

NI 43-101 2024 UPDATED MINERAL RESOURCE ESTIMATE FOR THE WHISTLER PROJECT

South Central Alaska Centred at 6,872,000 N and 520,000 E (NAD 83)

Submitted to: **GoldMining Inc. and U.S. GoldMining Inc.** 1830-1188 West Georgia St. Vancouver, B.C. V6E 4A2, Canada Tel: 604.630.1000

Effective Date: 12 September 2024 Date of Issue: 20 November 2024

Submitted by: **Moose Mountain Technical Services** #210 1510-2nd St. North Cranbrook, B.C. V1C 3L2, Canada Tel: 250.489.1212

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DATE & SIGNATURE PAGES

Herewith, our report entitled "2024 Updated NI 43-101 Mineral Resource Estimate for the Whistler Project" with an effective date of 12 September 2024.

"Signed and Sealed"

Signature of Sue Bird Dated: November 20, 2024 M.Sc., P.Eng. Moose Mountain Technical Services

CERTIFICATE OF QUALIFIED PERSON – SUE BIRD

I, Sue Bird, P.Eng., am employed as a Geological Engineer with Moose Mountain Technical Services, with an office address of #210 1510 2nd Street North Cranbrook, BC V1C 3L2. This certificate applies to the technical report titled "2024 Updated NI 43-101 Mineral Resource Estimate for the Whistler Project" that has an effective date of September 12, 2024 (the "technical report").

- 1. I am a member of the self-regulating Association of Professional Engineers and Geoscientists of British Columbia (#25007). I graduated with a Geologic Engineering degree (B.Sc.) from the Queen's University in 1989 and a M.Sc. in Mining from Queen's University in 1993.
- 2. I have worked as an engineering geologist for over 25 years since my graduation from university. I have worked on precious metals, base metals and coal mining projects, including mine operations and evaluations. Similar resource estimate projects specifically include those done for Artemis' Blackwater gold project, Ascot's Premier Gold Project, Spanish Mountain Gold, all in BC; O3's Marban and Garrison, gold projects in Quebec and Ontario, respectively, as well as numerous due diligence gold projects in the southern US done confidentially for various clients.
- 3. As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 Standards of Disclosure for Mineral Projects (NI 43–101).
- 4. I visited the Whistler Project site on September 14, 2022, and again on August 6, 2024.
- 5. I am responsible for all Sections of the technical report.
- 6. I am independent of GoldMining and U.S. GoldMining Inc. as independence is described by Section 1.5 of NI 43–101.
- 7. I have previously prepared resource estimates for the Whistler Deposit for Kiska Metals Corporation in March, 2011 which was re-issued by Brazil Resources Inc. (now U.S. GoldMining Inc.) in May 2016. I also co-authored the 2021 NI43-101 resource estimate with an effective date of June 11, 2021, and additional S-K 1300 reports with an effective date of September 22, 2022, and dated 16 December 2022 and with an effective date of September 12, 2024.
- 8. I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the technical report, to the best of my knowledge, information and belief, the sections of the technical report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the technical report not misleading.

Date: November 20, 2024

"Signed and Sealed"

Signature of Qualified Person **Sue Bird, P.Eng.**

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1 SUMMARY

Introduction

Moose Mountain Technical Services (MMTS) The author has prepared an updated Mineral Resource Estimate (MRE) for GoldMining Inc. (GoldMining) and U.S. GoldMining Inc. (U.S. GoldMining) of the Whistler Project located in Alaska, U.S.A. The Whistler Project resource estimate includes the Whistler, Raintree, and Island Mountain deposits. U.S. GoldMining is an indirect subsidiary of GoldMining Inc. and holds the rights to the Whistler gold-copper property located 150 km northwest of Anchorage, Alaska. U.S. GoldMining will be focused on the development and advancement of the Whistler Project. U.S. GoldMining does not have any operating revenues and does not expect to have any operating revenues in the near future.

The estimate contained herein is in support of the News Release issued by U.S. GoldMining Inc. (USGM), on October 8, 2024.

This report provides an overview of the Whistler Project and includes recommendations for future work required to reach a decision point. It discloses a Mineral Resource Estimate (MRE) including information about the geology, mineralization, metallurgy, exploration potential, Mineral Resources, and recommendations for the Whistler Project.

Mineral Resource Estimate

The Whistler Project total MRE includes the Whistler, Raintree and Island Mountain deposits and is summarized in [Table 1-1](#page-13-0) for the base case cut-off grade. Mineral Resources were estimated using the 2019 CIM Best Practice Guidelines and are reported using the 2014 CIM Definition Standards.

The resource utilizes pit shells to constrain resources at the Whistler, Island Mountain, and Raintree West gold-copper deposits, as well as an underground potentially mineable shape to constrain the mineral resource estimate for the deeper portion of the Raintree West deposit. The current estimate uses metal prices of US\$1,850/oz gold price, US\$4.00/lb copper and US\$23/oz silver, updated recoveries, smelter terms and costs, as summarized in the notes to [Table 1-1.](#page-13-0) Metal prices have been chosen based partially on market consensus research by CIBC Capital Markets (CIBC, 2024) based on mean prices from 2024 and forecast up to 2027 for long term prices. The metal prices chosen also considered the spot prices and the three-year trailing average prices. For all three metals, the final prices used for this resource estimate are below both the spot metal price and the three-year trailing average, which is considered an industry standard in choosing prices.

The base case cut-off grade for open pit mining is \$10.00/tonne for all three deposits, which more than covers the Processing + G&A costs of US\$7.90/tonne processed; this is the marginal cut-off for which mining costs are not included. Cut-off grades for underground mining are based on Processing costs plus an additional US\$17.10/tonne for underground bulk mining, to define the marginal cut-off NSR grade. There has been drilling in 2023 and 2024 which resulted in updated geologic modelling, resource estimation parameters and an updated resource estimate.

For the mineral resource cut-off grade determination, a 3.0% NSR was assumed. This is derived from the sum of a 2.75% royalty to MF2 plus a 1% royalty to Gold Royalty Corp., with an assumption that U.S. GoldMining can negotiate a buy back of a 0.75% NSR, for a net 3.0% NSR, as is customary to occur for

similar project developments. In preparing the resource estimate herein, a sensitivity analysis has also been conducted by the author. Based on such analysis, utilizing a higher 3.75% NSR royalty rate in determining a cut-off grade would not materially impact the estimates contained herein and would be de minimis (approx. 0.7% differential of total metal in the Whistler pit on a gold equivalent basis).

These mineral resource estimates include inferred mineral resources that are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

The QP is of the opinion that issues relating to all relevant technical and economic factors likely to influence the prospect of economic extraction can be resolved with further work. These factors may include environmental permitting, infrastructure, sociopolitical, marketing, or other relevant factors.

As a point of reference, the in-situ gold, copper and silver mineralization are inventoried and reported by intended processing method.

Notes to Table 1-1:

1. Mineral resources are not mineral reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the mineral resources will be converted into mineral reserves.

2. The Mineral Resource for the Whistler, Island Mountain, and the upper portions of the Raintree West deposits have been confined by an open pit with "reasonable prospects of economic extraction" using the following assumptions:

- Metal prices of US\$1,850/oz Au, US\$4.00/lb Cu and US\$23/oz Ag;
- Payable metal of 95% payable for Au and Ag, and 96.5% payable for Cu
- Refining costs for Au of US\$8.00/oz, for Ag of US\$0.60/oz and for Cu of US\$0.05/lb;
- Offsite costs for Au of US\$77.50/wmt, for Ag of US\$3.50/wmt and for Cu of US\$55.00/wmt;
- Royalty of 3% NSR;
- Pit slopes are 50 degrees;
- Mining cost of US\$2.25/t for waste and mineralized material; and
- Processing, general and administrative costs of US\$7.90/t.
- 3. The lower portion of the Raintree West deposit has been constrained by a mineable shape with "reasonable prospects of eventual economic extraction" using a US\$25.00/t cut-off.
- 4. Metallurgical recoveries are: 70% for Au, 83% for Cu, and 65% Ag for Ag grades below 10g/t. The Ag recovery is 0% for values above 10g/t for all deposits.

- 5. The NSR equations are: below 10g/t Ag: NSR (US\$/t)=(100%-3%)*((Au*70%*US\$54.646/t) + (Cu*83%*US\$3.702*2204.62 + Ag*65%*US\$0.664)), and above 10g/t Ag: NSR (US\$/t)=(100%- 3%)*((Au*70%*US\$56.646g/t) + (Cu*83%*US\$3.702*2204.62)) ;
- 6. The Au Equivalent equations are: below 10g/t Ag: AuEq=Au + Cu*1.771 +0.0113Ag, and above 10g/t Ag: AuEq=Au + Cu*1.771
- 7. The specific gravity for each deposit and domain ranges from 2.76 to 2.91 for Island Mountain, 2.60 to 2.72 for Whistler with an average value of 2.80 for Raintree West.
- 8. Numbers may not add due to rounding.

Terms of Reference

The Resource Estimate is being completed in connection with a News Release issued on October 8, 2024.

1.4 Project Setting

The Whistler Project is a gold-copper exploration project located in the Yentna Mining District of Alaska, approximately 170 km northwest of Anchorage.

The Whistler Project comprises 377 State of Alaska mining claims covering an aggregate area of approximately 53,700 acres (217 km²). The center of the property is located at 152.566° longitude west and 61.983° latitude north. The project is located in the drainage of the Skwentna River. Elevation varies from about 400m above sea level in the valley floors to over 5,000 m in the highest peaks resulting in quite a spectacular landscape. The Whiskey Bravo gravel airstrip established adjacent to the Skwentna River is compliant for wheel-based aircraft up to DC-3s. A fifty-person camp is equipped with diesel generators, a satellite communication link, tent structures on wooden floors and several woodframe buildings. Although chiefly used for summer field programs, the camp is winterized.

Mineral Tenure

Rights to the Whistler Project were acquired by GoldMining, through its subsidiary U.S. GoldMining, formerly named BRI Alaska Corp., in August 2015 pursuant to an Asset Purchase Agreement (the "Asset Purchase") with Kiska Metals Corporation ("Kiska") in exchange for the issuance of 3,500,000 common shares in the capital of GoldMining as disclosed by news releases of GoldMining on July 21 and August 6, 2015. The project is subject to three underlying agreements, which were assigned to U.S. GoldMining under the transaction.

1.5.1 Royalties and Encumbrances

The first underlying agreement is a Royalty Purchase Agreement between Kiska Metals Corporation, Geoinformatics Alaska Exploration Inc. and MF2 LLC. ("MF2"), dated December 16, 2014. This agreement grants MF2 a 2.75 percent NSR royalty over all 377 claims and extending outside the current claims over an Area of Interest defined by the maximum historical extent of claims held on the project as indicated on [\(Source: U.S. GoldMining Inc, 2024\)](#page-23-1)

[Figure 4-1.](#page-23-1) The MF2 royalty was subsequently assigned to Osisko Mining (USA) Inc. ("OM"). U.S. GoldMining can buy back 0.75 percent of the 2.75 percent NSR royalty for a payment of US\$5,000,000 to OM. Pursuant to a subsequent assignment agreement dated January 11, 2021, the buy-back right was conveyed to Gold Royalty U.S. Corp.

The second underlying agreement is an earlier agreement between Cominco American Incorporated and Mr. Kent Turner (whose rights and obligations thereunder were assumed by U.S. GoldMining) dated October 1, 1999. This agreement concerns a 2.0 percent net profit interest to Teck Resources, recently

purchased by Sandstorm Gold, in connection with an Area of Interest specified by standard township sub-division.

The third underlying agreement is a royalty agreement dated January 11, 2021, between U.S. GoldMining and Gold Royalty U.S. Corp, pursuant to which Gold Royalty U.S. Corp holds a 1% NSR royalty covering the Whistler Project.

Surface Rights

Under AS 38.05.255, the surface uses of land or water included within a state mining location that the owners, lessees, or operators of the location may undertake by virtue of such location are (a) are limited to those necessary for the prospecting for, extraction of, or basic processing of minerals and (b) shall be subject to reasonable concurrent uses (Stoel Rives, 2023).

 1.7 **Accessibility, Climate, Local Resources, Infrastructure and Physiography**

1.7.1 Accessibility and Climate

The Whistler Project is in the Alaska Range approximately 105 miles (170 km) northwest of Anchorage and 47 miles (76km) west of the township of Skwentna as illustrated in [\(Source: U.S. GoldMining Inc,](#page-23-1) [2024\)](#page-23-1)

[Figure 4-1.](#page-23-1) Access to the project area is by fixed wing aircraft to a gravel airstrip located adjacent to the Whistler exploration camp. The project area is between regions of maritime and continental climate and is characterized by severe winters and hot, dry summers. Annual precipitation ranges from 500 to 900 mm. Winter snow accumulation usually begins in October and by mid to late May the snow has melted sufficiently to allow for fieldwork.

1.7.2 Local Resources and Infrastructure

The nearest public infrastructure for the Whistler Project is the town of Petersville, located approximately 66 miles (106 km) east of Whistler; Petersville is connected to Anchorage by an allweather road and highway. The Whistler Project is supported by a 24 person, all season camp located on the banks of the Skwentna River approximately 1.7 miles (2.7 km) from the Whistler Deposit and 14 miles (22km) from the Island Mountain prospect. The camp is connected to the Whistler Deposit by a 4 mile (6km) access trail.

1.7.3 Physiography

The project is in the drainage of the Skwentna River that forms a large network of interconnected lowelevation U-shaped valleys cutting through the rugged terrain of the southern Alaska Range. Elevation varies from about 400 m above sea level in the valley floors to over 5,000 m in the highest peaks resulting in a quite spectacular landscape.

1.8 **History**

Mineral exploration in the Whistler area was initiated by Cominco Alaska Inc. in 1986 and continued through 1989. During this period, the Whistler and the Island Mountain gold-copper porphyry occurrences were discovered and partially tested by drilling. In 1990, Cominco's interest waned and all cores from the Whistler region were donated to the State of Alaska. The property was allowed to lapse.

In 1999, Kent Turner staked twenty-five State of Alaska mining claims at Whistler and leased the property to Kennecott. From 2004 through 2006 Kennecott conducted extensive exploration of Whistler region, including geological mapping, soil, rock and stream sediments sampling, ground induced polarization, the evaluation of the Whistler gold-copper occurrence with fifteen core boreholes and

reconnaissance core drilling at other targets in the Whistler region totalling 12,449m Over that period Kennecott invested over USD\$6.3 million in exploration.

From 2007 through 2008, Geoinformatics drilled thirteen holes for 6,027m on the Whistler Deposit and five holes for 1,597m on other exploration targets in the Whistler area. Drilling by Geoinformatics on the Whistler Deposit was done to infill the deposit to sections spaced at 75m and to test for the north and south extensions of the deposit. Exploration drilling by Geoinformatics in the Whistler area targeted geophysical anomalies in the Raintree and Rainmaker areas, using the same basic porphyry exploration model as Kennecott.

Kiska was formed in 2009 by the merger of Geoinformatics Exploration Inc. and Rimfire Minerals Corporation in order to advance exploration on the Whistler Project. The rights to the property were acquired by Geoinformatics from Kennecott in 2007 subject to exploration expenditures totalling a minimum of USD\$5.0 million over two years, two underlying agreements, and certain back-in rights retained by Kennecott to acquire up to sixty percent of the project. In September 2010, Kennecott's back-in right was extinguished after the completion and review of a geophysical and drilling program (the "Trigger Program") whose technical direction was guided by Kiska and Kennecott. From that time forward, Kiska continued to explore the project and completed a total of 48,498m of drilling, several large geophysical surveys, and an updated Whistler Deposit resource estimate, for a total expenditure of USD\$29.4 million. Kiska's primary objective was to explore the entire project area and test porphyry targets other than the Whistler Deposit, including Raintree West and the Island Mountain Breccia Zone (hereafter referred to as the Island Mountain Deposit).

Geologic Setting and Mineralization

Alaskan geology consists of a collage of various terrains that were accreted to the western margin of North America because of complex plate interactions through most of the Phanerozoic. The southernmost Pacific margin is underlain by the Chugach–Prince William composite terrain, a Mesozoic-Cenozoic accretionary prism developed seaward from the Wrangellia composite terrain. It comprises arc batholiths and associated volcanic rocks of Jurassic, Cretaceous, and early Tertiary age.

The Alaska Range represents a long-lived continental arc characterized by multiple magmatic events ranging in age from about 70 million years ("Ma") to 30 Ma and associated with a wide range of base and precious metals hydrothermal sulphide bearing mineralization. The geology of Whistler Project is characterized by a thick succession of Cretaceous to early Tertiary (ca. 97 to 65 Ma) volcanosedimentary rocks intruded by a diverse suite of plutonic rocks of Jurassic to mid-Tertiary age.

Two main intrusive suites are important in the Whistler Project area:

- 1) The Whistler Igneous Suite comprises alkali-calcic basalt-andesite, diorite, and monzonite intrusive rocks approximately 76 Ma with restricted extrusive equivalent. These intrusions are commonly associated with gold-copper porphyry-style mineralization (Whistler Deposit).
- 2) The Composite Suite intrusions vary in composition from peridotite to granite and their ages span from 67 to about 64 Ma. Gold-copper veinlets and pegmatitic occurrences are characteristics of the Composite plutons (e.g., the Mt. Estelle prospect, the Muddy Creek prospect).

The Whistler Project was acquired for its potential to host magmatic hydrothermal gold and copper mineralization. Magmatic hydrothermal deposits represent a wide clan of mineral deposits formed by

the circulation of hydrothermal fluids into fractured rocks and associated with the intrusion of magma into the crust. Exploration work completed by Kennecott, Geoinformatics, and Kiska has discovered several gold-copper sulphide occurrences exhibiting characteristics indicative of magmatic hydrothermal processes and suggesting that the project area is generally highly prospective for porphyry gold-copper deposits.

Exploration

Kennecott completed airborne helicopter geophysical surveys during 2003 and 2004. Results from these airborne surveys were used to interpret geological contacts, fault structures and potential mineralization in the Whistler, Island Mountain, and Muddy Creek areas. In particular, the airborne magnetic data showed that the Whistler Deposit displays a strong 900 m by 700 m positive magnetic anomaly attributed to the magnetic Whistler Diorite intrusive complex (host to the Whistler Deposit) in addition to a contribution from secondary magnetite alteration and veining associated with Au-Cu mineralization.

Cominco acquired 8.4 line-km of 2D Induced Polarization geophysics with results used to target the deposit area with subsequent drilling. From 2004 to 2006, Kennecott completed 39.4 line-km of 2D IP geophysics in the Whistler area. Subsequent lines targeted magnetic anomalies at the Round Mountain, Canyon Creek, Canyon Ridge, Canyon Mouth, Long Lake Hills, Raintree, and Rainmaker prospects. In 2007-2008, Geoinformatics completed 8.8 line-km of 2D IP from six separate reconnaissance lines in the Whistler area targeting airborne magnetic highs. Anomalous results from this survey in the Raintree area led to the Raintree West discovery. In 2009, Kiska completed 224 line-km of a 3D Induced Polarization geophysical survey. This was executed on two grids (Round Mountain; Whistler Area). This survey reaffirmed that the Whistler Deposit is coincident with a discrete 3D chargeability anomaly.

1.11 Drilling

A total of 72,480 m of diamond drilling in 261 holes are documented in the Whistler database for drilling on the Whistler Project by Cominco, Kennecott, Geoinformatics, Kiska and U.S. GoldMining from 1986 to the end of 2023. Of these drillholes 23,334 m in 53 holes have been drilled in the Whistler Deposit area, 5,190 m in 58 holes have been drilled in the Raintree area, and 15,572 m in 40 holes comprise the Island Mountain resource area. There are 29,385 m in 110 holes in areas outside the three resource areas.

1.12 Sample Preparation Analysis and Security

In the opinion of the QP, sampling preparation, analysis, and security by previous operators are consistent with industry standard practices. Review and analysis of the assay database and QAQC data shows the assay database is of sufficient quality for resource estimation.

1.13 Data Verification

Sue Bird, P.Eng., of MMTS, visited the Whistler Project site on September 14, 2022, and again on August 6, 2024. During the site visit collar locations at Whistler and Raintree were validated. The core from each deposit was examined for mineralization with 4 samples for re-assay obtained in 2022 with another 5-sample collected in 2024. The assay database is determined to be of sufficient quality and accuracy for resource estimation.

Metallurgy

The metallurgical testwork upon which the recoveries applied to Au, Ag, and Cu as stated in the Resource estimate are based involved: selection of appropriate drill core standard sample preparation of drill core sections at various metallurgical laboratories followed by batch froth flotation to recover pay metals in a copper sulphide concentrate. The laboratories used performed their testing in a competent manner within the scope of their investigations. Full details are provided in Section 13 of this report. Conceptual process plant parameters derived from test data are outlined in Section 17.

1.15 Permitting

GoldMining has submitted an Application for Permit to Mine in Alaska (APMA) to Alaska's Department of Natural Resources (ADNR) for the issuance of permits that will allow for future exploration work on the property. The status of the APMA is pending and GoldMining expects to receive approval in due course.

1.16 Risks and Opportunities

1.16.1 Sampling, Preparation, Analysis and Data Risks and Opportunities

GoldMining has the opportunity to add QAQC data for silver and to collect and complete the missing certificate numbers in the database. This information would more completely support the assay database.

The drill core is currently stored in wood boxes that are subject to weathering on site, which as contributed to some deterioration. An opportunity exists to protect these samples from further weathering by moving them or building a dry storage facility. The risk of continued decay is that the historic core may no longer be available to future potential owners for review and verification.

1.16.2 Metallurgical Testwork Risks and Opportunities

Analyses and accounting of Ag were omitted from the metallurgical testwork, which focused on Cu and Au grades and recoveries in what was anticipated initially to be a Cu-Au resource. Future testwork which includes Ag accounting would likely result in improved estimates of silver recovery and revenue contribution.

1.16.3 Resource Estimate Risks and Opportunities

Risk in the geologic interpretations relating to the continuity of the mineralization exist and can be mitigated by additional geologic modelling for use in controlling the block model interpolations. A description of additional potential risk factors concerning the resource estimate is given i[n Table 1-2](#page-18-6) along with either the justification for the approach taken or mitigating factors in place to reduce any risk.

Ħ	Description	Justification/Mitigation
	Classification Criteria	Classification based on the Range of the Variogram and therefore the variability of the mineralization within each deposit.
	Gold and Silver Price Assumptions	Based on three-year trailing average (Kitco, 2024)
	Capping	CPP, swath plots and grade-tonnage curves show model validates well with composite data throughout the grade distribution.
4	Processing and Mining Costs	Based on comparable projects in Alaska.

Table 1-2 List of Risks and Mitigations/Justifications

Opportunities to increase confidence in the resource through infill drilling and to expand the resource from step-out and exploration drilling are discussed in the recommendations section below.

Conclusions and Recommendations

Conclusions and Recommendations

The QPs make the following conclusions regarding sampling, analysis, metallurgical testwork and the resource estimate.

1.18.1 Sampling, Preparation, Analysis Conclusions

In the opinion of the QP, sampling preparation, analysis, and security by previous operators are consistent with industry standard practices. Review and analysis of the assay database and QAQC data shows the assay database is of sufficient quality for resource estimation.

1.18.2 Metallurgical Testwork Conclusions

The recoveries used for Resource estimate are reasonable for this level of study based on the metallurgical testing to date.

1.18.3 Resource Estimate Conclusions

In the opinion of the QP the block model resource estimate and resource classification reported herein are a reasonable representation of the global gold, copper, and silver mineral resources found in the Whistler, Raintree West, and Island Mountain deposits. Mineral resources are not mineral reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the mineral resource will be converted into mineral reserve.

The QPs make the following recommendations regarding sampling, analysis, metallurgical testwork and the resource estimate.

1.18.4 Sampling, Preparation, Analysis Recommendations

- QAQC for silver was not available, data for blanks and duplicates should be collected from the database. Future drilling should include CRMs for silver.
- Future programs should ensure that QAQC sample failures are identified and affected samples are re-assayed.
- Survey of 10% of collar locations be accomplished and all resurveyed as necessary.
- U.S. GoldMining continues to amend the assay database with certificate numbers and locate missing certificates as necessary.

1.18.5 Metallurgical Recommendations

- Mineralogical studies to better understand the gold associations
- Comminution testing specifically to address SAG mill power requirements and design
- Variability testing
- Confirmatory locked cycle flotation testing at the coarser primary grind size
- Testwork to include feed material containing Pb, Zn sulphide, and higher Ag grade material

1.18.6 Resource and Exploration Recommendations

- Further step-out and infill drilling at Whistler, Raintree West and Island Mountain to upgrade the resource classification and to potentially add new resources.
- Construction of a geological model and mineral domains at Raintree West.
- Preliminary metallurgical testwork for Raintree West.
- Additional geological modelling and mineral domain definition at the Whistler Deposit to further determine potential lithological and structural controls on mineralization, with potential updates to the resource estimate utilizing 2024 drilling data.

- The collection of additional specific gravity measurements from existing drillholes at all deposits to augment the database.
- Top-of-bedrock grid drilling in the Whistler area to define new targets.
- A new and full review of all exploration data, with an outlook to review, and rank all targets for further exploration drilling.
- Additional deep drilling to investigate the potential for the High-Grade Core, or other potential zones of high-grade mineralization, to extend to depth.

2 INTRODUCTION

U.S. GoldMining is an indirect subsidiary of GoldMining Inc. and holds the rights to the Whistler goldcopper property located 150 km northwest of Anchorage, Alaska. U.S. GoldMining will be focused on the development and advancement of the Whistler Project.

Moose Mountain Technical Services (MMTS) was retained by U.S. GoldMining to produce an updated resource estimate on the Whistler Project for the Whistler, Raintree West, and Island Mountain deposits. MMTS was initially retained by GoldMining to conduct NI 43-101 technical reports on the project in 2016 and 2021.

Terms of Reference

The purpose of this report is to support the News Release issued by USGO on October 8, 2024. and related disclosures on the Whistler Project.

All measurement units used in this Report are metric, and currency is expressed in US dollars unless stated otherwise.

Qualified Persons

The following serve as the qualified person (QP) for this Technical Summary Report:

• Sue Bird, P.Eng., Moose Mountain Technical Services is responsible for all Sections of the report.

Site visits and Scope of Personal Inspection

Sue Bird, P.Eng., of MMTS, visited the Whistler Project site on September 14, 2022, and again on August 6, 2024. During the site visit collar locations at Whistler and Raintree were validated. The core storage site at both Whiskey Bravo camp and Rainy Pass core storage site visited. The core from each deposit was examined for mineralization with 4 samples for re-assay obtained in 2022 with another 5-samples collected in 2024. The buildings at the previous camp at Rainy Pass were also investigated with most of the buildings found to be in good shape to be re-vamped for future drill programs.

Effective Date

The overall Report effective date is September 12, 2024.

2.5 Sources of Information

Sources of information are listed in the references, Section 27 of this report, with the sources provided by U.S. GoldMining and its parent, GoldMining, regarding property ownership and environmental permitting listed in Section 3.

3 RELIANCE ON OTHER EXPERTS

The QP authors of this Report state that they are qualified persons for those areas as identified in the "Certificate of Qualified Person" for each QP, as included in this Report. The QPs have relied, and believe there is a reasonable basis for this reliance, upon the following other expert reports, which provided information regarding mineral rights, surface rights, and environmental status in sections of this Report as noted below.

Mineral Tenure and Surface Rights 3.1

The QPs have not reviewed the mineral tenure, nor independently verified the legal status, ownership of the Project area or underlying property agreements. The QPs have fully relied upon, and disclaim responsibility for, information supplied by U.S. GoldMining, through its parent, GoldMining, experts and experts retained by GoldMining for this information through the following documents:

• Letter from Stoel Rives, LLP dated December 6, 2023, and titled: Limited Title Review for Alaska State Mining Claims.

This title information is used in Section 4.0 and 4.1 of the Report.

Royalties and Incumbrances

The QPs have not reviewed the royalty agreements nor independently verified the legal status of the royalties and other potential incumbrances. The QPs have fully relied upon, and disclaim responsibility for, information supplied by U.S. GoldMining, for this information through the following documents. This information was provided as a series of documents from U.S. GoldMining:

- Funding Agreement and Net Smelter Returns Royalty Agreement dated January 11, 2021;
- Notice confirming Osisko Mining (USA) Inc. Is the royalty holder;
- Notice of Address Change & Assignment of Buyback Right Osisko Mining (USA) Inc.; and,
- Royalty Holder Notice to U.S. GoldMining (Whistler Royalty), Nevada Select Royalty Inc.

This title information is used in Section 4.1 of the Report.

4 PROPERTY DESCRIPTION AND LOCATION

The Whistler Project is in the Alaska Range approximately 105 miles (170 km) northwest of Anchorage as illustrated i[n \(Source: U.S. GoldMining Inc, 2024\)](#page-23-1)

[Figure 4-1](#page-23-1) below. The center of the property is located at 152.57 degrees longitude west and 61.98 degrees latitude north.

(Source: U.S. GoldMining Inc, 2024)

Figure 4-1 Location of the Whistler Project

The Whistler Project comprises 377 State of Alaska mining claims covering an aggregate area of approximately 53,700 acres (217 km²) in the Yentna Mining District of Alaska. All the claims are owned 100% by U.S. GoldMining. The property boundaries have not been legally surveyed.

An all-season camp facility exists near the confluence of Portage Creek and the Skwentna River, approximately 15 km southeast of the Rainy Pass Hunting Lodge. The camp is serviced with a 1,000 m gravel airstrip for wheel-based aircraft. The camp is equipped with diesel generators, a satellite communication link, tent structures on wooden floors, and several wood-framed buildings.

GoldMining Inc., through its subsidiary U.S. GoldMining (then known as BRI Alaska Corp.), acquired the rights to the project on August 5, 2015, pursuant to an asset purchase agreement date August 5, 2015, between GoldMining, U.S. GoldMining, Kiska Metals Corporation and Geoinformatics Alaska Exploration, Inc. in exchange for the issuance of 3,500,000 GoldMining shares as set out in Gold Mining's news release of August 6, 2015.

A full Claims List can be found in Appendix A at the end of this report. Annual Labor requirements:

- \$400 for each quarter section MTRS claim
- \$100 each for any other type of claim

Labor must be performed by September 1 of each year and the statement of annual labor must be recorded by November 30. Excess labor from previous years may be carried forward.

Royalties and Encumbrances 4.1

The first underlying agreement is a Royalty Purchase Agreement between Kiska Metals Corporation, Geoinformatics Alaska Exploration Inc. and MF2 LLC. ("MF2"), dated December 16, 2014. This agreement grants MF2 a 2.75 percent NSR royalty over all 377 claims and extending outside the current claims over an Area of Interest defined by the maximum historical extent of claims held on the project as indicated on [\(Source: U.S. GoldMining Inc, 2024\)](#page-23-1)

[Figure 4-1.](#page-23-1) The MF2 royalty was subsequently assigned to Osisko Mining (USA) Inc. ("OM"). U.S. GoldMining can buy back 0.75 percent of the 2.75 percent NSR royalty for a payment of US\$5,000,000 to OM. Pursuant to a subsequent assignment agreement dated January 11, 2021, the buy-back right was conveyed to Gold Royalty U.S. Corp.

The second underlying agreement is an earlier agreement between Cominco American Incorporated and Mr. Kent Turner (whose rights and obligations thereunder were assumed by U.S. GoldMining) dated October 1, 1999. This agreement concerns a 2.0 percent net profit interest to Teck Resources, recently purchased by Sandstorm Gold, in connection with an Area of Interest specified by standard township sub-division as indicated in [\(Source: U.S. GoldMining Inc, 2024\)](#page-23-1) [Figure 4-1.](#page-23-1)

The third underlying agreement is a royalty agreement dated January 11, 2021, between U.S. GoldMining and Gold Royalty U.S. Corp, pursuant to which Gold Royalty U.S. Corp holds a 1% NSR royalty covering the Whistler Project.

(Source: U.S. GoldMining Inc, 2024) **Figure 4-2 Tenement Map**

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

Accessibility

The Whistler Project is located within the Alaska Range approximately 105 miles (170 km) northwest of Anchorage and 47 miles (76 km) west of the township of Skwentna as illustrated in [Figure 4-1.](#page-23-2) Access to the project area is by fixed wing aircraft to the Whiskey Bravo gravel airstrip located adjacent to the Whistler exploration camp. In the winter of 2011, Kiska constructed a temporary winter trail to the Whistler Project that was then used for the inbound transportation of fuel, earth moving equipment, and bulk items for the camp and exploration programs. A 3,280 ft (1,000 m) compacted gravel runway, the Whisky Bravo Airstrip [\(Figure 5-1\)](#page-26-2), provides a year-round accessibility to the site. The airstrip is capable of landing up to DC-3 class aircraft and is currently shared with the Estelle Gold Project owned by Nova Minerals Ltd.

(Source: U.S. GoldMining, 2024) **Figure 5-1 Layout of Built and Proposed (and permitted) infrastructure in the Whistler Area**

Climate

The project area is between regions of maritime and continental climate and is characterized by relatively mild winters and warm summers. The maritime climatic influence provides for dry, mild, and temperate summers. Fog and low clouds are common in mid-summer and fall especially around higher elevation areas. Average summer temperatures range between 41° to 68° F (5° to 20° C), whereas winter temperatures range from 5° to 23° F (-15° to -5° C). Occasionally, arctic cold fronts will propagate across the Alaska Range from the interior, causing cold dry air to seep into the watershed. These infrequent stationary high-pressure systems can lead to clear days with temperatures dropping to a low of -35° C during the winter. Moderate winds (>35 kts) persist during the winter months. Annual precipitation ranges from 19.6 to 35.4 in (500 to 900 mm). Winter snow accumulation usually begins in October and by late May the snow has melted sufficiently to allow for fieldwork.

Local Resources

The nearest public infrastructure for the Whistler Project is the Petersville Bridge, located approximately 66 miles (106 km) east of Whistler. Petersville is connected to Anchorage by an all-weather road and highway. The Whistler Project is also located approximately 75 miles (120 km) north of the Beluga gaspowered electricity generation plant and 80 miles (128 km) north of the village of Tyonek on the Cook Inlet coast.

Infrastructure

The Whistler Project is supported by a 24 person, all season camp located on the banks of the Skwentna River approximately 1.7 miles (2.7 km) in a straight line from the Whistler Deposit and connected to it via a 4 mile (6.4 km) long access trail, as illustrated in [Figure 5-1.](#page-26-2) The camp is 13.6 miles (22 km) in a straight line from the Island Mountain prospect. The camp is located 0.25 miles (400 m) from the northeast end of the Whisky Bravo Airstrip, connected via a gravel access trail.

The Whistler Camp was originally built by Kiska Corp. in 2011, and in 2023 the camp was renovated by U.S. GoldMining to satisfy building codes and all State safety, health and hygiene regulations. The camp is served by a 45-kW single phase generator with a 37-kW single phase backup generator, water well, septic system, showers and flush toilets, and a modern kitchen and dining facility. The camp has 8 wood frame accommodations cabins, kitchen / dining hall, First Aid Tent, a wood frame water well/generator house and a wood frame men's and women's shower/restroom building. The camp is currently permitted for 24 personnel, but with addition of extra accommodations it could be expanded and permitted for up to 50 personnel.

Core processing facilities consist of a well-insulated, well illuminated 22.9 ft by 45.9 ft (7 by 14 m) wood-frame building, and a core cutting tent that houses a core saw. The core logging facility has a deck that is designed for ease of handling large volumes of core with skid steer forklifts.

A wood-frame workshop building serves mobile equipment and general camp equipment maintenance. The core cutting facilities and shop are supplied electricity by a separate 20 kW and 2 kW kilowatt generators respectively.

Heavy equipment and ground transport machines at the Whistler Project include one Cat D6N bulldozer; one Cat 226B track skid-steer; one Bobcat S175 wheeled skid-steer; one Volvo A-30C haul

truck; two Mahindra Roxor 4WD vehicles, and a fleet of smaller ground transportation vehicles including snowmobiles; and side-by-side ATVs.

A core storage area approximately 75 by 328 ft (23 by 10 m) has been cleared near the core shack. Additional clearings can be made for more storage as the project grows. There are also two woodendeck helicopter pads with a small building for helicopter support [\(Figure 5-2\)](#page-28-0).

Figure 5-2 Layout of the U.S. GoldMining Camp and Facilities located adjacent to Whisky Bravo Airstrip

The Whisky Bravo Airstrip for the camp is illustrated in [Figure 5-3.](#page-29-0) A 5,000-gallon (18, 927 litre) fuel storage facility, comprising ten x 500-gallon tanks (1,892.7 litre), is located at the northeast end of the runway. All tanks are stored in lined containments. All pumping is done through aircraft approved filter

systems. A drillers lay-down areas is located adjacent the fuel storage facility for drilling contractor equipment, parts and materials storage [\(Figure 5-3\)](#page-29-0).

(Source: U.S. GoldMining Inc, 2024) **Figure 5-3 Drone aerial image looking northeast overlooking Whistler Camp adjacent the Skwentna River**

Communications is provided by Starlink ™ satellite system, with routers providing wireless internet communications throughout camp. Cell phone reception is weak at the top of the Whistler Ridge, and there is no cell coverage in camp. Operations communications is executed via two-way handheld radios, with a repeater located at the top of Whistler Ridge to ensure adequate radio communications between camp and the northern side of the ridge.

A winter trail was blazed by previous operators Kiska Corp. and has been used in recent years by Nova Minerals Ltd. which owns the Estelle Project west of U.S. GoldMining's claims, and which also operates from a camp on the southern side of the Whisky Bravo Airstrip [\(Figure 5-4\)](#page-30-1). The winter road requires annual trail re-establishment, including building of ice bridges over creek and river crossings. The cost of establishing the trail is such that it is only utilized for bulky and heavy equipment which cannot be flown, however for general freight purposes the cost and reliability of air transportation which has year-round availability, is competitive.

(Source: U.S. GoldMining Inc, 2024) **Figure 5-4 Layout of the Whiskey-Bravo Airstrip relative to Whistler Camp**

Future potential mining operations would require a year-round access road. On October 27, 2021, the Alaska Industrial Development and Export Authority ("AIDEA") announced the receipt of \$8.5 million in funds for the advancement of predevelopment work for the West Susitna Access Road ("WSAR") project, which would extend into areas west of Cook Inlet in Southcentral Alaska in the vicinity of the Whistler Project. During 2022 – 2024 AIDEA undertook road engineering investigations to support road design and test alternatives, environmental baseline surveys and archaeological surveys, and stakeholder consultation. The Alaska Department of Transportation and Public Facilities ("DOT-PF") has also announced that it has included the first 25 miles of the WSAR in its State Transportation Infrastructure Plan ("STIP") and has commenced permitting.

 5.5 **Physiography**

The project is in the drainage of the Skwentna River that forms a large network of interconnected lowelevation U-shaped valleys cutting through the rugged terrain of the southern Alaska Range. Elevation within the property footprint varies from approximately 1,033 ft (315 m) above sea level in the valley floors to over 5,708 ft (1,740 m) in the head waters of Muddy Creek. The Alaska Range is a continuation of the Pacific Coast Mountains extending in an arc across the northern Pacific.

The vegetation in the Whistler region is quite variable. The valley floors and lower slopes are usually characterized by dense vegetation giving way above about 2,406 ft (750 m) elevation to dense tundra shrubs above the timber line [\(Figure 5-5\)](#page-31-0). At higher elevations, vegetation is absent and, on the peaks, surrounding the Whistler Property, active glaciers with terminal and lateral moraines are present. The timber line is located at elevations varying between 2,624 to 3,608 ft (800 to 1,100 m). Bedrock exposures within the project area are scarce except at elevations above 3,280 ft (1,000 m) and along incised drainage.

The Whistler Project mineral claims provide the area that is sufficient for the development of a potential open pit project, including tailings storage, waste disposal, potential processing plant sites and water sources. A source of power has yet to be determined, and mining personnel would likely have to be housed in a camp.

(Source: U.S. GoldMining Inc., 2024) **Figure 5-5 Drone aerial photo looking southwest over the Whistler deposit with the Skwentna River valley on the left side of the photo**

6 HISTORY

During the late 1960s, regional mapping and geochemical sampling by the United States Geological Survey ("USGS") identified several base and precious metal occurrences over a very large area in the southern Alaska Range including southern portions of the Whistler project area.

Following the results of that work, limited exploration was conducted in the area during the 1960s and 1980s. Falconbridge (or their operator St. Eugene) was involved in exploring the nearby Stoney Vein in the late 1960s. A local prospector, Arne Murto (deceased), was active in the Long Lake Hills area from at least 1964 and AMAX staked at least four claims over the Lower Discovery showing at Mount Estelle (circa 1982).

Mineral exploration in the Whistler area was initiated by Cominco Alaska in 1986 and continued through 1989. During this period, the Whistler and the Island Mountain gold-copper porphyry occurrences were discovered and partially tested by drilling. In 1990, Cominco's interest waned and all core from the Whistler region were donated to the State of Alaska. The property was allowed to lapse.

In 1999, Kent Turner staked twenty-five State of Alaska mining claims at Whistler, the "Turner Property", and leased the property to Kennecott. From 2004 through 2006 Kennecott conducted extensive exploration of the Whistler region, including geological mapping, soil, rock, and stream sediments sampling, ground induced polarization and they conducted an evaluation of the Whistler gold-copper occurrence with fifteen core boreholes (7,948 m) and reconnaissance core drilling at other targets in the Whistler region (4,184 m). Over that period, Kennecott invested over USD\$6.3 million in exploration.

In June 2007, Geoinformatics Exploration Inc. ("Geoinformatics") announced the conditional acquisition of the Whistler Project as part of a strategic alliance with Kennecott Exploration Company ("Kennecott"). Between July and October 2007, Geoinformatics drilled seven core boreholes (3,321 m) to infill the deposit to sections spaced at seventy-five metres and to test for the north and south extensions of the deposit.

In August 2009, Geoinformatics acquired Rimfire Minerals Corporation and changed its name to Kiska Metals Corporation ("Kiska"). In 2009 and 2010, Kiska completed three phases of exploration on the property to fulfill the terms of the Standardization of Back-In Rights ("SOBIR") Agreement between Kennecott Exploration Company and Kiska Metals Corporation.

In total, Kiska completed 224 line-km of 3D induced polarization ("IP") geophysics, 40 line-km of 2D IP geophysics, 327 line-km of cut-line, geological mapping on the 3D IP grid, detailed mapping of significant Au-Cu prospects, collection of 109 rock samples and 61 soil samples, 8,660 m of diamond drilling from 23 drillholes (all greater than 200 m in total length), petrographic analysis of mineralization at Island Mountain, a preliminary review of metallurgy at the Whistler Resource, and metallurgical testing of mineralization from the Discovery Breccia at Island Mountain. This program was executed by Kiska geologists, independent geologists, and multiple contractors, under the supervision of Kiska personnel. All aspects of the exploration program were designed and monitored by a Technical Committee comprised of two Kennecott employees and two Kiska employees. In August of 2010, Kiska delivered a Technical Report (Roberts, 2010) to Kennecott summarizing the results of the completed Trigger Program. In September of 2010, Kennecott informed Kiska that it would not exercise its back-in right on the project and hence retained a 2% Net Smelter Royalty on the property.

From this point forward, Kiska continued to drill and explore the Whistler Project for the duration of the 2010 and 2011 field seasons. The majority of this work included shallow grid drilling (25 m to 50 m top of bedrock drilling) in the Whistler Area (also referred to as the Whistler Corridor), conventional stepout drilling from prospects in the Whistler Area, step-out drilling at the Island Mountain Breccia Zone, an airborne EM survey of the Island Mountain area, reconnaissance drilling at Muddy Creek, and minor infill drilling at the Whistler Deposit, followed by the publication of an updated NI 43-101 resource estimate (MMTS, 2011).

A Purchase and Sale agreement between Kent Turner, Kiska Metals Corporation and Geoinformatics Alaska Exploration Inc. dated December 16, 2014, terminated the "Turner Agreement" (an agreement that granted Kennecott and its successors a 30-year lease on twenty-five unpatented State of Alaska Claims; see [Figure 4-2](#page-25-0) and transferred to Kiska and Geoinformatics, and their successors, an undivided 100 percent of the legal and beneficial interest in, under, to, and respecting the Turner Property free and clear of all Encumbrances arising by, through or under Turner other than the Cominco American net profit interest.

GoldMining Inc., through its subsidiary U.S. GoldMining (then known as BRI Alaska Corp.), acquired the rights to the Whistler Project pursuant to an asset purchase agreement dated August 5, 2015, between GoldMining, U.S. GoldMining, Kiska Metals Corporation and Geoinformatics Alaska Exploration, Inc. in exchange for the issuance of 3,500,000 GoldMining shares, as set out in Gold Mining's news release of August 6, 2015. In April 2023 U.S. GoldMining listed on the NASDAQ and raised US\$20M to fund the recommencement of exploration activities at the Whistler Project, including drilling which commence in August 2023.

6.1 Historic Drilling Details

6.1.1 Drilling by Cominco Alaska Inc.

Partial records documenting the sixteen shallow core boreholes (1,677 m) drilled by Cominco on the Whistler gold-copper deposit in 1988 and 1989 including descriptions of the core, drilling logs and assay results are described by Couture, 2007.

Kennecott resurveyed the locations of several holes using either a handheld GPS or with a Trimble ProXr receiver providing real-time sub-metre accuracy. Three holes were unable to be located. The core from the Cominco holes was reportedly donated to the State of Alaska in 1990 and may be stored at a core library in Eagle River, Alaska (Couture, 2007).

6.1.2 Drilling by Kennecott

Between 2004 and 2006, Kennecott drilled a total of 31 core holes (9,630 m) on the Whistler Project, with fifteen of those core holes (7,953 m) intersecting the Whistler Deposit. The Kennecott core is partly stored at the site camp with some in a secured warehouse in Wasilla, Alaska. Drilling operations were conducted by NANA-Dynatec and NANA-Major drilling out of Salt Lake City, Utah using up to three drill rigs supported by helicopter. Core size was HQ-diameter in 2004 and subsequently NQ in 2005 and 2006 (Couture, 2007).

Drilling was documented by Kennecott personnel. The collar position of each borehole was laid out with a hand GPS unit, while azimuth and inclination were determined with a compass. Individual collars were subsequently surveyed using a Trimble ProXr receiver providing real-time sub-metre accuracy. Flex It Multi-shot readings at twenty-foot (six metre) intervals were taken to monitor downhole deviation.

Moose Mountain Technical Services

Magnetic susceptibility and gravity data were also recorded. Drilling, logging, and sampling were directly supervised by a suitably qualified geologist. Core retrieved from drilling was oriented using EzMark or an ACE device. All casing was pulled after drilling. Core recovery, geotechnical point load test, and rock quality determination were collected before the geologist recorded detailed information about lithology, mineralogy, alteration, vein density, and structure. All recorded descriptive data were entered into an acQuire database (Couture, 2007).

Twenty drillholes (4,746 m) were drilled by Kennecott to investigate exploration targets outside the Whistler deposit. Targets selected for drilling were typically chosen based on a combination of geology, geochemical and geophysical criteria believed to be indicative of magmatic hydrothermal processes. Selected targets were explored with vertical or angled drillholes to validate the geological model. One or more boreholes were drilled with the intent to identify the potassic core of a magmatic hydrothermal system known to be associated with better copper and gold sulphide mineralization in this area (Couture, 2007).

6.1.3 Drilling by Geoinformatics

In 2007 and 2008, Geoinformatics drilled twelve holes totaling 5,784 m on the Whistler Deposit, two holes of 622 m at Raintree and 4 holes totaling 1,219 m on other exploration targets in the Whistler project area. Geoinformatics used the same drilling contractor and drilling procedures as previously Kennecott except that oriented core was not obtained. Exploration drilling by Geoinformatics in the Whistler area targeted geophysical anomalies in the Raintree and Rainmaker areas, using the same basic porphyry exploration model as Kennecott (Roberts, 2011a).

6.1.4 Drilling by Kiska

During the 2009-2011 Kiska drilling campaigns, diamond drilling was performed by Quest America Drilling and Falcon Drilling Ltd. and supervised by geological staff from Kiska. Drilling was performed by helicopter-portable diamond drill rigs. Drillholes were collared with HQ diameter tools (6.35 cm) and reduced to NQ diameter tools (4.76 cm) when the rig reached the depth capacity of the HQ equipment. Collar locations were determined with hand-held GPS devices by Kiska staff. Downhole surveys for all holes were conducted by the drill contractor at 60 m intervals down-hole using a Reflex EZ Shot downhole camera (Roberts, 2011a).

During the 2009-2011 Kiska drilling campaign a total of 188 diamond drillholes were completed for a total of 48,498 m. All drillholes were logged by Kiska geologists at the core logging facility at the Whistler exploration camp. Logged geological information included lithology type, alteration type and intensity, vein types, percent vein volume and vein orientations (to core axis), structures (to core axis), the percent of sulphides and oxides, and magnetic susceptibility at meter intervals. Geotechnical information logged included core recovery and rock quality designation (RQD). All logging data was entered on paper logging forms in 2009 and transcribed digitally info LogChief software in 2010 and 2011 (Roberts, 2011a).

6.1.5 Whistler Deposit

A total of 8 holes totaling 5,475 m were drilled on the Whistler Deposit by Kiska. These holes were targeted to in-fill gaps from the previous drill campaigns and to test the edges and depth of the intrusive complex that hosts the deposit.

6.1.6 Raintree Deposit

The Raintree deposit is located 1,800 m to the east of the Whistler Deposit in the area formerly called Raintree West, just off the nose of Whistler Ridge. The discovery drillhole, RN-08-06, targeted an airborne magnetic high anomaly that is coincident with an IP chargeability high anomaly detected on a

2D IP reconnaissance line that crossed the Whistler Area. This hole discovered a significant zone of near surface (below 5 m to 15 m of till cover) gold-copper porphyry mineralization (160 m grading 0.59 gpt gold, 6.02 gpt silver, 0.10% copper). Kiska expanded on this discovery in 2009 with a scissor hole drilled on the same section as RN-08-06 (WH09-02). This was successful at duplicating the gold-copper mineralization zone in RN-08-06, and identified a second, deeper zone of porphyry mineralization on the west side of the Alger Peak fault zone. In 2010, Kiska followed up with an additional four drillholes, and in 2011 further tested the shallow zone and the deep zone with a total of eight holes for a total of 5,997 m. The majority of drillholes in Raintree were drilled on east-west sections with section spacing of 100 m.

6.1.7 Whistler Area Exploration Drilling

A total of 133 exploration holes for 27,464 m of drilling in the Whistler area were completed by Kiska in 2009-2011. A majority of these holes were drilled in the area that includes much of the broad valley floor to the north, east and south of the Whistler Ridge, that includes the parts of the Raintree and Rainmaker prospect areas [\(Figure 6-1\)](#page-36-1). Targeting for this drilling program was developed by a technical team comprised of Kiska and Kennecott geologists based on blind geophysical targets heavily weighted by the results of the 2009 3D IP survey (chargeability and resistivity anomalies), airborne magnetic anomalies, anomaly size, and proximity to areas of known mineralization or anomalous surface geochemistry. A majority of these holes intersected andesitic volcanic rocks with moderate to strong sericite-clay-pyrite alteration and occasional sphalerite- and galena-bearing quartz-carbonate veins with banded and colliform epithermal-like textures. The holes were spaced on average greater than 500 m apart and alteration and veining indicate that broad areas in the Whistler Area define the upper, cooler margins of a large porphyry-related hydrothermal system or a cluster of smaller, coalescing porphyryrelated hydrothermal systems. Within this broad area, drilling returned Whistler-like, porphyry-style Au-Cu mineralization with significant intercepts at the Raintree, Raintree North, and the Rainmaker deposits, and anomalous alteration and geochemistry at the Dagwood prospect.

6.1.8 Island Mountain Drilling

The 35 out of 42 holes completed by Kiska in the Island Mountain area between 2009 and 2011 targeted the Breccia Zone. The remainder targeted zones of either anomalous surface rock geochemistry and alteration (Cirque Zone) or geophysical anomalies (Super Conductor). Significant results were only returned from the Breccia Zone and are summarized below. The alteration patterns and geochemical pathfinder elements from the other areas may be useful for future drill targeting.

At the Island Mountain Deposit, drilling included in the resource estimate includes 36 drillholes for 14,410 m of drilling. The majority of these holes were completed on seven east-west cross-sections spaced 50 m apart in a 300 square metre area from 6,847,600N to 6,847,900N [\(Figure 6-2\)](#page-37-0). The lithologies, alteration and mineralization of the breccia-related mineralization indicate that the

magmatic-hydrothermal breccia complex defines an irregular pipe-shaped body approximately 300 m by 300 m in plan which from the surface down 500 m. Like the strike of the faults in the area, this breccia complex is sub-vertical and appears to trend in a northwest-southeast orientation (Roberts, 2011a).

(Source: MMTS, 2015 after Roberts, 2011b) **Figure 6-2 Island Mountain Drilling by Kiska**

Surface mapping, soil geochemistry and drilling has defined other distinct breccia bodies with zones of alteration, surface anomalism and significant mineralization up to 700m to the north - northwest of this breccia complex. Significant zones of mineralization are shown in [Table 6-1.](#page-38-0)

Table 6-1 Examples of Significant Drill Results North of the Island Mountain Deposit

7 GEOLOGICAL SETTING AND MINERALIZATION

Geological Setting

The Whistler Project is situated within the Wrangellia Composite Terrane ("WCT"), one of three composite terranes accreted to the Alaskan portion of the North America Cordilleran margin in the Mesozoic and Cenozoic. This margin records a complex history of terrane accretion, basin formation, basin exhumation, subduction, and multiple pulses of magmatism.

In south-central Alaska, the WCT is comprised of three significant tectono-magmatic assemblages as shown in [Figure 7-1:](#page-40-0) 1) the Paleozoic-Triassic basement rocks upon which the Early to Late Jurassic Talkeetna island arc was built, including volumetrically significant plutonic rocks; 2) the Kahiltna assemblage, consisting of Jura-Cretaceous flysch sediments that formed in basins initiated by the convergence of Wrangellia with the former continental craton; and 3) voluminous Upper Cretaceous and Paleocene-Oligocene igneous rocks, dominantly plutons, that stitch the Wrangellia composite terrane with the inboard autochthonous terranes. The latter two assemblages dominate the regional geology of the Whistler area.

The Kahiltna assemblage occurs as a broad 100 km by >300 km belt extending across the Alaska Range. This assemblage is comprised of mostly marine sediments with fossils indicating deposition from the Late Jurassic to Early Cretaceous.

The black inset box shows the location of Whistler area and map extent i[n Figure 7-1.](#page-40-0)

(Source: Trop and Ridgeway, 2007)

Figure 7-1 Regional Geological Map of South-central Alaska

Uplift and shortening of the Kahiltna basin was followed by the construction of a continental-margin arc as defined by an extensive belt of 80 - 60 Ma plutons extending from the Alaska Range south-eastwards into the Coast Range of Canada. In the Alaska Range, these arc rocks are dominated by plutons interpreted to be the deeper roots of subvolcanic and volcanic centres; however extrusive sections are locally preserved.

There are four intrusive suites associated with this epoch of magmatism that are recognized in the Whistler region, including (from oldest to youngest): 1) the Whistler Intrusive Suite or "WIS" (host to the Whistler Deposit); 2) the Summit Lake Suite; 3) the Composite Suite; and 4) the Crystal Creek Suite, as illustrated in [Figure 7-2.](#page-42-0) A stratigraphic column i[n Figure 7-3](#page-43-0) illustrates the timing relationship of intrusive suites in the district, and their relationship to host country rocks.

The Whistler Intrusive Suite consists of intermediate to mafic extrusive and intrusive rocks, including diorite porphyries. These diorite porphyries are host to, and genetically associated with, gold-copper porphyry mineralization in the Whistler Project area. This is the only suite where comagmatic extrusive rocks and shallow subvolcanic intrusive rocks are recognized in the region. On a district scale the intrusions generally occur as sills and less commonly as dikes and small stocks. Hornblende Ar-Ar dating of Whistler diorite porphyry gives an age of 75.5 +/- 0.3 Ma (Layer and Drake, 2005) and mapping shows Whistler diorite intruding extrusive andesite. Subsequent U-Pb age dating of zircons from the mineralized diorite porphyry in the Whistler Deposit, and other mineralized porphyries on the Whistler Project, indicate igneous ages of 76.36 Ma ±0.3 Ma (Hames, 2014). One of the least-altered diorite porphyry intrusions located on the Whistler Ridge has a hornblende Ar-Ar age date of 75.5 ± 0.3 Ma (Young, 2005).

The Summit Lake intrusions are regionally represented by 74 to 61 Ma calc-alkaline granodiorite to diorite, becoming more monzonitic and of alkali-calcic affinity in the Whistler area. East and northeast from Whistler, these intrusions are associated with local gold prospects and have been called the Kichatna plutons and more locally, the "Old Man Diorite".

The Composite Plutons include the Emerald, Mount Estelle, Stoney, and Kohlsaat plutons, and are locally associated with gold mineralization. The Composite Plutons are seen to be somewhat concentrically zoned magmatic series, with an early border phase of alkaline mafic to ultramafic rock, inwards towards less alkaline monzonites to granites. The common age range is 67 to 64 Ma.

The regional geology of the Whistler deposit area is shown in [Figure 7-2.](#page-42-0) The Crystal Creek sequence, located south of Whistler, is mainly calc-alkaline granite or rhyolite and ranges in age from 61 to 56 Ma. More mafic rocks, including the 61Ma Porcupine Butte andesite and Bear Cub (diorite) pluton, may represent higher level/border phases to the Crystal Creek sequence.

Continental arc magmatism in the Latest Cretaceous is responsible for some of the most significant gold and copper-gold deposits in Alaska. These include the Pebble gold-copper porphyry deposit (89 Ma; Schrader et al, 2001), the Donlin Creek gold deposit (70 Ma, Szumigala et al, 2000), the Fort Knox gold deposit (95 – 89 Ma, Mortenson et al, 1995), and the Livengood gold deposit (Late Cretaceous).

(Source: Wilson et al., 2009)

Figure 7-2 Regional Geology of the Whistler Project

Property Geology

The property geology of the Whistler area is well documented and described in detail by Young (2005) and Franklin (2007). A stratigraphic column i[n Figure 7-3](#page-43-0) illustrates the timing relationship of intrusive suites and their relationship to host country rocks at the property scale. The property can be subdivided into three main areas based on distinctive intrusive rocks and their association with gold-copper and gold-only mineralization: 1) The Whistler Corridor; 2) Island Mountain; and 3) Muddy Creek as illustrated in [Figure 7-4.](#page-44-0)

(Source: MMTS, 2015, modified from Roberts, 2011a) **Figure 7-4 Geological Map of the Whistler Corridor , Island Mountain, and Muddy Creek**

7.2.1 Whistler Corridor

The bulk of the Whistler property is underlain by flysch sediments of the Kahiltna assemblage, while the Whistler Corridor is dominated by a largely fault bounded block of andesitic volcanic rocks, interpreted to represent a local volcanic-dominated basin as illustrated in [Figure 7-5.](#page-45-0) The sedimentary and volcanic rocks are host to a variety of dioritic to monzonitic dykes, sills, and stocks of the WIS. Much of the lowlying areas in this region are covered by 5 to 15 m of glacial till, and hence much of the geological map is based on drilling and interpretation of geophysical data.

⁽Source: MMTS, 2015, modified from Roberts, 2011a) **Figure 7-5 Whistler Project Geology**

The Whistler Deposit is hosted by a multi-phase diorite porphyry intrusive complex of the WIS nested within sediments of the flysch package, whereas prospects in the Whistler Area (Raintree, Rainmaker) are hosted by similar diorite porphyry intrusive centres within the volcanic basin. Age dating of mineralized and barren diorite porphyry units on the Whistler ridge indicates that magmatism occurred at approximately 75 to 76 Ma (Layer & Drake, 2005; Young, 2005; Hames, 2011). The mineralogy and composition of the intrusive rocks and the andesitic volcanic rocks are quite similar, suggesting that they are broadly comagmatic (Young, 2005). Mapping implies monzodiorite porphyry and hornblende diorite suites intruded prior to eruption of extrusive andesites and therefore is older than the Whistler diorite porphyry. Hornblende Ar-Ar dating indicates unmineralized diorite porphyry is likely a later phase of

Whistler diorite porphyry (Hames, 2014). Andesitic porphyry is observed to cut all phases of diorite porphyry (Young, 2005) and can be assumed to be the youngest intrusive rock at the Whistler property.

Inversion modeling of the airborne geophysical data suggests that there is a large 5 km diameter batholith possibly situated 2-3 km below the surface and that some of the diorite porphyry intrusive centres represent hypabyssal apophyses (stocks and dykes) emanating from the deep causative batholith.

The detailed geology of the volcanic stratigraphy remains uncertain, largely due to glacial cover and the extensive amount of texturally destructive, hydrothermal alteration. Volcanic rocks are comprised of coherent andesites and volcanic breccias that define a variety of depositional facies. Based on the occurrence of common argillaceous interflow sediments Young (2005) inferred a sub-aqueous marine setting for the bulk of the volcanic rocks. In the eastern Long Lake Hills area, volcanic flows are interbedded with Feldspathic Sandstones, and Young (2005) interpreted this to represent the onset of volcanism in a shallower marine setting. In addition to these extrusive rocks, a large volume of the volcanic rocks is interpreted to be comprised of porphyritic, subvolcanic units, as either large stocks, sills or dykes. These subvolcanic units can be difficult to differentiate from coherent volcanic rocks, particularly porphyritic flows, and in areas of intense texturally destructive phyllic alteration. The stratigraphy of the volcanic rocks is currently unresolved. The current geological map only differentiates "least-altered" from "altered" volcanic rocks based on the extrapolation of airborne magnetic data from the grid and scout drilling. All the volcanic and subvolcanic rocks encountered in drilling are magnetic when they are least altered, and magnetism is generally destroyed by sulphidation during phyllic alteration.

In addition to least-altered volcanic rocks, magnetic high anomalies also occur in association with northwest-elongated linear to oval-shaped diorite dykes and stocks hosted by flysch sediments and in association with zones of near-surface secondary magnetite alteration and veining, such as the Whistler Deposit, and the Rainmaker and Raintree North deposits.

The bulk of the flysch sediments on the Whistler Project area have north to northeast striking and steeply dipping bedding orientations due to compressional deformation that resulted in chevron-style folding. These folds are north-east striking, and fold limbs are typically moderate to steep or overturned (Young, 2005). A dioritic sill exposed on the Whistler Ridge is likewise folded, suggesting that a component of dioritic magmatism pre-dated regional deformation.

Several northeast-trending faults have been interpreted based on topographic linear features and the truncation and offset of magnetic features. These are the earliest structure features on the property since they are truncated by north-northwest-oriented faults with left-lateral offset, such as the Alger Peak Fault.

7.2.2 Island Mountain

The Island Mountain area is comprised of a suite of nested intrusions, ranging compositionally from hornblende diorite to hornblende-biotite monzonite, emplaced within flysch sediments of the Kahiltna assemblage as illustrated in [Figure 7-6.](#page-48-0) Texturally, these intrusions range from equigranular to strongly porphyritic, suggesting a relatively high level of emplacement typical of the porphyry environment. Unlike the Whistler area, no coeval volcanic rocks are recognized. Based on limited whole-rock geochemistry (Young, 2005) the Monzonite at Island Mountain plots within the silica-saturated alkalic field of Lang et al. (1995) and is the intrusive equivalent of trachyandesite on a total alkali versus silica

diagram. This suite of intrusions is mapped as part of the circa 67 to 64 Ma Composite Suite of intrusions, like the Muddy Creek area, however recent age dating suggests some complexity with dates ranging from 77 Ma down to 64 Ma (Gross, 2014). Compared to Muddy Creek, the intrusive rocks at Island Mountain are generally more mafic (diorite and monzonites as opposed to quartz monzonite and granites at Muddy Creek), are magnetite-bearing rather than ilmenite-bearing, are commonly more porphyritic rather than coarse equigranular, lack the strong, pervasive gold-arsenic association, and lack the evenly distributed northwest-oriented sheeted fracture set that typifies mineralized structures at Muddy Creek. For these reasons, it is likely that igneous rocks at Island Mountain represent a unique intrusive suite separate from the Composite Suite.

This unique intrusive centre is broadly situated at the intersection between the regionally significant northwest-striking Timber Creek Fault, which can be traced for 10's of kilometres, and the Skwentna River valley, postulated as a possible fault zone (Young, 2005). The bulk of the nested intrusions occur on the southeast side of Island Mountain, and this is where sediments in the contact metamorphic aureole of these intrusions are hornfelsed. The hornfels, especially on the southwest corner of Island Mountain, occur as irregular rafts and possibly roof pendants that appear to form a slope-parallel skin of country rock that demarks the roof zone of this intrusive complex. Sediments consist of dark mudstone, shale, thin-to-medium-bedded siltstone and dark grey sandstone and minor dirty calcareous sedimentary beds and a few local thin pebble conglomerate units. These units predominate on the northwest portion of Island Mountain.

(Source: MMTS, 2015, modified from Roberts, 2011a) **Figure 7-6 Property Geology of the Island Mountain Area**

The earliest recognized intrusive phase is the Island Mountain Diorite Porphyry. This unit has been observed to be cut by all other igneous units and is the host to gold-copper porphyry mineralization associated with intrusive and hydrothermal breccias at the Island Mountain Deposit (previously referred to as the "Breccia Zone").

The next most volumetrically significant intrusive phase is a Monzonite Porphyry (IFMIP) that occurs in the northeast corner of Island Mountain, and which is generally the host of gold-copper porphyry-style mineralization at the Cirque and the Howell zones. Unlike the Diorite Porphyry, this unit contains magnetite phenocrysts and is thus well delineated by airborne magnetic survey data.

In the Breccia Zone, Diorite- and Monzonite-cemented intrusive breccias occur as sub-vertical, 100-150 metre diameter, sub-circular to irregularly shaped pipes that grade into actinolite-magnetite-cemented hydrothermal breccias with pyrrhotite-pyrite-chalcopyrite mineralization, which together define magmatic-hydrothermal conduits that host the bulk of gold-copper porphyry mineralization in this area. Not all the Intrusive Breccia bodies are altered or mineralized, suggesting that either some of these breccias post-date the main phase of mineralization, or that some pre-mineral intrusive breccias were not affected by hydrothermal fluid. Together, these intrusive and hydrothermal breccias have been the focus of the majority of the exploration drilling at Island Mountain since 2009. A series of these breccias extend discontinuously for 700m from the "Breccia Zone" on a north-northwest trend along the southwestern slope of Island Mountain. The Breccia Zone also contains narrow, pencil-like bodies of Coarse Porphyritic Hornblende Diorite that are syn to post gold-copper mineralization.

This corridor of breccias is flanked by strong pervasive albite alteration with local zones of vein and disseminated pyrrhotite that constitutes significant Au-only mineralization within and flanking the Breccia Zone. Similar intrusive and hydrothermal breccias with peripheral sodic alteration and pyrrhotite mineralization occur in areas of gold and copper soil anomalies at the Howell Zone, suggesting the occurrence of multiple magmatic-hydrothermal centres. The Howell Zone remains untested by drilling.

The last volumetrically significant phase of magmatism is represented by a coarse grained equigranular monzonite that occurs as a northwest-striking dyke or sill exposed near the base of slope on the southwestern side of Island Mountain. This unit lies adjacent and strikes parallel to the regional Timber Creek Fault, suggesting a possible regional control on the emplacement of this unit. Likewise, all the abovementioned units are cut by narrow, post-mineral, fine-grained mafic to intermediate dykes that generally strike to the northwest and dip steeply.

7.2.3 Muddy Creek

Muddy Creek is in rugged terrain along the western edge of the Whistler Project and is comprised of several steep, north-east facing U-shaped glacial valleys separated by razor-back ridges with small remnant glaciers at the heads of each valley. This prospect is largely underlain by a monzonitic intrusive complex, part of the Composite Suite (or Estelle Suite) of intrusions that were emplaced within sediments of the Kahiltna Assemblage in the late Cretaceous [\(Figure 7-7\)](#page-50-0). An argon-argon analysis of igneous biotite from a granodiorite on the western margin of the intrusive complex returned an age date of 67.4Ma ± 0.4Ma (Solie et al., 1991a). A steep, east-west trending contact between the intrusive complex and hornfels sediments is well-exposed in the ridgelines in the northern portion of the prospect and is comprised of a conspicuous and extensive red-brown colour anomaly. Hornfels also comprises the eastern contact of the intrusive complex.

The bulk of the geological mapping at Island Mountain was completed by Kennecott and the following descriptions are from Young (2005). The core of the intrusive complex is monzonitic, grading outwards to progressively more mafic and older intrusive phases (Crowe et al, 1991), with pendants of ultramafic rocks at the margins (Millholland, 1998). The pluton intrudes very steeply north-dipping sedimentary rocks of the middle Graywacke Sandstone subunit and Tabular Sandstone unit. Local matrix-supported pebble conglomerate and spherical concretions along Muddy Creek support a correlation with the Tabular Sandstone unit.

The majority of the Mount Estelle pluton consists of biotite-monzonite, with an increasing proportion of augite phenocrysts towards the margins. Monzonite is medium- to coarse-grained and idiomorphic granular and occurs at the central and southern portions of the mapped area at Muddy Creek. Mafics, principally biotite books (to 5 mm) and subordinate to absent stubby dark augite generally constitute 15 to 35% of the monzonite. Twinned 3mm to 1cm orthoclase phenocrysts are a fundamental component. Groundmass consists of a medium-grained equigranular mixture of feldspar and quartz. Rounded xenoliths are rare, but widespread, and consist of biotitized sediments and more strongly mafic (biotite and augite)-rich intrusive rock of earlier intrusive phases. Intrusion breccia's with rounded clasts are a very local feature as are sinuous to linear aplitic dikes.

(Source: MMTS, 2015, modified from Roberts, 2011c) **Figure 7-7 Geological Map of Muddy Creek**

Mineralization

Exploration on the Whistler Project by Kennecott, Geoinformatics, Kiska and U.S. GoldMining has identified three primary exploration targets for porphyry-style gold-copper mineralization. These include the Whistler Deposit, Raintree West, and the Island Mountain deposits as shown i[n Figure 7-8.](#page-52-0) The Whistler-Raintree and Island Mountain areas also host multiple additional porphyry-like prospects defined by drilling, anomalous soil samples, alteration, veining, surface rock samples, induced polarization chargeability/resistivity anomalies, airborne magnetic anomalies, and airborne electromagnetic anomalies. These include the Raintree North, Rainmaker, Round Mountain, Puntilla, Snow Ridge, Dagwood, Super Conductor, Howell Zone, and Cirque Zones. The Muddy Creek area represents an additional exploration target with the potential to host a low-grade, bulk tonnage, Intrusion-Related Gold mineralization.

(Source: MMTS, 2021) **Figure 7-8 Prospect Areas**

7.3.1 Whistler Area and Whistler Deposit Mineralization Overview

The Whistler Deposit and prospects in the Whistler Area (Raintree West, Raintree North and Rainmaker) display a common pattern of alteration, vein paragenesis, and mineralization styles that suggest these spatially separate porphyry centres share a common genetic association. These features are hosted by, and genetically linked to, pulses of diorite porphyry intrusive bodies that are nested in pipe-like centres. Geophysical inversion models of the airborne magnetic data suggest that these pipes represent hypabyssal apophyses (stocks and dykes) emanating from the deep causative batholith. That these porphyry centres are genetically associated is corroborated by common alteration assemblages, vein types, mineralization styles and paragenetic relationships. At the Whistler Deposit, the earliest Diorite Porphyry phase (Main Stage Whistler Diorite Porphyry) is associated with the main stage of gold-copper mineralization, whereas subsequent phases are less mineralized, and thus are either weak metal contributors or diluting bodies.

The Whistler Deposit is hosted within the Whistler Intrusive Suite, a composite of diorite stocks and dykes that divide the suite broadly into an early Main Stage Porphyry ("**MSP**"), a later Intermineral Porphyry Suite ("**IMP**") and a late intrusive phase referred to as the Late-Stage Porphyry ("**LSP**"). Gold and copper mineralization is characterized by abundant disseminated sulphide and quartz + sulphide vein stockworks (including classic porphyry diagnostic 'A', 'B', 'D', and 'M' type veins), and potassic alteration which is variably overprinted by later phyllic alteration. The early-stage MSP suite is most strongly altered, veined and mineralized, with the IMP being less intensely altered and veined but remaining consistently mineralized, and the late or post-mineralization LSP generally containing below cut-off grade or being unmineralized. In addition, a robust core of higher-grade mineralization is recognized within the deposit that correlates with intense alteration and B-veining within MSP and IMP in the eastern part of the intrusive suite.

The earliest recognized alteration event recognized at the Whistler Deposit and the porphyry prospects in the Whistler Area, referred to as "Magnetite" alteration, occurs as patchy magnetite alteration of mafic minerals (dominantly hornblende and possibly pyroxenes) and narrow, irregular magnetite veinlets ("M-veins"). Magnetite in this event is occasionally intergrown with trace chalcopyrite. This stage may include the partial replacement of feldspars by secondary K-feldspar, particularly in the selvages to M-veins, and hence may be part of the earliest, weakest stage of Potassic alteration (see [Figure 7-9](#page-54-0) below). This stage is recognized in both the Main Stage and Intermineral Stage Diorite Porphyry generally in the core zone of mineralization at the Whistler Deposit. In addition, it has been observed to occur within andesitic volcanic and volcaniclastic rocks within 50 m of similarly altered diorite intrusions in the Whistler Area, however not within the Feldspathic Sandstones that host the Whistler Deposit.

(Source: MMTS, 2015)

Figure 7-9 Photo of irregular M-veins in dark magnetite alteration of mafics (upper) and pervasive pink-black blotchy k-feldspar and magnetite alteration (lower) with wormy quartz + magnetite + chalcopyrite A-veins (Whistler Deposit)

The subsequent stage of alteration is "Potassic" alteration, defined by the occurrence of pinkish Kfeldspar replacing plagioclase and matrix, which generally occurs as halos to, or pervasively in zones of, A-style and B-style quartz veins. Potassic alteration also includes the replacement of mafic phases by fine-grained secondary "shreddy" biotite, however this is generally difficult to observe due to overprinting Chlorite-Sericite alteration (see [Figure 7-10,](#page-55-0) below). Strong Potassic alteration (pink rock) is generally accompanied by strong patchy magnetite alteration, and overall this leads to strong textural destruction such that the rock is mottled pink-black without an obvious porphyritic texture. Potassic alteration is associated with the bulk of gold-copper mineralization, which occurs as chalcopyrite and rare bornite in A- and B-style quartz veins and as fine-grained disseminations in adjacent wall rock. At the Whistler Deposit, gold occurs predominantly as electrum associated with chalcopyrite. There exists a spectrum of A- and B-style quartz veins. A-veins are millimetre wide, sugary quartz ± magnetite with wormy margins. These are generally observed to cut M-veins, however occasional M-veins have been seen to transition into A-like quartz veins. B-veins are generally comprised of slightly coarser, equigranular quartz with centre-line septa of chalcopyrite, and have straight sides. Intense zones of Bstyle veining form strong stockwork zones are associated with high-grade zones (>1 gpt Au, >0.5% Cu). Potassic alteration and quartz veining may include minor pyrite, yet these zones have relatively low total sulphide content (<1-2%).

(Source: MMTS, 2015) **Figure 7-10 Photo of a classic B-style quartz vein with a chalcopyrite-filled centreline cutting an irregular, wormy A-style quartz vein (Whistler Deposit, WH 08-08, ~123.0m)**

In general, core zones of Potassic alteration and Au-Cu mineralization are partially to completely overprinted by "Chlorite-Sericite" alteration. This "green rock" alteration is ubiquitous and the most macroscopically obvious alteration in zones of Au-Cu mineralization, even though it is a later event. As shown in [Figure 7-11,](#page-56-0) bright green chlorite replaces secondary biotite and any primary mafic phases remaining, and waxy green sericite replaces feldspars. Pyrite is part of this assemblage, partly replacing mafics and magnetite. Calcite or carbonate may be part of this assemblage, as well as trace epidote. Kennecott referred to this alteration assemblage as "Intermediate Argillic", which is equivalent to SCC alteration in the porphyry literature (Sillitoe, 2010). Kiska interpreted the Chlorite-Sericite alteration to be transitional to "Phyllic" alteration, overprinting (telescoping) and immediately peripheral to core zones of mineralization. This pervasive style of alteration is not obviously associated with any veining event, however there is a continuum of glassy quartz veins with pyrite>>chalcopyrite + molybdenite that appears to only occur in zones of Chlorite-Sericite and Phyllic alteration.

(Source: MMTS, 2015)

Figure 7-11 Photo or chlorite-sericite (+calcite) alteration overprinting potassic – magnetite alteration in a zone of quartz vein stockwork, subsequently cut by later Dpy veinlets with sericitic and iron-carbonate halos (Whistler Deposit)

Potassic and Chlorite-Sericite alteration is variably overprinted by "Phyllic" alteration. The Phyllic assemblage consists of sericite + pyrite + quartz. Moderate to strong Phyllic alteration is typically bleached grey-tan, where mafic minerals are completely to strongly replaced by sericite and pyrite, magnetite is replaced by pyrite, and feldspars are replaced by sericite (and clays). Phyllic alteration commonly occurs in halos to pyritic stringers ("Dpy") and quartz + pyrite veins ("D-veins"). In areas with intense D-style veining, phyllic halos coalesce to give pervasive Phyllic alteration, as illustrated in [Figure](#page-57-0) [7-12.](#page-57-0) Strong to intense Phyllic alteration is texturally destructive, which often leads to difficulty in distinguishing intrusive from volcanic rocks. It is also suspected that intense Phyllic alteration is grade destructive. At the Whistler Deposit and other prospects Phyllic alteration forms an outer and upper, commonly gradational halo to Chlorite-Sericite alteration, and is also preferentially developed in structural zones, including faults and hydrothermal breccias. Hydrothermal breccias commonly occur along the boundaries of different units (sediment/diorite; volcanic/diorite; diorite/diorite) and are comprised of variably milled wall rock fragments cemented by quartz-sericite-pyrite ("pyritic rock flour breccias"). These breccias occasionally contain tourmaline.

In the Whistler Area, strong Phyllic alteration and high pyrite content (10 - 15%) is common peripheral to individual porphyry centres extending for hundreds of metres into surrounding volcanic rocks. This has led to significant demagnetization of the volcanic stratigraphy such that the magnetic signature in the area is a function of alteration (dominantly Phyllic) rather than primary rock types. In contrast, the Phyllic halo at the Whistler Deposit only extends 50m into the surrounding Feldspathic Sandstone. In addition to pyrite, porphyry centres in the area are also large sulphur anomalies, in the form of sulphates. Anhydrite appears to span several alteration and vein types: anhydrite occurs within B-type quartz-chalcopyrite veins and within cross-cutting D-veins and Dbm veins (see below). Fine-grained anhydrite, of an uncertain alteration affiliation, also replaces feldspars at the microscopic scale. Gypsum locally replaces vein anhydrite and occurs as very narrow and abundant hairline veinlets in zones of strong to intense and pyritic phyllic alteration.

(Source: MMTS, 2015)

Figure 7-12 D-style pyrite veins with well-developed phyllic halos (Whistler Deposit), that cut and off-set B-style quartz veins (lower sample). Also note the local occurrence of hematite at the intersection of both vein types (magnetite>hematite?)

At the Whistler Deposit and other prospects in the Whistler Area, the latest stage of precious and base metal mineralization is associated with quartz-carbonate (dolomite and calcite)-sphalerite-galena ± chalcopyrite veins ("Dbm" or "D-base metal veins"). These veins have been observed to cut Potassic and Chlorite Sericite alteration (including Au-Cu mineralization and A- and B-vein stockwork), Dpy and D veins, and sericite-quartz-pyrite cemented hydrothermal breccias as illustrated in [Figure 7-14.](#page-58-0) In the Whistler Area, these veins are commonly most abundant in the outer, intense phyllic halo within volcanic rocks within 100 – 200 m of the diorite intrusive centres. The veins can range from narrow veins (0.5 - 1.0 cm wide) up to 2 – 5 m wide (generally as vein breccias). Veins minerals, including sulphides, are medium to very coarse-grained [\(Figure 7-13\)](#page-58-1), have local colliform banding, and vein quartz is occasionally chalcedonic. Based on their cross-cutting relationships, textures, mineralogy and spatial relationship to porphyry centres, these veins are interpreted to have formed syn- to post-Phyllic stage alteration. That these veins typically cut phyllic-stage hydrothermal breccias and have open-space fill colliform banding, suggests that these veins formed in a much different hydrologic/structural regime (hydrostatic, possible incursion of meteoric waters) relative to Magnetite through to Phyllic events. Relative to the Whistler Deposit, these veins are much more abundant in the host rocks to porphyry centres in the volcanic-hosted prospects in the Whistler Area, particularly Raintree West. This observation, in addition to the epithermal-like textures of these veins, supports the notion that other porphyry centres in the Whistler Area may have formed at shallower stratigraphic levels compared to that of the Whistler Deposit.

(Source: MMTS, 2015)

Figure 7-13 Photo of quartz-carbonate vein from Raintree West (WH11-030) showing welldeveloped colliform banding and coarse-grained sphalerite and galena

(Source: MMTS, 2015)

Figure 7-14 Common vein paragenesis in all porphyry occurrences in Whistler Area: dark grey quartz vein stockwork with chalcopyrite (A- and B-style), cut by quartz-calcite-carbonate-sphaleritegalena veinlet (Dbm veins, top left down to bottom right), cut by narrow Fe-carbonate veinlets with Fe-carbonate alteration halos (Raintree West example)

The most significant style of post-mineral alteration is Fe-carbonate alteration as illustrated i[n Figure](#page-58-0) [7-14](#page-58-0) above. This occurs as pervasive alteration of feldspars in structural zones and as selvages to ankerite veins. Primary igneous magnetite and secondary magnetite is commonly altered to hematite in these zones. Ankerite veins, typically as brittle tension gashes, crosscut all vein styles, including the Dbm veins. The degree and extent of this style of alteration is typically not obvious until the core has weathered for a year or more and is therefore not well-documented in the core logs.

7.3.2 Mineralization: Whistler Deposit

Gold and copper mineralization at the Whistler Deposit is hosted by a Late Cretaceous, multi-phase diorite porphyry intrusive complex that intrudes the Feldspathic Sandstone unit of the Kahiltna assemblage [\(Figure 7-3](#page-43-0) and [Figure 7-15\)](#page-59-0). The Feldspathic Sandstone is comprised of sandstone with minor interbeds of mudstone, siltstone, and conglomerate. Sedimentary bedding in the vicinity of the deposit primarily strikes to the northeast and dips steeply to the northwest.

⁽Source: U.S. Goldmining, 2024)

The diorite porphyry intrusive complex is ovoid-shaped and vertically plunging [\(Figure 7-16\)](#page-60-0). The long axis of the ovoid is 700 m long and oriented in a northwest-southeast direction. The short axis of the ovoid is 500 m wide and oriented in a northeast-southwest direction. Deep drilling indicates that the intrusive complex is open below a depth of 800 m from surface.

The intrusive complex is composed of at least three diorite porphyry phases that are compositionally and texturally similar: they are comprised of 60% - 80%, euhedral to subhedral blocks of plagioclase feldspar phenocrysts (0.2 - 3.0 mm diameter), 5%-20% hornblende laths (0.2 - 3.0 mm) that are usually altered to sericite, chlorite, pyrite, or a combination of these, and a fine grained, granular groundmass of feldspar and minor quartz, that is usually altered to silica, chlorite, sericite, clay or potassium feldspar. In places within the deposit, three intrusive phases are recognized based on cross-cutting relationships with mineralization and alteration. The oldest intrusive phase, the "main stage diorite porphyry" (MSP), carries the earliest recognized veining and alteration associated with gold-copper mineralization (see below); the second phase, the "inter-mineral diorite porphyry" (IMP) is recognized where it clearly cuts main stage diorite porphyry mineralization (i.e., intrusive contact cutting mineralized veins), and is itself veined and mineralized. The third and youngest phase, the "late-stage diorite porphyry" (LSP) is barren except for local mineralized xenoliths of main or inter-mineral porphyry.

Figure 7-15 Geological Map of the Whistler Deposit

Figure 7-16 Geological Cross-section – looking WNW of the Whistler Deposit

Due to the compositional and textural similarity of the main stage and inter-mineral stage porphyries and hence the difficulty in consistently identifying these stages in areas that lack clear cross-cutting relationships with mineralization or alteration, the MSP and IMP are currently modeled as a single mineralized porphyry unit. For consistency these phases are therefore referred to as 'productive porphyry, or collectively the "Main Stage Porphyry". Further re-logging of drill core and future in-fill drilling may be able to differentiate these phases clearly and consistently.

The Main Stage Porphyry ("MSP") comprises the bulk of the volume of the intrusive complex and is cut by the Late-Stage Porphyry. This latter phase clearly post-dates mineralization and truncates grade. It occurs as narrow, sub-vertical dykes and pencil-like bodies, generally 2 to 10 m wide but up to 150 m wide on the south, north and western edges of the MSP. This phase generally has strong pervasive phyllic alteration, and occasionally xenoliths or rafts of the MSP, which locally contribute grade.

Gold and copper mineralization in the Main Stage Porphyry is comprised of 1 - 3% chalcopyrite and trace bornite as grains within magnetite and quartz veins (see below) and as disseminations in the host porphyry generally within the halos to these veins. Petrography indicates that gold occurs predominantly as electrum associated with chalcopyrite (Petersen, 2004). This mineralogy and style of mineralization is typical of diorite-hosted gold-copper porphyry deposits (Sillitoe, 2010).

Recent, preliminary modelling has identified a 'High-Grade Core' [\(Figure 7-16\)](#page-60-0), interpreted as a semidiscrete, near-vertical, ovoid-shaped fluid flow conduit (interconnected vein networks) that delivered

Moose Mountain

Technical Services

and trapped the bulk of the metals in the MSP. The High-Grade Core is defined by coincident approximately ≥0.40 gpt gold and ≥0.20% Cu grade contours and extends approximately 500 m in the north-south dimension, 250 m in the east-west dimension and is 600 m deep (from surface). The High-Grade Core has the highest gold-copper grades relative to the remainder of the MSP domain, yet the boundaries are geologically gradational.

The High-Grade Core contains inner zones of strong potassic and magnetite alteration (see below), which is dominantly overprinted by pervasive chlorite-sericite alteration and local phyllic alteration. This domain is also defined by the consistent occurrence and highest concentration of M-veins and mineralized quartz veins (A- and B-veins), which generally range in volume from 1 to 5%. Local highergrade mineralization occurs in zones of high-density quartz vein stockwork (locally >20% quartz vein volume) and quartz + magnetite + chalcopyrite cemented hydrothermal breccias. Minor 1cm to 10cm wide quartz-carbonate (ankerite and calcite)-barite-sphalerite-galena ± chalcopyrite veins (Dbm veins) crosscut mineralized and unmineralized portions of the Main Stage Porphyry and are interpreted as intermediate sulphidation epithermal veins that have telescoped on the porphyry system. These sparse veins contain minor Au, Ag, Pb, Zn, and Cu, yet do not contribute significantly to the economic resource.

The structure of the intrusive complex is becoming better constrained with the most recent rounds of drilling (2023 and 2024 totalling 6240 meters core), combined with relogging of historic core, to fill gaps in understanding within the previously widely spaced drilling.

The 'Divide Fault', previously modelled based on drill core intercepts and breaks in the downhole magnetic susceptibility readings, and which formed a hard boundary between eastern and western domains (Domain 1 & 2 respectively in Bird, 2022), has been removed from the current structural model of the Whistler Deposit, as relogging campaigns and recent drilling has failed to find convincing evidence of the existence of this fault. While a diffuse / gradational 'break' in geology can be discerned parallel to the plane of the previously interpreted Divide Fault, this 'transition zone' is likely to represent an interfingering complex intrusive contact between MSP and IMP, subsequently intruded locally by LSP dykes. Thus, the transition zone is also no longer considered a hard boundary suitable for constraining resource interpolation. Several other previously modelled faults as described in earlier geological interpretations of the Whistler Deposit, have also been removed from the current geological model for the Whistler deposit, as their existence is tenuous and their impact on either controlling or offsetting / juxtaposing mineralization was minor.

A newly interpreted fault system crosscuts the northern part of the deposit [\(Figure 7-15\)](#page-59-0): the 'Rover Fault' and associated splays. Fault structures in the deposit are commonly associated with narrow zones of strong to intense sericite, clay, pyrite, and carbonate alteration. The Rover Faults are interpreted as post-mineral, with vertical displacement.

7.3.3 Mineralization: Raintree West

The Raintree West deposit occurs 1,500 m to the east of the Whistler Deposit, just off the nose of Whistler Ridge. It occurs below a thin veneer of glacial till (5 to 15 m) and hence is not exposed at surface. Outside of the Whistler Deposit, Raintree West is currently the most advanced deposit in the Whistler Area based on drill metres, with a total of 8,538 m since the original discovery hole drilled by Geoinformatics in 2008. The discovery drillhole, RN-08-06, targeted an airborne magnetic high anomaly that is coincident with an IP chargeability high detected on a 2D IP reconnaissance line that crossed the Whistler Area. This hole discovered a significant zone of near surface (below 5m of till cover) goldcopper porphyry mineralization (160 m grading 0.59 gpt gold, 6.02 gpt silver, 0.10% copper).

Mineralization at Raintree West occurs as two main types: 1) early, porphyry-style gold-copper mineralization hosted by diorite porphyry stocks and consisting of quartz and magnetite stockwork veining, with vein and disseminated chalcopyrite associated with potassic alteration, and 2) later crosscutting silver-gold-lead-zinc mineralization in quartz-carbonate veins (Dbm) that contain pyrite, sphalerite, galena, and chalcopyrite, with occasional banded epithermal-like textures. The early goldcopper mineralization is best developed within, and controlled by, early diorite porphyry intrusions (akin to Main Stage Porphyry at the Whistler Deposit), whereas the later silver-gold-lead-zinc veins surround and locally overprint the porphyry mineralization and are most abundant in the host volcanic rocks in zones of strong to intense phyllic alteration vertically above and adjacent to the diorite porphyries. In places, 25m to 50m wide diorite porphyry dykes cut both types of mineralization and are barren (akin to Late-Stage Porphyry at the Whistler Deposit).

Current drilling at Raintree West has defined two significant zones of gold-copper porphyry mineralization: 1) a near surface zone on the east side of the Alger Peak fault; and 2) a deep zone on the west side of the fault [\(Figure 7-17\)](#page-63-0).

The near surface porphyry gold-copper mineralization is coincident with a northwest-elongate airborne magnetic high anomaly that measures 250 m long and 150 m wide, which pinches to the northwest and southeast. Drilling has only intersected this mineralization on two 100 metre-spaced east-west sections (6,871,350mN and 6,871,450mN). Gold-copper mineralization occurs from the top of bedrock to a maximum depth of approximately 170 m, where it is either truncated by post-mineral diorite porphyry intrusions or faulting, and has a true width of approximately 150 m. Gold-copper mineralization is closed to the north, and potentially open to the south, however grade diminishes, and the airborne magnetic high anomaly pinches out just south of the most southerly hole (WH10-025).

The deep zone of porphyry gold-copper mineralization on the west side of the fault has a maximum apparent width and vertical extent of 300 by 300 m at its widest (6,871,650N), is open to depth, and occurs at its shallowest at 470 m below surface. This deep zone of mineralization can be traced along a northwest-trending strike extent for at least 325 m where it appears fault bound to the northwest and is open to depth to the southeast. The mineralization is essentially blind to the airborne magnetic data and the 3D IP due to the limited depth penetration of these techniques.

Porphyry mineralization at Raintree West is essentially like that at the Whistler Deposit with respect to veining and alteration, although Raintree West is mantled by intensely altered volcanic rocks with epithermal-texture quartz-carbonate veins. These veins (Dbm), interpreted to have formed in a shallow environment post-dating the main phase of porphyry gold-copper mineralization, may have developed through hydrothermal/thermal downward collapse onto to earlier formed high temperature porphyry system, contributing base and precious metals to the mantle of volcanic rocks and porphyry mineralization.

(Source: MMTS, 2015)

Figure 7-17 Plan Map of the Raintree West on a Background of greyscale airborne magnetic data, (magnetic high anomalies shown as lighter shades of grey)

7.3.4 Mineralization: Island Mountain

The Island Mountain deposit area is host to several mineralized zones interpreted to represent a cluster of individual porphyry centres within this large intrusive complex. These include the Breccia (the "Island Mountain Deposit"), Cirque and Howell Zones, and other prospects defined by surface geochemistry and geophysical anomalies that require further field assessment. Exploration activity and the majority of diamond drilling by Kiska have concentrated on mineralization associated within the Breccia Zone on the

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southwest slope of Island Mountain. Here, at least three styles of significant gold and copper mineralization are currently recognized: 1) gold-copper mineralization hosted by k-feldspar altered monzonitic intrusive breccia, 2) gold-copper mineralization hosted by intrusive and hydrothermal breccias associated with strong sodic-calcic alteration, and 3) gold-only mineralization associated with vein and disseminated pyrrhotite ("pyrrhotite-gold").

At the Breccia Zone, the first two styles of mineralization occur within a 300 m diameter, sub-circular, sub-vertical breccia pipe, which appears to have been a conduit for inter-mingled intrusive and hydrothermal breccias hosted by the Diorite Porphyry. Gold-copper mineralization hosted by the kfeldspar altered monzonitic intrusive breccia is volumetrically smaller than the subjacent hydrothermal breccias and is interpreted as being the earliest stage of mineralization, since this breccia body is cut by actinolite veinlets. Mineralization is associated with trace to 2% disseminated chalcopyrite in the kfeldspar altered intrusive cement of the breccia, as illustrated in [Figure 7-18](#page-64-0) below.

(Source: MMTS, 2015) **Figure 7-18 Photo of monzonite-matrix intrusive breccia with patchy albite alteration, silicification and disseminated chalcopyrite**

The bulk of gold-copper mineralization at the Breccia Zone is hosted by intrusive and hydrothermal breccias with strong sodic-calcic alteration with pyrrhotite as the predominate sulphide and trace to 1% chalcopyrite. Chalcopyrite is most abundant in the matrix of the hydrothermal breccias and is commonly intergrown with pyrrhotite and actinolite ± magnetite. Pyrrhotite, ranging from 1 to 5%, occurs as disseminations within the breccia matrix and as large blebs cementing the matrix as illustrated i[n Figure 7-19.](#page-65-0) The deportment of gold in the breccia zone is not known. Weaker goldcopper mineralization extends 50 - 75 m beyond the breccia zone and is associated with actinolite stockwork veining.

(Source: MMTS, 2015) **Figure 7-19 Photos of various textures of actinolite-magnetite hydrothermal breccia (BXMA), showing strong albitization in monomict breccia (upper), pyrrhotite matrix in polymict breccia (lower)**

Gold-only mineralization in the Breccia Zone (referred to as "Pyrrhotite-Gold" mineralization) occurs 100 – 200 m peripherally to the intrusive-hydrothermal breccia body and occurs in association with vein and disseminated pyrrhotite within the Diorite Porphyry. Pyrrhotite veins occur in irregular, possibly sheeted sets, and are typically 1 - 10 millimetres wide and have pyrrhotite-rich (up to 15 - 20%) net-textured vein selvages (i.e., replacing the igneous matrix of the Diorite Porphyry). Petrography and SEM studies indicate that gold occurs as electrum intergrown within and marginal to pyrrhotite grains. The orientation and continuity of these veins is currently undefined.

The relationship between the breccia-hosted gold-copper mineralization and the pyrrhotite-associated gold-only mineralization is not fully understood. The current working hypothesis is that the gold-copper and gold-only mineralization are associated with the same hydrothermal fluid, such that copper was precipitated in the hotter parts of the system within the hydrothermal breccia, and copper-depleted, gold-bearing fluids persisted into cooler, structural zones beyond the breccia and were subsequently precipitated as illustrated schematically i[n Figure 7-20](#page-66-0) below (Rowins, 2011).

Figure 7-20 Schematic Model of Breccia Zone Alteration and Mineralization

7.3.5 Mineralization: Muddy Creek

Gold mineralization at Muddy Creek is hosted throughout the core of the plutonic complex and is controlled by northwest-striking and steeply southwest-dipping, mm- to locally cm-wide veinlets of sulphides and quartz, manifest as rusty-weathering sub-parallel fracture sets, commonly spaced a metre or more apart [\(Figure 7-21\)](#page-67-0). These veinlets may contain any combination of chalcopyrite, arsenopyrite, pyrite, stibnite, pyrrhotite and native gold, with minor amounts of galena, sphalerite and molybdenite. Moderate sericitic alteration is typically restricted to cm-wide selvages to these veins, whereas the bulk of the interleaving rock is relatively unaltered and unmineralized. Cone sheets and circular onion skintype joints that resemble bubbles or miarolites also carry gold mineralization, and elevated gold and copper values are also found in cm-scale pegmatites. Coarse- to very coarse-grained feldspar-quartz pegmatite with chalcopyrite and subordinate molybdenite occur along joint planes and intersections, centered in aplitic dikes and at the cores of circular joint sets or cone sheets. Lastly, massive sulfide veins occur locally along Muddy Creek in hornfelsed sedimentary wall rock. Previous workers report gold in all mineralization types to range from ppm to more than 1 oz/t in select samples (Millholland, 1998).

(Source: MMTS, 2015) **Figure 7-21 Detail view of Biotite Monzonite Northwest of Muddy Creek, cut by sub-vertical limonite-stained fracture fillings of chalcopyrite-arsenopyrite (~1-3 per metre)**

Accessory minerals associated with mineralization in veins include vuggy quartz and K-spar, with greatly subordinate ilmenite, tourmaline, apatite, beryl, and possibly corundum. Unlike most other mineral types of the Whistler region, magnetite is completely absent and the only measurable magnetism in hand samples is imparted by ilmenite and pyrrhotite.

Previous exploration has largely been focused on areas where the vein/fracture density is highest. This includes structural zones near the top of Discovery Creek, Phoenix Creek, Prospect Creek, and Muddy Creek that occur along the strike extent of a significant northwest-striking fault zone. Two diamond drillholes drilled by Kiska in 2011 focused on a high-density vein/fracture zone at the top of Prospect Creek. Here drilling returned a highlight result of 0.44 gpt gold over 44.2 m from 297.0 downhole (MC11-002). True widths on mineralization in this area may be approximately 80% of drilled widths, yet the full extent of mineralization down-dip or along strike is unknown due to a lack of drilling.

8 DEPOSIT TYPES

Exploration on the Whistler Project by Kennecott, Geoinformatics, Kiska and U.S. GoldMining Inc., has identified three primary exploration targets for porphyry-style gold-copper deposits. These include the Whistler, Raintree and Island Mountain Deposits. These deposits and their exploration criteria, conform to the porphyry deposit model as described in Sillitoe (2010). All the porphyry deposits in the Whistler Area share similar styles of alteration, mineralization, veining and cross-cutting relationships that are generally typical of porphyry systems associated with relatively oxidized magma series (A- and B-type quartz vein stockwork, chalcopyrite-pyrite ore assemblage, presence of sulphates, core of potassic alteration with well-developed peripheral phyllic alteration zones). The Whistler area also hosts multiple additional porphyry-like prospects defined by drilling, anomalous soil samples, alteration, veining, surface rock samples, Induced Polarization chargeability/resistivity anomalies and airborne magnetic anomalies. These include the Raintree North, Rainmaker, Dagwood, Round Mountain, Puntilla, Canyon Creek, and Snow Ridge prospects. Thus, the Whistler-Raintree area, also known as the 'Whistler Orbit', is considered to be a classic porphyry cluster comprising multiple high-level magmatic apophyses emanating from a common deep causative batholith.

In contrast, Island Mountain has significantly different alteration, veining and sulphide assemblages associated with mineralization, principally the occurrence of pyrrhotite and to a lesser extent arsenopyrite associated with Au-Cu mineralization, Au-Cu association with strong sodic-calcic alteration, lack of significant sulphates, very minor hydrothermal quartz and weak to insignificant phyllic alteration. For these reasons, the porphyry system at Island Mountain may belong to the "reduced" subclass of porphyry copper-gold deposits (see Rowins, 2000).

The Muddy Creek area represents an additional exploration target with the potential to host a bulk tonnage, Intrusion Related Gold (IRG) deposit. Previous exploration by Millrock Resources Inc., and more recently by Nova Minerals Ltd., on claims directly adjacent to the Muddy Creek area, which are geologically analogous, have returned encouraging preliminary results. Like Island Mountain, the Muddy Creek mineralization is distinct from the Whistler Porphyry systems and shares more similarity with IRG systems characteristic of the Tintina Gold Belt. The intrusive complex at Muddy Creek is predominantly monzonitic grading to more mafic marginal phases yet is generally more felsic in composition relative to the diorites of the Whistler Area. Mineralization is restricted to sheeted vein zones with narrow millimetre scale veinlets and pegmatitic veinlets of quartz, feldspar, tourmaline, and sulphides that include arsenopyrite, minor chalcopyrite and pyrite-pyrrhotite. Gold mineralization is largely confined to the minute veinlets whereas the intervening intrusive rocks are largely unaltered and unmineralized.

9 EXPLORATION

A summary of all exploration work conducted by various operators from 1986 to present is summarized in [Table 9-1.](#page-69-0) Cominco Alaska Inc. is attributed with the discovery of the Whistler Deposit in 1986. The only exploration activity documented by Cominco for which Kiska has records are 8.4 line-kilometres of 2D Induced Polarization geophysics over the Whistler Deposit and sixteen diamond drillholes (1,677 m) in the Whistler Deposit.

AM=Airborne Magnetic survey EM=Airborne Electro-Magnetic survey IP=Induced Polarization survey

Geological Mapping

The bulk of the detailed geological mapping and interpretation on the property was undertaken by Kennecott and summarized in a report by Young (2006). This work laid the foundation for the geological interpretation of porphyry-style mineralization in the Whistler area (including the Whistler Deposit and the Raintree - Rainmaker deposits), the Breccia Zone at Island Mountain, and Intrusion-Related Au mineralization in the Muddy Creek area.

Airborne Geophysics

An airborne helicopter geophysical survey was commissioned from Fugro Airborne Surveys ("Fugro") by Kennecott during 2003. This survey covered the entire property with a high sensitivity cesium magnetometer and a 256-channel spectrometer.

Additional airborne magnetic data were acquired by Kennecott in 2004 over two smaller areas using a helicopter equipped by a Rio Tinto bird operated by Fugro and a Kennecott geophysicist. One area over the Snow Ridge target was investigated at 200m line spacing (79-line kilometres). The other grid was flown over the Whistler Deposit and surrounding area using fifty-metre line spacing (1,365-line kilometres).

Results from these airborne surveys were used by Kennecott to interpret geological contacts, fault structures and potential mineralization in the Whistler, Island Mountain, and Muddy Creek areas. In particular, the airborne magnetic data showed that the Whistler Deposit displays a strong 900m by 700m positive magnetic anomaly attributed to the magnetic Whistler Diorite intrusive complex (host to the Whistler Deposit) in addition to a contribution from secondary magnetite alteration and veining associated with Au-Cu mineralization. This observation formed that basis for exploration targeting in the Whistler area, particularly those areas covered by a thin veneer of glacial sediments, such as the Raintree and Rainmaker deposits. These surveys, in addition to 2D Induced Polarization ground geophysical surveys targeted over airborne magnetic anomalies, were instrumental in the "blind" discovery of the Rainmaker and Raintree deposits by Kennecott in 2005 and 2006, respectively.

Kiska commissioned a helicopter borne AeroTEM survey over the Island Mountain area by Aeroquest Airborne in June 2011. The principal geophysical sensor was an AeroTEM III time domain electromagnetic system, employed in conjunction with a caesium vapour magnetometer. Navigation was provided by a real-time differential GPS navigation system, plus a radar altimeter and a video recorder mounted in the nose of the helicopter.

The survey was flown on east-west flight lines with a spacing of 100 m. Control lines were flown northsouth, perpendicular to the survey lines, with a spacing of 1,000 m. The nominal terrain clearance of the EM bird was 30 m. The magnetometer sensor was mounted in a smaller bird connected to the tow rope 33 m above the EM bird and 20 m below the helicopter. Nominal survey speed was 75 km/hr., resulting in a geophysical reading about every 1.5 to 2.5 m along the flight path. The total survey coverage, including tie lines, was 635 km. Mira Geoscience was subsequently engaged to produce a 3D inversion of the data. The survey was designed to target potential zones of disseminated and net-textured pyrrhotite mineralization like the pyrrhotite-associated gold-only zone of mineralization on the flanks of the Breccia Zone. The survey did detect a large 1.5 km long by 1.0 km wide conductivity low anomaly on the southeast side of the Island Mountain area, referred to as the Super Conductor target. This anomaly was subsequently tested by three drillholes that did suggest that the conductivity anomaly may be associated with disseminated pyrrhotite mineralization with elevated gold values, yet further drilling is required to be conclusive and fully test the target.

Ground Geophysics

Cominco acquired 8.4 line-km of 2D Induced Polarization geophysics from six east-west oriented lines centred over the Whistler Deposit discovery outcrops. Anomalous results from these lines were used to target the deposit area with subsequent drilling. From 2004 to 2006, Kennecott completed 39.4 line-km of 2D IP geophysics in the Whistler area. Within this survey, two IP lines were run over the Whistler Deposit magnetic anomaly and showed that mineralization is coincident with a strong chargeability anomaly. Subsequent lines targeted magnetic anomalies at the Round Mountain, Canyon Creek, Canyon Ridge, Canyon Mouth, Long Lake Hills, Raintree and Rainmaker deposits. In 2007-2008, Geoinformatics completed 8.8 line-km of 2D IP from six separate reconnaissance lines in the Whistler area targeting

airborne magnetic highs. Anomalous results from this survey in the Raintree area led to the Raintree West discovery.

In 2009, Kiska undertook a significant 2D and 3D IP survey over most of the prospective areas in the Whistler, Island Mountain, and Muddy Creek areas. Kiska commissioned Aurora Geoscience to complete 224 line-km of a 3D Induced Polarization geophysical survey. This was executed on two grids (Round Mountain; Whistler Area) which were comprised of grid lines ranging from 4 to 9 km long with a line-spacing of 400 m. From November to December 2009, the raw data was delivered to Mira Geoscience for detail data quality control and error analysis prior to the construction of a 3D inversion model. This survey reaffirmed that the Whistler Deposit is coincident with a discrete 3D chargeability anomaly and showed that much of the Whistler area contains broad areas of anomalous chargeability [\(Figure 9-1\)](#page-72-0). In conjunction with the airborne magnetic data, these zones of anomalous chargeability formed the basis for exploration drilling in the Whistler Area in 2010.

(Source: Roberts, 2011a)

Figure 9-1 Depth slices (100m) of the chargeability (top) and resistivity (bottom) inversion model of the 3D IP data in the Whistler Area (with contours of the 400m line spacing AMAG RTP). WD, Whistler Deposit; RTW, Raintree West; RTN, Raintree North; RTS, Raintree South, DGW, Dagwood; RMK, Rainmaker

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In 2009 Kiska commissioned SJ Geophysics to complete 40 line-km of a 2D Induced Polarization geophysical survey. Survey lines were generally semi-straight reconnaissance-type lines over areas of interest at Alger Peak, Island Mountain, and Muddy Creek. The geophysical survey was acquired with a pole – dipole 2DIP technique with 100m dipoles.

Soil and Rock Sampling

From 2004 to 2006 Kennecott collected 1,300 rock samples, close to 2,500 soil samples and 103 stream sediments samples in the Whistler, Island Mountain, and Muddy Creek areas. Within this program, a soil grid over the Whistler Deposit returned anomalous Au-Cu results coincident with the magnetic high. Other reconnaissance soil lines in the Whistler area with anomalous Au-Cu results helped to define areas of interest at the Round Mountain, Canyon Creek, Canyon Ridge, Canyon Mouth, and Long Lake Hills prospects. In addition, soil reconnaissance lines at Island Mountain led to the Discovery of the Breccia Zone and broad zones of anomalous Au at Muddy Creek. In 2009 and 2010, Kiska collected 1,417 soil samples and 293 rocks samples, which largely confirmed areas of interest in the Whistler, Island Mountain, and Muddy Creek areas previously defined by Kennecott.

Rock samples consist of approximately one kilogram of rock collected over a small area surrounding each sampling site using a rock hammer. The sampling location is located using a handheld GPS unit and marked in the field with a metallic tag. Descriptive information about the geology of the sample was recorded and aggregated into the project database.

Soil samples are collected from the surface soils (generally the B-horizon) by extracting approximately one kilogram of soil into a plastic bag usually with a hand auger. Each sampling site is located using a GPS unit. Descriptive information such sampling depth and physical attributes are recorded and aggregated into the project database. Typically, field duplicates are collected at a rate of one every twenty samples.

Soil samples were collected along traverses as part of multi-kilometre reconnaissance programs, generally at 100 metre spacing. In two areas (Whistler Deposit and Snow Ridge), samples were collected at a more regular 100 metre grid spacing. This area is illustrated i[n Figure 9-2](#page-74-0) with the whistler-Rainmaker terrain shown in [Figure 9-3.](#page-74-1)

(Source: MMTS, 2015)
Figure 9-2 From **Figure 9-2 From the Whistler Area looking North to the Snow Ridge Area**

(Source: MMTS, 2015) **Figure 9-3 From the Whistler Area looking South to the Rainmaker Area**

10 Drilling

A total of 72,480 m of diamond drilling in 261 holes are documented in the Whistler database for drilling on the Whistler Project by Cominco, Kennecott, Geoinformatics, and Kiska from 1986 to the end of 2023. A summary of the drilling is shown i[n Table 10-1.](#page-75-0) Of these drillholes 23,334 m in 53 holes have been drilled in the Whistler Deposit area, 5,190 m in 58 holes have been drilled in the Raintree area, and 15,572 m in 40 holes comprise the Island Mountain resource area. There are 29,385 m in 110 holes in areas outside the three resource areas.

[Figure 10-1](#page-76-0) through [Figure 10-3](#page-78-0)**Error! Reference source not found.** are plan views of each deposit illustrating the drillholes by Year / Owner for Whistler, Raintree, and Island Mountain respectively. The resource pit outline is shown in black on all figures, with the underground resource confining shape in grey for the Raintree deposit.

Figure 10-1 Plan View of Drillholes by Year/Owner – Whistler

Figure 10-2 Plan View of Drillholes by Year/Owner – Raintree

Figure 10-3 Plan View of Drillholes by Year/Owner – Island Mountain

11 Sample Preparation, Analyses, and Security

This section provides an overview of the sample preparation, analyses and security procedures used by the pre-U.S. GoldMining /GoldMining operators of the Whistler Project. This section summarizes the verification work and practices employed by each of these operators for which records are available. The independent Qualified Person (QP) responsible for Section 11 of this report, Sue Bird, P. Eng., believes that these practices are consistent with industry standards and sufficient for their use in mineral resource estimation as detailed herein.

Sample Preparation and Analyses

11.1.1 Sample Preparation and Analysis -Cominco

There is no available documentation that describes the sampling used by Cominco. The core is not available for data verification. The sample preparation and analytical procedures used by Cominco are not known. Core samples were assayed for gold, silver, and copper and occasionally for a suite of eight other metals (arsenic, cobalt, iron, manganese, molybdenum, nickel, strontium, and zinc) at an unknown laboratory. No certificates of these analyses are available. It is unknown if quality control samples were inserted into the sampling stream, if they were, no records of these samples were available.

11.1.2 Sample Preparation and Analysis – Kennecott and Geoinformatics

Sample preparation protocols for drilling programs on the Whistler project documenting procedures describing all aspects of the field sampling and sample description process, handling of samples, and preparation for dispatch to the assay laboratory, were initially developed by Kennecott and subsequently adopted by Geoinformatics (SRK, 2007).

All soil, rock chips, core, and stream sediments samples were organized into batches of samples of the same type for submission to Alaska Assay Laboratories Inc. in Fairbanks, Alaska (AAL) for preparation using standard preparation procedures. The AAL laboratory is part of the Alfred H. Knight group, an established international independent weighing, sampling, and analysis service company (SRK, 2007).

Kennecott used two primary independent laboratories for assaying samples prepared by AAL. The samples collected during 2004 were assayed at AAL, however, all prepared pulps collected in 2005 and 2006 were submitted to ALS-Chemex Laboratory in Vancouver, British Columbia for assaying. The ALS Chemex Vancouver laboratory is accredited to ISO 17025 by the Standards Council of Canada and participates in a number of international proficiency tests, such as those managed by CANMET and Geostats (SRK, 2007).

It is reported (SRK, 2007) that Kennecott used two secondary laboratories for check assaying. ALS-Chemex re-assayed 191 pulp samples from the 2004 sampling programs, and Acme Analytical Laboratories Ltd. of Vancouver, British Columbia ("Acme") was used as a secondary laboratory in 2005 and 2006. Acme (now Bureau Veritas) is an ISO 17025 accredited laboratory.

Core samples were prepared for assaying using industry standard procedures. Splits of 500 g of coarsely crushed core samples were pulverized to ninety percent passing a -200-mesh screen. Splits of 250 g samples were pulverized to eighty-five percent passing a -150-mesh screen. In 2004, 30 g pulp samples were assayed by Alaska Assay Laboratories in Fairbanks for gold by fire assay with atomic absorption finish (AA), and for a suite of nine metals by aqua regia digestion with inductively coupled plasma (ICP). Core and rock samples collected after 2004 were assayed by ALS-Chemex for gold by fire assay with AA

finish on thirty-gram sub-samples and for a suite of thirty-four elements (including copper and silver) by aqua regia digestion and ICP-AES on 0.5 g sub-samples. Elements exceeding concentration limits of ICP-AES were re-assayed by single element aqua regia digestion and atomic absorption spectrometry (SRK, 2007).

Kennecott included quality control (QAQC) samples with all samples submitted for assaying. Each batch of twenty core samples submitted for assaying contained one sample blank, one of three project specific certified reference materials (CRMs), a field duplicate and a coarse crushed duplicate. These QAQC samples were inserted blind to the assay laboratory except for the coarsely crushed sample duplicates that were inserted by the preparation laboratory (SRK, 2007).

Geoinformatics used the sample preparation and assaying protocols, and quality control measures developed by Kennecott. All samples collected by Geoinformatics were submitted to Alaska Assay Laboratories for preparation. Pulps were submitted to ALS-Chemex by the preparation laboratory for assaying using the same tests described previously (SRK 2008).

Two sample blank materials were collected locally by Kennecott. An andesite rock (OPPBLK-1) collected on outcrop (522,399 m east and 6874,144 m north; NAD27, zone 5) and porphyritic andesite (WP-BLK-1) intersected in borehole 04-DD-WP-01 (SRK, 2007)

For the Whistler Project, Kennecott fabricated three in-house CRMs (WPCO1, WP-MG1 and WP-HG1; from coarse rejects from two boreholes drilled at Whistler (WP04-04-17 and WH04-01-17) that were used through 2010. Coarse rejects from core samples were selected to create three composite samples yielding low, medium and high copper and gold values. Each composite sample was prepared at AAL to yield homogenized pulverized samples for inclusion in the sample stream. Five samples of each standard were then submitted to five commercial laboratories for round-robin assaying. Each standard sample was assayed twice at each laboratory yielding fifty assay results that were analyzed to determine the expected values and standard deviation for QAQC analysis (Franklin, et al 2006).

11.1.3 Sample Preparation and Analysis – Kiska

Kiska geologists marked out samples for assay after logging the drill core, typically 2m to 3m in length, honoring lithological and alteration contacts. In general, the drillholes were sampled top to bottom, excepting holes that were partially sampled due to a lack of significant mineralization. After the sample tags were inserted into the core boxes, the core was photographed wet and dry before being cut in half with a diamond saw. One half was submitted for assay, one half was retained (Roberts, 2011a).

In 2009, Kiska used AAL in Fairbanks as the primary assay lab but switched to ALS-Chemex for the 2010 and 2011 drilling, both laboratories were independent of Kiska. At AAL samples were dried then crushed to 70% passing 10 mesh, a 250 g split was pulverized to 90% passing 150mesh. A 30-element suite was conducted by three-acid digestion with ICP-AES and gold was analyzed using 30 g samples by fire assay with AAS finish (Roberts, 2011a).

At ALS Chemex samples were crushed to 70% passing 2 mm, split, and pulverized to 85% passing 75µm. Gold was analyzed with a 30 g sample by fire assay with AA finish, 33 element analysis and ore grade were done with four-acid digestion on ICP-AES finish.

Kiska included QAQC samples at the rate of one CRM, one blank, and one field duplicate (quarter core) in each batch of 20 samples which were blind to the laboratory. CRMs purchased from Ore Research &

Exploration and silica sand were used for blanks. A sample tag was included for a lab duplicate. (Roberts, 2011).

11.1.4 Sample Preparation and Analysis – US GoldMining

For the Whistler Project drill core sampling program in 2023, samples were taken from the NQ/HQ core by sawing the drill core in half, with one-half sent to Bureau Veritas Commodities Canada Ltd. ("BV") in Fairbanks for sample preparation, then to BV's analytical laboratory in Vancouver, Canada for assaying, and the other half of the core is retained at the site for future reference. Sample lengths downhole were generally 2.0 m, except where samples were taken to honor geological contacts.

BV is a certified commercial laboratory and is independent of U.S. GoldMining. The Company has implemented a quality assurance and quality control program for the sampling and analysis of drill core samples, including duplicates, mineralized standards and blank samples for each batch of core samples. The gold analyses were completed by lead collection fire assay fusion with AAS finish (FA430 method) on 30 grams test weight. Copper, silver and other base metals (total suite of 45 elements) assays were assayed by 4-acid digestion and ICP-MS analysis (MA200 method) on 0.25 grams test weight.

11.2 Security and Chain of Custody

Kennecott devised a documented chain of custody procedure to monitor and track all sample shipments departing the base camp until the final delivery of the pulp to the assaying laboratory. Geoinformatics is reported to have adopted all procedures developed by Kennecott. These procedures included the use of security seals on containers used to ship samples, detailed work, and shipping orders. Each transfer point was recorded on the chain of custody form up to the final delivery of the pulp to the assay laboratory (SRK, 2007).

Kiska used rice bags closed with security tags to contain the samples for submission as shown in [Figure](#page-82-0) [11-1.](#page-82-0) The bags were loaded onto Regal Air flights direct to Anchorage and met by an Alaska Minerals representative who delivered them initially to Lynden transport to be shipped to the ALS preparation lab in Fairbanks, AK, or later directly to the ALS preparation lab Anchorage, AK. Prepared pulp samples were shipped to the ALS lab in North Vancouver for assay. Chain of custody tracking was documented on the form shown in [Figure 11-2](#page-82-1) (Roberts, 2011).

Following core processing, U.S. GoldMining's samples were bagged and tagged into separate bags and securely sealed with a zip tie. Samples were bagged in groups of approximately five samples (with a maximum weight of 50 lbs. per rice bag) and placed into a rice bag sealed with a security tag. Once finalized, sealed rice bags were put into bulk bags and shipped to Anchorage, Alaska, in batches of up to 100 samples. Sample were backhauled to Anchorage by Desert Air or Regal Air. If samples were shipped by Regal Air, Alaska Minerals Inc. received the samples and transported them to the Desert Air hanger. The samples were securely stored at Desert Air's hanger until being picked up by Carlisle Transportation to be shipped to Bureau Veritas in Fairbanks, Alaska, for sample preparation. A chain of custody documents with security tag and sample numbers are checked by the Bureau Veritas laboratory management in Fairbanks upon arrival. Upon confirmation of the security tag and sample numbers, the chain of custody documents is signed by the Bureau Veritas Fairbanks lab manager and sent back to site management prior to the beginning of sample preparation at the laboratory. An example of the chain of custody tracking documents is shown i[n Figure 11-3](#page-83-0) below. After sample preparation in Bureau Veritas Fairbanks, samples were shipped by Bureau Veritas Fairbanks to Bureau Veritas Vancouver for analysis.

(Source: Roberts, 2011a) **Figure 11-1 Sample Bags with Security Tags**

(Source: Roberts, 2011a) **Figure 11-2 Sample Dispatch Form**

(Source: U.S. GoldMining, 2024) **Figure 11-3 U.S. GoldMining Inc. Sample Dispatch Form**

QAQC Summary

The total number of assays and QAQC samples including samples identified as Certified Reference Materials (CRM or STD), blanks, field duplicates and check-assays in the provided database is given in [Table 11-1](#page-84-0) and shows that the percent of included QAQC samples is 15.1% in Whistler, 15.6% in Raintree and 15.5% in Island Mountain. The year in which the QAQC is counted is by year of analysis, not drilling. All available lab-internal QAQC data from 2004 to 2023 has also been entered into the company's database but has not been reviewed in detail for this report.

The QAQC sampling for all three deposits meets industry standards. QAQC data for copper and gold only have been provided and are presented here. The analysis of the QAQC samples split by deposit follows in Sections 8.3.1 to 8.3.3.

*Field Duplicates and 'blind' coarse duplicates combined because of missing classification records

As is common with projects that have been developed by various owners or operators over multiple decades, several laboratories with different analytical methods, a wide range of CRMs as well as multiple blank materials have been utilized at Whistler, Raintree and Island Mountain. Already described in some detail under Section 11.1., the following laboratories in [Table 11-2](#page-85-0) were contracted for sample preparation and geochemical analysis of drill core samples over the last 20 years.

Table 11-2 2004-2023 Assay Laboratories and assay methods for Au and Cu

The project's QAQC database currently contains 6 different designations for blank material (se[e Table](#page-85-1) [11-3\)](#page-85-1), of which OPPBLK-1 and WP-BLK-1 have been described under 8.1.2. The variability in granularity and hardness of the utilized materials as well as in natural background concentrations in andesitic to basaltic rocks contributed to significant scatter in blank plots, particularly for copper, potentially masking true inter-sample contamination during perp work at the respective labs. Several follow-upchecks on theoretical 'failure' data points and their preceding samples confirmed contamination to be an unlikely cause for these outliers.

Table 11-3 Blank Material Details 2004-2023

To control accuracy of the reported assay results, between 2 and 5 of the following blind reference materials were inserted into the sample streams of each drilling and sampling campaign, starting in 2004[. Table 11-4](#page-86-0) lists all standards, whil[e Figure 11-6,](#page-90-0) [Figure 11-10](#page-94-0) and [Figure 11-14](#page-97-0) in the following chapters detail their respective performances for each project.

Table 11-4 CRM Detail 2004-2023

The apparent standards utilized in 2004 by Kennecott (HMM, MHH, UC-2, and UC-5) could not be confirmed to be certified reference material and have therefore been excluded from the normalized Au and Cu graphs in the following chapters.

As indicated in [Table 11-1,](#page-84-0) field duplicate data from 2004 to 2006 was combined with coarse duplicate data as no distinction could be made because the actual classification for each duplicate at the time of drilling and sampling was not available at the time of this report.

11.3.1 QAQC Whistler Deposit

11.3.1.1 Whistler Blanks

The summary of the blind gold assays samples of blank material used to assess contamination in the Whistler deposit sample stream is given in [Figure 11-5.](#page-88-0) The results show an overall 1% failure rate at 10 times detection limit (DL), which is acceptable (5 fails total). The use of locally sourced andesite and porphyritic andesite taken from drill core as blank material by both Kennecott and Geoinformatics in 2004 to 2006 and 'BLANK_WHISTLER' in 2007-2008 may have contributed to the elevated number of 5*DL warning results (3.3% of total), given that this material recorded elevated background values in Cu on occasion as well.

The silica sand utilized by Kiska in 2010 did not produce any warnings or failures but because of its smaller grain size is also unlikely to have gone through the crushing stage during preparation which is a common source of contamination.

The VIGORO limestone crush in 2023 did not record any contamination failures.

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A sequential plot of gold assays blanks is presented in [Figure 11-4.](#page-87-0) The purple line indicates the year of drilling, and it is clearly seen that the performance of the blank material is poorest in 2008 (Alaska Assay). However, with a fire assay Au detection limit of 0.01ppm, only 3 of the elevated assays in 2008 classify as fails as per definition of >10*DL.

The use of silica sand as blank material in 2010 produced the fewest Au results above DL.

⁽Source: MMTS, 2024)

The DL for copper assays at the Whistler deposit is either 1 or 5 ppm depending on the analysis lab and year and applying a criterion of 5- or 10-times DL would result in an extremely high failure rate due to elevated natural copper concentrations. The copper assays are therefore compared against a level of 80 ppm, or 0.008%, which appears to be the approximate background level in the blank materials chosen 2004-2008. 111 of the 343 blanks from 2004-2008 reported >80ppm, but after spot-checking Cu grades of preceding samples to several select high-Cu outliers MMTS is of the opinion that natural variability in

Figure 11-4 Sequential Plot of Gold Assays of Blanks, Whistler Deposit

Cu grades is causing the frequent 'failures' and cross-sample contamination, while certainly possible on occasion, is likely irrelevant.

A combined 167 blanks were introduced in 2010 and 2023, and none indicate any relevant Cu contamination. The highest Cu result reported was 43ppm.

The sequential plot of copper assays of blanks in the Whistler deposit is presented in [Figure 11-5.](#page-88-0)

(Source: MMTS, 2024)

Figure 11-5 Sequential Plot of Copper Assays of Blanks, Whistler Deposit

11.3.1.2 Whistler CRMs

There are 461 samples of CRMs certified for both gold and copper included in the Whistler sample stream which are used to assess the accuracy of the laboratory assays, though one Au assay was not reported. The results of analysis of these samples are given in [Table 11-6](#page-89-0) in order of increasing grade of the expected value (EV) and show that the overall failure rate is an acceptable 1.7%. The absolute average percent error is 1.9% with 9 of 10 CRMs falling between -0.4% and -2.4%, indicating a minor negative bias to the laboratory gold assays. The CRM with the greatest percentage error (+8.1%) has only been inserted and analyzed twice and its performance is therefore not considered a concern.

The normalized process control chart showing results for all CRMS is given in [Figure 11-5](#page-88-0) and shows the acceptable results across all CRMs. It does not appear that quality control procedures were always followed. For instance, the high failure in 2008, plotting at almost +6 SD is sample 514915 in drillhole WH-08-08, and follows an assay value of 0.902 g/t. This control sample and the neighboring primary samples should have been re-assayed and replaced in the database if strict control measures were in place. Although individual lapses control procedures can be identified, the overall impact of these is not considered material as the number of failures is small.

[Figure 11-6](#page-90-0) also demonstrates that Alaska Assays in 2008 was able to measure Au concentration in the blind CRMs most accurately, while ALS Chemex and Bureau Veritas assays exhibit larger spreads.

The summary of copper assays of the CRMs is given in [Table 11-7](#page-90-1) in order of increasing grade and shows the overall failure rate to be acceptable at 2.6% and the percent error to be negligible at +0.2% when straight averaged.

⁽Source: MMTS, 2024)

Figure 11-6 Whistler Deposit Normalized Process Control Chart, Gold

The normalized process control chart for Cu is given i[n Figure 11-7](#page-91-0) in order of processing and shows the acceptable results with relatively few failures. Of note, however, are the moderate negative biases in normalized Cu for 2007 (ALS Chemex) and 2023 (Bureau Veritas). In 2007, 3 certificates received in November (FA07110167, FA07112984, and FA07127160) delivered consistently low Cu results across the 3 CRMs used at the time and should have been flagged for review and potential re-assaying at ALS.

In 2023, the low-range CRM OREAS 501d moderately but consistently underperformed by approx. 2.5% and was also used disproportionately often in comparison to the other CRM used that year (30 to 18 insertions, respectively).

The performance of both gold and copper CRMs in the Whistler deposit indicates acceptable accuracy [\(Figure 11-7\)](#page-91-0).

(Source: MMTS, 2024)

Figure 11-7 Whistler Deposit Normalized Process Control Chart, Copper

11.3.1.3 Whistler Field Duplicates

GoldMining's assay database provides a significant number of field duplicates for the 2010-2023 periods. Unfortunately, for earlier years 2004-2006, the distinction between field duplicates and company-initiated coarse reject duplicates has not been retained, so that a general 'Duplicate' designation has been given to all QAQC samples that could not be identified as blank or CRM.

The parent (original) versus daughter (duplicate) relationship however has been consistent, with the parent sample always directly preceding the daughter in the sample series. These duplicates along with regular field duplicates, where identified, have been combined into the field duplicate graphs of the following chapters for both Au and Cu.

The simple statistics of the field duplicates in the Whistler deposit are given in [Table 11-8.](#page-92-0) It is seen in the averaged ARD of the gold assays that the % difference of the means is 1.3% indicating there is a small positive bias to the duplicate samples as compared to the originals. There is a weak 0.5% difference in the avg. ARD of the copper assays, favouring the duplicate.

The percent below 10% Half Absolute Relative Difference (HARD) is 71.5% for gold and 72% for copper. The expectation for field duplicates is that 70% or more are below 10%, this is met for copper and gold, indicating the gold mineralization in Whistler is not highly heterogenous.

.									
DUP	Element	Units		Average		Count >10%	% <10% HARD		
count			Primary	Duplicate	ARD % Avg.	HARD			
492	Gold	g/t	0.271	0.283	1.31%	140	71.5%		
492	Copper	ppm	1069	1110	0.53%	138	72.0%		

Table 11-8 Whistler Field Duplicates Simple Statistics

The small positive bias of gold assays in the duplicate samples is also observed in the scatter plot in [Figure 11-8](#page-92-1) with the slope of the best fit line moderately above 1.0. The high correlation coefficient of 0.95 reflects the somewhat homogenous nature of the duplicate samples.

(Source: MMTS, 2024) **Figure 11-8 Whistler Deposit Field Duplicate Scatter Plot, Gold**

The scatter plot of copper field duplicates is given in [Figure 11-9](#page-93-0) and shows a very good correlation between duplicate pairs with slope of best fit line slightly above 1.0 and the R^2 at 0.95.

(Source: MMTS, 2024) **Figure 11-9 Whistler Deposit Field Duplicate Scatter Plot, Copper**

11.3.1.4 Whistler Umpire assays 2004-2005

A total of 206 pulps including blind blanks (9) and CRMs (8) originally prepared and analyzed by American Assay in 2004 were sent to ALS Chemex in Fairbanks, Alaska, for Au and Cu check-assay purposes. Both labs used a 30g charge for the fire assay Au analysis and an aqua regia digestion to analyze for Cu.

[Figure 11-10](#page-94-0) illustrates the very good correlation between the two datasets for Au. The majority of the check-assay pairs is moderately ALS-positive, particularly in the 0.5-5.0g/t range, which results in a difference of 0.1g/t in average grade (0.97g/t AAL to 1.07g/t ALS Chemex).

(Source: MMTS, 2024) **Figure 11-10 Whistler Deposit Umpire Scatter Plot, Gold**

[Figure 11-11](#page-95-0) highlights a significant bias towards the Cu ALS Chemex results which are consistently higher in both core sample pulps and CRM pulps. Additionally, the Cu data appears to split into two populations, which is predominantly caused by samples from drill hole WH04-05 between 185 and 233m for which the ALS Chemex assays are 74% higher on average, while the rest of the data is only 19% biased towards ALS Chemex. This is excluding results for which AAL overlimit results are not available.

(Source: MMTS, 2024) **Figure 11-11 Whistler Deposit Umpire Scatter Plot, Copper**

In response to the strong bias, Kennecott re-submitted all 2004 pulps to ALS Chemex in Elko, Nevada, for additional Cu analyses, again requesting Cu-AA45 and Cu-AA46 (overlimit) methods with aqua regia digestion. This most current Cu data is being used for resource estimation[. Figure 11-12](#page-96-0) shows the perfect correlation between the initial umpire results by ALS and the subsequent Cu-AA45 results also by ALS.

(Source: MMTS, 2024) **Figure 11-12 Whistler Deposit ALS Re-Assay Scatter Plot, Copper**

In 2005, Kennecott contracted ALS Chemex as the primary lab and chose ACME to perform the umpire assaying on a select 93 samples, 81 of which are relevant core samples[. Figure 11-13](#page-97-1) shows a significant and consistent bias towards the primary ALS Au results (+16% on average) while for Cu i[n Figure 11-14](#page-97-0) both y and R^2 approach 1.0 despite some weak scatter.

(Source: MMTS, 2024) **Figure 11-13 Whistler Deposit Umpire Scatter Plot, Gold**

(Source: MMTS, 2024) **Figure 11-14 Whistler Deposit Umpire Scatter Plot, Copper**

11.3.2 QAQC Raintree Deposit

11.3.2.1 Raintree Blanks

The summary of gold assays of blanks in the Raintree sample stream is presented in [Table 11-9](#page-98-0) and shows acceptable results with only 1.1% of samples exceeding the 5*DL warning threshold, and 2 failures passing the 10*DL level (0.4% of total).

The sequential plot of gold assays of blanks is shown i[n Figure 11-15](#page-98-1) and shows acceptable results indicating contamination is not likely to be a problem in the Raintree assay stream. The two >0.05g/t outliers of 2009 in certificate 28678 (Alaska Assays) have been reviewed and preceding samples were found to not have sufficiently high Au concentrations to reasonably explain the results as contamination.

(Source: MMTS, 2024)

Figure 11-15 Sequential Plot of Gold Assays of Blanks, Raintree Deposit

The sequential plot of copper assays blanks is given i[n Figure 11-16](#page-99-0) and, like the Whistler blanks plot [Figure 11-5,](#page-88-0) shows higher assay results in 2004-2009 due to naturally elevated copper in the blank material, as discussed previously. The assays in 2010 and 2011 have only two blanks exceeding the generic 80ppm level and are predominantly at 10 ppm and below, demonstrating no evidence of significant contamination in most of the sample stream in Raintree. Sample 845239 reporting 424ppm Cu might be a field duplicate, not a blank.

(Source: MMTS, 2024) **Figure 11-16 Sequential Plot of Copper Assays of Blanks, Raintree Deposit**

11.3.2.2 Raintree CRMs

The summary of CRM gold analyses for samples included in drilling in the Raintree Deposit is given in [Table 11-10.](#page-100-0) It is seen that the overall failure rate is 2.3% and there is a marginal overall negative bias of -0.3%. By far the most used CRMs are OREAS 50c and OREAS 52c, both of which performed very well except for a 2-week period in August-September of 2011 where ALS Chemex missed on 3 Cu and 4 Au CRMs over 4 certificates. The samples in these reports should have been re-run.

The normalized process control chart of all gold assays of CRMs in Raintree drilling is presented in [Figure](#page-100-1) [11-17](#page-100-1) and shows the reasonable overall results. 2 negative failures are <-6 and are not shown in the graph.

(Source: MMTS, 2024) **Figure 11-17 Raintree Deposit Normalized Process Control Chart, Gold**

The results of the 471 copper analyses of CRMs in Raintree drilling are presented in [Table 11-11](#page-101-0) and show an overall failure rate of 11.2% which is significant. The failures are seen to concentrate in three CRMs, OREAS-52c, OREAS-50c and OREAS-54Pa, also the CRMs with the most entries. The overall % error is slightly negative at -0.6%.

The normalized process control chart is given in [Figure 11-18](#page-101-1) and shows some significant trends over time. Samples of the 2010 drilling, analyzed by ALS Chemex using ME-ICP61 and OG-62 for CRMs >1% Cu, start by reporting generally higher than expected in April, and over the course of 4 months, trend noticeably low, without a single CRM approaching or exceeding its expected value for Cu in July.

After a 3-months hiatus in reporting (Aug-Oct 2010), November 2010 and April 2011 ALS certificates again report a significant high bias before trending lower for the rest of the year, with the 50-sample moving average line illustrating a consistent dip below the expected values by the end of May 2011. In this context it is of note that OREAS 54Pa as the CRM with the highest Cu grade at 1.55% EV consistently under performs, including a approx. 30% failure rate.

(Source: MMTS, 2024) **Figure 11-18 Raintree Deposit Normalized Process Control Chart, Copper**

Results for CRM OREAS-50c, with the most samples at 183 and very high failure rate of >14%, are given in [Figure 11-19.](#page-102-0) The graph shows that despite an initial high bias in the first 50 assays, the overall mean of the population as illustrated by the 5-sample moving average ends up being 0.745, very close to the expected value of 0.742, aided by a comparable distribution of high and low failures and the absence of far outliers.

(Source: MMTS, 2024) **Figure 11-19 Process Control Chart Raintree OREAS-50c, Copper**

[Figure 11-20](#page-103-0) for CRM OREAS 54Pb displays a consistent low bias, with only 8 of total 54 results matching or exceeding the 1.55% EV. The poor accuracy of this specific CRM is consistent across the data of all three deposits in this report. Since the EV of OREAS 54Pb is well above the expected grade range at Raintree, with only 23 core samples in all three deposits recording 1% Cu or higher, and a theoretical low bias in the impacted core samples rendering the resource estimate to be more conservative, MMTS does not consider this a major concern.

In summary, the Cu accuracy control in Raintree shows partially significant bias that previous operators did not address through sample batch reruns at the respective lab. Equally, a significant number of failures should have triggered review and re-assay at the time. Overall, MMTS still views the results as acceptable because 4 of the 5 OREAS CRMs used in 2010-2011 performed relatively well, the failures are not strongly biased and OREAS 54Pa as the poorest control CRM in this dataset is the least applicable CRM in terms of Cu grade.

(Source: MMTS, 2024)

Figure 11-20 Process Control Chart Raintree OREAS-54Pa, Copper

11.3.2.3 Raintree Duplicates

The simple statistics of the field duplicates from drilling in 2005 to 2011 at the Raintree deposit are given in [Table 11-12.](#page-103-1) Little difference is seen in the means of the gold assays, though the average ARD is slightly negative at -1.74%. The copper assays show no significant bias at comparatively low Cu grades in the selected duplicate pairs. Both sets of pairs meet the expectation for the HARD statistic, with 82.5% <10% HARD for Cu aided by the low overall grade.

DUP count	Element	Units		Average		Count >10% HARD	% <10% HARD	
			Primary	Duplicate	ARD % Avg.			
441	Gold	g/t	0.114	0.113	$-1.74%$	122	72.3%	
441	Copper	ppm	238	246	0.05%	77	82.5%	

Table 11-12 Raintree Field Duplicates - Simple Statistics

The scatter plot of duplicate pairs of gold assays is given in [Figure 11-21,](#page-104-0) and does not give concern of selection bias and paired with the HARD statistic, show the gold mineralization to not be highly heterogenous. The y=0.918 is strongly influenced by the highest-grade pair, which happens to be moderately original-positive. Removing this one data point results in a y=1.01, illustrating the sensitivity of linear trends to high-grade outliers.

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(Source: MMTS, 2024) **Figure 11-21 Raintree Deposit Field Duplicate Scatter Plot, Gold**

The scatter plot of copper assays of field duplicates is given i[n Figure 11-22.](#page-105-0) The graphed assay data confirms the predominantly low-grade nature of the selected duplicates at Raintree as most of the results plot between 20ppm and 60ppm, with a second population forming between 500ppm and 800ppm. The correlation is very good and the data unbiased.

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(Source: MMTS, 2024) **Figure 11-22 Raintree Deposit Field Duplicate Scatter Plot, Copper**

Overall, analysis of duplicate samples in Raintree does not show evidence of selection bias at the core sampling level, indicates moderate heterogeneity of gold mineralization, and shows that significant bias is unlikely at the sample preparation stage.

11.3.3 QAQC Island Mountain Deposit 11.3.3.1 Island Mountain Blanks

The summary of gold assays of blanks in the Island Mountain sample stream is given in [Table 11-13](#page-105-1) and shows an overall failure rate of 0.6%. These results are acceptable with little evidence of contamination.

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	Blank	Year used		> 5*DL warning	$% > 5*DL$	$>10*$ DL fail	$% > 10*DL$		
	BLANK	2009	12		0.0%		0.0%		
	BLANK SS	2010-2011	328	4	1.2%		0.6%		
	Total	2009-2011	340	4	1.2%		0.6%		

Table 11-13 Summary of Gold Assays of Blanks, Island Mountain Deposit

The sequential plot of gold assays of blank material is given i[n Figure 11-23.](#page-106-0)

The sequential plot of copper assays of samples of blank material is given in [Figure 11-24](#page-106-1) and shows 2 results >80ppm which is inconsequential.

(Source: MMTS, 2024)

Figure 11-24 Sequential Plot of Copper Assays of Blanks, Island Mountain Deposit

11.3.3.2 Island Mountain CRMs

The summary of results of gold assays for CRM samples included in drilling in Island Mountain are presented in [Table 11-14.](#page-107-0) The overall percentage of failures is 1.8% and the error is 0.3% indicating a slight positive bias carried by the two most frequently used CRMs OREAS 50c and 52c. The performance is very good.

CRM	Year used	Count	EV Cu %	AVG Cu %	% Error	Low Fail	High Fail	% Fail
OREAS-52Pb	2010	16	0.307	0.326	5.8%	0	0	0.0%
OREAS-52c	2010-2011	133	0.346	0.348	0.4%	1	0	0.8%
WP-CO1	2009	8	0.48	0.478	$-0.5%$	0	0	0.0%
OREAS-53Pb	2010	26	0.623	0.617	$-1.0%$	2	0	7.7%
OREAS-50c	2010-2011	103	0.836	0.838	0.2%	$\overline{2}$	$\mathbf{1}$	2.9%
WP-MG1	2009	5	1.715	1.686	$-1.7%$	0	0	0.0%
OREAS-54Pa	2010	30	2.9	2.925	0.8%	0	0	0.0%
WP-HG1	2009	5	4.693	4.698	0.1%	Ω	Ω	0.0%
Total	2009-2011	326				5	1	1.8%

Table 11-14 Island Mountain Deposit CRM Summary, Gold

The normalized process control chart of gold assays in the Island Mountain drilling is presented in [Figure](#page-107-1) [11-25](#page-107-1) showing the mean close to the expected value and 4 of the 6 failures. Two very strong low failures are not shown, one of which is likely caused by an Au data shift in the ALS Chemex certificate (sample 813068 in certificate FA10123328).

The summary of results of 326 copper assays of CRMs in Island Mountain is given in [Table 11-15](#page-108-0) and shows a higher-than-expected overall failure rate of 13.5% with overall percent error of -0.5% indicating a moderate negative bias to the copper assays of the CRMs. As was noted under 8.3.2.2, CRM OREAS 54Pa again performed very poorly with a 43% failure rate and a general under-performance approaching 5% (ALS Chemex Cu-OG62 method).

Table 11-15 Island Mountain Deposit CRM Summary, Copper

The normalized process control chart is presented in [Figure 11-26](#page-109-0) and shows that at the end of June 2010 into the first week of July 2010, over several certificates, ALS Chemex was not able to accurately measure Cu concentration in any of the blindly inserted CRMs, resulting in a significant low bias for the data points 19-50 as plotted. The data then shifts to a period of inconsistent Cu results with a weak high bias and several high outliers for the remainder of 2010. The 2011 drill campaign results are moderately biased low with several failures between July and September (data points 142-230) before turning more consistent and within the +/-3 SD line.

(Source: MMTS, 2024) **Figure 11-26 Island Mountain Deposit Normalized Process Control Chart**

The process control chart for CRM OREAS-50c is given i[n Figure 11-27](#page-110-0) and shows that despite the high failure rate of 10.7% at high volume the results are seen to indicate little bias with the mean close to the expected value of 0.742% Cu. Also, the 11 noted failures are generally very close to the +/-3SD failure threshold.

(Source: MMTS, 2024) **Figure 11-27 Process Control Chart Island Mountain CRM OREAS-50c, Copper**

For drilling in Island Mountain, analysis of the CRMs shows fluctuating results for Cu and ALS Chemex should have been requested to investigate their Cu-OG62 Cu ore grade method performance despite OREAS 54Pa's too-high Cu grade being unsuitable for accuracy control at Island Mountain. MMTS sees no indication of bias material to the resource estimate.

11.3.3.3 Island Mountain Duplicates

The simple statistics of the gold and copper assays of the field duplicates from drilling in 2010 and 2011 at Island Mountain are given i[nTable 11-16.](#page-110-1) The means of the gold assays of the duplicate pairs show a 0.74% ARD avg. difference with the originals higher, while the originals of the copper assay pairs are slightly lower than the duplicates, albeit at low grades overall. The HARD statistic expectation of 70% is more than met for copper and only 59% for gold, indicating higher heterogeneity than Whistler and Raintree. This is reflected in the significant but generally un-biased scatter around the 1-1 line in [Figure](#page-111-0) [11-28.](#page-111-0)

DUP count	Element	Units		Average		Count >10% HARD	% <10% HARD
			Primary	Duplicate	ARD % Avg.		
322	Gold	g/t	0.270	0.249	0.74%	132	59%
322	Copper	ppm	410	424	$-2.62%$	39	87.9%

Table 11-16 Island Mountain Field Duplicate Simple Statistics

The scatter plot of field duplicate assays for gold is given in [Figure 11-28](#page-111-0) and shows the considerable scatter with low coefficient of correlation. The slope at y=0.77 indicates very strong bias towards the original but the trend line is strongly influenced by two high-grade outliers. Removing those two data points results in y=1.007 and R^2 of 0.93 and would also reduce the 0.74% avg. ARD to practically 0%.

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The scatter plot of copper field duplicate assays is given i[n Figure 11-29](#page-112-0) and shows the excellent correlation of the un-biased pairs. The grade distribution in the data appears very consistent between 50ppm and approx. 600ppm.

(Source: MMTS, 2024) **Figure 11-28 Island Mountain Deposit Field Duplicate Scatter Plot, Gold**

(Source: MMTS, 2024) **Figure 11-29 Island Mountain Deposit Field Duplicate Scatter Plot, Copper**

Analysis of duplicate samples in Island Mountain do not show evidence of selection bias at the core sampling level but indicate higher heterogeneity of gold mineralization in comparison to the Whistler and Raintree deposits.

Sample Preparation, Analyses and Security Conclusions and Recommendations

The QP concludes that the sample preparation, analysis, and security are of sufficient quantity and quality for resource estimation. The author further recommends that:

- For completeness, QAQC data for silver blanks and duplicates should be collected from the historical database for analysis in future studies that include silver in the resource estimate. None of the CRMs used before 2023 were certified for silver. The lack of silver QAQC samples is not of material significance currently because silver is a minor contributor to the resource estimate.
- The locally sourced material for blanks used prior to 2009 gives inconclusive results for assessing contamination as it appears to contain trace mineralization. This is particularly pronounced in the Whistler Deposit where most of the sampling was in 2008 and earlier. Future drilling campaigns should use coarse crush limestone as was done in 2023 or alternatively a commercially prepared blank material.
- 3 CRMs with varying Au-Cu-Ag concentrations that approach the expected deposit grades be used to better represent low-grade, medium-grade, and high-grade mineralization. The CRMs are to be inserted blindly and at roughly equal ratios.

12 Data Verification

12.1 Site Visit

This section summarizes the verification work and practices employed by GoldMining and previous operators of the Whistler Project. The independent Qualified Person (QP) responsible for Section 12 of this report, Sue Bird, P. Eng., believes the databases are sufficiently validated and verified to support their use in mineral resource estimation for each of the deposit as presented herein.

12.2 Site Visit

Site visits have been conducted on September 14, 2022, by Sue Bird, P.Eng. of MMTS and again on August 6, 2024. During the site visits collar locations at Whistler and Raintree were validated. The core storage at the Whiskey Bravo camp site was visited. The core from each deposit was examined for mineralization with 4 samples for re-assay obtained in 2022 and an additional 5 samples obtained in 2024. The buildings at the camp have been re-vamped since 2022 and have been used for the 2023 and 2024 drill programs. An aerial view of the camp is given in [Figure 12-1.](#page-113-0) The core storage area is also illustrated i[n Figure 12-2.](#page-114-0) It should be noted that much of the Whistler core is also stored at a warehouse in Sterling, Alaska about 140 miles south of Anchorage. A core logging shed is shown in [Figure 12-3.](#page-115-0)

(Source: MMTS, 2021) **Figure 12-1 Aerial view of Whistler Camp**

(Source: MMTS, 2021)
Figure 12-2 Drillc **Figure 12-2 Drillcore Boxes in Storage Area**

(Source: U.S. GoldMining Inc, 2024) Figure 12-3 Core Logging Shed

12.3 Re-Assay Results

Four intervals of half core were obtained for check assaying. Two samples from Island Mountain, and 1 from each of Whistler and Raintree. The samples were chosen to be of mineralized intervals, with Au grades ranging from 0.223 gpt to 7.160 gpt and Cu grades between 0.146% and 0.449%. Results of this limited check assay program done in 2022 are shown in [Figure 12-4](#page-116-0) an[d Figure 12-5](#page-116-1) for Au and Cu respectively. Ag had only two samples above detection, both of which had a re-assay value higher than the original. The results indicate slightly lower grades for the higher values of Au. However, it was also noted that the OREAS standards also had lower values than the certified grades, particularly for Au. The results for both Au and Cu are reasonable when considering the outdoor storage area, the general scatter expected for Au and the low results of the CRM material.

(Source: MMTS, 2024) **Figure 12-4 Check Assay Results from 2022 and 2024 Site Visits – Au**

(Source: MMTS, 2024) **Figure 12-5 Check Assay Results from 2022 and 2024 Site Visits – Cu**

12.4 Data Audit

The most current version of the assay database was received on September $11th$, 2024. The database contains 27,994 sampled intervals, excluding QAQC samples, across all areas of the Whistler project. No errors were noted for overlapping intervals or missing assay data.

12.4.1 Certificate Checks and Database Corrections

The assay database as received contained certificate numbers attached to the assay intervals, however for drill holes WH04-01 to WH04-04 two certificates from two laboratories should have been recorded. For validation purposes, MMTS compiled Au and Cu data from 49 randomly selected certificates from years 2004-2023 and proceeded by comparing the resulting 3,071 raw data against the data in the database (this represents approx. 11% of the data, see [Table 12-1\)](#page-117-0).

Only two data issues were detected:

- 1. 2010 certificate FA10043640: 12 Au data show a small discrepancy, probably related to the proximity to the ALS Chemex Au-AA23 detection limit (samples 755056 to 755073)
- 2. 2023 certificate FBK23002831: 8 samples were rerun at Bureau Veritas, likely because of a moderately low Cu CRM. The rerun data should replace the original data.

The validation showed that for 2004 the original American Assay data for Au and Cu had been replaced by the re-assay data produced by ALS Chemex data of 2004 and 2005, to which MMTS agreed.

Table 12-1 Certificate Check Results

The amount of data by interval length that is supported by certificate and QAQC data (blanks CRMs and field duplicates) is given in [Table 12-2](#page-118-0) and is reported by drilling year, not analysis as previously presented in the QAQC section. The percentage of assayed length fully supported by certificate and QAQC in Whistler is 92% because of a limited amount of historical Cominco drill data. In Raintree and Island Mountain it is 100%.

12.4.2 Check assays

Check-assays or umpire assays have been completed for parts of the 2004 and 2005 drilling and assaying campaigns, with the data presented under Section 11.3. Umpire assaying for the 2023 dataset has not been initiated at the time of this report.

12.5 Collar Survey

In 2011, it was reported that collar locations for Island Mountain holes had been re-captured using a Trimble Geoexplorer 6000 GPS instrument (<1 m accuracy) and that the intention was to re-survey most of the holes on the property in 2012 (Roberts, 2011a). DGPS collar re-survey was completed in 2012.

Data Verification Conclusions and Recommendations

The QP concludes that the resource database provided is of sufficient quality for resource estimation. It is further recommended that:

- At least 10% of collar locations in each resource area, to include drilling from all years, be surveyed with GPS equipment with <1 m accuracy. If significant deviations are determined from the recorded values, all collars would need resurvey.
- GoldMining continues to pursue matching assay samples to certificates and collection of missing certificates.
- Future drilling should include third party check assays, and the data should be appropriately maintained.

12.7 Statement on Adequacy of Data

The QP is of the opinion that the data provided and used in the resource estimate for the Whistler project deposits is adequate for resource estimation. There are no additional limitations to the exploration database for use in resource modeling.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

The information contained in Section 13 regarding metallurgical testwork is intended to support and substantiate the metallurgical recoveries used in the Resource Estimate. The information provided is the best available data but may not be fully optimized with respect to the current resource. The metallurgical testwork was intermittently performed by different laboratories with different primary objectives on select portions of the overall resource. Metallurgical testing for the Whistler and Island Mountain Deposits had previously been reported by MMTS in 2015 and in 2021 and is repeated verbatim below solely for the benefit of continuity of data.

No metallurgical testing was carried out on rocks from the Raintree West deposit, however given the similarities in geological setting, host rock, mineralization and alteration between Raintree West and the Whistler Deposit, it has been assumed that metallurgical processes and metal recoveries determined for the Whistler Deposit are a reasonable approximation for the Raintree West Deposit at this time.

Metallurgical testing has been carried out in three phases starting with the 2004/2005 preliminary testing in Salt Lake City under the general supervision of Kennecott and culminating in the two phases under Kiska Metals and conducted at G&T Laboratories in Kamloops during 2010-2012. These three phases are described separately below.

Summary of Preliminary Metallurgical Testing, Whistler Deposit (Phase One)

Preliminary metallurgical test-work was carried out at Dawson Metallurgical Laboratories Inc. (DML) in Salt Lake City, Utah from September 2004 until early 2005 with a final report being issued in March of 2005 by George Nadasdy. (Nadasdy, 2005). The work was carried out under the direction of Rio Tinto Technical Services representing Kennecott.

Three different sample composites were tested. The samples were differentiated by sample history and particle size and by lead/zinc content. The three designations were Original Composite, New Core Sample and Low Lead-Zinc Composite.

13.1.1 Sample Preparation

A total of approximately 180, coarse assay reject interval samples were received at DML on September 13, 2004, from Kennecott Exploration. All the individual samples from the entire drillhole WH-04-05-21 (from 2.32 to 328.56 m) were received. Kennecott selected a mineralized interval (from 117.6 to 200.2 m) from this drillhole for testing.

The original composite was produced by including every other individual assay reject sample from the 117.6 to 200.2 metre mineralized interval. The original composite represented a total of 42.2 m of material and weighed 88.7 kg. The composite was air dried, and stage crushed to minus 10 mesh in preparation for testing. The minus 10 mesh composite was mixed in a "V" cone blender and split into batches. A 50 kg test sample was rotary table split into 2.0 kg test charges. A 37.6 kg reserve sample was also made. All samples were kept in the DML freezers to reduce sample oxidation.

Initial testwork on the original composite produced low rougher concentrate copper grades due to sulfide activation (pyrite, galena and sphalerite floating along with the chalcopyrite). On November 10, 2004, a second Whistler mineralized sample was received for testing. This second sample was the remaining ½ of Kennecott's cut core from the same drillhole (WH-04-05-21) and represented material from 140.6 to 155.3 m. Some of the higher-grade lead-zinc core was removed by Kennecott geologists

and not included in this second sample. This core sample was designated as the "new core sample". The new core sample weighed 20 kg; it was stage crushed to minus 10 mesh mixed in a "V" cone blender and then rotary table split into 2 kg test charges.

A third Whistler mineralized sample was prepared at DML at the end of November for continued testwork and was designated as the low lead-zinc composite. The low lead-zinc composite was made from the remaining individual coarse assay reject samples not used in the original composite (from 117.6 to 200.2 m). At the direction of Kennecott, selected high grade lead-zinc samples were omitted from this low lead-zinc composite. The low lead-zinc composite weighed 71 kg and was prepared in a similar fashion to the original composite.

13.2 Testing

Preliminary metallurgical testwork included gravity concentration or flotation to recover the copper and gold. The three (3) mineralized samples designated as: the original composite, the new core sample, and the low lead-zinc composite, as described above were tested from September 2004 through March 2005.

Testwork conducted on the Whistler mineralized samples included the following:

- 1. **Original Composite**: DML comparative (ball mill) grind work index test; a gravity centrifugal concentration and amalgamation test; a head assay screen at a (RM) P80=140 µm grind; rougher kinetic-reagent scoping tests; rougher kinetic-pH tests (pH 9.3, 10.0 and 10.8); three (3) stage cleaning tests at different primary and regrind sizes and cleaner tests at pH 9.3 or 11.0.
- 2. **New Core Sample**: a gravity concentration and amalgamation test; a rougher kinetic grind series P80=162, 111, 80 and 66 microns and a three (3) stage cleaner test at a P80=80µm primary grind, a P80=48 µm regrind size and a cleaner pH of 9.3.
- 3. **Low Lead-Zinc Composite**: a rougher kinetic test at a P80=80 µm grind; three (3) stage cleaning tests at a P80=80µm primary grind and P80=37 µm regrind and a cleaner pH of 9.3 or 11.0. A cleaner test was also conducted with $SO₂$ added to the first cleaner. A final cleaner test was conducted to generate a third cleaner concentrate for a suite of assays for smelter evaluation.

13.2.1 Results from Preliminary Testing

The initial work on the Original Sample resulted in lower than expected rougher and cleaner grades and high levels of lead and zinc reporting to the cleaner concentrate. This was attributed to both the high lead and zinc in the feed and the fact that the composite was created from assay rejects that had potentially aged at a relatively fine crush between core preparation and metallurgical testing.

The high lead and zinc values in the Original Sample were essentially concentrated in two of the twentyfive intervals used to make up the composite. For the two subsequent composites the high lead-zinc intervals were left out of the mix. In addition, the second sample to be tested (New Core Sample) was produced from ½ section core that provided less opportunity for the deleterious effects of ageing when stored under ambient atmospheric conditions at finer sizes.

In general, it was found in the early work that gravity recovered gold was in the finer size ranges with an average gold grain size of minus 400 mesh (37 microns) so this avenue was not pursued in later testwork on the assumption that liberated gold would be recovered through flotation.

In addition, it was also found that a primary grind of ~80% passing 80 microns was required for best recovery of both copper and gold.

Below is the table from the Dawson report indicating cleaning test results for the three composites [\(Table 13-1\)](#page-121-0). The 3rd Cleaner copper grade increased from 16% to 21% to 23% for the Original, Low Pb-Zn and New Core samples respectively. Copper recoveries were 80% to 84% with gold ranging from 60% to 65%.

The poor performance on the original composite material was attributed to the high lead and zinc content and the effects of sample size and ageing. The New Core material responded best and the results with the Low Pb-Zn were close but not up to the level of the New Core material. Thus, there was a significant improvement with the exclusion of the high Pb-Zn intervals and a further improvement with the "fresh" half core. Crushed assay rejects are generally problematic for testwork with samples containing copper, lead and zinc minerals.

As per the table above, regrind sizes ranged from 34 to 53 microns. This leaves some potential for finer regrinding to improve cleaner separations, if necessary, in the future. In addition, there is further potential for copper cleaner enhancement with a higher pH regime in that part of the circuit if it does not have a significant negative effect on gold recoveries.

The DML report further indicates that in an analysis of cleaner test products the gold values tend to track closely with the deportment of the copper as opposed to following the iron.

13.2.2 Preliminary Conclusions

In any future work care must be taken to ensure the material to be tested is as fresh as possible and has been stored in such a manner as to minimize the potential for surface oxidation. The resource data must be analyzed to assess the presence, level and distribution of lead and zinc throughout the deposit and appropriate samples selected for metallurgical testing so that they reflect the nature of the resource and the likely plant feed. Care must also be taken to ensure that the copper and gold grades of the feed for any further testwork reflect the expected levels in the resource.

For first pass metallurgical testing reasonable copper and gold recoveries were achieved at less than optimum concentrate copper grades. Care and attention to sample preparation and handling (as mentioned above) along with more in-depth testing should allow for improvements in both recoveries and grades. Further reagent screening should be carried out both to enhance recoveries and selectivity and to attempt to allow for processing at a coarser primary grind.

Combined cleaner and scavenger tails accounted for the loss of 29% to 35% of the contained gold and 10% to 14% of the copper. These preliminary cleaning tests all involved open circuit cleaning. In the normal course of more detailed flowsheet development (reagent and regrind optimization plus closure of the cleaning circuit) one could potentially expect to be able to improve copper recoveries to ~85% into a concentrate with a copper grade in the range of 25% to 27%. A combination of the flotation improvements and the application of additional gold recovery techniques in the cleaner circuit might potentially improve gold recovery to the 75% range.

In addition, as mentioned above, future test-work should be carried out on material with feed grades reflecting the likely grade that would be mined and sent to the plant. Lower feed grades tend to somewhat reduce metal recoveries.

Summary of Preliminary Metallurgical Testing, Island Mountain Deposit (August 21, 2010) (Phase 2)

13.3.1 Introduction

Two holes (IM09-001 and IM09-002) were drilled at Island Mountain in 2009. These holes produced interesting gold and copper values and also what appeared to be "interesting" associations between the contained gold, copper, pyrrhotite and magnetite. It was decided to carryout preliminary metallurgical testwork on the available sample material in order to assess the mineralogical associations and the potential for effective treatment of the rock to recover gold and copper. Core logging indicated an apparent difference between the upper and lower mineralized intervals of the drillhole. The upper mineralized interval had higher copper, but lower gold values, and the lower mineralized interval tended to contain more pyrrhotite. The lower region also represented the greater tonnage potential.

13.3.2 Sample Selection

The drill data had been assessed in terms of a gold equivalent whereby copper and silver values were added to the gold value based on assumed recoveries of 75% for Au and Ag and 80% for Cu. Assumed prices were \$US550/oz, \$US8/oz, \$US1.50/lb respectively for the three metals. A simple gold equivalent cut-off of 0.30 gpt (\$US5.30/tonne at \$US550/oz) was taken. Based on this cut-off, 72 out of 81 two metre intervals were selected from the upper 162m of IM09-001 to form an Upper Composite. Similarly, 75 out of 111 two metre intervals were selected to form a Lower Composite from the lower 222m of the hole. From hole IM09-002, only 20 of 99 two-metre intervals surpassed the selected cutoff. As higher-grade intervals were distributed erratically throughout the length of the hole none of this material was used for the metallurgical work.

Quarter core was available for composite preparation, and it was shipped to G&T Metallurgical in Kamloops BC for composite assembly and the metallurgical testing.

13.3.3 Feed Grade

[Table 13-2](#page-123-0) provides the analyses of the elements of interest in the two composites.

Table 13-2 Summary of Analysis of Composites from IM09-001 and IM09-002

The copper values in the Upper Composite are on the lower side of normal feed grades whereas the copper values in the Lower Composite are well below where one would generally expect to make saleable copper concentrate grades with any significant recovery. The gold however, particularly in the Lower Composite, contributes a significant value to the feed.

13.3.4 Test Program

Various processing options were applied to the sample material in order to assess both the association between the gold and the other minerals and to assess the potential for economic recovery of the copper and gold.

The preferred and simplest option would be to produce a saleable copper concentrate containing the bulk of the copper and also the bulk of the gold. Another possible route would be to leach the gold from the whole ore with cyanide. The leaching approach could possibly produce good gold recovery but would not recover copper values and would likely involve significant cyanide consumption due to the copper content of the feed. Hybrid approaches would involve the selective flotation of a saleable copper concentrate with some of the gold and leaching of some or all of the flotation tailings to recover un-floated gold values.

As well as recovery considerations, a significant concern in cyanide leaching arises from the consumption of cyanide by other metals and minerals in the feed material. Of particular interest are copper and pyrrhotite. Depending on the form and activity of the copper and iron minerals significant quantities of cyanide can be tied up as copper and iron cyanides.

The current test program included bulk flotation of copper and gold, selective flotation of copper, cyanidation of the feed material and cyanidation of the combined tailings from selective open circuit cleaning tests performed on each of the composites. Due to the expectation that the Lower Composite likely represented the greater portion of "minable" material testwork addressed this sample with confirmatory work then being applied to the Upper Composite.

13.3.5 Metallurgical Results

Bulk Flotation

Various grinds plus some pH modifications were applied to the bulk rougher flotation of both composites. In general, the best copper recoveries were achieved with flotation at a grind of ~80% passing 100 microns and a pH of 10. Gold recoveries were not as sensitive to the changes. [Table 13-3](#page-123-1) shows a summary of the bulk flotation results.

Table 13-3 Bulk Flotation Results

Copper recoveries were reasonable considering the low head grades – particularly in the case of the Lower Composite. However, given the value of gold in the feed, gold recoveries were too low. In addition, a saleable copper concentrate would require a 15-to-20-fold increase in the copper grade which would further reduce the recovery of both metals.

The low gold recoveries also indicate that there is gold associated with some other mineral that is not floating in the non-selective bulk circuit.

Selective Flotation

Reagent changes were made to try and float a cleaner copper concentrate using open circuit cleaning. The selective flotation produced similar but somewhat lower copper rougher recoveries than those achieved in the bulk flotation circuit [\(Table 13-4\)](#page-124-0).

Table 13-4 Selective Cleaner Flotation

There is a potential to improve these with further optimization. The copper loss between roughing and cleaning was like that experienced in the bulk circuit. Both these aspects can be addressed by further reagent and operating condition adjustments. Further testwork with closed circuit cleaning will significantly reduce the cleaning circuit losses. Gold recovery was much lower during roughing and was significantly reduced during cleaning for the Upper Composite. This confirms the earlier suggestion that there is a significant portion of the gold that is associated with some mineral or minerals other than the copper bearing ones.

13.3.6 Whole Ore Leach

The whole ore leach approach worked well – particularly for the Lower Composite [\(Table 13-5\)](#page-124-1).

Table 13-5 Whole Ore Cyanidation

For both composites ~90% of the gold was extracted in 48 hours. Higher solution strength was required for the Upper Composite, and this resulted in significantly higher cyanide consumption.

13.3.7 Leaching of Selective Flotation Tails

Based on the results of the whole ore leach and the selective cleaner flotation, the flotation tailings for both composites were leached in cyanide for 48 hours at solution strength of 0.50 kgpt [\(Table 13-6\)](#page-125-0).

	Feed (gpt)	Residue (gpt)	Recovery (%)	Cyanide Strength (kgpt)	Cyanide Consumption (kgpt)	Flotation + Cyanidation Recovery (%)
Upper Composite	0.18	0.08	56.52	0.50	0.40	75.08
Lower Composite	0.51	0.09	81.44	0.50	0.38	89.60

Table 13-6 Cyanidation of Selective Flotation Tailings

Leaching results were particularly good for the Lower Composite at 81% and the overall recovery by flotation and cyanidation was almost 90%. Similar to the results of the whole ore leach, the leaching conditions for the Upper Composite can likely be optimized to improve the extent and rate of leaching for the flotation tailings from the Upper material.

13.3.8 Overall Recoveries

Potentially 90% of the gold in the Lower Composite can be recovered either by direct cyanidation or by flotation followed by cyanidation of the flotation tailings. Similarly, almost 90% of the gold can be leached from the Upper Composite and further work should improve the overall gold recovery from this material by the combined flotation-leach approach.

More in depth work should be performed to improve flotation grades and recoveries. In addition, once an optimized flotation approach has been established the opportunities to produce a high-grade copper concentrate followed by the production of a low-grade gold concentrate for subsequent leaching should be investigated. This could substantially reduce the capital and environmental ramifications of whole ore or full tailings leaching.

13.3.9 Conclusions

The preliminary testing Indicated that the Island Mountain material tested is amenable to copper recovery by flotation and that the gold is relatively free milling. This is particularly true of the greater portion of the material represented by the Lower Composite. The results indicate that in the range of 90% of the gold in the Lower Composite can be recovered by either whole ore leaching or a combination of flotation and leaching of the tailings. With further development work, copper flotation recoveries will likely rise to the 80% range for the Lower Composite.

Similarly, gold recovery in the range of 90% can be achieved by whole ore leaching of the Upper Composite. Further flotation work on the Upper Composite will improve both copper and gold recoveries to concentrate.

For both materials it was concluded that further metallurgical development and assessment work would still be required to develop the best flowsheet with respect to capital and operating costs, metal recoveries and overall economics.

Summary of Whistler Deposit Testwork (2012) (Phase 3)

The final round of work was also carried out at G&T Metallurgical Laboratories, now part of ALS Metallurgy, there being continuity of personnel and experience with the Island Mountain testwork previously reported.

The work commenced in August 2012 and was completed by year end and the results presented in its report KM3499 of January 2013.

13.4.1 Metallurgical Samples

Initial work was conducted on core from the 2008 drilling campaign, on sample 08-08 which had been kept in carefully controlled conditions and was believed to be still fresh. Arrangements had been made to obtain a sample from a similar hole planned for the summer 2012 drilling campaign as a "calibration" check to validate its freshness, especially in view of the aging effects reported in the Kennecott testwork. Unfortunately, the cancellation of the 2012 campaign negated this process; however, as is evident from the results presented below, there is no reason to suspect any impact of oxidation on flotation response.

What was a greater concern with respect to this sample was that, following the update to the geological model reported in AMC's letter report of November 2012, it might have been insufficiently representative of the bulk of the mineralization being predominantly in the central quartz-breccia zone, representing only 20% of the tonnage, although 30% of the metal content.

Accordingly, a second sample, 10-19 from the 2010 drilling campaign, more representative of the Main Stage Porphyry, although right on the margin of the proposed ultimate pit, was selected for additional tests and in fact became the basis for setting the predicted metallurgical parameters.

Both samples had been divided into high grade, medium grade and low-grade samples in accordance with gold grades, with most of the work carried on the medium grade samples, being closer to Resource grades.

Sample grades are tabulated in [Table 13-7.](#page-126-0)

Table 13-7 Sample Head Grades

No mineralogical work was carried out. However normative mineralogy calculations show that Sample 08-08 generally has almost twice the pyrite content of Sample 10-19. Sample 08-08 was similar to Island Mountain in this respect.

The testwork program focused mainly on conventional copper flotation; however, it soon became evident that improving gold recovery was key so, similar to the direction taken with Island Mountain, the program included work on cyanidation of cleaner tails and also investigation of enhancing gold recovery with pyrite concentrate production.

The flotation and cyanidation testwork flowsheets are shown in [Figure 13-1](#page-128-0) (abstracted from the ALS KM3499 report).

13.4.2 Results

The results of the metallurgical testwork for a conventional comminution/flotation flowsheet are summarized below.

13.4.2.1 Comminution

A single standard Bond ball mill work index test was carried out on 10-19 mg composite towards the end of the program, and at a closing size of 106 μ m.

The Bond ball mill work index (BWI) was found to be 19.9 kWh/t (compared to the Island Mountain value assumed for the initial flowsheet design of 18.5 kWh/t). This result puts Whistler in the very hard range of ball mill hardness.

No SAG mill testing (e.g.) JK Drop weight or SMC tests were included in the program, nor indeed any Bond rod mill work index tests. Some industry standard benchmarks and approximations have been used in setting appropriate SAG mill design criteria. It is recommended that these additional comminution tests be a high priority for the next stage of testwork.

Key parameters in the copper flotation tests were:

- Primary grind target was generally 100 μ m (some later tests, following the receipt of the BWI result, were done in the 150-200 µm range).
- Regrind target was generally 20 µm (test 1 at 76µm was a procedural error).
- Cytec 3418A, a specialist copper/precious metal flotation reagent, was used as the primary copper sulphide mineral collector.
- pH in the rougher and cleaner circuits was generally maintained at 10 and 11 respectively, using hydrated lime.

Figure 13-1 Flotation and Cyanidation Flowsheet and Test Conditions

The key results are tabulated and graphed in [Figure 13-2](#page-130-0) (abstracted from the ALS metallurgy KM3499 report).

In summary the main findings were as follows:

- Open-circuit batch flotation testing achieved consistently 80-85% copper recovery to a 25% Cu concentrate grade; however gold recovery was lower (40-50%) due to lower rougher recoveries and low cleaner recoveries with significant deportment of gold to cleaner tailings streams.
- From the flotation results, the gold associations were inferred as follows:
	- 60% with chalcopyrite
	- 20% with pyrite (± chalcopyrite)
	- 20% with gangue minerals

The QP strongly recommends that mineralogical studies be a high priority for the next phase of testwork.

- Some attempts were made at recovering gold to a pyrite concentrate for subsequent treatment (a possible alternative to cyanidation of cleaner tails), but overall recovery fell, and later work focused on the locked cycle tests as a means of recovering gold reporting in recirculating streams that were not accounted for in simple batch tests.
- Locked cycle tests on both the 08-08 and 10-19 samples proved to be the key to unlocking gold value with substantial improvements to gold recovery from the recycle of intermediate streams (short of pilot-plant testing, locked cycle tests are the best way of replicating a full-scale flotation plant). Averaging the results from both and rounding numbers appropriately yielded the following:
	- 92% copper recovery to a 25% Cu concentrate grade
	- 70% gold recovery
- On receipt of the higher-than-expected BWI results with a significant impact on both capital and operating costs, some final open circuit batch flotation tests were conducted at coarser primary grinds (154 μ m, 173 μ m and 204 μ m) but retaining the same 20 μ m regrind size. The results were analyzed in grade-recovery terms and are presented in graphical form i[n Figure 13-3](#page-131-0) and [Figure 13-4.](#page-131-1) Copper grade-recovery performance was retained up to 173 µm but showed a significant deterioration at the coarsest grind, whereas gold recovery seemed largely insensitive to primary grind size. Although further work, including definitive locked cycle testing, is required to validate this, the QP believes it is reasonable to assume a primary grind size of 175 µm (in round figures) as an option for capital / operating cost sensitivities.
- Some very preliminary variability tests (four in total) were carried out on the low grade and high-grade samples for each main composite. The results showed a high degree of variability in the 70-90% range for copper recovery and 20-30% Cu in final concentrates. Gold recovery was generally constant at around 50% although the 08-08 high grade sample did show a significantly higher recovery of 76%. The QP does not attach much importance to this limited number of results, their having no spatial relationship to the deposit, and would recommend that future variability work be based on spatial and mineralogical/textural parameters rather than grade.

100

90

Figure 13-2 Flotation Test Results

(Source: MMTS, 2015)

Figure 13-3 Copper Grade Recovery

(Source: MMTS, 2015) **Figure 13-4 Gold Grade Recovery**

13.5 Cyanidation

The batch flotation tests had indicated a substantial amount of the gold was reporting to cleaner tails and, pending the results of the locked cycle tests, some cyanidation tests were carried out on combined cleaner tails from tests 6 and 7 on 10-19 samples where 23% of the gold was accounted for in the cleaner tails.

Forty-eight-hour gold extractions were 77% to solution, thus overall gold recovery would improve from 57% to approximately 74%. However, although cyanide consumption was moderate for a sulphidic stream, the absolute gold grades in cyanidation feed were still low and the marginal return versus costs at current gold and cyanide prices exactly that, marginal. Also, the use of cyanide requires a different level of onsite management and therefore is more complicated in terms of its cost benefit.

Given the excellent locked cycle test results already reported, and with overall gold recoveries by flotation being only in the region of 70%, it was decided not to pursue further cyanidation testwork.

13.6 Concentrate Specifications

The final bulk concentrates from cycles II-V of the locked cycle tests 12 (10-19 MG) and 17 (08-08 MG) were analyzed for potentially deleterious elements and the results are shown in [Table 13-8.](#page-133-0)

Concentrates from both samples are remarkably clean and would indicate that the specifications would fall well within typical smelter limits for penalty elements, with no penalty payable.

Normative mineralogy calculations, assuming a simple chalcopyrite:pyrite sulphide blend, suggest the pyrite concentrate from the 08-08 sample to be almost twice that of 10-19, i.e., similar to what was observed in the head samples.

Minor Element Data

13.7 Conclusions

From the metallurgical testwork results and subsequent analysis it appears that the Whistler Deposit is metallurgically very amenable to a conventional flotation route to produce saleable high quality copper concentrates with gold credits, despite the low head grade, and that the levels of recovery and upgrade for both copper and gold are relatively insensitive to feed grade. There are no processing factors or deleterious elements that could have significant effect of potential economic extraction.

Although some late testwork on ore hardness revealed the ore to be harder than expected with a Bond Work Index of 19.9 kWh/t, some batch flotation work also showed that the primary grind size could be increased from 100µm to 175 µm, subject to confirmation with further locked cycle tests, with net savings in comminution power.

Overall Metallurgical Observations and Comments for 2021 Resource Estimate

As noted in the history of exploration of the Whistler deposit, which expanded from an initial Cu-Au porphyry deposit centered on Whistler and expanding over time to include Raintree West and Island Mountain in the Resource tonnage, as well as additional revenue potential from Ag, each phase of metallurgical testwork had focused exclusively on the exploration objectives at the time. As a result, the cumulative metallurgical understanding lags the geological understanding by a considerable margin.

The data reported in Sections 13.1 to 13.7 above are an accurate record of the testwork performed at the time, and the conclusions drawn refer to those made within the scope of the specific test program. They do not, however, provide a complete picture of overall Mineral Resource with respect to pay metal grades and recoveries for a few reasons:

• To date no mineralogical work has been performed.

- Assumptions in the various reports regarding gold recovery have noted that while higher Au recoveries than measured could possibly be achieved by combining flotation and cyanide leaching, it was noted that for the low grades, high cyanide consumption and environmental control measures could render the additional gold recovery uneconomical.
- Copper toll smelters are loath to accept copper concentrates containing less than 25% Cu without imposing higher Cu deductions on payable metal. The early Whistler testwork identified difficulties in obtaining payable Cu grades even with 3 stages of cleaning and consequently decided to exclude ore samples containing elevated Pb and Zn from subsequent testwork (Section 13.2.1).
- No assays of silver were performed during the test programs, apart from Ag grades being reported in the minor element analysis of the two concentrates produced in the 2012 testwork [\(Table 13-8\)](#page-133-0), which were not linked to Ag head grades and yield unreliable metallurgical accounting results.
- Flotation testwork assays covered only Au, Cu, and some Fe and S assays were performed, but Pb, Zn and Ag assays were conspicuous by their absence.
- As seen in the notes in the Resource table [\(Table 1-1\)](#page-13-0) the overall Indicated resource grades are 0.79 g/t Au; 0.13% Cu, and 2.19 g/t Ag. Note 4 states silver recovery for Ag grades below 10 g/t are estimated at 65% while no Ag recovery is allowed for Ag grades above 19 g/t as assays indicate a strong association of high Ag values with high Pb and Zn content samples, for which no metallurgical testwork has been performed except for the single Kennecott test which returned unsatisfactory Au and Cu results in terms of concentrate grades due to Pb and Zn dilution of the copper concentrate (Section 13.2.1).
- For all the above reasons the metallurgical recommendation of 70% Au recovery, 83% Cu recovery and 65% Ag recovery of ore containing less than 10 g/t Ag should be used until such time as a more comprehensive metallurgical test program is performed which provides reliable grade and recovery results on material containing Pb and Zn as well as Au, Cu, and Ag.

14 MINERAL RESOURCE ESTIMATE

The Mineral Resource Estimate (MRE) for the Whistler Project has an effective date of September 12, 2024. The resource estimate was prepared by Sue Bird, P.Eng., of Moose Mountain Technical Services (MMTS).

Mineral Resource Estimate

The Whistler Project total Mineral Resource Estimate (MRE) includes the Whistler, Raintree and Island Mountain deposits and is summarized i[n Table 14-1](#page-136-0) for the base case cut-off grades. Mineral Resources were estimated using the 2019 CIM Best Practice Guidelines and are reported using the 2014 CIM Definition Standards. In the opinion of the Qualified Person, the Mineral Resource Estimates reported herein are a reasonable representation of the mineral resources found within the Project at the current level of sampling.

The resource utilizes pit shells to constrain resources at the Whistler, Island Mountain, and Raintree West gold-copper deposits, as well as an underground potentially mineable shape to constrain the mineral resource estimate for the deeper portion of the Raintree West deposit. The current estimate uses metal prices of US\$1,850/oz gold price, US\$4.00/lb copper and US\$23/oz silver, updated recoveries, smelter terms and costs, as summarized in the notes to [Table 14-1.](#page-136-0) Metal prices have been chosen based partially on market consensus research by CIBC Capital Markets (CIBC, 2024) based on mean prices from 2024 and forecast up to 2027 for long term prices. The metal prices chosen also considered the spot prices and the three-year trailing average prices. For all three metals, the final prices used for this resource estimate are below both the spot metal price and the three-year trailing average, which is considered an industry standard in choosing prices.

The base case cut-off grade for open pit mining is \$10.00/tonne for all three deposits, which more than covers the Processing + G&A costs of US\$7.90/tonne processed; this is the marginal cut-off for which mining costs are not included. Cut-off grades for underground mining are based on Processing costs plus an additional US\$17.10/tonne for underground bulk mining, to define the marginal cut-off NSR grade. There has been drilling in 2023 and 2024 which resulted in updated geologic modelling, resource estimation parameters and an updated resource estimate.

For the mineral resource cut-off grade determination, a 3.0% NSR was assumed. This is derived from the sum of a 2.75% royalty to MF2 plus a 1% royalty to Gold Royalty Corp., with an assumption that U.S. GoldMining can negotiate a buy back of a 0.75% NSR, for a net 3.0% NSR, as is customary to occur for similar project developments. In preparing the resource estimate herein, a sensitivity analysis has also been conducted by the author. Based on such analysis, utilizing a higher 3.75% NSR royalty rate in determining a cut-off grade would not materially impact the estimates contained herein and would be de minimis (approx. 0.7% differential of total metal in the Whistler pit on a gold equivalent basis).

These mineral resource estimates include inferred mineral resources that are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

The Qualified Person is of the opinion that issues relating to all relevant technical and economic factors likely to influence the prospect of economic extraction can be resolved with further work. These factors may include environmental permitting, infrastructure, sociopolitical, marketing, or other relevant factors.

The sensitivity to the resource by deposits is presented in [Table 14-2](#page-137-0) throug[h Table 14-4](#page-138-0) for the Whistler, Raintree, and Island Mountain deposits respectively. As a point of reference, the in-situ gold, copper and silver mineralization are inventoried and reported by intended processing method.

Notes to Table 14-1 through 14-4:

Inferred

1. Mineral resources are not mineral reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the mineral resources will be converted into mineral reserves.

Island Mountain 10 124,529 18.21 0.54 0.45 0.05 1.02 2,180 1,817 139 4,084 Raintree-Pit | 10 | 15,056 | 23.12 | 0.69 | 0.55 | 0.06 | 4.36 | 335 | 267 | 21 | 2,112 **Inferred Open Pit** varies **157,809 19.00 0.57 0.45 0.06 1.42 2,883 2,317 214 7,221** Raintree-UG 25 40,432 32.81 0.98 0.76 0.12 3.31 1,275 994 103 4,300 **Total Inferred varies 198,241 21.82 0.65 0.52 0.07 1.81 4,158 3,311 317 11,521**

2. The Mineral Resource for the Whistler, Island Mountain, and the upper portions of the Raintree West deposits have been confined by an open pit with "reasonable prospects of economic extraction" using the following assumptions:

- Metal prices of US\$1,850/oz Au, US\$4.00/lb Cu and US\$23/oz Ag;
- Payable metal of 95% payable for Au and Ag, and 96.5% payable for Cu
- Refining costs for Au of US\$8.00/oz, for Ag of US\$0.60/oz and for Cu of US\$0.05/lb
- Offsite costs for Au of US\$77.50/wmt, for Ag of US\$3.50/wmt and for Cu of US\$55.00/wmt.
- Royalty of 3% NSR;
- Pit slopes are 50 degrees;
- Mining cost of US\$2.25/t for waste and mineralized material; and
- Processing, general and administrative costs of US\$7.90/t.
- 3. The lower portion of the Raintree West deposit has been constrained by a mineable shape with "reasonable prospects of eventual economic extraction" using a US\$25.00/t cut-off.
- 4. Metallurgical recoveries are: 70% for Au, 83% for Cu, and 65% Ag for Ag grades below 10g/t. The Ag recovery is 0% for values above 10g/t for all deposits.
- 5. The NSR equations are: below 10g/t Ag: NSR (US\$/t)=(100%-3%)*((Au*70%*US\$54.646/t) + (Cu*83%*US\$3.702*2204.62 + Ag*65%*US\$0.664)), and above 10g/t Ag: NSR (US\$/t)=(100%- 3%)*((Au*70%*US\$56.646g/t) + (Cu*83%*US\$3.702*2204.62)) ;
- 6. The Au Equivalent equations are: below 10g/t Ag: AuEq=Au + Cu*1.771 +0.0113Ag, and above 10g/t Ag: AuEq=Au + Cu*1.771
- 7. The specific gravity for each deposit and domain ranges from 2.76 to 2.91 for Island Mountain, 2.60 to 2.72 for Whistler with an average value of 2.80 for Raintree West.
- 8. Numbers may not add due to rounding.

Table 14-2 Mineral Resource Estimate and Sensitivity – Whistler Deposit

Table 14-3 Mineral Resource Estimate and Sensitivity – Raintree Deposit

Table 14-4 Mineral Resource Estimate and Sensitivity – Island Mountain Deposit

The flagship Whistler Deposit contains a high-grade core defined by coincident approximately ≥0.40 g/t gold and ≥0.20% Cu grade contours that extend approximately 500 m in the north-south dimension, 250m in the east-west dimension and extend to 600 m depth (from surface), where it remains open down dip. The Whistler Deposit high-grade core offers the option to consider low strip ratio, higher – grade starter-pit scenarios. [Table 14-5](#page-138-1) provides summary of the phases illustrating the higher grade and very low strip ratio in the initial phases. The conceptual pits are shown in the section through the center of the deposit i[n Figure 14-1](#page-139-0) which also plots the NSR of the blocks.

Figure 14-1 Whistler Deposit Resource Pit and Conceptual Phases

14.2 Key Assumptions and Data used in the Estimate

The total Whistler Project area comprises a database of 250 drillholes totaling more than 70,000 m with 182 drillholes and 53,200 m of assayed length within the three deposit block models and other targets in the Project.

A summary of the drillholes within each of the Whistler Project block model areas is provided in [Table](#page-140-0) [14-6.](#page-140-0)

Moose Mountain
— Technical Services

Geologic Modelling

Three-dimensional wireframe solids based on geology have been used to constrain the grade interpolations.

At Whistler, a three dimensional solid of the diorite intrusion has been created based on the logged geology. The geology has also been used to define the Divide Fault as a major fault through the center of the deposit, dividing it into two domains. Dykes have not been modelled explicitly because they are too thin both to model and to separate when mining. Therefore, the un-mineralized assays within the solids have been included in the interpolations. A three-dimensional view looking northeast of the Whistler domains is illustrated in [Figure 14-2,](#page-141-0) also showing the resource pit.

[Figure 14-2](#page-141-0) illustrates the mineralized domain for Raintree, looking northeast and also plotting the resource pit and underground mineralized shape.

[Figure 14-3](#page-142-0) illustrates the domains for Island Mountain. There are six sub-vertical domains (plotted in shades of blue) that are based on lithology as various mineralized dykes. These were combined into one domain for the interpolations. Two domains surrounding the central core at a nominal cut-off of 0.1 gpt and 0.3 gpt AuEqv are used to confine the interpolation outside of the dyke boundaries (plotted in yellows). The outline of the resource pit on surface is also plotted for reference.

(Source: MMTS, 2024)

Figure 14-2 Whistler Deposit – Au-Ag high grade domain (red), Cu high grade domain (yellow) lower grade halo (blue)

(Source: MMTS, 2021) **Figure 14-3 Domains Modeled for Raintree Deposit**

(Source: MMTS, 2021) **Figure 14-4 Domains Modelled for Island Mountain**

14.4 Capping

Cumulative probability plots (CPP) are used to define capping values and potential outlier restrictions during interpolations. [Figure 14-5](#page-143-0) and [Figure 14-6](#page-143-1) show the CPP plots for Au and Cu respectively for Whistler. [Figure 14-7](#page-144-0) an[d Figure 14-8](#page-144-1) show the CPP plots for Au and Cu respectively for Raintree and [Figure 14-9](#page-145-0) are the CPPs for Island Mountain for Au and Cu respectively.

(Source: MMTS, 2024) **Figure 14-5 CPP of Au Assay Data by Domain - Whistler**

(Source: MMTS, 2024) **Figure 14-6 CPP of Cu Assay Data by Domain – Whistler**

(Source: MMTS, 2024) **Figure 14-7 CPP of Au Assay Data by Domain – Raintree**

(Source: MMTS, 2024) **Figure 14-8 CPP of Cu Assay Data by Domain – Raintree**

(Source: MMTS, 2024) **Figure 14-9 CPP of Au Assay Data by Domain – Island Mountain**

(Source: MMTS, 2024) **Figure 14-10 CPP of Cu Assay Data by Domain – Island Mountain**

Capping and Outlier values are summarized i[n Table 14-7](#page-146-0) below. Values above the capping value are equal to the capping value in the assay file prior to compositing. Composite values above the Outlier value are restricted during interpolations to the Outlier value for distance greater than 5m from the composite interval.

Table 14-7 Summary of Capping and Outlier Restriction Values

The capped assay and composite statistics of each domain are summarized in the [Table 14-8](#page-146-1) through [Table 14-10](#page-147-0) for Au, Cu and Ag respectively. These table illustrate that no significant bias has been introduced during the compositing process. They also indicate that the distributions have low CV confirming the choice of linear interpolation methods are appropriate.

ס־דב בועסו	Capped Assay and Composite Statistics by Domain - Ad						
Source	Parameters	Whistler		Raintree	Island Mountain		
		1	$\mathbf{2}$	5	$1-6$		8
Assays	Num Samples	5,393	3,743	2,731	1,795	1,999	767
	Num Missing	14	21		12	0	
	Min (gpt)	0.000	0.001	0.003	0.003	0.003	0.003
	Max(gpt)	10.667	4.530	14.150	10.000	10.000	2.660
	Wtd mean (gpt)	0.374	0.212	0.260	0.452	0.253	0.122
	Wtd CV	1.778	1.250	2.067	1.746	2.187	1.899
Composites	Num Samples	1,952	1,376	1,305	841	917	411
	Num Missing	3	7		⁰	0	Ω
	Min (gpt)	0.002	0.001	0.003	0.003	0.003	0.004
	Max(gpt)	6.075	2.097	6.068	6.412	4.626	1.167
	Wtd mean (gpt)	0.374	0.212	0.260	0.452	0.253	0.122
	Wtd CV	1.578	1.088	1.562	1.447	1.570	1.409
Difference in Wtd Means (%)		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 14-8 Capped Assay and Composite Statistics by Domain - Au

Table 14-9 Capped Assay and Composite Statistics by Domain - Cu

Table 14-10 Capped Assay and Composite Statistics by Domain – Ag

14.5 Compositing

Compositing of Au, Ag and Cu grades have been done as 5 m fixed length composites. Small intervals less than 2.5 m are merged with the up-hole composite if the composite length is less than 5 m. The length of 5 m is chosen to be half the size of the block height, and longer than the majority of assay lengths, as illustrated i[n Figure 14-10.](#page-148-0) Domain boundaries are honored during compositing.

(Source: MMTS, 2024) **Figure 14-10 Histogram of Assay Lengths**

Variography

Correlograms have been created for each domain, each deposit. A summary of the spherical correlogram parameters is given in [Table 14-11](#page-148-1) throug[h Table 14-13](#page-149-0) for Whistler, Raintree, and Island Mountain respectively.

An example of the Variogram Model for Cu in Domain 1 in the major and minor axes directions is illustrated i[n Figure 14-11](#page-150-0) for Cu and [Figure 14-12](#page-151-0) for Au in the Whistler deposit. [Figure 14-13](#page-152-0) is the variograms for Cu at Raintree in Domain 5. An[d Figure 14-14](#page-153-0) illustrates the variogram for Island Mountain for the major and minor axes for Au.

(Source: MMTS, 2024)

Figure 14-11 Variogram Model for Cu in Domain 1 – Major and Minor Axes – Whistler Deposit

(Source: MMTS, 2024)

Figure 14-12 Variogram Model for Au in Domain 1 – Major and Minor Axes – Whistler Deposit

(Source: MMTS, 2024)

(Source: MMTS, 2024) **Figure 14-14 Variogram Model for Au in Domains 1-6 – Major and Minor Axes – Island Mountain Deposit**

14.7 Block Model Interpolations

The block model limits and block size for each deposit are as given in [Table 14-14.](#page-154-0)

Deposit	Direction	From	To	Block size	# Blocks
	East	517,200	519,860	20	133
Whistler	North	6,870,000	6,873,000	20	150
	Elevation	-50	1,280	10	133
	East	519,700	521,100	10	140
Raintree West	North	6,871,000	6,872,000	10	100
	Elevation	-260	730	10	99
	East	511,500	513,600	10	210
Island Mountain	North	6,847,000	6,848,400	10	140
	Elevation	490	1,470	10	98

Table 14-14 Block Model Limits

Interpolation of Au, Cu and Ag values is done by ordinary kriging (OK) in four passes based on the variogram parameters. Interpolations used hard boundaries, with composites and block codes required to match within each domain. Search parameters are summarized i[n Table 14-15](#page-154-1) through [Table 14-17](#page-155-0) below.

Table 14-16 Search Rotation and Distances – Raintree

Table 14-17 Search Rotation and Distances – Island Mountain

Additional search criteria on composite selection are summarized in [Table 14-18.](#page-156-0) Search criteria are used to ensure that more than one drillhole is used for all passes, and more than one quadrant is used for the first three passes, as well as to limit smoothing of grade by limiting the maximum number of composites to be used.

Table 14-18 Additional Search Criteria

14.8 Classification

Classification has been done in accordance with 229.1302(d)(1)(iii)(A) (Item 1302(d)(1)(iii)(A) of Regulation S-K. The Classification is based on the variogram parameters, with the required average distance to the nearest two drillholes required to be less than the distance of the range at 80% of the sill (R80 value) for each domain as summarized in [Table 14-19.](#page-156-1)

Table 14-19 Classification Criteria

Deposit	Whistler		Raintree		Island Mountain	
Domain			5	99	$1 - 6$	$7-8$
Average Distance to 2 DHs	120	120	100	100	80	80
Distance to furthest DH	170	170	na	na	na	na

Block Model Validation

14.9.1 Comparison of Tonnage and Grades

Interpolations have also been completed using a Nearest Neighbour method to essentially de-cluster the composite data for grade comparisons with the modelled grades. [Table 14-20](#page-157-0) gives a summary of the mean grades for de-clustered composites (NN interpolation), and OK grades at a 0.1% Cu cut-off. [Table](#page-157-1) [14-21](#page-157-1) gives a summary of the mean grades for de-clustered composites (NN interpolation), and OK grades at a 0.1% Cu cut-off. The tonnage, grade and metal content are variable, but conservative compared to the un-capped de-clustered composites.

This comparison is illustrated more succinctly in the plots of tonnage-grade curves. Cut-off grade plots (tonnage-grade curves) are constructed for each metal to check the validity of the modelling. The NN values for Au and Cu are plotted and compared to the modelled OK values for the Whistler deposit in [Figure 14-16](#page-158-0) and [Figure 14-17.](#page-158-1) For Raintree, the tonnage-grade curves for Au and Cu are presented in [Figure 14-18](#page-159-0) and [Figure 14-19.](#page-159-1) And for Island Mountain the tonnage grade curves are presented in [Figure 14-20.](#page-160-0) The curves for Whistler and Island Mountain are within the Resource confining pit shape. For Raintree, all blocks within modelled domains are plotted due to the underground component of the resource. In each case, the distributions show good correlation, and thus the change of support are valid.

Figure 14-15 Tonnage-Grade Curves for Au – Comparison of Interpolation Methods – Whistler

(Source: MMTS, 2024) **Figure 14-16 Tonnage-Grade Curves for Cu – Comparison of Interpolation Methods - Whistler**

(Source: MMTS, 2024)

(Source: MMTS, 2024) **Figure 14-18 Tonnage-Grade Curves for Cu – Comparison of Interpolation Methods - Raintree**

Figure 14-19 Tonnage-Grade Curves for Au – Comparison of Interpolation Methods – Island Mountain

Figure 14-20 Tonnage-Grade Curves for Cu – Comparison of Interpolation Methods - Island Mountain

14.10 Visual Validation

A series of E-W, N-S sections (every 20 m) and plans (every 10 m) have been used to inspect the ordinary kriging (OK) block model grades with the original assay data. [Figure 14-21](#page-161-0) and [Figure 14-22](#page-162-0) give examples of this comparison at Whistler for the E-W section at 6871330N, for Au and Cu grades respectively. [Figure 14-23](#page-163-0) and [Figure 14-24](#page-164-0) illustrate the grade comparisons at Raintree through the center of the deposit with looking SW at an azimuth of 135 degrees. [Figure 14-25](#page-165-0) an[d Figure 14-26](#page-166-0) are plots of the Au and Cu grades respectively for Island Mountain through the center of the deposit at 6847740N.

Plots throughout the model confirmed that the block model grades corresponded well with the assayed grades.

Figure 14-21 E-W Section Comparing Au Grades for Block Model and Assay Data – Whistler

Figure 14-22 E-W Section Comparing Cu Grades for Block Model and Assay Data - Whistler

Figure 14-23 Section Looking SW - Comparing Au Grades for Block Model and Assay Data – Raintree

Figure 14-24 Section Looking SW - Comparing Cu Grades for Block Model and Assay Data – Raintree

Figure 14-25 E-W Section Comparing Au Grades for Block Model and Assay Data – Island Mountain

Figure 14-26 E-W Section Comparing Cu Grades for Block Model and Assay Data – Island Mountain

Reasonable Prospects of Eventual Economic Extraction

The resource confining pit and/or underground shapes defines a boundary for continuous mineralization with suitable grades and with a reasonable expectation that an engineered plan will produce an economic plan. The net smelter return calculation for both the open pit and underground resources as well as the metallurgical recoveries are summarized in [Table 14-22.](#page-167-0)

Lerchs-Grossman pits were run for each deposit using the following parameters:

- Pit slopes of 50 degrees;
- Mining costs of US\$2.25/t for both mineralized material and; and
- Processing, general and administrative costs of US\$7.90/t. The cut-off grade for the open pits is considered to be US\$10.00/tonne which more than covers the Processing + G&A costs. The base case cutoff for the underground portion of the resource is US\$25.00/tonne which includes Process + G&A + Underground mining costs.

The lower portion of the Raintree West deposit has been constrained by a mineable shape within a "reasonable prospects of economic extraction" using a US\$25.00/t cut-off, assuming the same

processing costs as for the open pit, and a bulk mining scenario. Material within a cohesive shape above this cut-off has been included in the Raintree underground resource estimate. Metal prices are based on the 3-year trailing average (Kitco, 2024) and are consistent with those seen to be used throughout the industry.

Table 14-22 Economic Inputs and Metallurgical Recoveries

*Indicated and Inferred resources are used for pit optimization.

The pit delineated resource is given in [Table 14-2](#page-137-0) through [Table 14-4](#page-138-0) for each deposit and for a range of NSR cut-offs with the base case cut-off of US\$10.00/tonne highlighted. Process recoveries, as well as mining, processing and offsite costs have been applied in order to determine that the pit resource has a reasonable prospect of economic extraction. The US\$10.00/tonne cut-off (an Au Equivalent grade of approximately 0.27 gpt at the base case prices) yields an Indicated resource of 294.5 Mt at 0.42 gpt gold, 0.16% copper and 2.0 gpt silver (0.68 gpt AuEq) for 6.48 Moz AuEqv and an Inferred resource of 198.0 Mt at 0.52 gpt gold, 0.07% copper and 1.81 gpt silver (0.65gpt AuEq) for a total of 4.16 Moz AuEqv metal.

14.12 Statement on Prospect of Economic Extraction

The QP is of the opinion that all relevant technical and economic factors likely to influence the prospect of economic extraction can be resolved with further work.

14.13 Factors That May Affect the Mineral Resource Estimate

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

• Commodity price assumptions

- Metal recovery assumptions
- Mining and processing cost assumptions

There are no other known factors or issues known to the QP that materially affect the estimate other than normal risks faced by mining projects in the province in terms of environmental, permitting, taxation, socio-economic, marketing, and political factors.

14.14 Risk Assessment

A description of potential risk factors is given in [Table 14-23](#page-168-0) along with either the justification for the approach taken or mitigating factors in place to reduce any risk.

Table 14-23 List of Risks and Mitigations/Justifications

#	Description	Justification/Mitigation
	Classification Criteria	Classification based on the Range of the Variogram and therefore the variability of the mineralization within each deposit.
	Gold and silver Price Assumptions	Based on three-year trailing average (Kitco, 2024)
	Capping	CPP, swath plots and grade-tonnage curves show model validates well with composite data throughout the grade distribution.
	Processing and Mining Costs	Based on comparable projects in Alaska.

15 MINERAL RESERVE ESTIMATES

There are no reserve estimates at this time.

16 MINING METHOD

Open pit and underground mining methods are being considered for the project, though no details have been developed at this time.

17 RECOVERY METHODS

Not applicable to the resource statement.

18 PROJECT INFRASTRUCTURE

Preliminary infrastructure is discussed in Section [5,](#page-26-0) while detailed infrastructure has not been determined at this time.

19 MARKET STUDIES AND CONTRACTS

No concentrate market studies have been done at this time.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

U.S. GoldMining submitted an Application for Permit to Mine in Alaska (APMA) to Alaska's Department of Natural Resources (ADNR) on 30 June 2022. On 22 September 2022, the Alaska Department Natural Resources, Division of Mining, Land and Water, approved Multi-Year 2022-2026 Exploration and Reclamation Permit Number 2778 for Hardrock Exploration – Skwentna River - Yentna Mining District, and in addition also approved Reclamation Plan Approval Number 2778. Subsequent amendments were approved incorporating alterations to U.S. GoldMining's exploration plans in 2023 and 2024.

U.S. GoldMining commenced environmental studies in August 2022, comprising an aquatics survey completed by Owl Ridge Natural Resource Consultants Inc (Owl Ridge). The aquatics survey is summarized in a report compiled by Owl Ridge (Owl Ridge, 2024), in addition to subsequent work completed during 2023 including surface water quality sampling, additional terrestrial wildlife resources acid rock drainage and leachate potential studies, and heritage resources studies. Subsequent work completed in 2024 to date has included water quality sampling, eagle nest mapping, and on ground archaeological surveying.

U.S. GoldMining Inc. has developed a Stakeholder Engagement Plan (Parkan, 2023) which provides a comprehensive roadmap to engaging with community and native organizations, regulators and legislators, and special interest groups, to ensure broad consultation with regards to current and future activities at the Whistler Project. Currently U.S .GoldMining does not have any ongoing negotiations or agreements signed with respect to stakeholders.

21 CAPITAL AND OPERATING COSTS

Capital and operating costs have not been developed in detail at this time.

22 ECONOMIC ANALYSIS

Economic analysis has not been completed at this time.

23 ADJACENT PROPERTIES

The Estelle Gold Project owned by Nova Minerals Limited of Australia is currently in exploration phase and shares the Whiskey Bravo runway.

24 OTHER RELEVANT DATA AND INFORMATION

There is no additional relevant data and information for the Whistler, Raintree West, and Island Mountain deposits.

25 INTERPRETATION AND CONCLUSIONS

Sampling, Preparation, Analysis

The procedures documented by Kennecott, Geoinformatics and Kiska and U.S. GoldMining for sampling, analysis and security are deemed adequate. Analysis of the QAQC samples indicates the laboratory results are of sufficient quality for resource estimation.

Data Verification

The amount of data fully supported by certificate and QAQC is 92% in Whistler, 100% in Raintree and 100% in Island Mountain, which is typical or better than similar projects with most of the drilling completed before 2010. Inconsistencies detected during validation of the assay database are minimal. Measurements made during the site visit and previous reports indicate a collar survey is to be considered.

Metallurgical Testwork

The recoveries used for Resource estimate are reasonable for this level of study based on the metallurgical testing to date.

25.4 Resource Estimate

In the opinion of the QP the block model resource estimate and resource classification reported herein are a reasonable representation of the global gold, copper and silver mineral resources found in the Whistler, Raintree West, and Island Mountain deposits. Mineral resources are not mineral reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the mineral resource will be converted into mineral reserve.

Risks and Opportunities

25.5.1 Sampling, Preparation, Analysis and Data Risks and Opportunities

U.S. GoldMining could add QAQC data for silver and to collect and complete the missing certificate numbers in the database. This information would more completely support the assay database.

The drill core is stored in wood boxes subject to weathering on site, they are beginning to fall apart. An opportunity exists to protect these samples from further weathering by moving them or building dry storage. The risk of continued decay is that the historic core may no longer be available to future potential owners for review and verification.

25.5.2 Metallurgical Testwork Risks and Opportunities

Analyses and accounting of Ag were omitted from the metallurgical testwork, which focused on Cu and Au grades and recoveries in what was anticipated initially to be a Cu-Au resource. Future testwork which includes Ag accounting would likely result in improved estimates of silver recovery and revenue contribution.

25.5.3 Resource Estimate Risks and Opportunities

Risk in the geologic interpretations relating to the continuity of the mineralization exist and can be mitigated by additional geologic modelling for use in controlling the block model interpolations. A description of additional potential risk factors concerning the resource estimate is given i[n Table 14-23](#page-168-0) along with either the justification for the approach taken or mitigating factors in place to reduce any

risk. Opportunities to increase confidence in the resource through infill drilling and to expand the resource from step-out and exploration drilling are discussed in the recommendations section below.

26 RECOMMENDATIONS

Sample Preparation, Analyses and Security

To ensure and further improve data quality, MMTS recommends that:

- Three suitable CRMs that are made of porphyry copper material and represent expected low, medium, high mineralization grades for Au, Cu, and Ag be sourced and included in any future drilling. None of the CRMs used before 2023 were certified for silver.
- Future drilling should continue using coarse/crush blank material (quartz or limestone)
- Individual failed samples need to be identified in a timely manner and the neighboring primary assays samples be re-assayed if warranted. If this was indeed done in the past, the database has not been correctly maintained as the provided re-assay certificates do not cover all failures. The number of failures does not appear to be of material significance currently. Future programs should adhere to standardized control procedures.

26.2 Data Verification

For further data verification it is recommended that:

- At least 10% of collar locations in each resource area, to include drilling from all years, be surveyed with GPS equipment with <1m accuracy. If significant deviations are determined from the recorded values, all collars would need resurvey.
- Future drilling should include third party check-assays, and the data should be appropriately maintained.
- Further attempts should be made to identify 2004-2009 field duplicate and coarse duplicate distinctions from respective reports or internal documents and update the assay database accordingly.

26.3 Metallurgy

Metallurgical recommendations include:

- Mineralogical studies to better understand the gold associations
- Comminution testing specifically to address SAG mill power requirements and design
- Variability testing
- Confirmatory locked cycle flotation testing at the coarser primary grind size
- Testwork to include feed material containing Pb, Zn sulphide, and higher Ag grade material

Exploration and Resource

26.4.1 Whistler

At the Whistler Deposit, recommendations include:

- Ongoing development of the geologic model to provide a better understanding of how the three stages of intrusion relate to the mineralization geometry and continuity. This would involve utilizing the 2023 and 2024 drill logging, plus selective re-logging of historic core, with the current knowledge of the multi-element assay values and hyperspectral data. Solids modelling of each intrusive phase and alteration facies could be constructed from this interpretation.
- A better understanding of the current known faults could be an opportunity for increasing the resource at Whistler, especially in the northern section of the deposit where the Rover Fault

system dissects and complicates the geometry of lithological contacts, alteration and mineralization facies.

• Additional deep drilling to investigate the potential for the High-Grade Core, or other potential zones of high-grade mineralization, to extend to depth. Noting that the Raintree Underground Resource lies at a deeper vertical horizon compared with the Whistler deposit, there is potential for Whistler mineralization to extend well beyond the base of the currently estimated open pit mineral resource.

26.4.2 Raintree

For the Raintree Deposit, the following recommendations are made:

- Infill and step-out drilling to the north and south of the current deposit to potentially upgrade the classification of the current resource estimate and to potentially increase the resource. Specifically shallow holes (200 to 250 m) dipping east on sections 6,871,350 N and 6,871,400 N and 6,871,500 N should be drilled to increase the confidence in near surface mineralization.
- In concert with the new drilling, the previous drill core should be relogged and a robust geological model/domains should be constructed for future resource estimates.
- Further specific gravity measurements should be collected from current and future drillholes.
- Metallurgical testing should be conducted on Raintree West samples.

26.4.3 Island Mountain

For the Island Mountain deposit, the following recommendations are made:

• Infill and step-out drilling to the north and south of the deposit. This drilling should be done to potentially upgrade the classification of the current resource estimate and to potentially increase the resource. Drilling should aim to link the mineralized breccias drilled north of the resource area, with the main breccia complex. Deep drilling under the breccia complex is also warranted to potentially locate the causative, and potentially mineralized, intrusive driving the brecciation.

26.4.4 Exploration Program and Budget

The recommended exploration program is divided into two streams: 1. Known deposit expansion and delineation, and; 2. Exploration for discovery of new porphyry deposits.

- **1. Known deposit expansion and delineation** Whistler, Raintree and Island Mountain up to 10,000 meters core drilling to test the wingspan expansion of the existing deposits and upgrade resource classification.
	- Follow-up drilling of the **Whistler** deposit (~5000 meters) should target lateral and depth expansion opportunities to grow the mineral resource estimate (MRE), especially within the existing MRE constraining pit shell where waste can potentially be converted to mineralization with additional drilling.
	- Grid drilling program and step out drilling at **Raintree** (2,500 m). Any significant mineralized intercepts from this phase of step-out drilling should be sent for metallurgical testing with particular focus on the impact of the relatively high lead-zinc concentrations.
	- Approximately 2,500 m of diamond drilling to in-fill and expand mineralization at the Breccia Zone at **Island Mountain**. Mineralization is open to south and north, and undrilled breccia bodies occur for 700 m to the north of the Breccia Zone.

- **2. Exploration for discovery of new porphyry deposits.**
	- Focussed on the Whistler Orbit and Island Mountain areas which represent classic 'porphyry clusters'.
	- Review of previous soil/till geochemical sampling coupled with surficial geological mapping, and further surface mapping and sampling, plus "top-of-bedrock" relogging and resampling of existing core holes in the Whistler Orbit area, and potentially additional top of bedrock grid drilling program in the Whistler Orbit area. The grid drilling program would penetrate the glacial cover and drill approximately 25m into bedrock to obtain geological and geochemical data. Drilling on 200 metre centres from fifty holes (1,250 m) would cover the most prospective areas in the Whistler area.
	- This data, in conjunction with the existing airborne magnetic data and 3D IP data, would considerably enhance exploration targeting for deeper drill testing of high priority targets: 2500 meters at Whistler and 2500 meters at Island Mountain.
	- Compilation work to rank and prioritize other exploration targets on the project area (Muddy Creek, Snow Ridge, Puntilla, Round Mountain, Howell Zone, Super Conductor), with the aim to test one or more of these targets with drilling (1,500 m).

26.4.5 Initial Mining Assessment / Preliminary Economic Assessment (PEA)

The MRE should be combined with benchmarked mining costs and other assumptions to develop an Initial Assessment / PEA to test the potential to develop an economic mining opportunity at the Whistler Project. Initial Assessment / PEA should test options for mine design and throughput, ore processing and waste/tailings storage, include trade-off studies for power generation/transmission and access road costs, and ultimately optimize capital and operating costs to develop a positive economic base case and support investment into future mine feasibility studies.

Baseline surveys and stakeholder consultation should ramp up in support of eventual mine permitting. [Table 26-1](#page-177-0) shows the proposed exploration budget.

Table 26-1 Proposed Exploration Budget

*all-in cost includes mobilization/demobilization, drilling, assays, helicopter-support, camp costs, wages and G&A

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APPENDIX A: CLAIMS LIST

[MTRS = Meridian, Township, Range, Section; Q = ¼ Section; Q-Q = ¼ ¼ Section]

* Denotes 40-acre claims