Cut Off Grade Summary
Liberty Gold Corp. – Black Pine Project

Parameter	Units	Black Pine
Gold Price	US$/oz	1,800
Resource Category		Ind & Inf
Dore Freight, Security & Insurance	$/oz produced	2.20
Royalties (2.5% of Au Price)	$/oz produced	45.00
Total Selling Cost	**$/oz produced**	**47.20**
Processing Gold Recovery[1]	%	75
Process Cost	$/t leached	2.00
Site General Cost	$/t leached	0.80
Total Process and Site Cost	**$/t leached**	**2.80**
Marginal Plant Cut-Off Grade[2] (Excluding Mining Cost)	**g/t Au**	**0.07**

1. The metallurgical recoveries vary from 63% - 83% based on the rock type and Au grade.
2. For all reporting purposes, a marginal cut-off grade of 0.20g/t Au is used.

A cut-off grade of 0.20 g/t Au was selected for reporting Mineral Resources to account for uncertainties in the inputs to the cut-off grade calculation. Figure 14-10 shows the conceptual pit shells with a 0.20 g/t Au grade cut-off in relation to the block model.

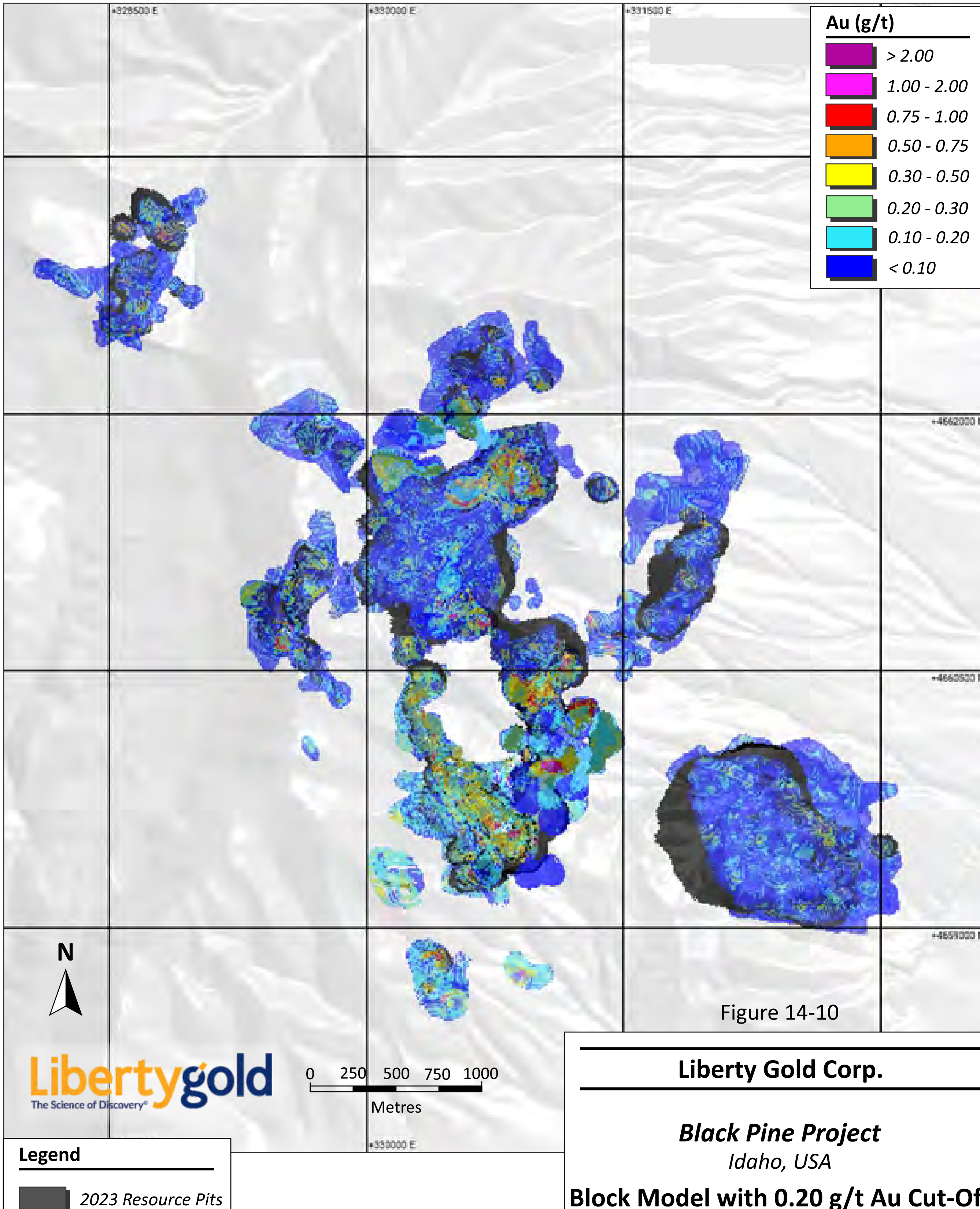


Figure 14-10

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Block Model with 0.20 g/t Au Cut-Off Resource Pit Shells

March 2023

Source: SLR, 2023.

14.12.2 Pit Optimization

To fulfill the CIM requirement of "reasonable prospects for eventual economic extraction", or RPEEE, SLR prepared conceptual open pit shells for the Project to constrain the block model for Mineral Resource reporting purposes.

Pit optimization was conducted in Whittle software utilizing the Lerchs-Grossmann (LG) algorithm to generate a pit shell based on a regular block model (10 m by 10 m by 5 m in size) and a set of input economic and technical parameters summarized in Table 14-12. The Overall Slope Angle (OSA) used in the optimization ranged from 45°to 47° and is based on Knight Piesold's report titled "1-Report_Pit Slope Design_Rev A.pdf" dated October 20, 2022.

Whittle uses the LG algorithm to define the blocks that can be mined at a profit and creates an RPEEE shell (LG shell) based on the following information:

- Initial topography
- Overall slope angles by geotechnical zone
- Metallurgical recoveries by mineralization and rock type
- Geologic grade model with gold and silver grades, density, lithology, and mineral types
- Process and mining costs
- Incremental vertical bench mining costs
- Downstream costs, such as gold refining, royalties, freight, and marketing

The results of the pit optimization partially form the basis of the Mineral Resource statement and are used to constrain the Mineral Resource with respect to the CIM Standards. Pit optimization does not constitute an attempt to estimate reserves.

The resource pit shell input parameters are summarized in Table 14-12. Whittle treated blocks below the cut-off grade of 0.20 g/t Au as waste in preparing the pit shell.

Table 14-12: Black Pine Pit Optimization Parameters
Liberty Gold Corp. – Black Pine Project

Parameter	Units	Black Pine
Gold Price	US$/oz	1,800
Base Mining Cost	$/t	2.35
Process Cost		
Process Cost	$/t leached	2.00
Site General Cost	$/t leached	0.80
Recoveries		
Processing Gold Recovery	%	Variable: 63% - 83%
Other Costs		
Dore Freight, Security & Insurance	$/oz produced	2.20
Royalties (2.5% of Au Price)	$/oz produced	45.00

Table 14-13 presents the Black Pine Mineral Resources tabulated within conceptual pit shells developed using increasing cut-off grades. This is presented to provide grade-distribution data that allows for an assessment of the sensitivity to different pit shells and cut-off grades.

Table 14-13: Black Pine Pit Shell and Cut-Off Grade Sensitivity
Liberty Gold Corp. – Black Pine Project

	Indicated			Inferred		
Cut-off (g Au/t)	**Tonnes (000 t)**	**Grade (g/t Au)**	**Contained Metal (koz)**	**Tonnes (000 t)**	**Grade (g/t Au)**	**Contained Metal (koz)**
0.10	311,571	0.34	3,412	97,244	0.27	850
0.15	230,709	0.41	3,056	66,042	0.33	702
0.17	197,518	0.45	2,875	50,260	0.37	599
0.20	**157,267**	**0.52**	**2,613**	**35,150**	**0.43**	**483**
0.25	111,567	0.62	2,236	21,082	0.53	359
0.50	29,080	1.10	1,026	4,182	0.94	126

Notes:

1. The Project Mineral Resources are shown in bold and are comprised of all model blocks at a 0.20 g/t Au cut-off that lie within optimized resource pit shells.
2. Tabulations at higher cut-offs than used to define the mineral resources represent subsets of the mineral resources.
3. The Effective Date of the resource estimations is January 21, 2023.
4. Mineral resources that are not mineral reserves do not have demonstrated economic viability.
5. Rounding as required by reporting guidelines may result in apparent discrepancies between tonnes, grade, and contained gold content.

14.13 Classification

Definitions for Mineral Resource categories used in this Technical Report are consistent with those defined by CIM (2014) and adopted by NI 43-101. The Canadian Institute of Mining, Metallurgy and Petroleum definition Standards for Mineral Resources and Mineral Reserves (CIM, 2014) are consistent with these definitions.

A Mineral Resource is defined as 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 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.

Based on this definition of Mineral Resources, the Mineral Resources estimated in this Technical Report have been classified according to the definitions below based on geology, grade continuity, and drill hole spacing.

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 qualified person 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 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 qualified person to apply modifying factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Because an Indicated Mineral Resource has a lower level of confidence than the level of confidence of a Measured Mineral Resource, an Indicated Mineral Resource may only be converted to a Probable Mineral Reserve.

Inferred Mineral Resource 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 Reserve.

The SLR QP has considered the following factors that can affect the uncertainty associated with each class of Mineral Resources:

- Reliability of sampling data.
- Drilling, sampling, sample preparation, and assay procedures follow industry standards.
- Data verification and validation work confirm drill hole sample databases are reliable.
- No significant biases were observed in the QA/QC analysis results.

Confidence in interpretation and modelling of geological and estimation domains:

- Mineralization domains are interpreted manually in cross-sections and refined in longitudinal sections by an experienced resource geologist.
- There is good agreement between the drill holes and mineralization wireframe shapes.
- The mineralization wireframe shapes are well defined by sample data in areas classified as Indicated.

Confidence in block grade estimates:

- Indicated block grades correlate well with composite data, statistically and spatially and locally and globally.

Blocks were classified as Indicated or Inferred based on drill hole spacing, confidence in the geological interpretation, and apparent continuity of mineralization.

14.13.1 Measured Mineral Resources

There are no Measured Resources at the Black Pine Project.

14.13.2 Indicated Mineral Resources

Indicated Mineral Resources were defined where drill hole spacing of 50 m to 60 m was achieved. The drill holes spacing for indicated classification is supported with the experimental variogram ranges.

SLR notes that a few isolated areas met the criteria for Indicated classification but were supported wholly by historic drilling. These areas have been downgraded to Inferred classification until results are supported by infilled drilling by Liberty Gold.

14.13.3 Inferred Mineral Resources

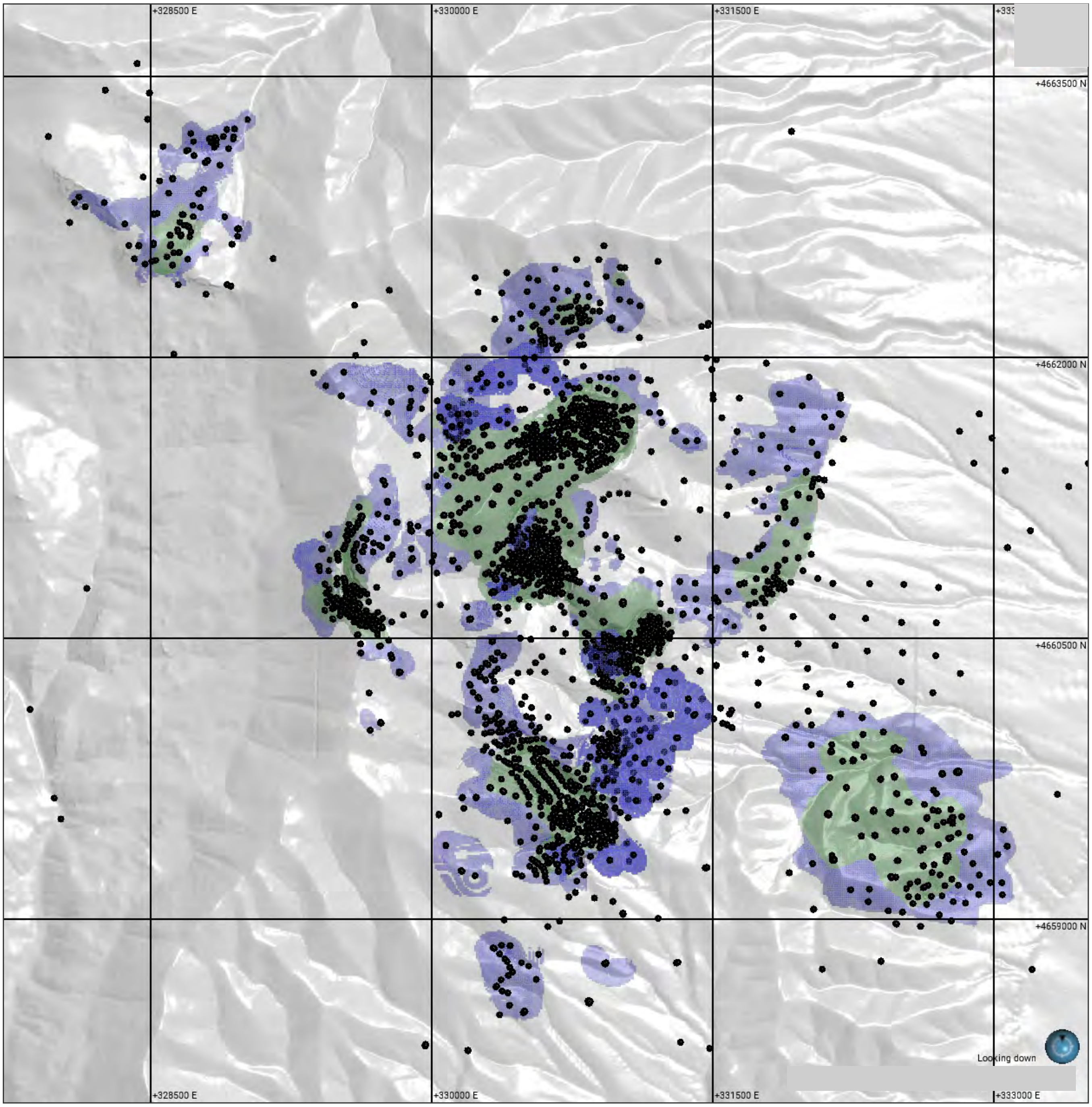
All remaining blocks contained within the wireframe model and estimated within the block model were limited to an Inferred classification.

The backfill dumps and waste dumps that contain mineralization above the cut-off grade were also classified as Inferred Mineral Resources.

14.13.4 Classification Model

The final classification for the Project is shown in Figure 14-11.

In the SLR QP's opinion the classification of Mineral Resources is reasonable and appropriate for disclosure.



Classification:
Indicated
Inferred

N
0 250 500 750 1000 1250
Metres

Libertygold
The Science of Discovery®

Figure 14-11

Liberty Gold Corp.

Black Pine Project
Idaho, USA
Classification Model

March 2023

Source: SLR, 2023.

14.14 Block Model Validation

14.14.1 Statistics

The SLR QP reviewed and validated the block model using various modelling and interpolation aspects of the Black Pine model. Observations and comments from the model validation are provided below.

The SLR QP reviewed gold grades and proportions relative to the blocks and composite samples. SLR observed that the block grades compared well with drilling and sampling and did not appear to smear significantly across sampled grades.

A statistical comparison of the estimated block grades with the 3.048 m composites is shown in Table 14-14. The block results compare well with the composites, indicating a reasonable overall representation of the gold grades in the block model. Note that spatial clustering of composite samples can affect the representativeness of the values, such as the mean, SD, and CV.

Table 14-14: Comparison of Block and Composite Gold Grades
Liberty Gold Corp. – Black Pine Project

Domain	HG/LG	Type	Count	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	SD (g/t Au)	CV
Backrange	HG	Blocks	90,766	0.03	6.00	1.08	0.63	0.58
		Comps	216	0.02	7.06	1.18	1.02	0.87
Backrange	LG	Blocks	371,102	0.02	2.05	0.24	0.15	0.62
		Comps	723	0.01	2.06	0.23	0.21	0.92
CDF	HG	Blocks	215,896	0.00	6.94	0.78	0.46	0.6
		Comps	2,014	0.02	8.00	0.86	0.70	0.81
CDF	LG	Blocks	640,321	0.00	1.43	0.20	0.09	0.43
		Comps	8,371	0.00	1.53	0.19	0.13	0.69
Disco	HG	Blocks	632,438	0.00	17.63	1.03	0.87	0.85
		Comps	5,616	0.00	20.00	1.28	1.61	1.26
Disco	LG	Blocks	1,913,509	0.00	5.00	0.23	0.19	0.83
		Comps	24,124	0.00	5.00	0.21	0.28	1.30
E Pit	HG	Blocks	16,366	0.13	3.86	0.98	0.44	0.45
		Comps	206	0.02	4.35	1.05	0.79	0.75
E Pit_3200	HG	Blocks	1,264	0.72	11.15	2.55	2.07	0.81
		Comps	84	0.02	24.33	4.19	5.24	1.25
E Pit_3201	HG	Blocks	1,713	0.32	6.19	1.60	1.25	0.78
		Comps	212	0.02	25.00	2.78	3.92	1.41
E Pit	LG	Blocks	252,948	0.02	2.88	0.20	0.11	0.53
		Comps	3,053	0.01	3.00	0.19	0.19	0.99

Domain	HG/LG	Type	Count	Minimum (g/t Au)	Maximum (g/t Au)	Mean (g/t Au)	SD (g/t Au)	CV
J Zone	HG	Blocks	46,157	0.07	4.6	0.9	0.44	0.48
		Comps	251	0.04	5.68	0.93	0.78	0.84
J Zone	LG	Blocks	413,043	0.02	1.67	0.19	0.10	0.53
		Comps	1,364	0.02	1.88	0.19	0.18	0.94
M Zone	HG	Blocks	71,992	0.03	6.34	1.35	0.79	0.58
		Comps	274	0.02	6.86	1.38	1.12	0.81
M Zone	LG	Blocks	413,419	0.02	1.9	0.21	0.13	0.63
		Comps	1,165	0.01	1.90	0.20	0.18	0.89
Rangefront	HG	Blocks	677,882	0.01	5.00	0.57	0.41	0.71
		Comps	1,978	0.01	5.00	0.62	0.64	1.03
Rangefront	LG	Blocks	1,597,674	0.01	1.00	0.16	0.07	0.43
		Comps	8,426	0.00	1.00	0.14	0.09	0.68

14.14.2 Swath Plots

SLR produced comparative statistics, including NN and ID^2 estimations, and swath plots for all deposits. Swath plots generally demonstrated good correlation, with block grades being somewhat smoothed relative to composite grades, as expected. Figure 14-12 is an example of some of the swath plots produced for validation through the CDF Zone.

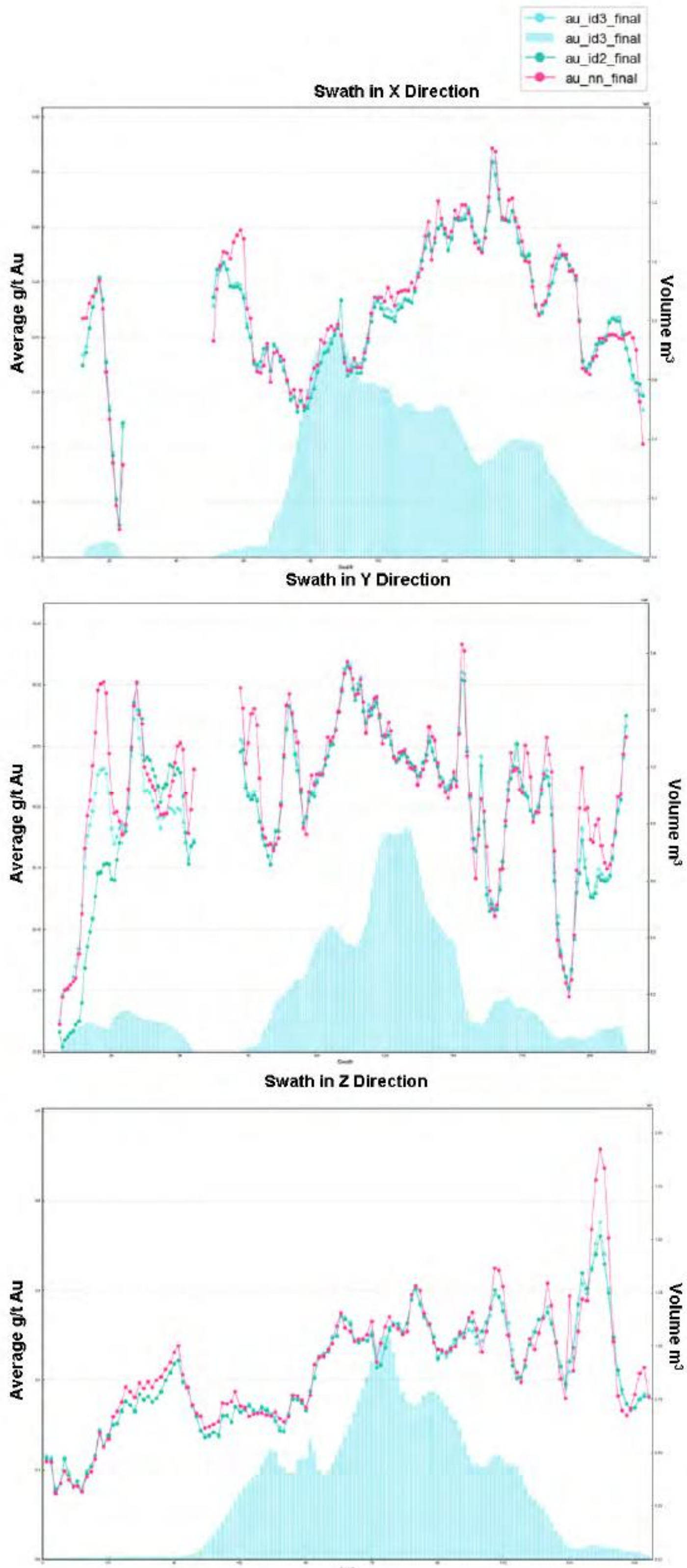
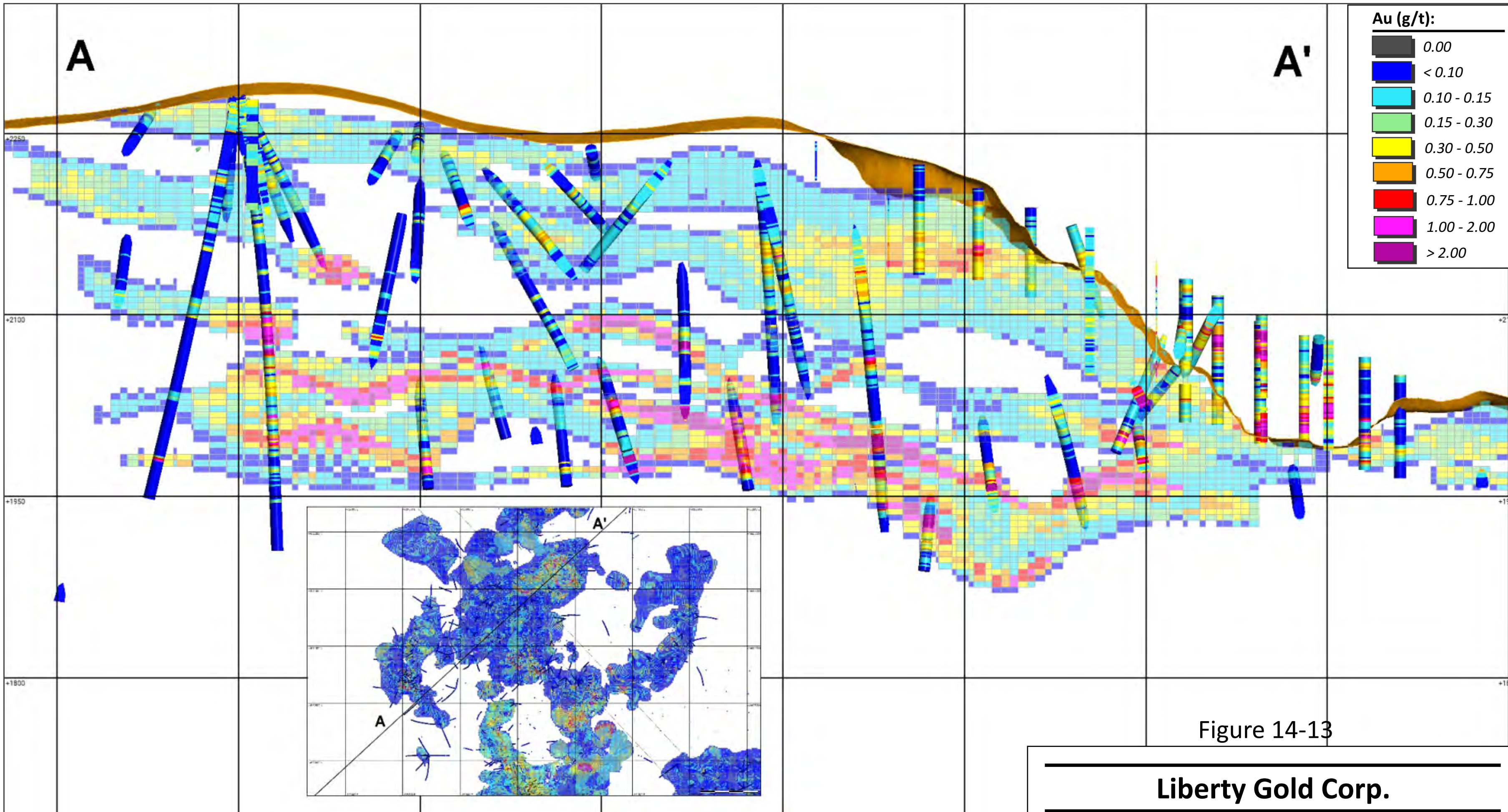


Figure 14-12: Swath Plots through CDF Zone

14.14.3 Visual Validation

SLR used visual validation tools including cross sections and plan views to compare the block model with the drilling data. Figure 14-13 through Figure 14-15 show various cross and plan view sections through different parts of the Project.



0 50 100 150 200
Metres

Figure 14-13

Liberty Gold Corp.

Black Pine Project

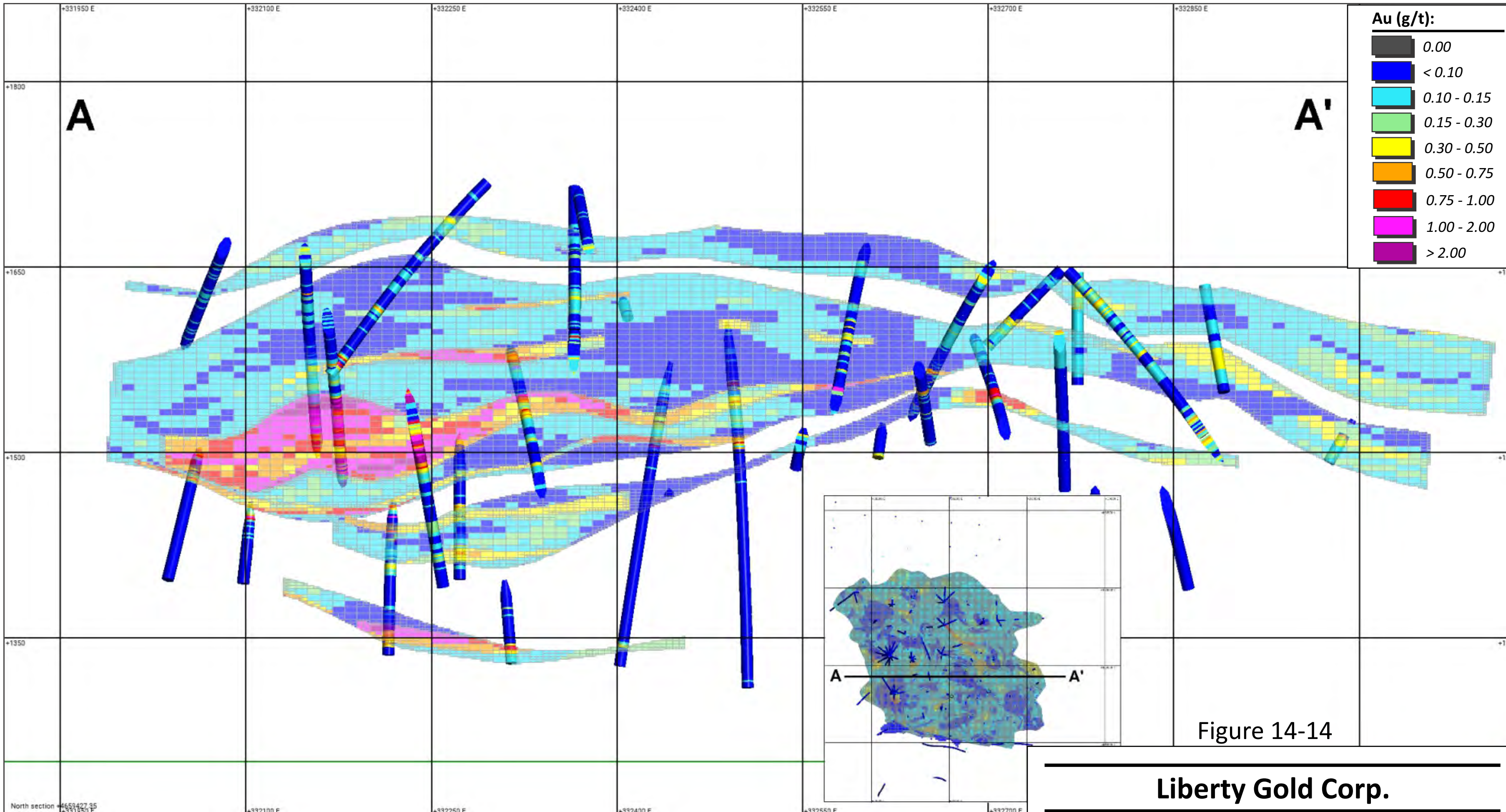
Idaho, USA

Cross Section Through Discovery Zone

Libertygold
The Science of Discovery

March 2023

Source: SLR, 2023.



0 50 100 150 200
Metres

Figure 14-14

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Cross Section Through Rangefront Zone

March 2023

Source: SLR, 2023.

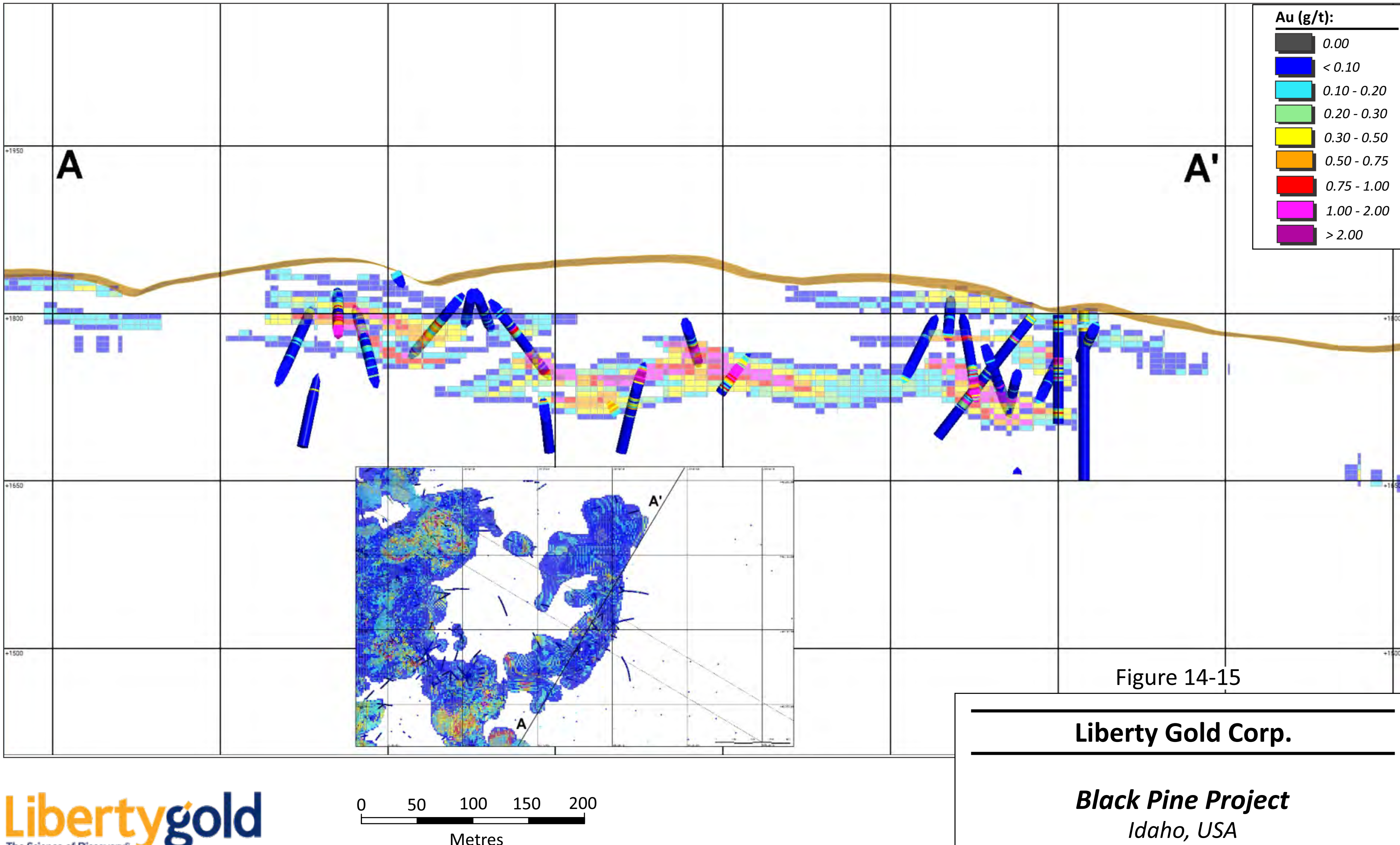


Figure 14-15

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Cross Section Through M Zone

Libertygold The Science of Discovery

March 2023

Source: SLR, 2023.

14.14.3.1 Blast Data Visual Reconciliation

A lack of production records by pits and zones means a direct reconciliation cannot be performed. However, blast hole records do exist for some of the historic pits. SLR visually compared gold assay results from blast hole data to the updated block model and found the comparisons to be favorable. Figure 14-16 is a cross section through the historic CD pit comparing gold values from historic blast holes with the block model.

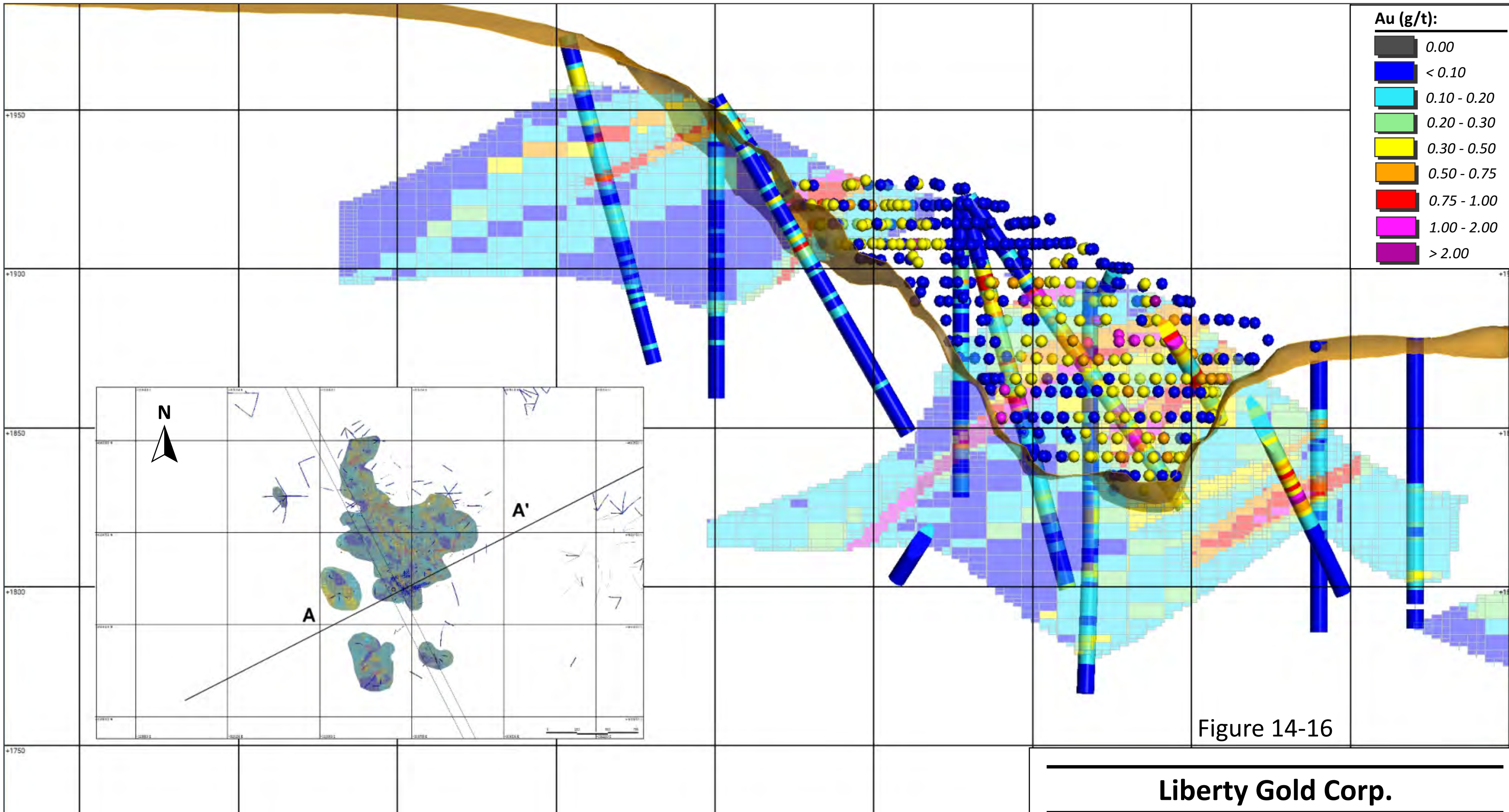


Figure 14-16

Liberty Gold Corp.

Black Pine Project

Idaho, USA

Cross Section Through CDF Zone with Blast Holes

Libertygold The Science of Discovery

0 12.5 25 37.5 50 Metres

March 2023

Source: SLR, 2023.

14.15 Grade Tonnage Sensitivity

Figure 14-17Figure 14-17 presents the sensitivity of the pit constrained Indicated and Inferred Mineral Resources for the Black Pine Mineral Resource model to various cut-off grades. The total tonnes (above 0 g/t Au) within the conceptual resource pit are 378 Mt.

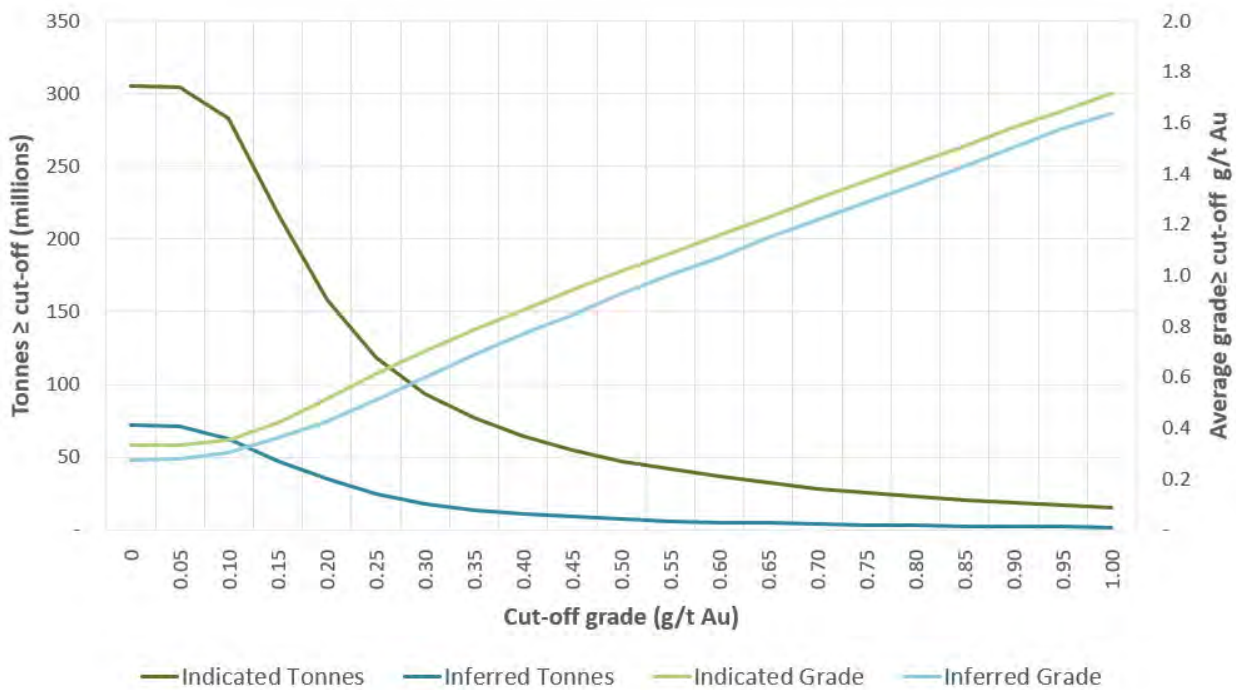


Figure 14-17: Indicated and Inferred Mineral Resource Grade Tonnage Curves

14.16 Mineral Resource Estimate Reporting

The Project resource estimate is summarized by area at a cut-off grade of 0.2 g/t Au in Table 14-15. In the SLR QP's opinion, the assumptions, parameters, and methodology used for the Project Mineral Resource estimate are appropriate for the style of mineralization. The effective date of the Mineral Resource estimate is January 21, 2023. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

The SLR QP is of the opinion that with consideration of the recommendations summarized in Section 1 and Section 23, any issues relating to all relevant technical and economic factors likely to influence the prospect of economic extraction can be resolved with further work.

The SLR QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

Table 14-15: Summary by Area of Mineral Resources as at January 21, 2023
Liberty Gold Corp. – Black Pine Project

Classification	Area	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Indicated	CDF	13,649	0.40	173
	E Pit	2,614	0.43	36
	Disco	86,275	0.54	1,498
	J Zone	1,310	0.50	21
	Rangefront	46,581	0.49	732
	M Zone	5,255	0.71	120
	Back Range	1,584	0.62	32
Total Indicated		**157,267**	**0.52**	**2,613**
Inferred	CDF	7,260	0.39	90
	E Pit	3,529	0.32	37
	Disco	8,282	0.40	107
	J Zone	3,620	0.38	44
	Rangefront	7,913	0.46	118
	M Zone	762	0.45	11
	Back Range	3,783	0.63	77
Total Inferred		**35,150**	**0.43**	**483**

Notes:

1. CIM (2014) definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at a gold cut-off grade of 0.20 g/t using a long-term gold price of US$1,800 per ounce.
3. Mineral Resources are estimated using a variable recovery derived from metallurgical studies.
4. Bulk density is variable by rock type.
5. There are no Mineral Reserves currently estimated at the Black Pine Project.
6. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
7. Mineral Resources are reported within conceptual open pit shells.
8. Rounding as required by reporting guidelines may result in apparent discrepancies between tonnes, grades, and contained gold content.
9. The effective date of the Mineral Resource estimate is January 21, 2023.

15.0 MINERAL RESERVE ESTIMATE

There are no Mineral Reserves estimated at the Project.

16.0 MINING METHODS

This section is not applicable.

17.0 RECOVERY METHODS

This section is not applicable.

18.0 PROJECT INFRASTRUCTURE

This section is not applicable.

19.0 MARKET STUDIES AND CONTRACTS

This section is not applicable.

20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

This section is not applicable.

21.0 CAPITAL AND OPERATING COSTS

This section is not applicable.

22.0 ECONOMIC ANALYSIS

This section is not applicable.

23.0 ADJACENT PROPERTIES

There are no adjacent properties to report in this section.

24.0 OTHER RELEVANT DATA AND INFORMATION

No additional information or explanation is necessary to make this Technical Report understandable and not misleading.

25.0 INTERPRETATION AND CONCLUSIONS

The Black Pine project data is considered to be acceptable for use in the estimation of the project mineral resources, and the authors are unaware of any significant risks or uncertainties that could be expected to affect the reliability of the estimated resources.

The updated mineral resource estimate outlines a large, oxidized gold deposit that is similar in nature to other oxidized bulk tonnage gold deposits that are currently in production throughout the Great Basin. Significant opportunities for resource expansion exist, including a number of undrilled, sparsely drilled, or shallowly drilled areas that surround the historical pits and lie within soil anomalies that extend beyond the drill-tested areas. Areas of shallow alluvial or upper plate cover west of the Rangefront Fault also present targets for resource expansion.

SLR offers the following conclusions by area.

25.1 Geology and Mineral Resources

- The Black Pine Project is a sedimentary rock-hosted, Carlin-type gold deposit.
- The property has been the site of previous mining and exploration activities including 30 million tonnes of ore mined, 434,000 ounces produced, and 1,877 drill holes delineating mineralization.
- The database has been through rigorous auditing and verification methods and in the opinion of the QP is adequate for Mineral Resource estimation.
- The QA/QC protocols and results conducted by Liberty Gold are to industry standards and allow for confidence in the assays used in the database.
- The Mineral Resource estimates have been prepared utilizing acceptable estimation methodologies, and the classifications of Indicated and Inferred Mineral Resources conform to CIM (2014) definitions.
- The geologic and resource interpretation models for the Project are good representations of the Projects geology and mineralization and can be relied upon for use in the Resource Estimation.
- The Mineral Resource estimation approach, including interpolation design and grade restriction, is reasonable.
- Total Mineral Resources at the Black Pine Project above a gold cut-off grade of 0.2 g/t Au are estimated to total:
  - Indicated – 157 Mt grading 0.52 g/t Au, containing 2.61 Moz Au .
  - Inferred – 35 Mt grading 0.43 g/t Au, containing 0.48 Moz Au.
- There is potential to outline additional Mineral Resources with additional exploration drilling programs at the Black Pine Project.

25.2 Metallurgical Test Work

- The Black Pine Project is predominantly an oxide deposit with very little sulfides and some organic carbon.
- All carbonaceous and sulfide material has been geologically identified (3D modelled) and this material is excluded from the ROM heap leach metallurgical recovery domains.

- The Black Pine oxide resources are amenable to low-cost ROM conventional heap leaching.
  - Oxide resources demonstrate low sensitivity to heap leach feed particle size.
  - Cyanide and lime consumptions are low.
- Black Pine deposits are characterized as having low silica and high carbonate content, making them non-acid generating and amenable to more favorable environmental permitting and closure practices.
- Some mining face and heap-leach bench blending of modest clay (portions of Pola and Polb resources from Discovery Zone) is planned.
- Potential cyanide consuming elements are low (S=, Cu, Ni, and Zn). Other potential toxic elements are also very low (As, Hg, and Se).

25.3 Risks

The QPs note the following risks:

- A better understanding of the original material contributing to the backfill dumps and waste dumps needs to be considered. The material types need to be studied to be certain that proper care and handling of the material is taken to de-risk any of the material being sent for processing or further storage.
- A lack of production records prevents any meaningful reconciliation work for the project.

In the QP's opinion, there are no other significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information presented in this Technical Report and the data provided to SLR by Liberty Gold, and is believed to be reasonably representative of the Property geology and gold mineralization.

26.0 RECOMMENDATIONS

SLR offers the following recommendations.

26.1 Geology and Mineral Resources

1. Submit density samples for the backfill dumps, waste dumps, and the quaternary alluvium (QAL) rock type to assist in estimating tonnages for mine design and operations planning.
2. Carry out a Phase I work program totalling approximately $10.5 million, that includes RC and core drilling and additional metallurgical testing, with the intent to update the resource in late 2023. Drilling should focus on upgrading Inferred portions of the current Resources to Indicated, step-out drilling along the margins of defined zones of mineralization, and testing of new targets.
3. Subject to positive Phase I results, complete a Phase II work program totalling approximately US$17.5 million. The Phase II program would allow for continued exploration and resource definition drilling, metallurgical testing, permitting activities, and completion of a pre-feasibility study including all studies not already completed in Phase 1.

The costs of the recommended phased programs are detailed in Table 26-1. Phase II is dependent on the results of the Phase I work program.

Table 26-1: Recommended Black Pine Project Budget
Liberty Gold Corp. – Black Pine Project

Activity	Phase I		Phase II	
	Exploration	Development	Exploration	Development
Drilling	3,613,000	195,000	3,500,000	1,750,000
Geology	150,000		150,000	
Assaying and Geochemistry	1,379,000		1,300,000	450,000
Metallurgy		440,000		550,000
Engineering		125,000		250,000
Resource Estimation	170,000	150,000	150,000	150,000
Permitting	100,000	50,000	100,000	250,000
Environmental	400,000	300,000	100,000	500,000
Water Permitting	317,000	450,000	50,000	300,000
Pre-feasibility		160,000		3,500,000
Field Support	700,000		850,000	
Administrative	283,000		275,000	250,000
Wages and Salaries	1,122,000		1,100,000	1,000,000
ESG	50,000		50,000	200,000
Contingency	250,000	50,000	250,000	450,000
Total	**8,534,000**	**1,920,000**	**7,875,000**	**9,600,000**
	10,454,000		**17,475,000**	

26.2 Metallurgical Test Work

The following work is needed to progress Black Pine metallurgical development to pre-feasibility and ultimately feasibility level.

1. Complete Phase 4A, 4B, and 4C variability composite testing at KCA. Phase 4A is currently in progress.
2. Plan additional met core drilling and variability composite testing in 2023 to fill gaps in the current drilled resource to ultimately satisfy feasibility level 43-101 requirements.
3. Continue with select metallurgical domain environmental characterization of composite heads and residues to assist project engineering/design and permitting.
4. Initiate a blast fragmentation study in 2023 to finalize ROM heap leach Feed P_{80} values for each metallurgical domain to aid in finalizing gold recovery models.

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28.0 DATE AND SIGNATURE PAGE

This report titled "Technical Report on the Updated Mineral Resource Estimate at the Black Pine Project, Cassia and Oneida Counties, Idaho, USA" with an effective date of January 21, 2023 was prepared and signed by the following authors:

(Signed & Sealed) ***Ryan Rodney***

Dated at Lakewood, CO
March 10, 2023

Ryan Rodney, C.P.G.
Associate Geologist, SLR

(Signed & Sealed) ***Gary L. Simmons***

Dated at Larkspur, CO
March 10, 2023

Gary L. Simmons, MMSA
Consultant, GL Simmons Consulting LLC

(Signed & Sealed) ***Moira Smith***

Dated at Spring Creek, NV
March 10, 2023

Moira Smith, Ph.D., P.Geo.
Corporate Technical Advisor,
Liberty Gold Corp.

29.0 CERTIFICATE OF QUALIFIED PERSON

29.1 Ryan Rodney

I, Ryan Rodney, C.P.G., as an author of this report entitled "Technical Report on the Updated Mineral Resource Estimate at the Black Pine Gold Project, Cassia and Oneida Counties, Idaho, USA" with an effective date of January 21, 2023, prepared for Liberty Gold Corp., do hereby certify that:

1. I am an Associate Geologist with SLR International Corporation, of Suite 100, 1658 Cole Boulevard, Lakewood, CO, USA 80401.
2. I am a graduate of the University of Arizona in 2008 with a B.Sc. degree in Geology.
3. I am Certified Professional Geologist with the American Institute of Professional Geologists (No. CPG-11954) and a Registered Member of SME (RM #4229254). I have worked as a geologist for a total of 12 years since my graduation. My relevant experience for the purpose of the Technical Report is:
    - Mineral Resource estimation and preparation of NI 43-101 Technical Report for Jerritt Canyon.
    - Mineral Resource estimation and preparation of NI 43-101 Technical Reports for various other properties.
    - Geologic mapping, ore control, and modelling of Carlin type deposits Leeville, Turf, Four Corners, Pete Bajo etc. in Nevada, USA for previous employer Newmont Mining Corp.
    - Planning and execution of resource exploration and reserve conversion drilling.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Black Pine project on November 9, 2023.
6. I am responsible for the overall Technical Report including Sections 2 to 12, 14 to 24, and contributions to 1, 25, 26, and 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 10th day of March 2023,

(Signed & Sealed) ***Ryan Rodney***

Ryan Rodney, C.P.G.

GL Simmons Consulting, LLC

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Phone (719) 487-2899, e-mail: moooseworld@msn.com

29.2 Gary L. Simmons

I, Gary L. Simmons, QP/MMSA, as an author of this report entitled "Technical Report on the Updated Mineral Resource Estimate at the Black Pine Gold Project, Cassia and Oneida Counties, Idaho, USA", with an effective date of January 21, 2023, prepared for Liberty Gold Corp., do hereby certify that:

1. I am President/Owner with of GL Simmons Consulting, LLC, 15293 Shadow Mountain Ranch Road, Larkspur, CO 80118.
2. I am a graduate of the Colorado School of Mines in 1973 with a Bachelor of Science Degree in Metallurgical Engineering.
3. I am registered Qualified Professional (QP) Member of the Mining and Metallurgical Society of America (MMSA - 01013QP). I am also a registered member of the Society for Mining, Metallurgy and Exploration of SME, Member ID 2959300. I have worked as a metallurgical engineer for a total of 50 years since my graduation. My relevant experience for the purpose of the Technical Report is:
   - Geo-metallurgical characterization of mineral deposits,
   - Design and management of metallurgical test programs,
   - Modelling of test data and development of metal recovery domains,
   - Process flowsheet development and
   - Engineering/design support.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I visited the Black Pine Project on numerous occasions: June 3, 2019, October 18-19, 2019, June 22-23, 2020, and May 13, 2021 as a consultant to Liberty Gold.
6. I am responsible for Section 13 and contributions to Sections 1, 25, 26, and 27 of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
8. I have been a consultant and QP contributor to previous technical reports on the Black Pine Project that is the subject of the Technical Report.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated 10th day of March 2023

(Signed & Sealed) *Gary L. Simmons*

Gary L Simmons, QP/MMSA

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29.3 Moira T. Smith

I, Moira T. Smith, Ph.D., P.Geo., as an author of this report entitled "Technical Report on the Updated Mineral Resource Estimate at the Black Pine Gold Project, Cassia and Oneida Counties, Idaho, USA" with an effective date of January 21, 2023, prepared for Liberty Gold Corp., do hereby certify that:

1. I am a geologist residing at 928 Hardrock Place, Spring Creek, NV 89815, and am employed by Liberty Gold Corp. as Vice President, Exploration and Geoscience, and:
2. I graduated from Pomona College, with a B.A in Geology in 1983. I obtained a M.Sc. in Geology from Western Washington University in 1986, and a Ph.D. in Geology from the University of Arizona in 1990. I have practiced my profession continuously since 1990.
3. I am a Professional Geoscientist (P.Geo.) registered in good standing with the Association of Professional Engineers and Geoscientists of British Columbia (#122720); I have relevant experience having led or participated in geological studies supporting 6 advanced exploration and development projects and/or operations, in 4 different countries.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43- 101") and certify that, by reason of my education, affiliation with professional associations (as deemed in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
5. I have visited the Black Pine project site on a regular basis since 2016.
6. I prepared Sections 2 to 10 and 15 to 24 of this report and contributed to 1, 25, 26, and 27 of the Technical Report.
7. I am not independent of Liberty Gold Corp. (the "Issuer") applying all the tests in Section 1.5 of NI 43-101, and acknowledge that I hold securities of the Issuer in the form of stock and stock options.
8. I have worked on the Black Pine project in a technical capacity since August 2016.
9. I have read NI 43-101, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.
10. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all of the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated this 10th day of March 2023,

(Signed & Sealed) ***Moira T. Smith***

Moira T. Smith, Ph.D., P.Geo.