ABSTRACTS

ALASKA MINERS ASSOCIATION

2026 ANNUAL CONVENTION & TRADE SHOW

BUILT TO DELIVER: ADVANCING ALASKA MINING

NOVEMBER 2-5, 2026

DENA'INA CIVIC AND CONVENTION CENTER

ANCHORAGE, ALASKA



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ALASKA MINERS ASSOCIATION

2026 ANNUAL CONVENTION & TRADE SHOW

TRACK ONE

GEOSCIENCE INVESTIGATIONS

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Critical Element Content of Alaska Placer Deposits: Insights From Geochemical Analyses of Size and Density Splits of Samples From Different Mineral Districts

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The Critical Minerals in Alaska Placer Deposits project was designed to evaluate the presence and abundance of critical minerals in legacy and current placer mine tailings. In most cases only gold has been extracted from these placer deposits and our hypothesis is that the critical minerals in the original alluvial gravels remain in the tailings. In addition, historic dredges were known to be inefficient, and some gold that could help mitigate the cost of reprocessing the tailings and extracting critical minerals might also remain in legacy tailings. Element suites in placer operations reflect the local mineral systems that underlie each mining district. Geochemical and mineralogical data for tailings samples provide insights on critical element contents of each placer deposit and contribute to strategies for reprocessing legacy tailings as well as processing alluvial material in new placer operations in each district.

There are currently 1,912 placer mine records in the Alaska Resource Data File. These placer deposits tend to cluster in known mineral districts. Mining districts in Alaska commonly host mineral deposits sourced from more than one mineral system. Mineral systems are typically characterized by distinctive suites of elements. Overlapping mineral systems have the potential to host a variety of critical elements. We collected samples

from placer tailings underlain by mineral systems characterized by different suites of critical elements, including gold pathfinder elements, platinum group elements, rare earth elements, tungsten and tin. We selected more than 40 placer deposits statewide to sample different mineral systems based on 1) high gold (and/or other precious metal) contents, 2) high volume of tailings, and 3) elevated contents and diversity of reported critical elements. Our sample set includes 8 samples collected from tailings at Flat for a pilot study in 2022; information gained in processing those samples supported continuation of processing protocols for samples collected in 2023 and 2024.

Samples were collected from multiple locations at each placer tailings site to achieve a representative composite sample of 0.2 yd^3 in volume. These samples were processed by sieving and gravity technologies to acquire separate density fractions from four grain size fractions finer than 0.25 inch. Quantitative geochemical analyses yielded values for 78 elements for initial bulk samples as well as derivative density fractions from each of the four grain size fractions. Critical element and critical mineral contents are recorded for each size and density fraction to determine their distribution in the tailings to guide strategies for processing the tailings. Critical element contents in sampled placer deposits may indicate favorability of additional placer deposits for sampling within a mining district.

The pilot study conducted on tailings from Flat, Alaska yielded information on the distribution of critical elements in bulk samples as well as in eleven size and density fractions for each sample. Gold and a consistent suite of critical elements that have values more than an order of magnitude above global averages, including antimony, chrome, and tungsten, were observed in all 8 samples; critical elements differed in relative abundance in the size and density fractions. Minerals identified by automated mineralogy include chromite, scheelite, and ferberite, however stibnite was not identified in any Flat samples.

Results for samples from different mineral systems statewide similarly showed critical element contents in all 4 size fractions with variable abundances in density fractions; mineral identification for the fractions is in progress. The geochemical results 1) indicate that best strategies for critical element extraction should be tailored to the specific minerals and elements in each placer operation, 2) provide information to guide processing of the tailings for extraction of critical element-bearing minerals, and 3) contribute to developing practical new engineering technologies for more efficient extraction of critical minerals from tailings. The critical element-bearing mineralogy of the placer deposits is the basis for researching environmentally sustainable metallurgical beneficiation of critical elements from their host minerals.

Geology and Metal Endowment of the Port Snettisham Ultramafic Complex, Southeast Alaska

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The U.S. Geological Survey is assessing the lode critical-mineral potential of zoned ultramafic intrusions in southeastern Alaska. Previous investigations in the region focused primarily on platinum-group elements (PGEs). Given the economic value of vanadium in Ural-Alaskan-type complexes like Russia's Kachkanar deposit, we evaluated Alaskan equivalents and identified the Port Snettisham intrusion as a prospective vanadium target.

The Port Snettisham intrusion is a Cretaceous (~110-100 Ma) ultramafic complex within the Yukon–Tanana terrane. It consists predominantly of hornblende–magnetite–apatite clinopyroxenite and is bounded by diorite to the south and metavolcanic rocks to the north. The exposed portion of the intrusion covers approximately 1.9 km^2. Geophysical data indicate that it extends an additional ~1.5 km northwestward beneath Port Snettisham, producing an estimated total footprint of approximately 5 km^2; its depth extent is unknown. Historical exploration in the area targeted gold, iron, and titanium.

New geochemical data, including high-precision NiS fire-assay analyses of precious metals from 76 drill-core and surface samples, reveal bulk-rock V_2O_5 concentrations reaching 0.41 wt% and averaging 0.15 wt%. Combined Pt+Pd+Au (3PGE) grades reach 341 ppb and average 46 ppb, with Pd/Pt ratios of approximately 1 and Cu/Ni ratios of approximately 30. Vanadium occurs in disseminated to semi-massive magnetite, whereas PGEs occur as discrete mineral phases within silicate minerals. Preliminary LA–ICP–MS analyses indicate that magnetite contains up to 3,800 ppm V.

An open-pit-constrained estimate of the mineralized in-ground material indicates approximately 285 Mt of Fe, 42 Mt of TiO_2, 2.6 Mt of V_2O_5, 34.5 Mt of P_2O_5, and 77.9 t of 3PGE.

Alaska DGGS Earth MRI Update

Wes Buchanan, Michael Barrera, Logan Fusso, Gina Lukoczki, Jamshid Moshrefzadeh, Isabella Muller, Travis Naibert, Rainer Newberry, Lily Norwood, Eric Petersen, David Szumigala, Conner Truskowski, Evan Twelker, Kelly Wilson

Alaska Division of Geological & Geophysical Surveys

The Alaska Division of Geological & Geophysical Surveys (DGGS) is engaged in major data collection efforts in Interior Alaska, the Kuskokwim Mountains, the Seward Peninsula, and areas of high interest in the Alaska Range. This work is funded through the U.S. Geological Survey's (USGS) Earth Mapping Resources Initiative (Earth MRI) and the State of Alaska. The goal of these programs is to improve our understanding of the nation's geologic framework and to identify areas that have potential for discovery of critical mineral resources. Geologic mapping has focused on the Yukon Tanana Upland (YTU) of Interior Alaska since 2019, since the USGS identified the YTU as having the highest probability of undiscovered resources. The YTU hosts multiple economic resources, historical mining, and current large-scale mining operations, creating the perfect area for a geologic framework study around known mineral occurrences. The program is regional in scope overall but includes areas of more intensive study, and combines geophysical surveys, geologic mapping, geochronology, geochemical sampling, and microprobe analyses to elucidate the tectonic history and structural framework of the YTU.

DGGS geologists continued a multi-year effort to update and improve the geologic maps of the YTU, as well as further investigating and understanding mineral occurrences in the region. DGGS's ~500 person-day helicopter supported 2026 field season investigated of an area of roughly 14,4801 km^2 (5,591 mi^2) within the far northwestern end of the YTU field area. Geologic mapping efforts in 2026 focused on the Manely region stretching to the northeast through Livengood and into the Mount Schwatka and Victoria Mountain regions. Emphasis is on building a more detailed understanding of Cretaceous-Cenozoic plutonic rocks, the deformation conditions and timing of metamorphism of Paleozoic metaigneous and metasedimentary rocks, and orientation and relationship of early and late-stage fault systems. The 2026 Earth MRI geophysical program included two Rank 1 helicopter magnetic and radiometric surveys within the Seward Peninsula focusing on the Kougarok Mountains (5,961 km^2) and over the Nome region (7,839 km^2). Both surveys collected data that were 100% completed to specification and represent the highest resolution surveys that could be achieved with the aircraft flown.

Whole-Rock and Zircon U-Pb-Hf-TREE To Assess the Fertility of Hydrothermal Mineralization of the Fairbanks-Salcha Plutonic Suite in the Western Yukon Tanana Upland, Alaska

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The western Yukon Tanana Upland (YTU) hosts several significant precious- and base-metal deposits, including the producing Fort Knox mine. The Fort Knox deposit and related systems are magmatic-hydrothermal in origin, manifesting as intrusion-hosted sheeted veins, disseminated deposits, greisen-like alteration, proximal skarns and veins, distal veins, and replacement deposits. In contrast, the origin of other deposits, such as Pogo, is disputed, with some workers proposing an orogenic origin with no clear relationship between magmatism and mineralization. Other areas, such as the Central Mining District and Faith Creek areas, lack historic hardrock metal production but do have significant placer gold production. Additionally, previous studies and Alaska Resource Data Files document significant precious- and base-metal mineralization, including gold, silver, antimony, tungsten, tin, uranium, and REE, with varying associations to plutonism. Magmatism ranges from syn- to post-tectonic, from ~113 Ma to ~55 Ma, with emplacement of the main pulses at ~110 Ma to 100 Ma, ~99 Ma to ~90 Ma, ~72 to ~66 Ma, and ~60 Ma to ~55 Ma. Major gold mineralization in the area is of the Reduced Igneous Related Gold System (RIRGS) model and is associated with plutons emplaced at 99 to 90 Ma. Although the RIRGS model proposes that magmatic oxidation state is important in the genesis of these gold deposits, this hypothesis has not been tested in central Interior Alaska using modern zircon trace element datasets. This study examines whole-rock geochemistry, magnetic susceptibility, U-Pb age, Hf isotope, and zircon REE signatures of mineralized vs. unmineralized intrusions in the Fairbanks-Salcha igneous suite (~99-90 Ma).

The Mineral Resources section of the Alaska Division of Geological & Geophysical Surveys is conducting ongoing bedrock geologic mapping funded by the United States Geological Survey Earth Mapping Resources Initiative. We aim to classify and determine the origin of significant periods of plutonic activity and assess the prospectivity for specific metal associations. In addition to previously published data, we collected samples during bedrock geologic mapping in the summers of 2023-2025. We analyzed selected samples for major- and minor-element concentrations and coupled this with U-Pb-Hf-TREE zircon analysis.

Uranium-lead zircon geochronology via LA-ICP-MS determined the crystallization ages of individual plutons. It defined the duration of major magmatic periods, magmatic lulls, and the timing of emplacement of fertile vs. non-mineralizing intrusions. RIRGS-associated

plutons have both similarities and differences in whole-rock and zircon TREE signature as compared to Cu porphyry mineralizing intrusions. Whole-rock lithophile trace-element ratios of Sr/Y, and, to a lesser extent, $(Eu_N/Eu^*)/Yb_N$, and V/Sc are also useful for determining an intrusion's potential RIRGS fertility. Zircon TREE supports high magmatic water content and low oxygen fugacity, suggesting these intrusions may be resource-fertile and capable of forming a magmatic hydrothermal system. Hf isotope systematics are a powerful petrogenetic tracer widely used to assess competing petrogenetic processes, including melt source, fractional crystallization, and assimilation of crustal material. Based on the Hf isotope analysis results, the RIRGS-mineralized plutons identified in this study are the most primitive intrusions in the suite.

Mike Barrera grew up in Green River, Wyoming and enlisted in the U.S. Army after graduating high school in 1999. He served for over 20 years, including more than 15 years stationed in Alaska at both Fort Wainwright and Joint Base Elmendorf-Richardson, with deployments to Iraq, Afghanistan, and Syria. He retired from the U.S. Army as a Command Sergeant Major in 2019 and started attending the University of Alaksa, Fairbanks, majoring in geology. Since 2021, he has interned with the Mineral Resources Section of the State of Alaska Division of Geological & Geophysical Surveys and participated in bedrock geologic mapping as part of the USGS Earth Mapping Resources Initiative. He is the lead author of the Bedrock geologic map of the Yukon Training Area and lower Salcha River, Big Delta and Fairbanks quadrangles, Alaska (2026). He received his bachelor's degree in 2023 and was recognized as the outstanding undergraduate student of the year in Geoscience. He is currently a candidate for a Master of Science in Geology at the University of Alaska, Fairbanks.

Aeromagnetic Characterization of Displaced 100-90 Ma Plutonic Suites in Eastern Alaska: Implications for Mineral Exploration

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Plutonism throughout eastern Alaska during the Cretaceous was the primary driver for major Au deposits (e.g., Fort Knox, Pogo) with enrichment in critical minerals such as bismuth (Bi), antimony (Sb), tellurium (Te), and tungsten (W). The development of a new igneous framework and oxidation state of plutons (which directly influences aeromagnetic signatures) has allowed for the aeromagnetic characterization and development of mappable criteria of these metallogenically important 100-90 Ma plutons. We evaluate the magnetic character of the Wolverine, Shawe Creek, and Harper suite plutons through the integration of the new geologic framework and modern aeromagnetic and magnetic susceptibility data. Wolverine plutons are generally weakly magnetized and produce subdued aeromagnetic responses despite being hosted in weakly magnetized siliciclastic rocks, although several intrusions enriched in rare-earth elements (REEs) and Sb exhibit localized magnetic highs and elevated susceptibilities. Contact aureoles are common yet lack strongly magnetized pyrrhotite that can be used for exploration targeting. The Shaw Creek suite, which hosts the Fort Knox deposit, is invariably weakly magnetized with low susceptibilities that mimic the poly-deformed gneisses and schists that host the plutons. Magnetic contact aureoles are less common in the Shaw Creek suite, resulting in weak or indistinguishable magnetic anomalies. Harper plutons display the greatest variability, including strongly and weakly magnetized plutons and a bimodal susceptibility distribution. The presence of strongly magnetized plutonic host rocks complicates this interpretation, as older plutonic rocks tend to exhibit strong aeromagnetic anomalies. Alaska suites are correlated with the Tombstone, Mayo, and Tungsten suites in the Yukon suites based on similarities in age, geochemistry and oxidaation state. However, Yukon suites have much more pronounced magnetic signatures, including donut-shaped anomalies caused by strongly magnetized aureoles ringing weakly magnetized plutons. We hypothesize that the difference in aeromagnetic responses is likely related to more reduced, pyrite-bearing sedimentary inputs to the magma source region in the platform rocks of the Selwyn Basin. This contrasts with the oxidized and poly-deformed to upper greenschist-amphibolite facies deepwater host rocks in Alaska. This difference in sedimentary inputs and post-depositional modification of the deepwater units strongly influences the different aeromagnetic signatures of the suites between Alaska and Yukon.

EXPLORATION PROJECT HIGHLIGHTS

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Alex Metals – 2026 Southeast Alaska Exploration Highlights

Nathan Steeves, VP Exploration, Alex Metals Corp.

Alex Metals (TSXV: ALX) is a newly formed exploration company with one goal: a NEW silver-gold-rich VMS discovery. Its three Southeast Alaska projects (KSO, Wodski, and Frenchie) lie within the Alexander Terrane, which hosts the world-class Greens Creek and Windy Craggy VMS deposits and the emerging Palmer VMS deposit, yet has seen limited exploration in recent decades.

The inaugural 2026 exploration program included 3,058 m of drilling at three prospects on the KSO Project (Prince of Wales Island) and 3,138 m of drilling at the Mad Dog prospect on the Wodski Project (Woewodski Island), along with geological mapping, sampling, and geophysical surveys. Results are pending. Alex Metals has significantly expanded its land package at all three projects.

KSO Project

The historical Khayyam and Stumble-On mines saw minor production between 1901 and 1907 and little exploration work since. Outcropping massive sulphide lenses at both sites returned chip samples up to 3.7 g/t Au, 54.9 g/t Ag, 8.1% Cu, and 6.5% Zn over 2.2 m. After staking these sites in 2024, Alex Metals completed a SkyTEM survey in 2025 that identified a large, new conductivity anomaly west of Khayyam: the Western Anomaly.

In 2026, Alex Metals completed 16 diamond drillholes at the Stumble-On, Khayyam, and Western Anomaly, plus mapping, sampling, ground and borehole EM, and UAV magnetics and photogrammetry surveys. Prospecting discovered several massive sulphide lenses and stringer-style mineralization at the Western Anomaly, within a very large zone of amphibolite-grade VMS-style alteration. Alex Metals expanded the KSO land package and staked numerous other prospects in the region.

WODKSI Project

Woewodski Island saw sustained exploration from the 1980s to mid-2000s following the discovery of Greens Creek, identifying at least ten VMS prospects, including Lost Lake, which has an historical ‘geologic inventory’ of 553,800 imperial tons of 87.5 g/t Ag, 8.1% Zn, and 0.6% Pb. In 2004, the first hole at the Mad Dog prospect intersected 5.4 m of 437.0 g/t Ag, 3.8% Pb and 18.5% Zn from 30.3 m and 17.0 m of 223 g/t Ag, 1.0% Pb, and 11.3% Zn from 40.7m, with no follow-up until 2026.

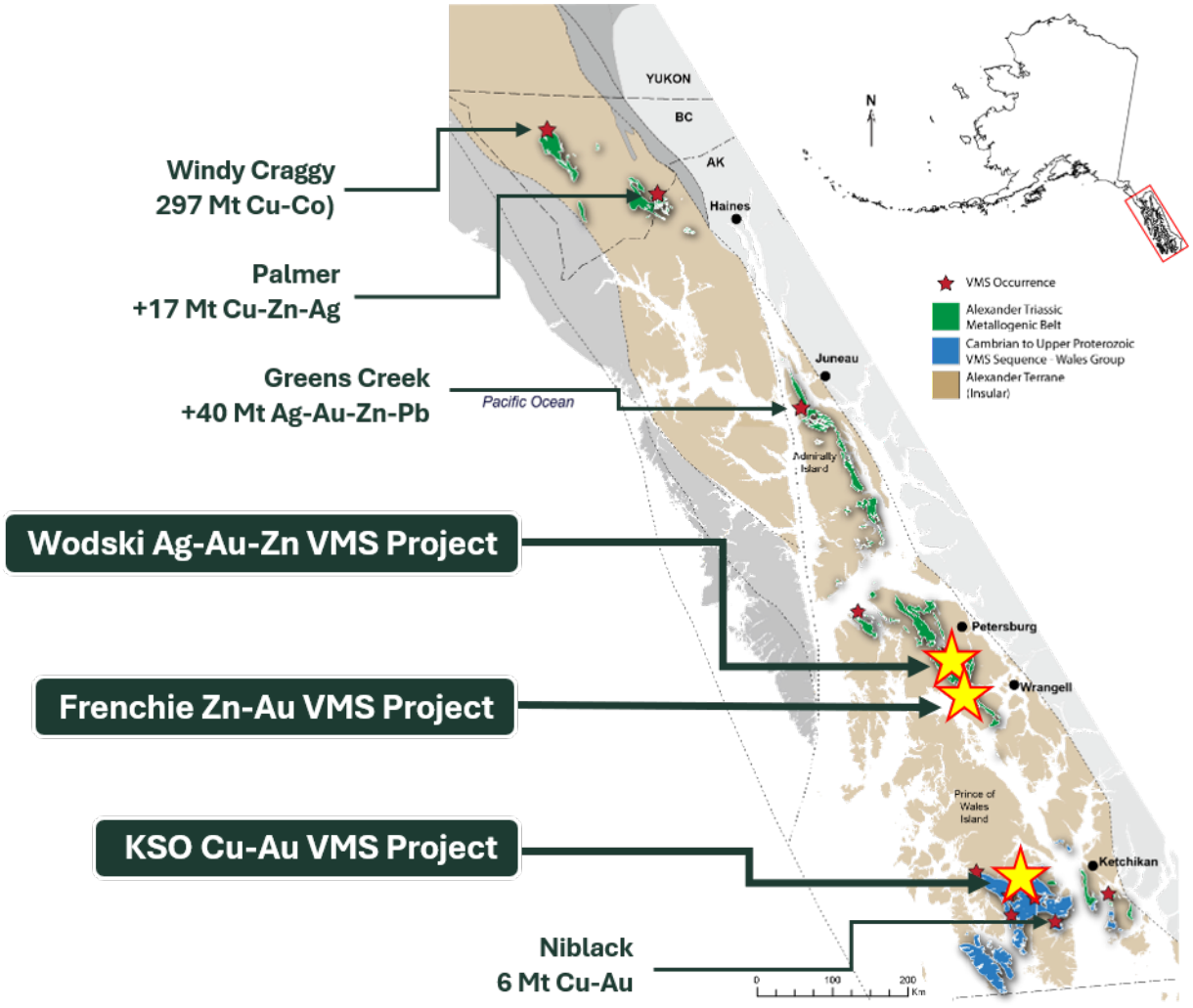
Alex Metals’ 2026 program included 13 drillholes at Mad Dog, property-wide mapping and prospecting, airborne LiDAR, and UAV magnetic and photogrammetry surveys.

FRENCHIE Project

A creek exposure of flat-lying massive sulphide and barite on Zarembo Island was first described in 1923. Limited historical work included an EM survey and 18 short drillholes, with highlights of 2.7 m of 1.2 g/t Au, 14.5 g/t Ag, 0.9% Cu, and 2.0% Zn. Alex Metals chip samples include 2.9 g/t Au, 3.0% Zn, and 0.4% Cu over 1.5m and 1.7 g/t Au, 1.9% Zn, and 0.8% Cu over 2.1 m.

After optioning the claims in 2025, Alex Metals completed the first property-wide mapping and sampling in 2026, along with UAV magnetic, LiDAR, gravity, and IP surveys.

Mapping shows stratigraphy dipping gently northwest, suggesting historical drilling south of the prospect may not have adequately tested the continuation of massive sulphide mineralization.



Flat Gold Project: Advancing a District-Scale Reduced Intrusion-Related Gold System from Exploration to a Maiden Resource, Southwest Alaska

Trent Newkirk, Director of Exploration, Tectonic Metals Inc.

The Flat Gold Project comprises 99,840 acres of predominantly Native-owned land held by Doyon, Ltd., in southwest Alaska, within a >20 km Late Cretaceous-age volcano-plutonic complex that contains at least six kilometre-scale, intrusion-related gold targets. The primary target, Chicken Mountain, is interpreted as a Reduced Intrusion-Related Gold System (RIRGS) hosted in a sericite-altered, variably oxidized monzonitic intrusive complex, cut by clustered sets of sheeted quartz to quartz-sulphide veins/veinlets, that was subsequently structurally modified during exhumation. The Chicken Mountain complex exhibits characteristics consistent with a bulk-tonnage, potentially heap-leachable gold deposit.

Diamond and reverse-circulation drilling since 2023 (206 holes to date) has outlined a mineralized footprint 3.3 km along strike, up to 700 m wide, and exceeding 300 m of vertical depth. Primary RIRGS gold mineralization at Chicken Mountain is flaggy in nature and generally northeast trending and dipping to the northwest. Internal higher-grade areas, ~200–300 m in strike length and up to 200 m wide, are observed and are resolved within the broader mineralized envelope, correlating with increased quartz-sulphide vein density, oxidation, and sericite alteration. The 2026 drilling program extended one higher-grade corridor to over 300 m vertical depth. The mineralized system remains open along strike, at depth, and across the majority of the mapped intrusive footprint.

Reprocessing and inversion modeling of regional magnetic surveys and a 2025 high-resolution drone magnetic survey support district-scale vectoring. Three-dimensional magnetic inversion modeling has identified zones of low magnetic susceptibility that coincide with known gold mineralization and are being used to help prioritize step-out and regional drill targets.

Figure 1: Regional geology map of the Flat Gold Project and map of the Chicken Mountain intrusion drilling area. Holes in green are new assays from 2026 up to and including those noted in the news release issued on October 15, 2026.

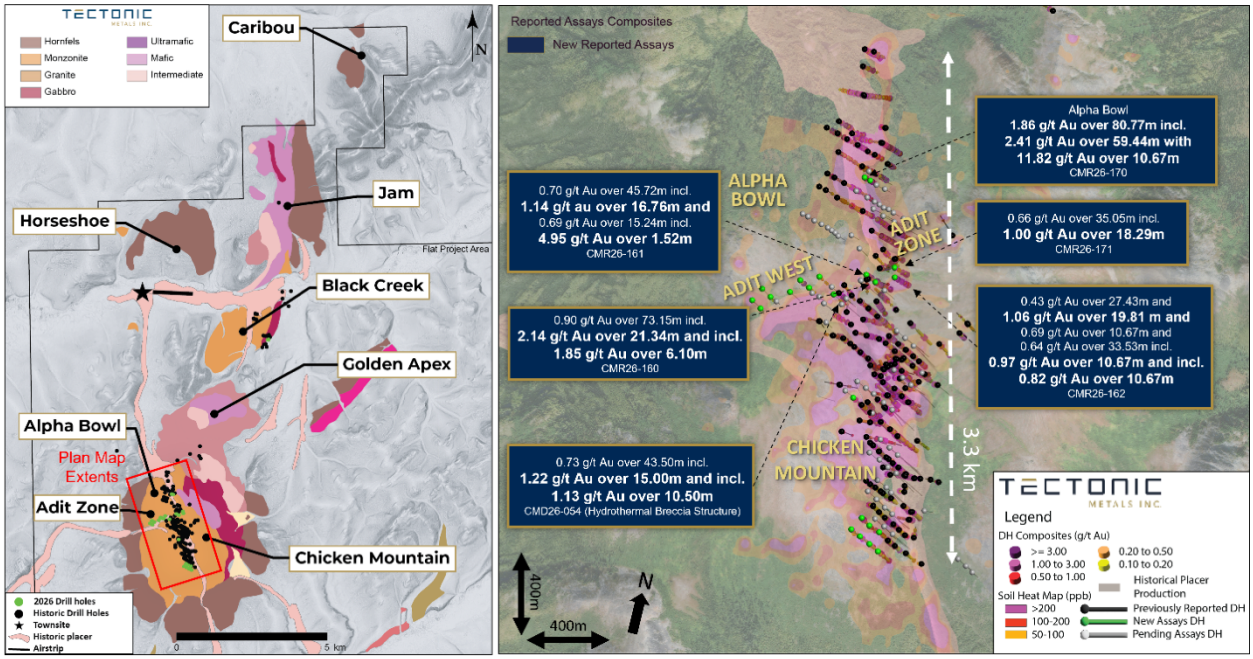
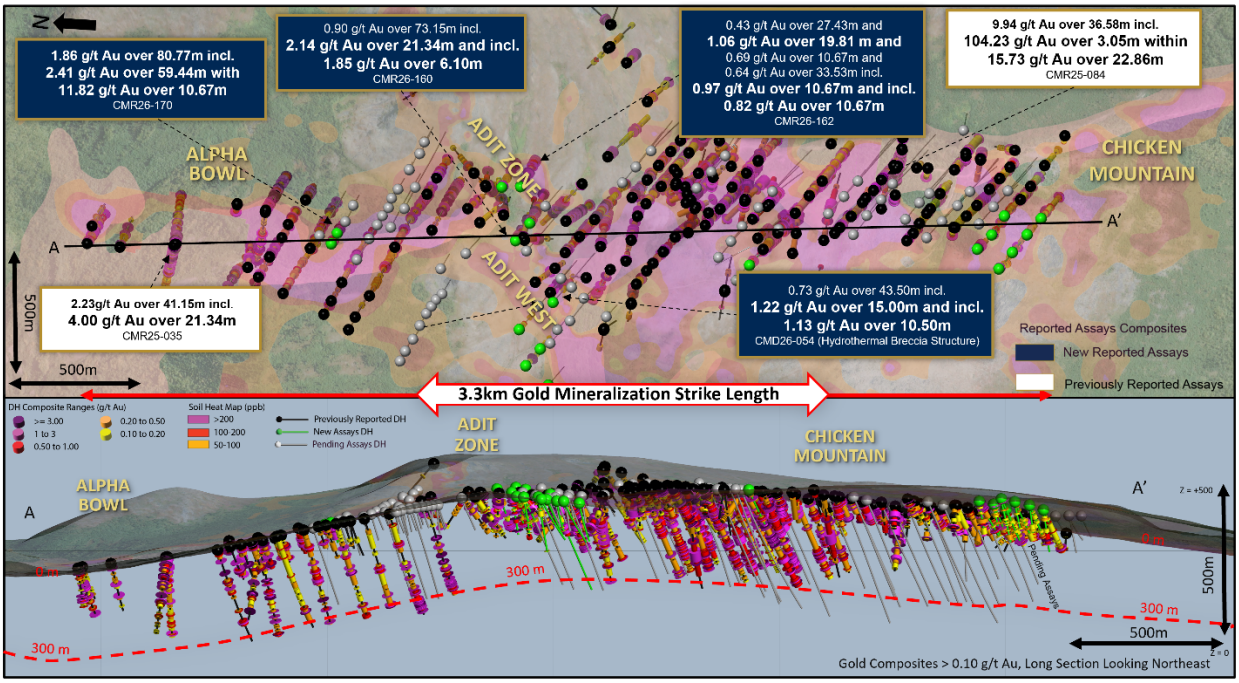


Figure 2: Chicken Mountain plan view and long section showing the mineralized drill results, 3.3 km drilled strike extent drilled to 300 m vertical depth.



Triple Z Prospect: The Perspective in 2026

Mu Li, Dave Larimer, Alina Wyatt; Contango Silver and Gold

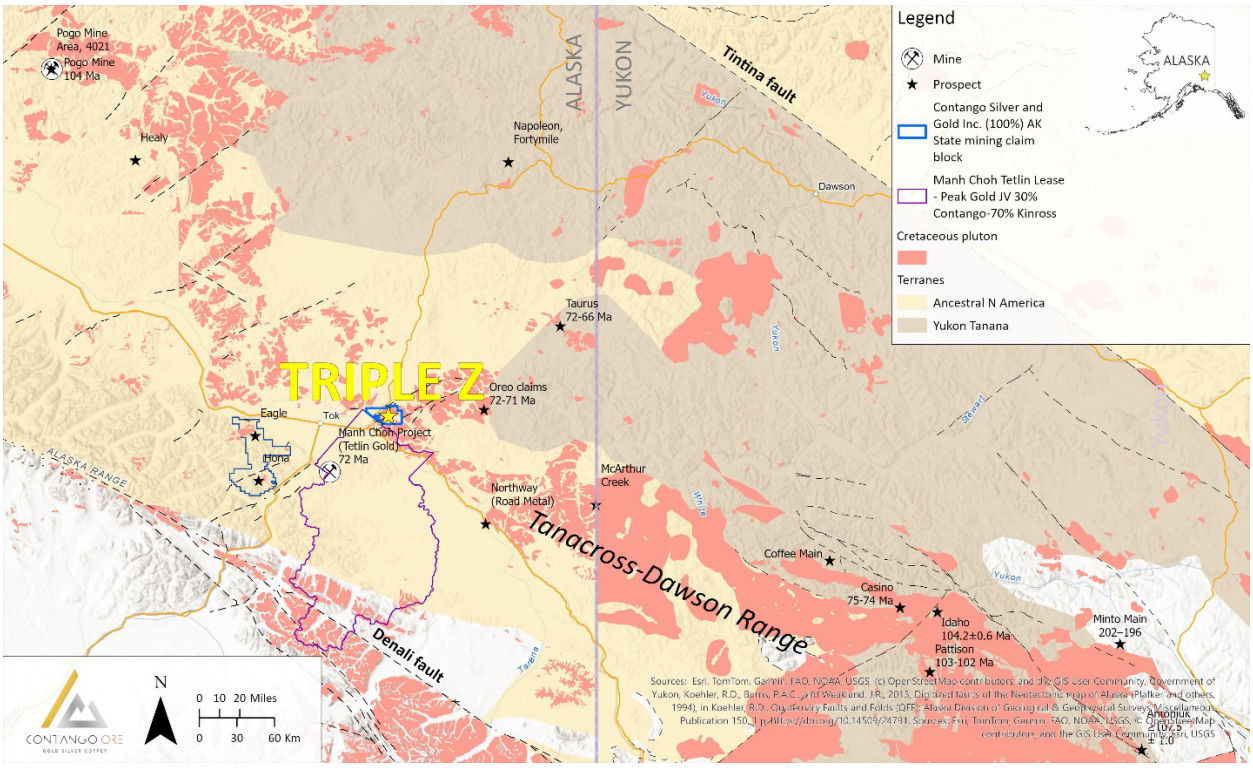
Contango Silver and Gold's Triple Z prospect, located northeast of Tetlin Junction, Alaska, represents a highly prospective target for porphyry-style copper-gold-molybdenum (Cu-Au-Mo) mineralization. This project covers an area of 14,810 acres across 95 State mining claims, immediately adjacent to the Alaska Highway to the south and west, and the Taylor Highway to the north and east. Until recently, only the eastern portion of the property was authorized for full mineral exploration activities due to historic unresolved land status issues. The successful transfer of "State Select" lands from federal ownership (BLM) to the State of Alaska in late 2024 enabled year-round access and unlocked the full potential for advanced resource delineation.

Since exploration began in the early 2000s, integrated geological, geochemical, and geophysical datasets have established Triple Z as a compelling Cu-Au-Mo porphyry target. The lithological framework consists of Lower Paleozoic metasedimentary units intruded by a multiphase felsic-to-intermediate plutonic suite, including quartz-feldspar porphyry (U-Pb, 103.0 ± 0.6 Ma), hornblende-biotite granodiorite (U-Pb, 102.9 ± 0.7 Ma), and biotite granite. New LA-ICP-MS U-(Th-)Pb zircon results suggest that the Triple Z plutons may be associated with the same metallogenic events to those of the Dawson Range (Yukon), including Pattison ($^{187}Re/^{187}Os$ moly, 102–103 Ma), Idaho Creek ($^{187}Re/^{187}Os$ moly, 104.2 ± 0.6 Ma) and Antoniuk (U-Pb, ≥107.5 ± 1.0) copper-gold porphyry-breccia systems.

Contango's 2026 drilling focused on the copper-gold soil and rock geochemical anomalies, and spatially correlating induced polarization (IP) chargeability and conductivity highs. A total of 1,214.1 meters of HQ diamond drilling was completed in fall 2026. Drilling results confirmed the presence of pyrite-dominant sulfide-rich zones and provided critical insights into hydrothermal alteration zonation - argillic, phyllic, potassic, and propylitic – alongside multiple vein generations (A-, B-, D-, EDM veining). Historic drilling intersected 27.3 m (90 feet) grading 0.129% Cu, 11.5 g/t Ag and 0.129 g/t Au starting at 275.5 m (902 ft), and 9.3 m (30.5 ft) grading 0.146% Cu, 17.4 g/t Ag and 0.163 g/t Au starting at 306.3 m (1005 ft), reinforcing the interpretation of a zoned porphyry system.

Significant exploration and discovery potential remains on this prospect, particularly on additional IP chargeability targets to the east and north of current drilling, as well the magmatic-hydrothermal breccias found in drill holes.

Track 1. Exploration Project Highlights



Major Gold and Industrial Mineral Sands Resource Defined At Grinder Deposit, Icy Cape District, Alaska

Jusdi Warner, Executive Director, Trust Land Office (TLO)
Dr. Karsten Eden, Chief Geologist, Trust Land Office (TLO)

The Grinder deposit in the Icy Cape district of coastal Alaska is the largest known placer gold and garnet sand accumulation in the State, and one of the most substantial, recognized heavy-mineral placer systems along the Pacific margin. The Grinder deposit lies within the Icy Bay region of the Gulf of Alaska, approximately 120km northwest of Yakutat and 230km east of Cordova.

A newly completed NI43-101 compliant resource estimate, effective April 30, 2025, outlines an indicated resource of 1.126Moz of gold and 350,950M tonnes of garnet contained within 34.1M tonnes of well-sorted nearshore marine sediment. The deposit's unusually thick auriferous section – averaging 37.2m – is central to its exceptional gold endowment and distinguishes Grinder from typical coastal placer systems.

Geologically, Grinder is hosted in fine to medium-grained marine sediments that have undergone repeated hydraulic sorting, allowing dense minerals such as gold, garnet, and zirconium, titanium and rare earth element-bearing phases to accumulate over multiple depositional cycles. The garnet is of premium industrial grade, with particle size characteristics suitable for sandblasting, waterjet cutting and filtration applications.

Beyond Grinder, the surrounding Icy Cape land block – covering roughly 200sq km – is emerging as a major placer gold and industrial mineral sands district. More than 30km of favorable mineralized trends have been delineated through TLO's integrated exploration program.

Several additional targets share geological characteristics with Grinder and represent the next phase of district-scale evaluation. Resource definition drilling and metallurgical testing at Dr. Rock are planned for 2028, marking the beginning of a broader effort to assess the district's full multi-commodity potential.

A recent hydrocarbon assessment adds another dimension to the region's economic geology. Two natural gas prospects – Big River and Johnston Creek – have been identified close to the mineralized trends.

If commercial quantities are confirmed, on-site natural gas could provide a low-cost power source for mineral sands processing, significantly improving operating margins and enabling scalable development across the district. A local energy supply is particularly important to large-volume mineral sands operations, where power costs are a major economic driver.

Taken together, Grinder's large gold endowment, substantial industrial garnet resource, critical mineral potential, district-scale exploration upside and possible access to local natural gas create a compelling development opportunity. The geological characteristics of the deposit and surrounding district suggest long-term production potential driven by favorable sedimentology, mineralogy and energy economics.

US Antimony Corporation: 2026 Alaska Exploration and Project Advancement

Rebecca Gower, M.P.S., P.Geo., US Antimony Corporation / Great Land Minerals LLC

Introduction

United States Antimony Corporation (USAC), through its wholly owned subsidiary Great Land Minerals LLC (GLM), advanced its Alaska mineral exploration portfolio during the 2026 field season, focusing on domestic antimony resources and associated mineral opportunities. From its logistics center in Fox, near Fairbanks, the company manages six principal project areas: Ester Dome, Maclaren River, Nolan Creek, Stibnite Creek, True North, and Dome Creek. Field exploration was conducted at Ester Dome, Maclaren River, True North, and Nolan Creek; Stibnite Creek and Dome Creek remained part of the broader project portfolio.

Ester Dome – Fairbanks Mining District

USAC completed a percussion drilling program consisting of 302 holes across five prospect areas at Ester Dome. Approximately 10 tons of bulk samples were collected from the St. Paul and Mohawk prospects, where geological observations identified stibnite veining. These observations and the 2026 exploration work will guide more advanced exploration planned for the 2027 field season.

Maclaren River – Alaska Range

At the Maclaren River Project, exploration focused on the Kathleen-Margaret copper deposit, which contains historic underground workings, including an adit. One diamond drill hole was completed to a depth of 609.5 feet to further evaluate the deposit's copper potential and provide geological information for future exploration planning.

Nolan Creek – Southern Brooks Range

USAC significantly advanced its Nolan Creek antimony-gold project near Wiseman following acquisition of the historic mining property and additional surrounding state mining claims in 2026. Nolan Creek is a priority project within the company's Alaska portfolio, with work directed toward evaluating the potential redevelopment of historic underground workings. During the 2026 season, activities included collection of an approximately three-ton surface bulk sample, LiDAR and aerial photogrammetric surveying, cultural resource assessments, environmental evaluations, and improvements to existing site access and infrastructure. The company also advanced permitting, engineering, and contractor preparations for potential underground exploration and development. Planned work includes rehabilitation of existing underground workings, detailed underground geological investigations, and collection of an underground bulk sample of up to 1,000 tons for metallurgical and technical evaluation, subject to applicable authorizations.

2027 Outlook

The 2026 programs provide a foundation for continued geological evaluation and advanced exploration across USAC's Alaska portfolio, with particular emphasis on Nolan Creek and follow-up work at other identified mineralized prospects.

Figure 1 : USAC Project Location Map

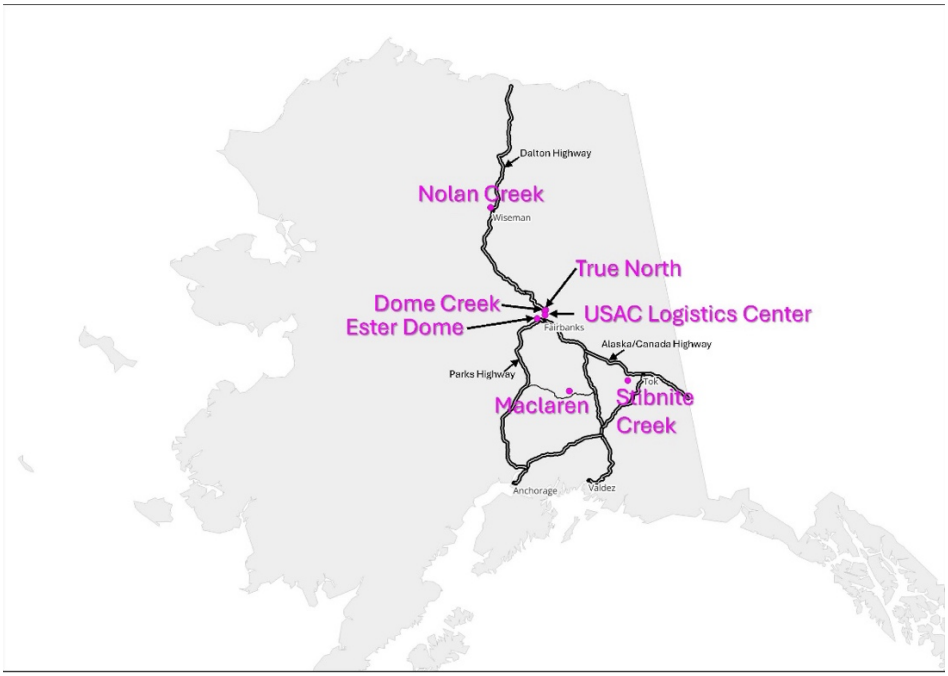


Figure 2: USAC 2026 Prospects Location Map

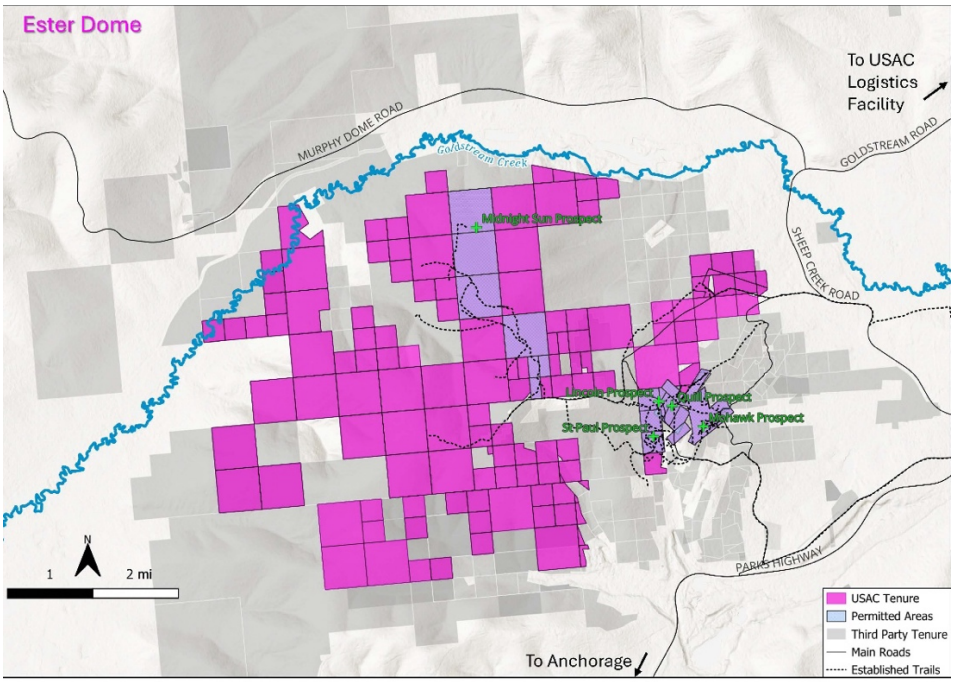


Figure 3: Maclaren Area 2026 Prospect Location Map

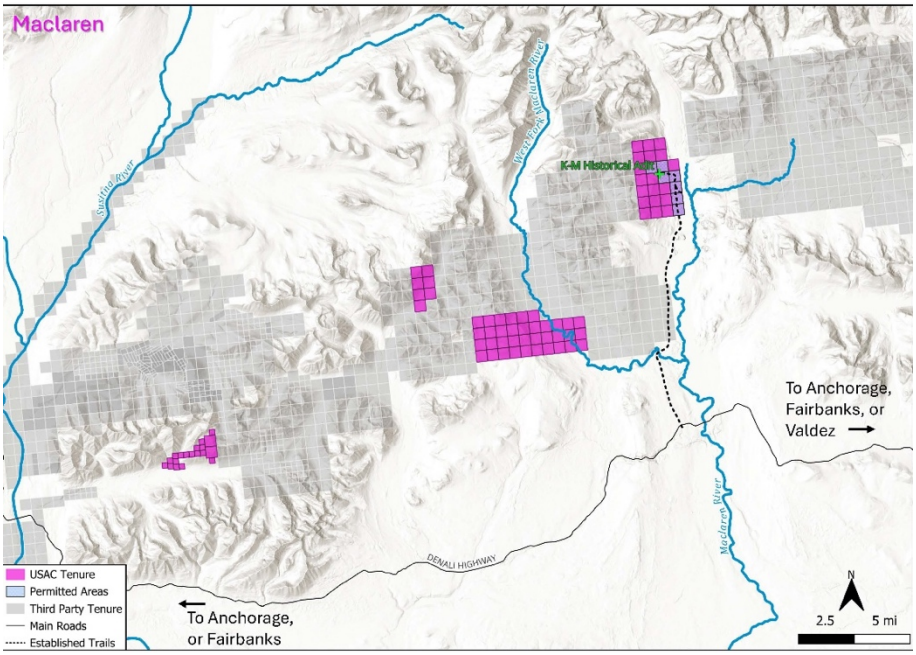
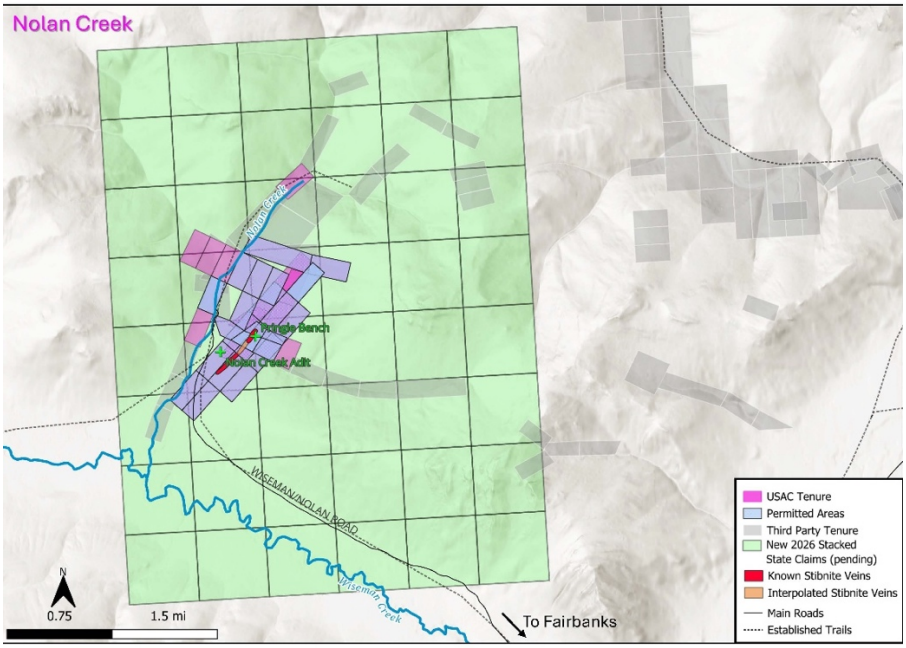


Figure 4: Nolan Creek Project Location Map



Kougarok Lithium-Tin-Tantalum-Niobium Project, Seward Peninsula, Alaska

Liam Doyle, Lost River Mining, Inc.

The Kougarok deposit is being explored by Lost River Mining, Inc. The Kougarok deposit is hosted within and around one of nine granite bodies recognized on the Seward Peninsula. The Kougarok intrusion is sub-horizontal and sill-like and comprised of multiple intrusive and differentiated granitic phases with variable texture, mineralogy, and chemistry. The associated mineral deposit contains potentially economic concentrations of lithium, tin, tantalum, and niobium. Magmatic and hydrothermal processes concentrated lithium, tantalum, and niobium in zinnwaldite granite and greisen-altered granite in the upper parts of the intrusive complex. Hydrothermal fluids exsolved during granitic crystallization deposited tin in greisen-altered intrusive rocks and into surrounding schist within the metamorphic aureole.

Treasure Creek: Antimony and Gold in One Structural Corridor — 2026 Exploration Update, Fairbanks Mining District, Alaska

Jason Keys, Exploration Manager, Felix Gold Limited

The Treasure Creek project, ~18 km north of Fairbanks, hosts the historic Scrafford antimony mine and the NW Array gold deposit within a single structural corridor. Exploration by Felix Gold Limited during 2025–2026 combined surface mapping, trenching, VLF-EM and induced polarization (IP) surveys, reverse-circulation and diamond drilling, and drone LiDAR survey control to trace massive stibnite veins over more than 250 m of combined strike and to extend near-surface gold mineralization at NW Array. The results support a model in which antimony and gold belong to one reduced intrusion-related system but occupy different structural sites: stibnite fills steep extensional veins and fault-hosted breccias, whereas gold occurs within a broader fracture system and higher grade discrete structures. Bulk sampling of the high-grade antimony bearing Bundtzen Vein began in mid-2026.

The project comprises 227 Alaska State mining claims held 100% by Felix Gold, with no federal land in the footprint, year-round paved road access and grid power. The Scrafford Mine operated from 1915 to 1977 and produced about 2.4 million pounds (1,079 t) of antimony metal from massive stibnite veins, supplying the U.S. through both World Wars and the Korean War (Bundtzen and Taylor, 2021). Felix Gold commenced exploration in 2022 following consolidation of claims in the Treasure Creek area.

Devonian Fairbanks Schist is intruded by a gently east-dipping sill of Late Cretaceous (92 Ma) porphyritic felsic rock of granitic composition. Antimony occurs as (1) massive quartz–stibnite veins in structures up to 3 m wide, open along strike and at depth; (2) silicified breccia zones with disseminated stibnite dipping about 50° east; and (3) massive stibnite pods within schist-hosted faults. Three main structural controls are recognized: east–west extension veins, north–south striking moderate-angle faults, and northeast-trending dextral strike-slip faults.

Drilling comprised 104 holes for 8,456 m. Selected antimony intercepts include 8.67 m at 12.51% Sb from 17.08 m, including 1.63 m at 36.65% Sb (25TCDC026), and 6.1 m at 7.86% Sb (25TCRC009); trench 24NWTR004 returned 3 m at 50.26% Sb and 5.29 g/t Au. At NW Array, which hosts an Inferred Mineral Resource of 25 Mt at 0.58 g/t Au for 467,000 oz (ASX, 20 June 2024), new drilling returned best results of 47.43 m at 2.45 g/t Au and 13.75 m at 7.69 g/t Au from 3.29 m. The resource remains open. Flotation concentrate contains about 95% antimony-bearing minerals with arsenic below 0.01%.

Exploration is shifting back to Felix Gold's wider Fairbanks tenement package of 72,242 acres. A soil survey was completed at the Moose Creek tenement in 2026. District exploration focuses on gold, with continued extension of antimony through soil sampling, trenching, and follow-up drilling.

Mineral Resource estimates for gold and antimony are planned for mid-December 2026. Drilling will continue to test steep ramp segments, east–west vein extensions and NW Array step-outs, alongside the State Plan of Operations.

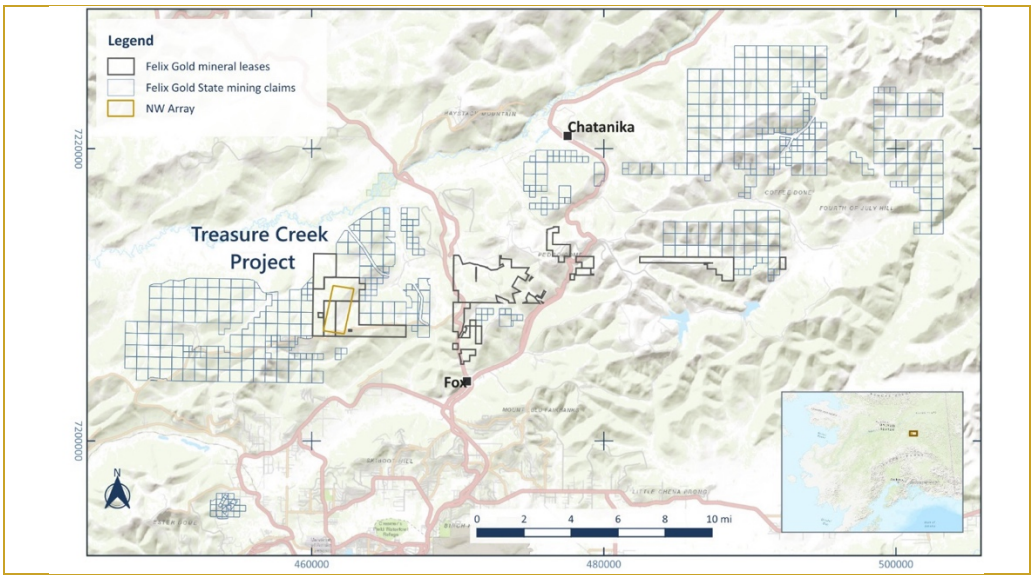


Figure 1. Location of the Treasure Creek project, Fairbanks Mining District, showing Felix Gold claims and access.

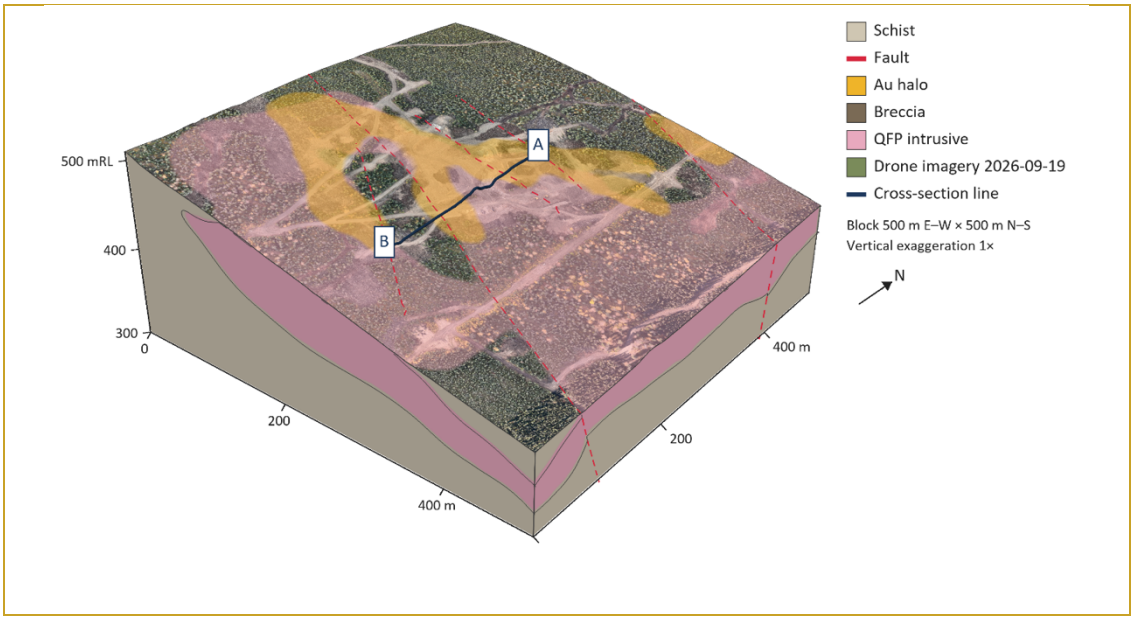


Figure 2. Geology of the NW Array deposit – Treasure Creek project.

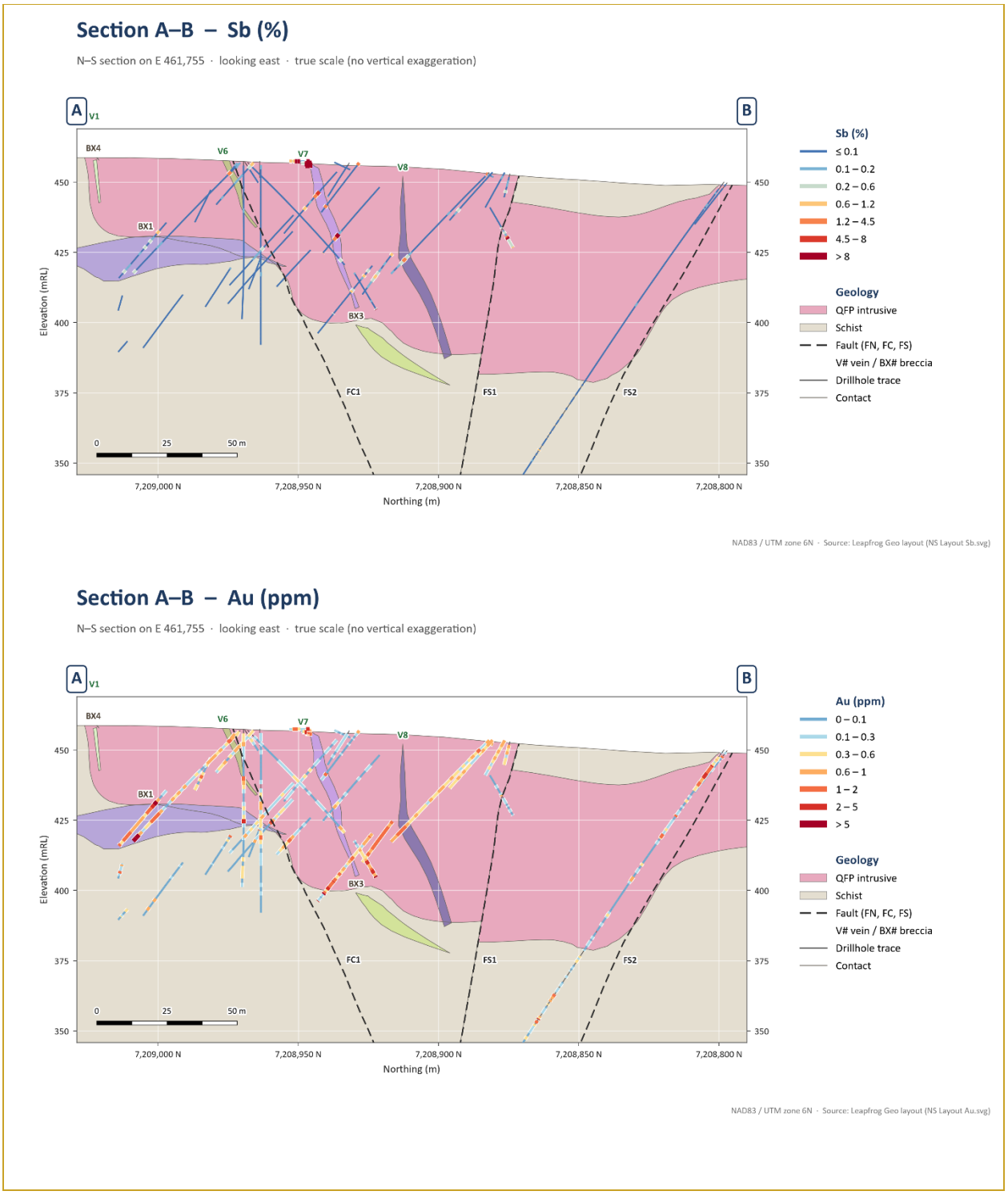


Figure 3. Cross-section through NW Array showing distribution of Antimony and Gold grade with interpreted veins and faults.

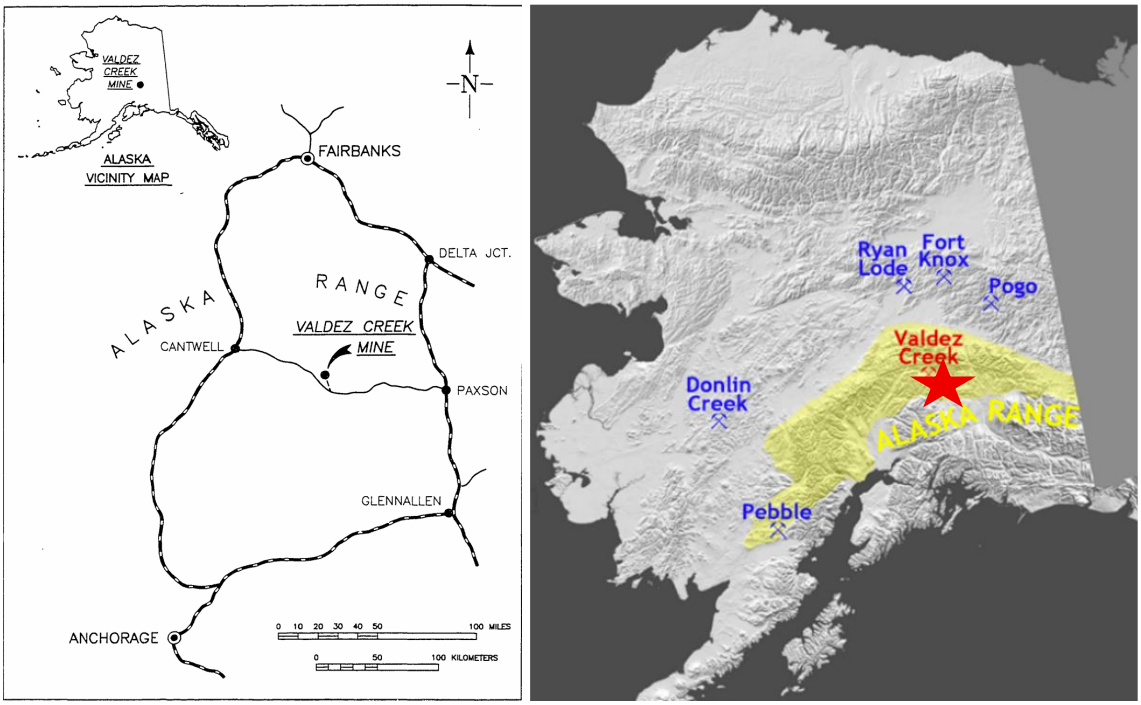
ADVANCED EXPLORATION

...

The Valdez Creek, Alaska Gold Deposits

Paul Hohbach, Consultant/ Technical Advisor
Valdez Creek Mining LLC.

The road-accessible Valdez Creek Project is located just north of the Denali Highway from the AK SH 12 turnoff, halfway between Cantwell and Paxson, Alaska. Valdez Creek Mining holdings consist of 206 State of Alaska claims and 56 Bureau of Land Management-administered, patented (placer) claims for 17,840 acres (72km^2). Valdez's semi-permanent camp is located in gently-sloping, grass-covered terrain.



Location Plans – Valdez Creek Project

Valdez Creek is most famous for large, high-grade, placer gold deposits. In 1905, discovery of a 44 ounce gold nugget in Lucky Gulch set off an early gold rush to the townsite of Denali on Valdez Creek. Subsequent periods of placer mining and hardrock prospecting took place in the 1910s through 1930s. Cambior Mining J.V. undertook extensive drilling and mining of Valdez Creek gravels in the 1980s and 1990s; the J.V. established the 3rd largest gold placer operation in the world at that time. Currently Valdez Creek Mining operates the Valdez Placer Mine along White Creek, a tributary to Valdez Creek. To date, approximately

600,000 to 1.0M+ ounces (estimated) of placer gold have been recovered to from Valdez Creek terrains.

Since 2016, Valdez Creek Mining has undertaken hardrock gold exploration on their adjacent holdings funded by placer gold mining revenues. A 2023 maiden resource estimate calculated 1.8Moz Au in 34.5Mt of material at an average grade of 1.6 gpt Au(below). Approximately 108 holes have been drilled.

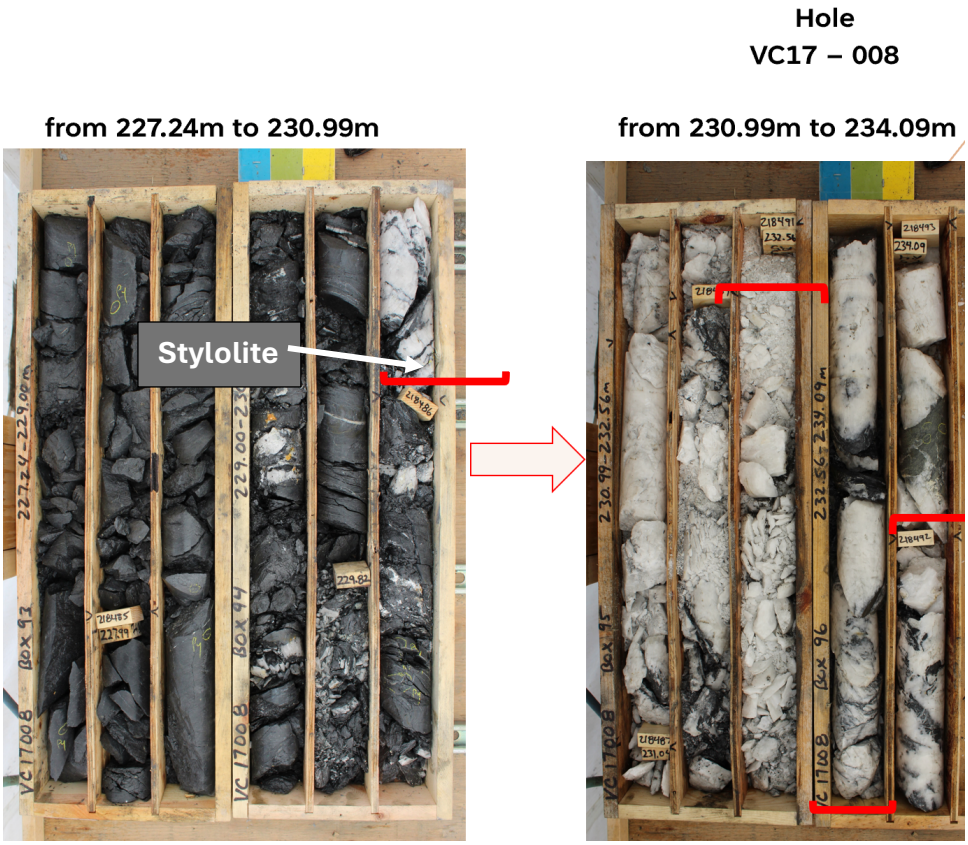
NI 43-101 MINERAL RESOURCE ESTIMATE – EASTERN ZONE (Effective October 1, 2023)

Category	Tonnage (Mt)	Grade (g/t Au)	Contained Gold (Moz)
Indicated	19.5	1.63	**1.0**
Inferred	15.0	1.58	**0.8**
TOTAL	**34.5**	**~1.61**	**~1.8**

Reported above 0.5 g/t Au cut-off (open-pit amenable). Numbers rounded. Source: RedDot3D Inc., NI 43-101 Technical Report.

Resource Strip Chart

Hardrock gold deposits occur in greenschist facies meta-sediments of Jurassic age. This strongly-folded host sequence has been intruded by numerous 85-88Ma aged Cretaceous quartz diorite stocks, the Cretaceous-aged East Susitna Batholith and other granitic to mafic intrusions. Orogenic gold deposits occur in an erosional window between the north-verging MacLaren Terrain and the Wrangellia Terrain suture just south of the claim boundary. Structural preparation along Talkeetna Fault Zone ENE normal faults, accompanied by right-lateral strike-slip movements, appears to have opened meta-sedimentary fold crests and limbs to quartz diorite dyke and sill intrusions. At a later date (latest Cretaceous to earliest Paleocene time(?)) during plate movements, gold bearing fluids rose into these same locales, accompanied by arsenic, mercury and tellurides. Most of the known deposits are poor in silver and molybdenum.



"Fosterville type" deposit example with gold-rich stylolites. Gold grades from 230.78 to 232.26 / 1.48m at **34.98 gpt** Au; and from 232.56 to 233.76m / 1.22m at **115.5 gpt** Au from drill hole 17-008 (see below)

A "Fosterville-type" (Victoria State, Australia) deposit model can be applied to several meta-sedimentary hosted gold deposits described above. Such deposits can attain kilometers-long strike lengths, several hundred meter depths and often exhibit high-grades of gold (> 5.0 gpt Au). A 2024 study by Reagan et. al. indicated that metamorphic deformation in the Clearwater Mountains took place from 72 to 56Ma.and provided ample geological time for such deposits to form. Riccio et. al. in 2014 studied East Susitna Batholith intrusion ages (from 98 to 57Ma), cooling and fault movements within this complex directly adjacent to the Valdez Creek lodes.

Three known, ENE-striking structural zones, totaling over 20 kilometers in length, host gold deposits, core-drilled gold intercepts and sampled gold-surface geochemical anomalies are open for new exploration drilling.

Gold Origin and Deposit Types

A 2022 study by Suhey et al. showed that the geochemistry of Valdez placer gold and nearby Lucky Hill hardrock deposits are very similar. Along with extensive geochemical sampling, gold sources for the placer deposits are believed to be eroded from the adjacent high-value, hardrock gold deposits. There are variations in deposit styles and geochemistry

within the Valdez terrain, but at least 3 different types of gold deposits can be postulated at this time - “Fosterville type”, vein-hosted and sulphide-lode deposits. Strong gold values > 10.0 gpt Au occur in all deposit types and areas of exploration interest. Gold mineralization is hosted in most common meta-sedimentary rocks and in quartz diorite intrusions.

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5. “The role of thrust faulting in the formation of the eastern Alaska Range: Thermochronological constraints from the Susitna Glacier Thrust Fault region of the intracontinental strike-slip Denali Fault system” Steven J. Riccio1, Paul G. Fitzgerald1, Jeff A. Benowitz2, and Sarah M. Roeske3; October 3, 2014; AGU Publications.

6. National Instrument 43-101 Technical Report “Exploration Update of the Valdez Creek Project, Alaska.” Qualified Person: Alan Lambden (P.Geo.) R. Mohan Srivastava (P.Geo.) Effective Date: October 1st, 2023. Red-Dot-3D Group.

New Amalga Gold Project – FAST-41 Permitting for an Underground Mine in Southeast Alaska

Kyle Mehalek, PE (OreLogic LLC) – Lead Consultant, UG Mining & Planning – Grande Portage Resources Ltd.

Summary:

The New Amalga Gold Project consists of a sub-parallel mesothermal quartz vein system located approximately 20 miles from Juneau, AK hosting a high-grade resource of over 1.4M gold ounces indicated plus 0.5M gold ounces inferred. The project is located near transportation infrastructure in an area frequently utilized for outdoor recreation by Juneau residents. It is therefore being advanced as a direct-ship operation (DSO) to include a small-footprint underground mine utilizing sensor-based ore sorting then transporting material offsite for processing at an existing third-party facility, eliminating the need for onsite tailings storage. The project has been accepted into the FAST-41 coordinated federal permitting program and has completed most baseline studies, with submission of a mining Plan of Operations and initiation of NEPA with the US Forest Service planned in March 2027.

Location and Background:

The New Amalga (formerly Herbert Gold) project is Located 19 miles northwest of downtown Juneau and 4 miles east of Glacier Highway, within Herbert River Valley of the Tongass National Forest (Fig 1). The original federal lode claims date to 1986, pre-dating the Roadless Rule. Grande Portage Resources Ltd became involved in 2010 and has since conducted over $25M worth of exploration and development work.

Geology, Resource and Exploration:

The deposit is a “Juneau Gold Belt” type mesothermal quartz-sulfide vein system consisting of several sub-parallel vein structures. Mineralogy is dominantly quartz with lesser carbonate, arsenopyrite, pyrite, galena, sphalerite, scheelite and occasionally visible gold. (Fig 2 & 3)

The current resource estimate (July 2024), informed by over 210 drillholes and 35 channel samples, contains an Indicated Resource of 1.4M oz Au at an average grade of 9.5 g/t Au (4.7M tonnes) and an Inferred Resource of 0.5M oz Au at an average grade of 8.9 g/t Au (1.8M tonnes)

Development Strategy:

The area around the deposit in the Herbert River Valley is a popular area for outdoor recreation. The project must therefore utilize a development strategy with an extremely small, unobtrusive footprint to maintain local social license and facilitate the environmental review and permitting process.

The way to achieve this is via development of a direct-ship operation (DSO). An underground mine utilizing selective longhole stoping methods would extract ore which would then be subjected to a sensor-based ore sorting process (Fig. 4). The sorted ore would then be hauled to a new barge dock and transported to an offsite third-party facility for processing.

This avoids the use of any processing reagents and eliminates the need for an onsite tailings facility, reducing the acreage of land impacted by approximately 85%. All development waste rock would be returned underground as backfill, avoiding any permanent stockpiles left on surface after closure.

FAST-41 Regulatory Pathway:

The project has been accepted as a "Covered Project" under the federal FAST-41 coordinated permitting program. The benefits include improved permitting predictability and accountability, enabling earlier identification and resolution of any potential permitting delays. A federal permitting coordinator has engaged all the relevant federal regulatory agencies and developed the permitting schedule to which the agencies are held accountable (Fig. 5). Baseline environmental studies are nearly complete and the project intends to submit a mining Plan of Operations and initiate NEPA with the US Forest Service in March 2027.

Fig. 1. Location of the New Amalga Gold Project

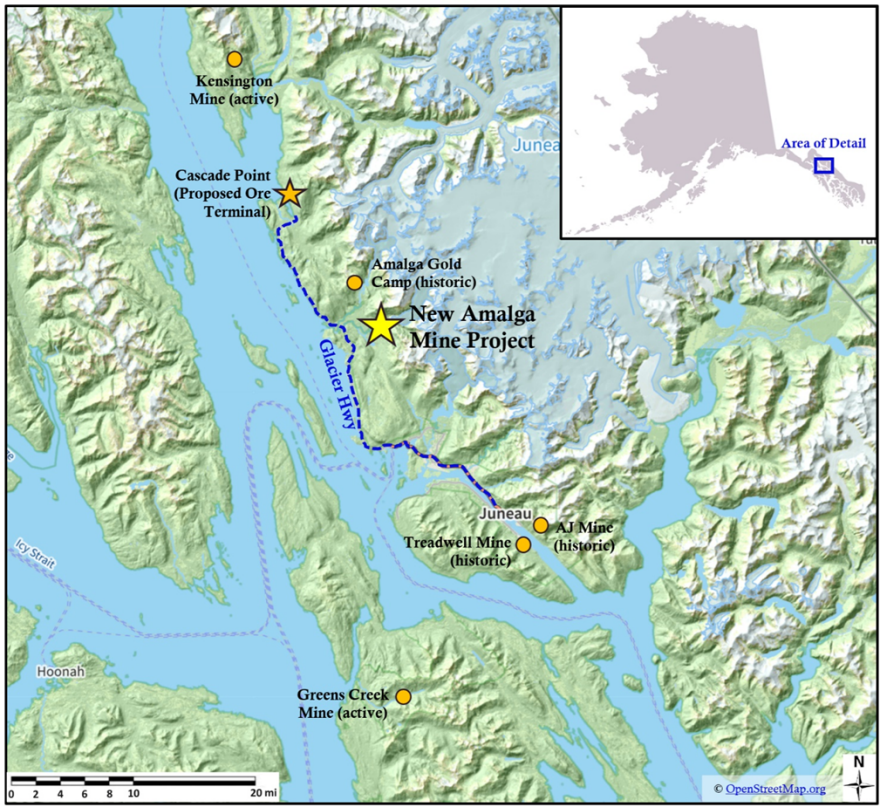


Fig. 2: Example of New Amalga Drill Core



Fig. 3. Arrangement of Vein Structures and Shear Zone Contacts at the New Amalga Deposit

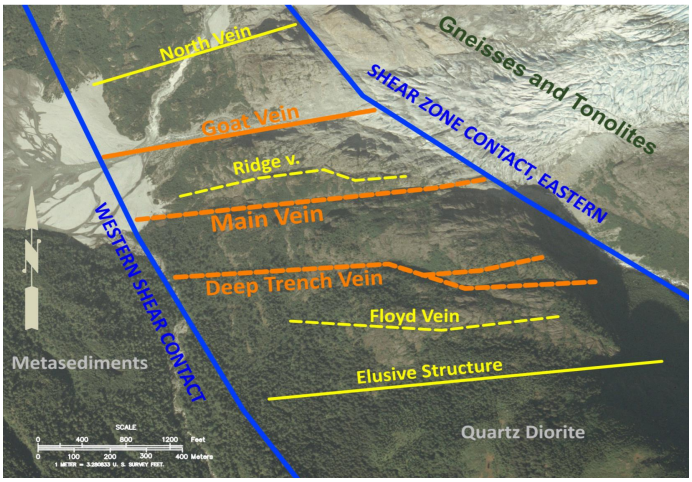


Fig. 4: Image of XRD Sensor-Based Ore Sorting Testwork Being Conducted on New Amalga Samples

The crushed rock is placed on a conveyor belt and then passed in front of the sensor, which rapidly analyzes the individual pieces of rock. When a piece of rock is identified as waste, a puff of compressed air redirects it to a "reject" bin. The remaining pieces of rock are sent to the accepted "product" stockpile. Testwork on a composite sample of New Amalga material showed a gold recovery of 94% and a 57% mass reduction

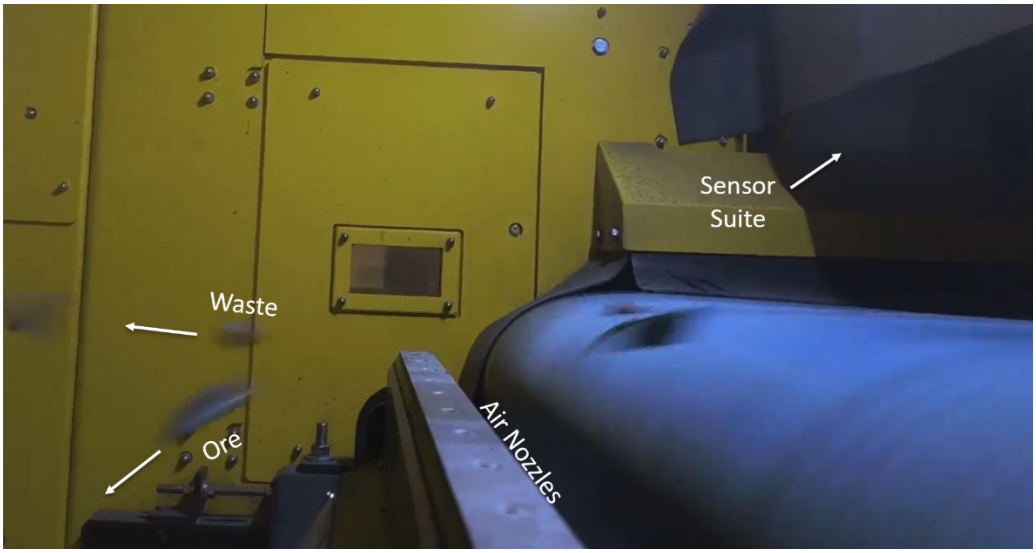
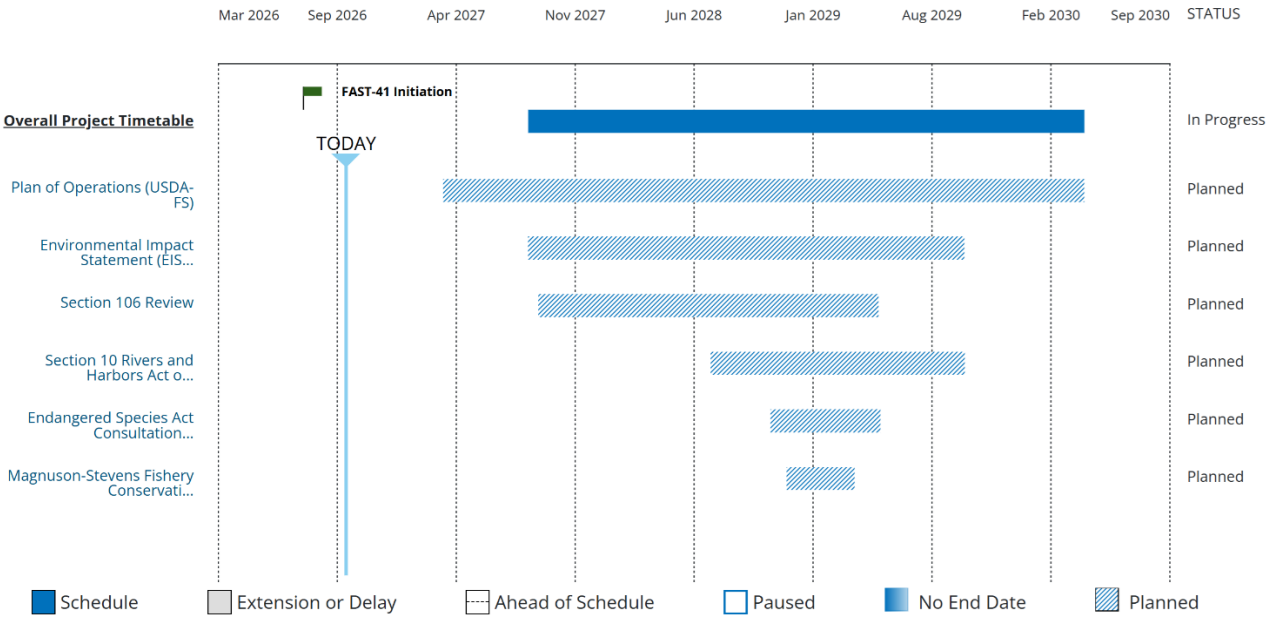


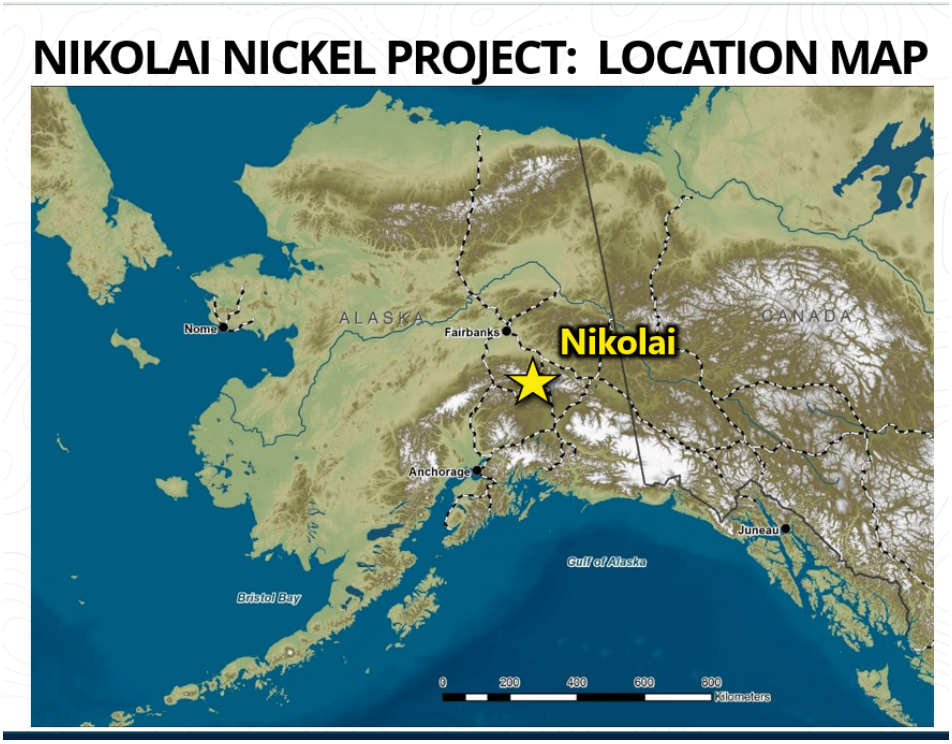
Fig. 5: High-Level Permitting Schedule from the project's FAST-41 Dashboard



Overview of the Nikolai Nickel Project

Gregory Beischer, CEO, President, and Director, Alaska Energy Metals Corp

The Eureka deposit of Alaska Energy Metals (AEMC) Nikolai Nickel project is a large, tabular body of disseminated magmatic base metal sulfide mineralization. The deposit breaches surface at several locations, dips 45 degrees to the south and is open along strike in both directions and in the down-dip direction. The primary valuable sulfide is pentlandite, with chalcopyrite and cobalt sulfide. Platinum group elements are also associated with the metallic mineralization. Drilling has allowed Alaska Energy Metals to calculate a Mineral Resource Estimate (independent report at this link) that includes 9.38 billion pounds of nickel in the Inferred category (2.09 billion tonnes grading 0.22% nickel), and 5.6 pounds of nickel in the higher-confidence Indicated category (1.19 billion tonnes grading 0.21% nickel), making it (to the knowledge of AEMC) the largest known nickel deposit in the United States. While not high grade, the deposit is remarkably uniform and continuous over the 3.4 mile-long drilled strike length of the deposit. Treatment of the mineralized rock by froth flotation and magnetic separation forms two separate concentrates. The flotation concentrate consists of iron, nickel, copper, and cobalt sulfides enriched in platinum group elements and gold. Initial hydrometallurgical refining tests on the flotation concentrate indicates that most of the valuable metals will go into solution under pressurized conditions, presenting the opportunity for on-site refining and production of metals in Alaska (as opposed to shipping a metal sulfide concentrate to an existing smelter elsewhere in the world). The magnetic concentrate contains chromium and iron. More work is required to determine whether a saleable ferrochrome concentrate can be made. Next steps include economic evaluation and extension of the Rainy Creek Mining Road by several miles to the deposit. The Eureka deposit is located 20 miles west of the Richardson highway and 20 miles north of the Denali Highway on the south flank of the Alaska Range, 80 miles south of Delta Junction. For more information on Nikolai and Alaska Energy Metals Corporation please follow this link.



Advancing Exploration and Project Development at the Illinois Creek District

Sage Langston-Stewart, Principal Geologist at Alaska Silver

The Illinois Creek District is located in west-central Alaska, approximately 250 miles west of Fairbanks. Originally discovered by Anaconda in the 1980s, the district encompasses five evolving mineral projects within Alaska Silver Corp's 100%-owned land package, hosting gold, silver, copper, lead, zinc, and gallium mineralization.

The 2026 field program was the largest and most aggressive program to date – 9,496 m of diamond drilling in 39 drill holes across the Waterpump Creek and Silver Sage zones. At Waterpump Creek, 12 holes investigated potential extensions of the high-grade carbonate replacement deposit (CRD) mineralization, tested structural and stratigraphic interpretations, and evaluated potential mineralization pathways. Drilling provided additional constraints on carbonate alteration, intrusive relationships, and structural controls, prompting reassessment of the geometry of the mineralized system. At Silver Sage, 27 holes followed up on mineralized breccias discovered through trenching in 2025 and investigated the extent of alteration and mineralization across a large, structurally complex hydrothermal system. These drill programs are refining the geological model and informing future targeting, with assays pending.

Surface exploration extended beyond the two principal drill targets. At Illinois Creek West, excavator-assisted mapping, trenching, and soil sampling evaluated favorable stratigraphy, alteration, and potential extensions of known mineralization. Mapping and systematic soil sampling at the TG and TG North CRD prospects on the Round Top property revisited historical exploration targets and investigated structural corridors associated with silicification and lead-silver-zinc anomalies. These activities, integrated with regional geophysical data, are advancing a district-scale structural and stratigraphic framework for evaluating CRD mineralization and identifying additional exploration targets within the districts' two porphyry-CRD systems. Collaboration with the U.S. Geological Survey also initiated geochronological and isotopic studies intended to constrain the timing of mineralization and regional geological events. Alaska Silver is partnering with the University of Alaska Fairbanks' new NSF Critical Mineral Accelerator Engine.

In parallel with exploration, Alaska Silver completed a metallurgical sampling program at the in-situ Illinois Creek Resource. Sampling included geochemical characterization of mineralization across the in-situ resource, targeted samples from major gossan zones, and a representative bulk sample along approximately 200 m of exposed mineralization. Samples were submitted for full-element geochemical analysis to ALS and metallurgical testing by Kappes, Cassiday & Associates. The program is designed to characterize deposit variability and evaluate a processing flowsheet that recovers copper while maximizing silver and gold recoveries. Results will help inform future metallurgical studies, resource development planning, and assessment of Illinois Creek's potential economic viability.

The 2026 program represents an important step in advancing the Illinois Creek District toward resource growth and evaluation while increasing exploration opportunity. The combination of systematic drilling, district-scale targeting, metallurgical characterization, and collaborative geoscience studies is building the technical foundation for continued exploration and future development decisions across this district.

Graphite One’s Integrated Graphite Development Plan

Mike Schaffner, COO, Graphite One

Graphite One is advancing the development of a fully integrated U.S. graphite supply chain to support the rapidly growing demand for battery anode materials used in electric vehicles, energy storage systems, and other critical applications. The company's strategy combines the development of its world-class Graphite Creek natural graphite deposit in Alaska with the establishment of advanced anode manufacturing capabilities in Conneaut, Ohio.

Graphite One recently completed a feasibility study for its Graphite Creek Project, located 38 miles north of Nome, Alaska, with $37.5 million in support from the U.S. Department of Defense and is currently completing and Environmental Impact Study under the US Army Corp of Engineers that is scheduled to be completed in September of 2027. The Feasibility Study confirmed Graphite Creek as one of the world's largest known graphite deposits, providing a substantial long-term resource base for domestic graphite production. The project represents an important first step toward establishing a secure and sustainable supply of natural graphite for the U.S. market.

A central component of Graphite One's integrated strategy is the development of a battery anode material manufacturing facility in Conneaut, Ohio. The planned facility will establish domestic capabilities for producing advanced graphite anode materials, incorporating both natural and synthetic graphite to meet the evolving requirements of battery manufacturers. By integrating advanced processing technologies and manufacturing expertise, the Conneaut facility is intended to provide a critical link between raw material production and the growing North American battery industry.

While conventional graphite mining and concentration technologies are well established, the production of high-performance Anode Active Material (AAM) requires increasingly sophisticated manufacturing processes which are currently dominated by Chinese producers. In addition, the growing use of synthetic graphite and the development of blended anode formulations are reshaping the industry's technical and commercial requirements. Successful domestic production will depend on the ability to manufacture both natural and synthetic graphite products that meet demanding battery performance and cost specifications.

Graphite One is addressing these challenges through a strategy focused on developing and licensing technology. By combining the significant natural graphite resources at Graphite Creek with advanced anode material production in Ohio, the company is positioning itself to become a leading U.S. supplier of graphite materials for battery and industrial applications.

This presentation will provide an update on the Graphite Creek feasibility study and project development, outline plans for the Conneaut anode manufacturing facility, and examine the evolving technologies and market trends shaping the graphite anode industry. Particular emphasis will be placed on the technical and commercial challenges of

establishing an integrated domestic graphite supply chain, from mineral resource development through the production of finished battery anode materials.

Contango Silver and Gold: On the Move in 2026—Building the Mines of the Future

Dave Larimer, CPG | Vice President, Exploration
Contango Silver & Gold Inc.

Overview. Contango Silver & Gold Inc., formerly Contango ORE, is headquartered in Fairbanks and listed on NYSE American and the TSX under CTGO. This presentation reviews the past year's progress, emphasizing Lucky Shot and Johnson Tract in Alaska, with an update on Kitsault Valley in British Columbia.

Lucky Shot. At Lucky Shot in the Willow Mining District, 2026 work combined surface drilling in the Coleman area with underground exploration development and drilling. Approximately 5,800 meters of surface drilling targeted resource infill and the interpreted structural relationship between the Coleman and Lucky Shot vein systems. Results released through October 6 provide additional constraints on vein continuity and historical workings. Underground development has opened access to the newly recognized KM vein system, where drilling began in September. The presentation will examine how these programs are refining the geological model and guiding the next phase of resource definition. The publicly outlined pathway includes continued underground drilling through winter, an updated mineral resource estimate targeted for the first half of 2027, and a subsequent feasibility study evaluating a direct shipping ore approach. Production remains subject to study results and a development decision.

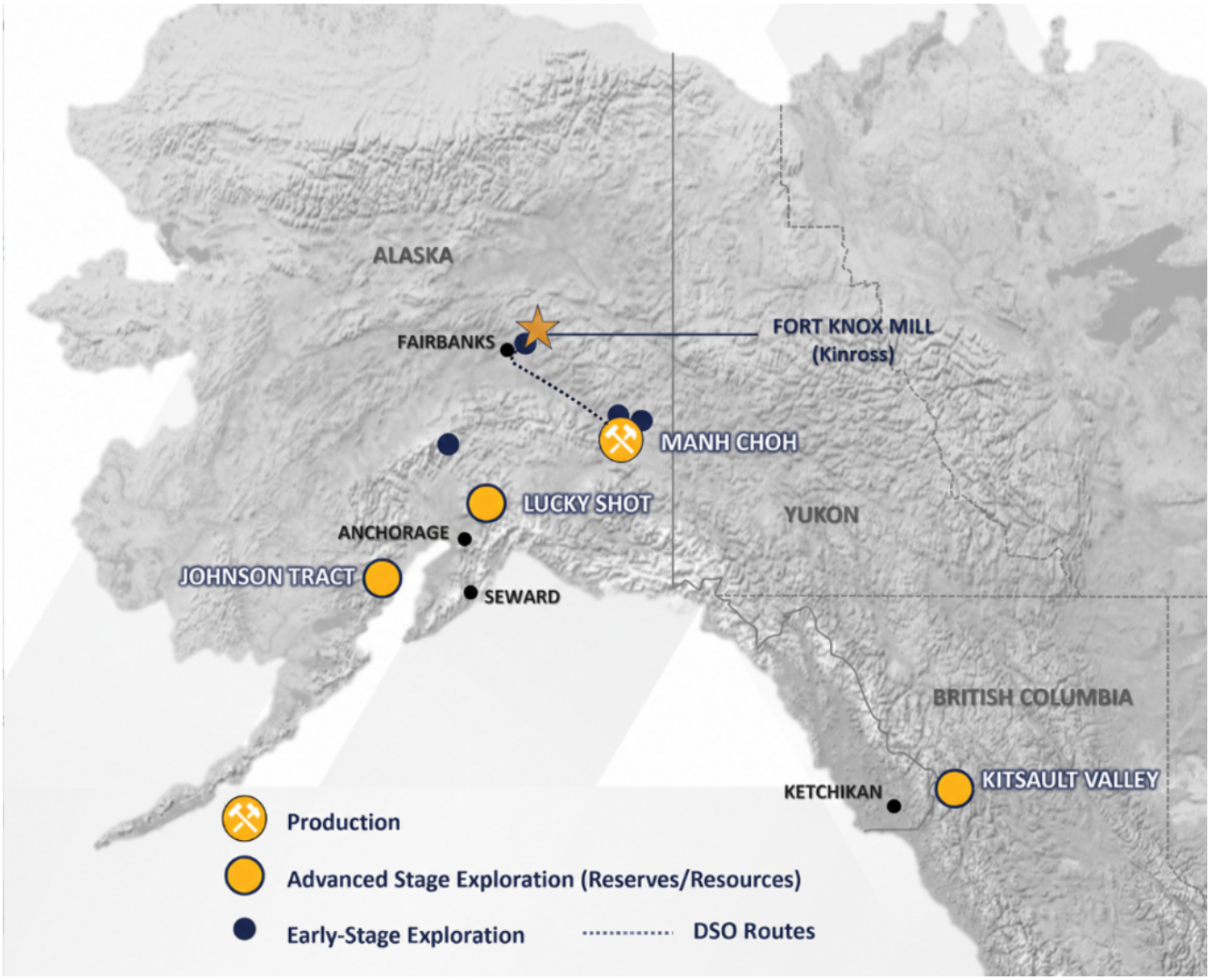
Johnson Tract. At Johnson Tract, southwest of Anchorage on CIRI lands near tidewater, the focus is advancing a gold, silver, copper, zinc, and lead project through the field work and permitting needed for further evaluation. During 2026, crews completed the road and bridge connections from camp to the proposed underground portal site, the portal pad, and associated surface preparations. Geotechnical drilling for the proposed coastal access road and barge landing was completed, while environmental and cultural baseline studies were substantially completed by early September. Federal permitting for the surface infrastructure is being coordinated through FAST-41. The presentation will connect these accomplishments with the project's published Initial Assessment and explain the roles of access, underground exploration preparations, and baseline information in the development pathway. Looking ahead, the publicly described work includes continued permitting and engineering preparations for a substantial camp expansion in 2027.

Kitsault Valley and the Dolly Varden merger. The March 2026 merger with Dolly Varden Silver added Kitsault Valley in British Columbia's Golden Triangle to Contango's portfolio. The updated mineral resource estimate (MRE), released September 22 and effective September 11, 2026, covers the Dolly Varden and Homestake deposit areas. It incorporates revised geological models and drilling completed through 2025, with a substantial increase in Indicated silver-equivalent (AgEq) resources. Key highlights are:

- Indicated: 89.55 million oz AgEq in 7.66 million tonnes at 363 g/t AgEq, a 93.1% increase in contained AgEq over the previous estimate.
- Inferred: 64.92 million oz AgEq in 6.31 million tonnes at 320 g/t AgEq.

The MRE excludes 2026 drilling, which had exceeded 50,000 meters by the release date. A further resource update incorporating those results is planned for the first half of 2027, followed by an S-K 1300 Initial Assessment later in 2027. AgEq reflects the published metal-price and recovery assumptions; mineral resources are not mineral reserves.

References: Contango news releases dated March 26, September 8, September 22, and October 6, 2026 (contangoore.com).



Valhalla Metals Update – Progress at Sun and Smucker Properties

Brett Tobin, Bonnie Broman, Valhalla Metals

The Sun and Smucker deposits occur on the eastern- and western-most ends, respectively, of the highly prospective Ambler District and are characterized as volcanogenic massive sulfide (VMS) deposits containing high grade copper, lead, zinc, silver and gold mineralization. Over 50 years ago mineralization was discovered on these properties and since that time these projects have gone through several periods of intense exploration followed by periods of dormancy – the most recent being Valhalla Metals Inc. acquiring Sun in 2018 and Smucker in 2026. On a worldwide comparison basis, these properties rank in the second quartile for size and the second quartile for metal value.

Historically, 96 holes (19,123m) have been drilled into the Sun deposit to define a Canadian NI 43-101 compliant indicated resource of 1.71 million tonnes (Mt) grading **4.32% Zn, 1.48% Cu, 1.11% Pb, 60.0 g/t Ag, and 0.21 g/t Au (4.09% CuEq)**; and an Inferred resource grading **9.02 Mt of 4.18% Zn, 1.21% Cu, 1.46% Pb, 81.7 g/t Ag, and 0.25 g/t Au (4.10% CuEq)*.** Ten additional holes (2,895m) have been drilled by Valhalla, which have not yet been included in any resource update. Prior to exploration by Valhalla, drilling had not been extended beyond ~200m below surface within the Main Sun deposit, offering the potential to upgrade and increase the overall size of Sun downdip and along strike. Mineralization at Sun is hosted by at least two polymetallic massive and semi-massive sulfide horizons containing primarily pyrite, sphalerite, chalcopyrite, galena, and tetrahedrite-tennantite with other accessory sulfide minerals.

At Smucker property, 40 holes (7,959m) have been drilled and has a historic resource estimate of 11.8Mt (1981) with **6.6% CuEq** historic resource grade highlighted by **6.0m at 9.48% CuEq and 10.36m at 4.12% CuEq****. Smucker mineralization is also believed to occur in two stratigraphic horizons as massive and semi-massive sulfides containing chalcopyrite, sphalerite, galena, tetrahedrite-tennantite, arsenopyrite, and minor pyrite and pyrrhotite.

With continual progress of the Ambler Mining District Industrial Access Project (AMDIAP), Valhalla intends to continue the advancement of both Sun and Smucker projects. At Sun, Valhalla intends to confirm, upgrade and expand the current resource by continuation of exploration and resource drilling along strike and down dip. Additionally, a 2022 Versatile Time Domain Electromagnetic (VTEM) survey has identified three other anomalies that present similarly to the Main Sun deposit that warrant additional exploration efforts. At Smucker, Valhalla intends to establish a 24-man camp local to the property and commence exploration drilling to confirm historic results and expand the resource based of the findings of a VTEM and Z-Axis Tipper Electromagnetic (ZTEM) surveys.

*The following metal prices were used to calculate CuEq: copper - $3.00/lb; zinc - $1.10/lb; lead - $1.00/lb; silver - $18/oz; and gold - $1,300/oz

**THE SMUCKER HISTORIC RESOURCE HAS NOT VERIFIED BY A QUALIFIED PERSON THEREFORE IS NOT NI 43-101 COMPLIANT AND SHOULD NOT BE RELIED UPON. SEE www.valhallametals.com FOR FULL CAUTIONARY NOTES

The Whistler Au-Cu Project – A Robust PEA with Exploration Upside

Tim Smith, P.Geo., U.S. GoldMining Inc.
Imola Gotz, P.Eng., U.S. GoldMining Inc.

U.S. GoldMining Inc.'s 100% owned Whistler gold-copper exploration project ("Whistler project", or "Whistler") is located in the Yentna Mining District of south central Alaska, approximately 100 miles northwest of Anchorage. The Whistler project comprises 377 State of Alaska mining claims covering an aggregate area of approximately 53,700 acres (217.5 square kilometers). A State of Alaska 'Roads to Resources' initiative, the proposed 'West Susitna Access Road', is expected to connect Whistler with existing highway, rail, power and port infrastructure in the region of Anchorage.

Whistler was first explored by Cominco from 1986-1989, and then by Kennecott, Geoinformatics and Kiska Metals Corporation from 2004-2011, producing a combined total of 257 diamond core drill holes for 70,247 meters. GoldMining Inc. acquired the Whistler project in 2015, subsequently creating subsidiary U.S. GoldMining Inc. in 2022 which completed a successful IPO in April 2023, listing on the Nasdaq (ticker: USGO) and raising US$20M to recommence exploration at Whistler for the first time since 2011.

Exploration drilling has to date delineated three gold+copper+silver mineral deposits: the Whistler deposit, the Raintree West deposit and the Island Mountain deposit. These mineral deposits share similar styles of alteration, mineralization, veining and cross-cutting relationships, including cores of potassic alteration with A- and B-type quartz vein stockwork and chalcopyrite-pyrite mineralization, and peripheral phyllic alteration zones. The Whistler Project (combining all three deposits) hosts estimated indicated mineral resources[1] of 299.2 Mt grading 0.41 g/t Au, 0.15% Cu and 1.9 g/t Ag (0.56 g/t AuEq) containing 5.41 Moz AuEq, and estimated inferred mineral resources of 290.7 Mt grading 0.47 g/t Au, 0.06% Cu and 1.6 g/t Ag (0.54 g/t AuEq) containing 4.97 Moz AuEq[1]. The Whistler-Raintree and Island Mountain mineral systems are interpreted to represent classic porphyry clusters, with multiple additional porphyry prospects and targets interpreted as defined by magnetic + chargeability highs, surface geochemistry, alteration, veining, and historic drilling.

In early 2026 U.S. GoldMining Inc announced the results of the first initial economic assessment[1] (or Preliminary Economic Assessment ("PEA")) completed on Whistler, with estimated after-tax net present value at 5% discount rate ("$NPV_{5\%}$") of $2.04B, an internal rate of return ("IRR") of 33.0% and initial payback of 2.1 years, utilizing base case prices of $3,200/oz Au, $4.50/lb Cu, and $37.50/oz Ag. The PEA comprises an open-pit truck-and-shovel operation at a 14.6 year life of mine ("LOM") strip ratio of 2.2 : 1, and with conventional processing methods operating at a nominal throughput rate of 40,000 tonnes per day ("tpd") which comprises a flotation and leach circuit recovering 88.9% gold and 77.8% copper. Average annual production is estimated at 345,000oz gold equivalent ("AuEq") per year estimated during the first three years of operations and total LOM production of 3.6Moz AuEq, comprised of 2.6Moz gold, 6.9Moz silver, and 592Mlbs copper. Estimated All-In

Sustaining Costs ("AISC") is $1,046/oz Au (by-product basis) and initial capital cost is estimated at $1.28B.

The PEA was inclusive of only the Whistler deposit; thus U.S. GoldMining Inc. views the PEA as a base case, with potential upside from the inclusion of the Raintree and Island Mountain deposits in future iterations of the proposed mine plan, along with the district scale exploration opportunity which provides potential for additional future discoveries.

[1]For further information regarding the Whistler Project, including the mineral resource estimate and PEA, see the technical report summary titled “Whistler Gold-Copper Project, S-K 1300 Technical Report Summary and Initial Assessment with Economic Analysis, Alaska, United States of America” (the “S-K 1300 Report”) prepared under subpart 1300 of Regulation S-K under the U.S. Securities Act of 1933 (“S-K 1300”) and the Canadian National Instrument 43-101 (“NI 43-101”) technical report titled “Whistler Gold-Copper Project, NI 43-101 Technical Report and Preliminary Economic Assessment”, each dated effective March 2, 2026. The S-K 1300 Report is available under the Company’s profile at www.sec.gov and the NI 43-101 Report is available under its profile at www.sedarplus.ca.

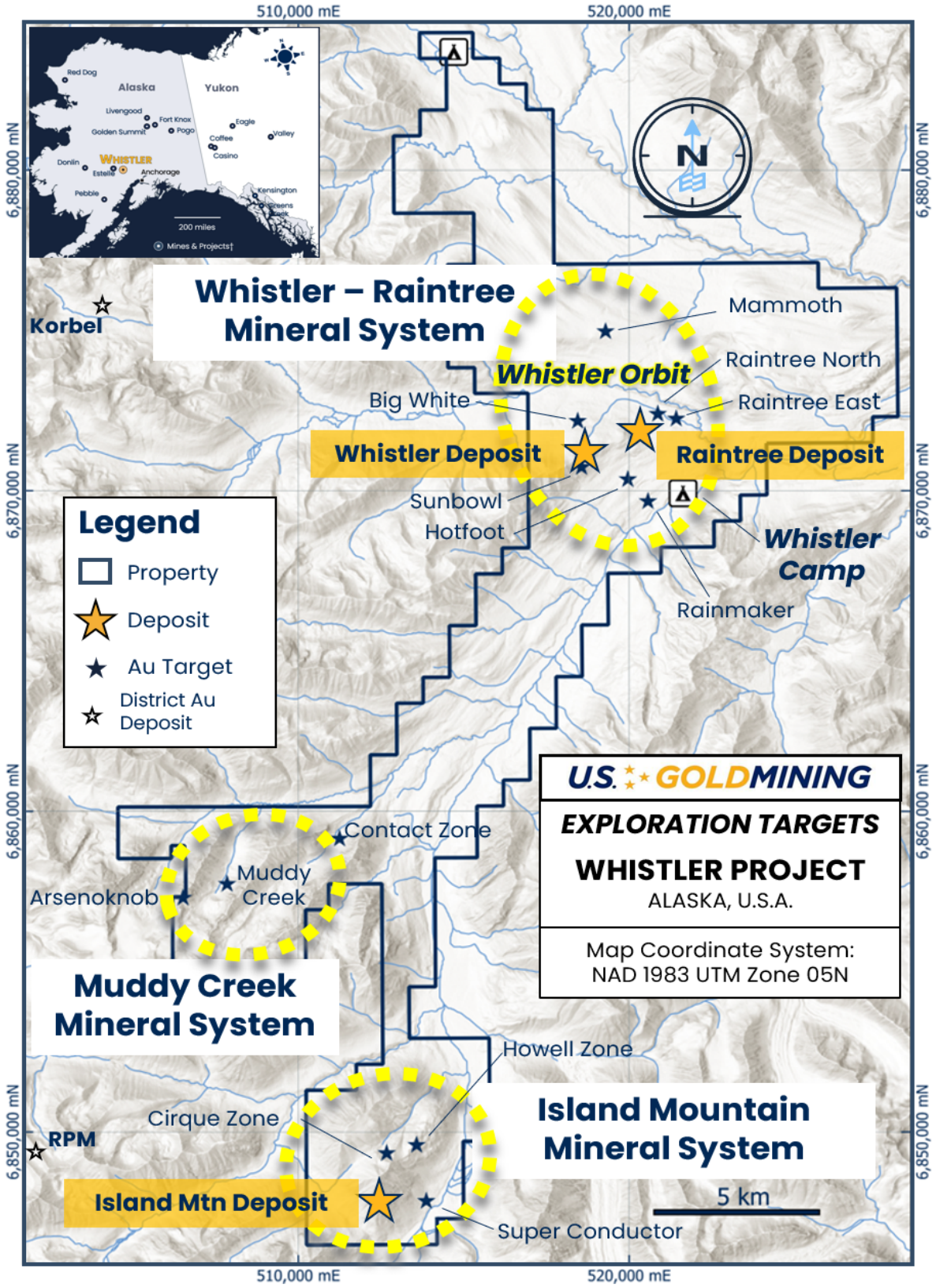


Figure 1. Whistler Project – claims boundary, deposits and exploration targets.

Red Dog Mine Life Extension

Kyle Moselle, Teck American Inc.

This presentation will provide an overview of the proposed Red Dog Mine Life Extension Project. The current stage of coordinated federal permitting under the FAST-41 Program will be discussed. Project priorities for 2027 will also be presented.

REMOTE ALASKA MINE ACCESS

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Engineering Remote Mine Access Roads in Alaska: Challenges, Innovations, and Lessons Learned

Dustin Hannafious, HDR

Designing and constructing access roads to remote mining projects in Alaska presents unique engineering, environmental, logistical, and economic challenges. Limited infrastructure, extreme climate, permafrost, complex terrain, short construction seasons, and difficult material logistics can significantly affect alignment, embankment design, drainage, construction methods, and long-term maintenance.

This presentation will examine key considerations for planning, designing, and constructing remote mine access roads, including route selection, geotechnical characterization, permafrost and frost-susceptible soils, borrow-material availability, embankment design, water management, and stream crossings. Practical examples will highlight how early geotechnical investigation, constructability planning, material balance, and effective drainage design can reduce construction risk and life-cycle costs. The presentation will also discuss lessons learned from working in remote Alaska environments and strategies for developing durable, cost-effective road infrastructure that supports reliable mine operations.

From a Line on a Map to a New Road: Geotechnical Aspects of Remote Mine Access Development in Alaska

Peppi Bolz, PE, CPG, Recon LLC
Steve Rowland, PE, RECON LLC

There are about 17,000 miles of public roads in Alaska. Most of the state is only accessible by water or air. Prospects in Alaska are commonly in remote areas without access to existing infrastructure. The cost of design, permitting, and construction of new roads and/or airports has an enormous impact on the economic feasibility of a project. This talk addresses the geotechnical aspects of new infrastructure development in remote Alaska.

The design process for a new road from a geotechnical perspective includes desktop studies, developing a preliminary alignment, boots on the ground fieldwork, and geotechnical drilling. All these steps are iterative and performed in parallel with permitting, H&H, cultural resources, and design. The route is continuously adjusted based on new information from any of the parties involved. The geotechnical studies evaluate terrain units, potential geohazards, existing subsurface conditions, and potential material sources. Geotechnical exploration advances from reconnaissance level to more specific geotechnical studies for bridge foundations or material sites, etc.

Geotechnical studies for a new road in Alaska typically take several years to complete. Requirements for geotechnical exploration depend on the route, terrain units, accessibility, and the design requirements. Features such as large cuts, fills, bridge structures or large culvert locations will require more in-depth geotechnical studies.

The purpose of the geotechnical studies is to provide sufficient information for the permitting process, the economic feasibility of the project, costing & budgeting, and for developing a road design for bidding and construction. Common challenges for geotechnical studies include limited available previous information, accessibility, drill rig limitations, land access permissions and restrictions, terrain, and iterative adjustments based on studies by other parties (e.g., cultural resources, wetlands, etc.).

This talk presents a typical geotechnical study workflow for a hypothetical remote mine access scenario in the Kuskokwim Mountains.

Hydrologic and Hydraulic Analyses for Remote Road Infrastructure in Alaska

Kelsey Stockert, HDR

Resource development often depends on access roads that cross rivers, streams, wetlands, and other flood-prone areas. In Alaska, these crossings must be designed under challenging conditions characterized by remote locations, extreme climate and seasonality, and limited data. Bridge and culvert designs rely on hydrologic and hydraulic (H&H) studies to provide the foundation for evaluating flooding, ice, erosion, and channel stability. Road access is an essential link for a mining project, and inadequate H&H design can place these projects at risk.

This presentation is a high-level overview of an H&H study's workflow, from project initiation through final design. This includes geomorphic evaluations of the crossing to assess channel stability and floodplain processes; statistical analyses to estimate design flood flows, including consideration of climate change impacts; and the hydraulic modeling used to evaluate flooding, erosion, and scour risks.

An example study, including field investigations and the various analyses, will be presented with an emphasis on the logistical challenges of working in remote Alaska. In these settings, engineering judgment, local knowledge, and site-specific conditions play an important role in developing appropriate and effective designs. The presentation also explores common challenges encountered throughout project development.

The findings demonstrate the importance of integrating H&H studies early in project planning and design. These approaches support the development of transportation infrastructure that is built to withstand flooding and other hydraulic hazards in Alaska's remote environments.

Want to Build a Mine in Alaska? Consider Cultural Resources – Early

Randy Tedor, SRB&A

Cultural resources, and the regulatory compliance requirements that address cultural resources, are a small but integral component of any mining endeavor. Taking these requirements into consideration, particularly in the early stages of mine planning, significantly increases the potential for unnecessary (and often costly) project delays and adversity. Using a hypothetical scenario based on real-world conditions, this presentation will provide an overview of the unique aspects and challenges associated with performing cultural resource compliance work for the initial development of a remote mining operation in southwest Alaska. It will focus on discussing critical planning considerations including consultation, the seasonality of cultural resource work, landownership and independent cultural resource permitting, logistical preparations and arrangements, the methods and challenges of conducting cultural resource fieldwork, and post-field reporting and potential curation obligations. The goal of this presentation is to convey the importance of considering cultural resources, and consulting a cultural resource specialist, in the earliest phases of all mine planning.

Permitting – Don’t Leave It to The End

Jennifer Murrell, Senior Permitting Coordinator, Donlin Gold LLC

A conceptual overview of how integrating permitting into the various phases of the design process can save you time and money, especially on remote projects.

MINES AND ADVANCED PROJECTS

...

From Three Weeks to Next Day: How Kinross Fort Knox and the University of Alaska Fairbanks Brought Cyanide Data Home

Muradur Rashedin, Senior Environmental Engineer, Kinross Alaska – Fairbanks Gold Mining Inc.

Cyanide concentrations in Fort Knox water shift between winter and summer operations and also change with ore processing types, so conditions in the detox circuit and three reverse osmosis (RO) water treatment units can change quickly. To respond in time, operators need current cyanide results every day. The in-house lab at Fort Knox supports many production priorities with limited staff and, like most mine-site labs, operates in a dusty environment where maintaining lab hygiene is often challenging. Out-of-state commercial labs process high sample volumes, so time-sensitive samples wait in the queue, and weather and logistics disruptions sometimes delay shipping. Getting results from commercial labs takes three weeks on average. By then, process conditions have already changed, so the data describe past conditions instead of guiding the next action.

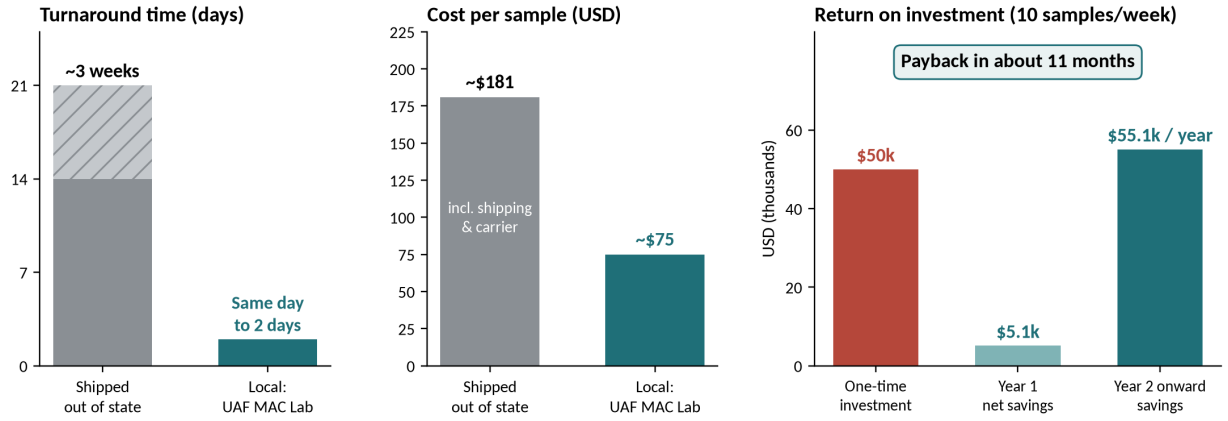
To address this gap, Kinross Fort Knox partnered with the University of Alaska Fairbanks (UAF) Institute of Northern Engineering (INE) Materials Analysis Center (MAC) Lab. Kinross funded a $49,990 cyanide analyzer (FS3700) that measures free, WAD and total cyanide. The INE MAC Lab operates and maintains the analyzer and covers the cost of supplies, while Fort Knox pays per sample. Results are now available the same day or within 48 hours, at about $75 per sample compared to about $181 previously, including shipping and carrier costs. At 10 samples per week, the analyzer is expected to pay for itself in about 11 months (Figure 1).

This presentation introduces the operational lab as a middle option between the in-house lab and the out-of-state commercial lab, designed to overcome the limits of both. Commercial labs continue to provide certified results for permits and regulatory reporting, while the operational lab shows what is happening in the process now. As a research lab, the INE MAC Lab does not seek certification, so that it does not compete with commercial laboratories. However, it follows nearly the same quality control steps as standard methods, including calibration, duplicates, spiked samples and blanks. Beyond cyanide, the INE MAC Lab offers cations by ICP-MS and microwave plasma atomic emission spectroscopy (MP-AES), anions by ion chromatography, organics by gas chromatography and HPLC-MS, total carbon and nitrogen, total and methyl mercury, and sample preparation such as acid digestion and extraction.

Faster results support better operational decisions. Detox problems can be identified and corrected within a day, the performance of each RO unit can be checked with measured data, and a wider margin can be kept below the 50 ppb WAD cyanide permit limit. INE MAC Lab WAD cyanide results can also be used to calibrate the in-house lab.

The partnership also benefits UAF and Alaska. UAF gains a new instrument, steady sample work, and revenue that helps sustain INE MAC Lab operations, while Alaska gains additional in-state analytical capacity. The presentation will cover the business case, the questions raised during the donation review, and lessons that may help other Alaska operators develop similar university partnerships.

Figure 1. Turnaround time, cost per sample, and return on investment: shipping samples out of state vs. local analysis at the UAF INE MAC Lab



Building Toward a Bright Future

Ethan Trickey, Senior Mining Engineer, P.E., Usibelli Coal Mine

Since 1943, Usibelli Coal Mine has been a cornerstone of Alaska's coal industry, supplying 100% of the state's in-state coal demand.

To prepare for moving its 4.2-million-pound *Ace in the Hole* dragline nearly 11 miles to the Jumbo Dome mine, Usibelli began upgrading its mine haul road six years ago and completed a nine-mile power line two years ago.

This presentation will explore the engineering behind these major infrastructure projects and the innovative strategies planned to move the massive dragline to Jumbo Dome. It will also examine how the dragline will improve mining efficiency at Jumbo Dome, which is expected to serve as Usibelli's primary mining operation for decades to come.

Silt Reduction: Underground Pretreatment and Hydraulic Solids Management at the Kensington Mine

Benjamin Holtz, Project Manager, Coeur Mining, Inc.

The Coeur Alaska Kensington mine, an underground gold mining operation located 45 miles north-northwest of Juneau, Alaska, treats more than one billion gallons of groundwater inflow annually. As groundwater flows through active mine workings, it mobilizes fine-grained rock particles as silt generated from development and production activities, depositing more than 25,000 tons of silt material every year, most entering the site's surface water treatment. Not only does this material require substantial operational effort to dredge, decant, and backhaul, the high silt content slows down the water treatment process.

To address these issues, Coeur Alaska constructed a pretreatment clarifier underground to remove the silt from the mine water stream before it reports to the surface treatment plant. The clarifier will concentrate the silt into a slurry stream and pump it into mined-out underground voids for permanent containment while the clarified water continues on to the surface treatment facility. While challenging to design, placing the clarifier underground provides several advantages over a surface-based facility. Pumping the slurry replaces a year-round backhaul campaign with a pump and pipeline. The clarifier is in the final phase of construction and is expected to be online by the end of the year. Once in operation, the clarifier is expected to remove more than 90% of the silt material.

While managing silt in mine dewatering is not a unique challenge in mining, the amount of sediment generated in the mine water stream at Kensington is unique. The silt reduction project is a novel approach to solving this unique challenge. This presentation explores the development, design, and implementation of this novel solution.

Leading Through Systems: Red Dog's Management Operating System Journey

Chris Van Arsdale, Superintendent, Improvement
Teck Alaska, Red Dog

Red Dog Operations has been on a journey to implement a Management Operating System (MOS) that enables the reliable delivery of business objectives through disciplined processes, clear accountability, and aligned leadership behaviors. Grounded in the Plan-Do-Check-Act cycle, MOS provides the structure needed to set planning and execution teams up for success and enable effective decision-making at the appropriate levels. The system is designed to support the safe, reliable production of high-quality metal products that meet customer expectations while creating a culture focused on safe performance, continuous improvement, and sustained results.

This presentation explores the foundational principles of an effective operating system, key lessons learned during implementation, approaches for engaging and managing the organization through the change, and insights into sustaining the system to ensure lasting performance improvements and business results

Engineering and Execution of the Pogo Mine Underground Ore Bin Remediation

Zachary McLeay, Operations Manager
Northern Star Resources Limited

Located in interior Alaska, the Pogo Underground Gold Mine commenced commercial production in 2006, the same year the mine's underground ore bin was commissioned. The bin receives and conveys all ore upstream of the process plant and is therefore a critical component of the mine's production system.

Constructed in geotechnically challenging ground conditions, the ore bin had experienced progressive deterioration that was managed through operational controls which, although effective, constrained mine performance. Risk management of the asset was further complicated by multiple and evolving potential failure modes each of uncertain consequence and likelihood.

The principal engineering challenge of this project was developing a safe methodology to access the interior of the bin and execute a long-term remediation solution. This paper presents the approach to risk management, the development of engineering solutions, the access and remediation methodology, the final outcomes and the lessons learned through delivery of this technically challenging project.

Key learning objectives (3–5):

- Understanding the key technical and operational risks associated with remediating a deteriorated underground infrastructure asset while maintaining mine production
- Understanding the methodology used to assess and manage uncertain or difficult-to-observe failure modes within existing ore-bin infrastructure
- Determining a solution to allow safe established ground support techniques in a novel application inside an ore bin
- Identifying practical considerations for planning and executing a time-critical remediation project where access, safety, constructability, and production constraints interact.
- Balancing conflicting priorities between optimizing production downtime & the longevity of the remediated asset

TRACK THREE
THE REST OF THE STORY
...

Representing Discontinuous, Degrading Permafrost in Groundwater Models for Mine Remediation: Lessons from a Historical Gold Mine Project in central Yukon

Eric Tharumalingam, MASc, P.Eng; Amir Niazi, Ph.D, P.Eng; Thomas Chung, M.Sc, P.Geo; Jessie Chao, Ph.D, P.Geo.
Ensero Solutions US, Inc.

At a confidential historical gold mine in central Yukon, remediation planning requires long-term predictions of seepage from tailings relocated into a Pit Containment Structure (PCS). Discontinuous permafrost, which underlies 50-90% of the site, is the dominant hydraulic control but is highly variable and increasingly degraded by historical mining and climate warming. Conventional binary frozen/unfrozen representations could not capture this variability. To address this, a terrain-based permafrost likelihood model (built from LiDAR, boreholes, ground temperatures, and geophysics) was translated into a continuous, calibratable hydraulic conductivity reduction function within a regional finite-element flow and transport model. Ensemble calibration (PEST-IES) against 65 monitoring wells and nine baseflow stations achieved an R^2 of 0.995 and NRMSE of 2%, indicating that the integrated groundwater model, including the permafrost conductivity-reduction formulation, could reliably reproduce observed heads and baseflow under present-day conditions.

Contaminant migration from the PCS was assessed using mass transport transfer functions under a range of seepage rates, for both post-remediation (2033) conditions and a 2100 scenario assuming complete permafrost degradation and increased recharge. Simulations predict that seepage follows preferential groundwater pathways to the receiving creek, with concentrations at least three orders of magnitude below source and limited connectivity to adjacent creeks. Under the fully degraded permafrost scenario, the dominant transport pathway remained unchanged, while receptor concentrations were similar or lower due to increased groundwater flux and dilution. Transient runs showed peak concentrations require over two centuries to develop, confirming steady-state results as conservative.

For practitioners working in subarctic environments, this study provides a transferable framework for supporting closure planning at sites where permafrost serves as a hydraulic control. It demonstrates how climate-driven change and permafrost degradation can be incorporated into long-term performance assessments.

Predicting Effective Stress in Gas-Injected Coal Seam Using Ultrasonic Coda Waves and Machine Learning for Safer Mining and Subsurface Gas Operations

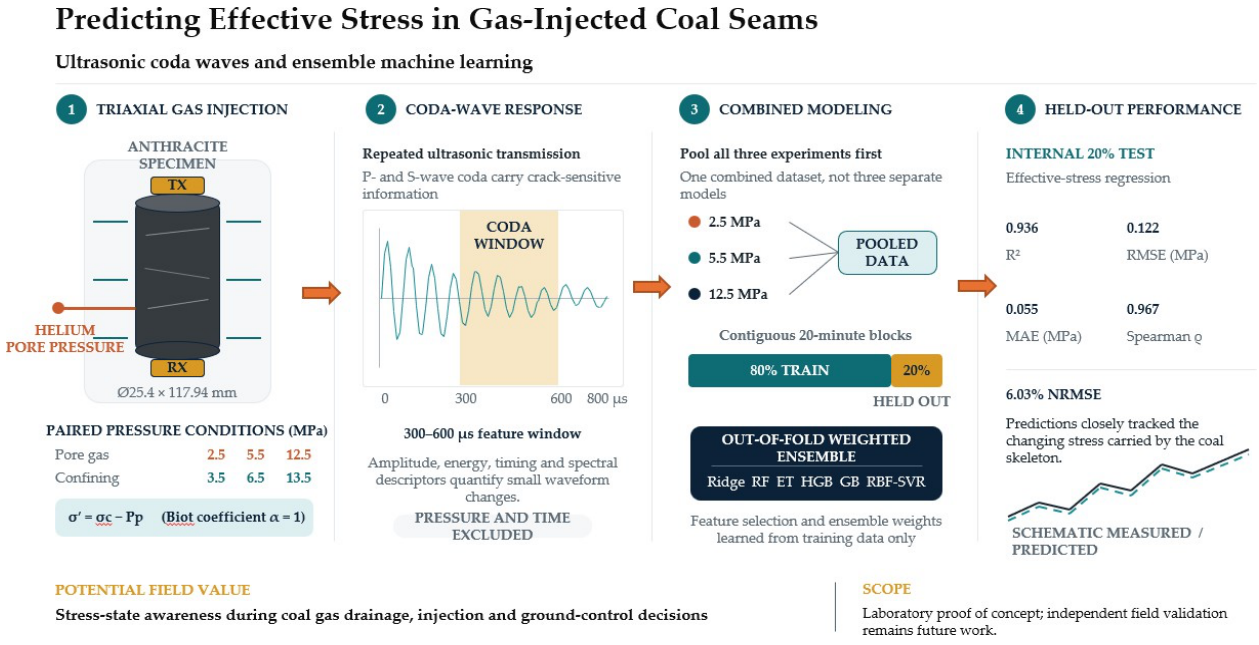
Gilbert Yaw Bimpong[1] and Long Fan[1]
[1]Department of Mining and Mineral Engineering, University of Alaska Fairbanks, Fairbanks, AK, USA

Effective stress governs coal deformation, fracture response, permeability, and the stability of gas-bearing mine strata, yet continuous assessment remains difficult. This study develops a laboratory-scale, non-destructive framework for predicting effective stress in gas-injected coal by integrating ultrasonic coda-wave measurements with ensemble machine learning. We assessed whether stress-sensitive information contained in scattered ultrasonic wavefields could be converted into quantitative estimates that could support safer ground-control and subsurface gas-management decisions. Unlike direct arrivals, which sample the fastest propagation path, coda waves repeatedly interact with pores, fractures, and grain boundaries and are therefore sensitive to distributed microstructural change. This sensitivity is valuable in coal, where gas pressure can change fracture aperture and stiffness before visible deformation or instability develops. The framework treats the ultrasonic response as a geomechanical sensor, rather than solely as a velocity measurement during gas injection.

Experiments were conducted on an anthracite coal cylinder subjected to controlled helium injection at nominal pore pressures of 2.5, 5.5, and 12.5 MPa under corresponding triaxial confinement. We calculated the effective confining stress as total confinement minus the measured upstream pore pressure, assuming a Biot coefficient of unity. Repeated P- and S-wave traces were acquired throughout pressure evolution and reinjection. Coda-wave features described relative velocity variation, waveform correlation, amplitude, energy, spectral content, entropy, envelope behavior, and signal variability. The three datasets were combined and partitioned using contiguous 20-minute blocks, with approximately 80% used for model development and 20% retained as a locked internal test set. Blocking reduced leakage between temporally adjacent observations. Feature screening, stability selection, correlation pruning, hyperparameter optimization, and ensemble weighting used only the training data. Ridge, random forest, extra-trees, histogram-gradient-boosting, gradient-boosting, and radial-basis-function support-vector regressors were evaluated. Grouped out-of-fold predictions

were combined through a non-negative weighted ensemble selected before test-set evaluation.

The ensemble explained 93.63% of held-out effective-stress variation, with an RMSE of 0.122 MPa, MAE of 0.055 MPa, normalized RMSE of 6.03%, bias of -0.024 MPa, and Spearman correlation of 0.967. It substantially outperformed the dummy-median baseline, with an RMSE of 0.487 MPa and negative R^2. Results demonstrate that coda waves contain measurable signatures of gas-driven effective-stress evolution under laboratory conditions. This internally evaluated proof of concept provides a foundation for non-invasive stress surveillance around gas-drainage zones, underground coal workings, coalbed-methane systems, and subsurface gas-storage operations. Future work should test independent specimens, gas types, stress paths, sensor configurations, and mine-scale conditions to establish transferability, uncertainty, and operational reliability under realistic operational noise.



Bituminous Geomembrane for Mine Waste in Extreme Climates

Preston Kendall – IKO Coletanche USA

Mines are often located in challenging environments accompanied with strong environmental protection requirements. One of the important environmental tasks at a mine is fluid containment, often fulfilled by geomembranes. This containment role can include wastewater, tailings, process water, and encapsulation of solid waste. The presentation will introduce geomembranes as a containment technology with a broad context of civil engineering materials. Among the many geomembranes types, a reinforced Bituminous Geomembrane (BGM) is one of the thickest and heaviest. BGMs represent an alternative lining technology that combines a reinforced geotextile structure with an elastomeric bituminous binder. The resulting composite material exhibits mechanical properties fundamentally different from polymer-based liners, including higher mass per unit area, lower thermal expansion coefficients, greater conformability to irregular surfaces, and tolerance to installation under a wider range of environmental conditions. These characteristics can reduce design uncertainty, simplify construction logistics, and potentially lower total project costs when evaluated on a whole-of-facility basis rather than material cost alone. These properties as well as others, are useful for particularly harsh mining environments such as extreme cold, extreme wind, and extreme UV conditions. This talk will explore how the properties of a BGM are put to use on three difference remote mining sites located within extreme climate conditions. The projects include a diamond mine in Canada's Arctic permafrost region, a remote lithium tailings storage facility in Western Australia, and a trona mine wastewater pond in Wyoming, USA. These examples illustrate how the unique properties of BGM can address specific engineering challenges while reducing project risk and construction complexity.

Digitizing the State of Alaska's Geologic Sample Library

Dr. Amber Zandanel, Alaska DNR Division of Geological & Geophysical Surveys

The Geologic Materials Center (GMC) in Anchorage houses Alaska's largest archive of geologic samples, including hundreds of thousands of feet of drill core and rock materials well as written records of prospect and sample histories. This archive is searchable through the collection's inventory and accessible for viewing by request at the GMC in Anchorage. As this archive is reliant on donations, however, metadata such as drill logs and mineralogical information over borehole depth is not consistently represented across the collection of >130,000 m of drill core stored at the GMC.

To address this issue, the GMC has begun a major digitization effort centered on hyperspectral imaging of thousands of meters of core. The hyperspectral scanner installed at the GMC includes visible and near-infrared (VNIR), short-wave infrared (SWIR), mid-wave infrared (MWIR), and long-wave infrared (LWIR), as well as RGB (digital photo) imaging and a laser profiler. This analytical suite results in high-resolution, digitally accessible images of the core curated at the GMC, as well as mineralogical information discriminating clays, carbonates, sulfates, phosphates, amphiboles, iron oxides, and feldspars, including other mineral species, rare earth elements, and hydrocarbons. Hand-held XRF data are additionally collected for specific cores of interest to validate mineral interpretation workflows.

The resulting dataset bridges gaps between existing sample characterizations, such as geochemical analyses and lithologic logs, creating an internally consistent and digitally accessible record of the State of Alaska's geologic sample library. The near-term focus for this program is establishing an in-house workflow and making results accessible through the GMC inventory website, as well as outreach to gauge interest in providing a framework for scanning services to the public. This presentation will focus on contextualizing some of the initial results of the scanning program to Alaska geology, including copper porphyry systems and potential lithium deposits, and how the results of this program can contribute to scalable regional geologic models and exploration efforts.

What Happens to Freight Cost After Anchorage

Christine Hopkins, President and CEO, Advanced Supply Chain International (ASCI), Anchorage, Alaska

We once bid a contract that included delivering supplies to remote locations across Alaska. We got the cost of getting goods to Tacoma right. We got the cost of moving them into and through Alaska wrong, and we took a loss on the contract.

The floor kept resetting. Rates never came down or leveled off, and they rose faster than we had planned. Much of the increase came in through surcharges and fees buried in the bills. When our customer asked why costs had climbed so steeply, we could not fully explain it.

That is why we built the Alaska Logistics Cost Index. Advanced Supply Chain International (ASCI) went back through its own freight bills to learn what moving goods into and across Alaska actually costs. The Index now covers nearly 2,000 invoices from 2023 through mid-2026, across ocean, truck, LTL, air cargo, parcel, and barge. It includes deliveries over road, marine, and air-only routes to places like Kodiak, Sitka, Cordova, and Southeast Alaska communities.

The data shows a reset, not a spike. Alaska freight cost now sits in two layers. The bottom layer is structural and is not coming back down. The Port of Alaska per-ton cargo fee went from $0.59 in 2024 to $8.05 in 2026, and carrier base rates have stacked up year over year. The top layer is fuel. Diesel-linked surcharges reversed hard in 2026 and at times made up more than half of the trucking cost on an invoice. Fuel will ease, but at least one major carrier has already folded part of its fuel surcharge into base rates. Some of today's fuel cost becomes tomorrow's floor.

The second leg is where cost multiplies. For a remote hub like Utqiagvik, the last leg out of Anchorage can cost about as much as the whole trip up from the Lower 48. Anyone supplying a site past the end of the road, on a barge schedule, or behind air-only access is pricing into that, including most of Alaska mining. This session covers what we got wrong, what the invoices showed, and how to find the costs hiding in your own freight bills. Attendees will leave able to separate the temporary from the permanent and build it into their numbers before the bid goes out, not after the invoices arrive.

Introducing NWCORE-CM: Building Alaska’s Critical Minerals Future Through Research, Workforce Development, and Industry Partnerships

Brent J Sheets, Director, Natural and Energy Resources Engineering Center (NEREC), part of the Institute of Northern Engineering (INE), at UAF

The Northwest Region Carbon Ore, Rare Earth, and Critical Minerals Program (NWCORE-CM) is a new (as of Oct 1, 2026), $10 million U.S. Department of Energy-funded initiative focused on advancing critical mineral development across Alaska, Washington, and Oregon. Led by UAF and a coalition of the geological surveys across all three states, industry partners, and stakeholders, NWCORE-CM seeks to strengthen domestic supply chains for critical minerals through resource assessment, applied research, technology development, workforce training, and industry engagement.

This presentation will introduce Alaska's mining community to the objectives, structure, and opportunities associated with NWCORE-CM. Attendees will learn how the project is working to identify and characterize critical mineral resources, develop mineral processing knowledge relevant for the region, and establish a regional Technology Innovation Center to support long-term growth of the sector within the region. The presentation will also highlight University capabilities, present results from ongoing research and collaborations, and provide an overview of how University academic and research programs are helping to prepare tomorrow’s workforce.

The NWCORE-CM program is designed not only to advance scientific understanding of critical mineral resources but also to help bridge gaps between research institutions and industry, accelerating the development of projects that can strengthen Alaska's economy as well as for the Pacific Northwest while contributing to U.S. critical mineral security.

Mapping Subsurface Geological Architecture with Airborne Natural Electromagnetic Fields

Alexander Prikhodko, Aamna Sirohey
Expert Geophysics Surveys Inc.

Exploration beneath surficial cover requires an understanding of the geological structures that control mineralization. In Alaska, rugged terrain, remote locations, and limited bedrock exposure make this architecture difficult to establish through surface mapping alone. Individual electromagnetic anomalies provide useful exploration leads, but their significance depends on their relationships to lithology, alteration, and deformation. This presentation examines how airborne natural-field electromagnetic data can be interpreted to investigate these relationships and develop geological targets.

The approach combines three components of airborne magnetic-field variation with two horizontal electric-field components recorded at a stationary reference site. Measurements over approximately 20 Hz to 20 kHz are used to derive rotationally invariant total-field electromagnetic responses. Broadband data are inverted to produce resistivity sections, depth slices, and three-dimensional representations of subsurface resistivity. Depending on ground conditions and data quality, the investigation extends from near-surface units to depths exceeding one kilometre.

Structural analysis traces correlated anomaly axes and resistivity gradients through successive depth slices and vertical sections. The resulting geoelectrical trends are examined for continuity, orientation, depth extent, offsets, and intersections, and can be integrated with magnetic and geological information. This workflow supports interpretation of possible faults, shear zones, lithological contacts, intrusive boundaries, folds, and conductive stratigraphic horizons.

Field examples from porphyry, volcanogenic massive sulphide, intrusion-related gold, and magmatic nickel–copper–cobalt exploration illustrate how the analysis identifies spatial relationships that are difficult to establish from individual anomaly maps. These include persistent bedrock trends beneath shallow cover, changes in structural orientation with depth, and intersections between contrasting resistivity domains. The examples show how conductive and resistive features can be evaluated within the surrounding geological architecture to inform target selection and follow-up investigations.

A key lesson is that anomaly strength alone provides an incomplete basis for assessing exploration significance. Geometry, continuity, depth persistence, and relationships to independently mapped features contribute to a more informed interpretation. Resistivity contrasts are non-unique, and their geological meaning must be assessed in the context of available evidence and the resolution of the inversion models.

The presentation demonstrates a workflow for translating airborne electromagnetic measurements into testable geological interpretations. It also discusses how survey geometry, inversion assumptions, and integration with independent datasets influence

confidence in the inferred structures and their use in planning ground investigations and drilling.

Beyond the Deliverable: Getting More Value from Your Mine's Engineering Data

Elliot Wilson, PE, Jay Byam, RESPEC

Engineering data can deliver value long after construction is complete. When infrastructure is damaged, operations change or experienced employees leave, access to reliable information can help a mine make safer decisions, reduce downtime and avoid unnecessary costs.

Mining operations rely on engineering consultants for expertise during permitting, construction and daily operations. Although consultants are often hired to produce specific deliverables, such as Issued for Construction (IFC) plans, the underlying data can remain valuable throughout the mine's life cycle. Thoughtful collection, preparation and storage make that information easier to retrieve and apply to repairs, infrastructure modifications, changes in use and assessments of remaining service life.

In this presentation, RESPEC's Elliot Wilson, PE, and Jay Byam will explore how mining operations can engage engineering consultants as long-term partners in creating and preserving useful data assets. The discussion will focus on three critical areas: field data collection, infrastructure design and data asset management.

Drawing on nearly 20 years of engineering experience with Interior Alaska mines, Wilson will bring practical context from his recent work supporting structural repairs to Kinross Fort Knox's overland conveyor and rebuilding Pogo Mine's underground ore bin. Byam will contribute his perspective as the founding developer of Kartorium, a data asset management tool.

Attendees will learn how to establish expectations for engineering information, preserve institutional knowledge through personnel turnover and make data accessible to the people responsible for operational decisions.

The presenters will also discuss preparing engineering data for future artificial intelligence applications. The emphasis will be on practical choices that extend the value of engineering investments throughout the life of a mine.

Bridge Solutions for the Mining Industry

Tom Johnstone, Spanweld Bridges

The mining industry increasingly operates in severe, off-grid environments where site access requires heavy-duty crossing solutions capable of supporting extreme axle loads. Project engineers and site managers face the complex challenge of balancing installation speed, structural reliability, cost, and stringent environmental regulations near sensitive waterways.

This presentation examines a real-world case study from Central Alaska, where a remote mining operation required multiple bridge crossings across challenging terrain, including braided glacial till rivers and remote creeks. Through this operational example, attendees will receive a technical and practical evaluation of primary bridging alternatives, including:

- **Safety and Structural Risks:** Evaluating the limitations and hazards of many traditional bridge models including timber bridges and crane mats.
- **Comparative Material & Design Analysis:** Weighing the trade-offs in structural integrity, span capability, and assembly logistics between timber truss, welded modular steel, and long-span steel truss bridges.
- **Economic & Operational Evaluation:** Comparative cost baselines, transport considerations, and reusability across multi-phase project lifecycles.
- **Site Preparation & Selection Framework:** A step-by-step practical checklist for site selection, bridge type selection, install issues, and possible environmental issues on various mining sites.

This technical session provides objective, data-informed guidance designed to help mining operators, logistics planners, and site engineers make optimal access decisions tailored to their specific geographical and regulatory constraints.

Permitting in Motion: NEPA Reform, Clean Water Act Jurisdiction, and Alaska Mine Approvals After Recent Legal Change

Andrea Driggs, Holland & Hart

Mining and energy-infrastructure projects in Alaska are being permitted in a legal environment where federal environmental review, wetlands jurisdiction, agency deference, and state coordination are all changing at once. This presentation will provide a practical permitting roadmap for project teams navigating the National Environmental Policy Act, Clean Water Act Sections 401, 402, and 404, Alaska's Application for Permits to Mine in Alaska process, reclamation approvals, and related land and water authorizations. The federal permitting baseline has shifted significantly since the Fiscal Responsibility Act amendments to NEPA, CEQ's rescission of its NEPA regulations, agency-specific NEPA rewrites, and the Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County*. Recent agency materials describe NEPA as a procedural statute that requires review of reasonably foreseeable environmental effects, alternatives, and irreversible commitments for major federal actions, while also emphasizing deadlines, page limits, lead-agency roles, and project sponsor-prepared environmental documents. *Seven County* has become central to permitting strategy because agency materials interpret it to require substantial deference to reasonable agency NEPA judgments and to limit review of future, geographically separate, or agency-uncontrolled projects. Clean Water Act permitting remains a parallel project driver. Section 404 requires authorization before dredged or fill material is discharged into waters of the United States, including wetlands, and EPA identifies mining projects as among the activities regulated under the program. The 2025 proposed WOTUS rule would implement Sackett by focusing federal jurisdiction on relatively permanent waters and wetlands with a continuous surface connection, which could materially affect wetlands delineation, mitigation planning, and Section 404 strategy for mine roads, pads, tailings facilities, and related infrastructure. For Alaska projects, federal requirements must be integrated with state-specific planning and reclamation obligations.

Reducing Environmental Impact Through Smarter Mine Road Stabilization

Royal Marty, CEO of Substrata

Mine haul roads and access roads require ongoing grading, aggregate replacement, dust control, and heavy equipment use, all of which contribute to operating costs and environmental impact. This presentation will examine enzyme soil stabilization as an alternative to traditional road stabilization and maintenance methods, comparing factors such as material requirements, maintenance frequency, dust, equipment use, and long-term road performance.

Attendees will learn the principles behind enzyme stabilization, where it may be appropriate, and key considerations when evaluating it for mining environments. Real-world applications will illustrate how different stabilization strategies can reduce resource-intensive maintenance while supporting operational performance and environmental goals.

CORE SHACK AND PROSPECTORS TENT

...

Kinross Alaska Core Shack Exhibit

Selected core and rock sample displays to characterize host rock, alteration, and mineralization of the three Kinross Alaska Mines.

- **Fort Knox**: accompanying plan and long sections of the deposit, and project timeline. Shawn Colburn and David Poole, 2018
- **Gil – Sourdough**: interpretive cross sections of the Main and North Deposits. Bryan Babb, 2021
- **Manh Choh**: interpretive cross sections of the Main and North Deposits. Shawn Colburn, 2022

Fort Knox
Pit is 1.6 mi E-W, 1 mile N-S, 1900 ft deep.
9.5 Moz produced.
Mine ~250,000 tons/day using 36, 240-ton trucks, 4 shovels and two loaders; drill ~350 holes a day.
1996-2022: 1,300,000,000 tons mined; 372,000,000 tons milled; 294,000,000 tons on Walter Creek Heap Leach (2.3 Moz); over 147,000,000 tons on Barnes Creek Heap Leach (0.9Moz) another 87 MT (.60Moz) to end of P10); the mill can push up to 40K tons a day.
815,000,000 tons waste moved (33 Mt more). Another 527,000 left in P10.

Gil
14-mile haul to Fort Knox
Gil:
24.6 M tons mined
7.3 Mtons A ore 184 koz
2 M tons C with 22.3 koz
15.2 M tons waste

Fort Knox/Gil-Sourdough

- 2022 Production – 221,248 oz Fort Knox; ~70,000 oz Gil
    - 1.9 Moz P&P Reserves, including 0.145 Moz Gil
    - 1.1 Moz M&I Resources, including 0.233 Moz Gil
- 2023 H1 Production – 134,825 oz / $1,166 oz
    - ~12.5% of Kinross' global production

Manh Choh

At the 70%-owned Manh Choh project and it is expected to add approximately 640,000 attributable Au eq. oz. to the Company's production profile over its approximately 4.5-year life-of-mine.

    - 0.7 Moz Au, 1.2 Moz Ag P&P Reserves
    - 0.05 Moz Au, 0.1 Moz Ag M&I Resources
- Avg. dug/day: ~25k tons (this is average of moved over 2024-2025 present)
- Ore shipped: ~ 1.26 million tons
- Avg. Au opt: ~ 0.237 (since you exploration folks insist on metric ~ 8 g/t)
- Poured and recoverable we ae at ~ 259k ounces
- 3.6 Mt and 714 koz (70%)

Including Manh Choh, the Company expects to produce an average of approximately 400,000 attributable Au eq. oz. per year, ~19% of Kinross' global production, from 2024 to 2027 from its Alaskan assets.

Porphyry-Related Cu Skarn at the Midway Target, Farewell Tract

Brendan McCrum, C.P.G.
Alaska Earth Sciences, Inc. (AES), on behalf of Cook Inlet Region, Inc. (CIRI)

The Farewell Tract comprises about 98,000 acres of CIRI land on the northwest side of the Alaska Range, 150 miles northwest of Anchorage and 70 miles southeast of McGrath. Anaconda first documented carbonate-replacement Cu–Ag mineralization in the Midway–Tin Creek area in the early 1980s (Anaconda, 1982). In 2024, CIRI's Phase 2 program flew a 50 m line-spaced airborne magnetic and radiometric survey over a magnetic high first outlined by the 2014 DGGS regional survey, followed by 3D inversion modeling, mapping, and sampling. Two copper zones were found above the flanks of the buried magnetic body, including an altered porphyry dike returning ~30% Cu and ~4,000 ppm Ag.

The 2026 Phase 3 program, funded through the BIA Energy and Mineral Development Program, completed three NQ diamond core holes totaling 3,506 feet. Collars were sited from the 3D inversion model to test the magnetic body beneath the surface copper zones. Assays from 202 core samples are pending at ALS.

Our 2026 AMA Core Shack display features core from 26FWDH003, showing the range of copper mineralization intersected, from disseminated and blebby sulfides in skarn to the semi-massive chalcopyrite–pyrrhotite at the bottom of the hole. The display also includes molybdenite veining, which has not been observed at surface at Midway.

The progression from pyrrhotite hornfels to Cu skarn suggests the drilling is vectoring toward the mineralizing intrusion. The copper may be confined to skarn along intrusive contacts, or the skarn may be the outer expression of porphyry-style mineralization at depth. Assays and further drilling are needed to tell the two apart, and the system remains open at depth.

Donlin Gold: A Geologic Overview

Matt Matko, Senior Exploration Geologist; Graham Ellsworth, Senior Geologic Modeler; Preston Weeks, Project Geologist; Quin Doud, Field Geology Coordinator; Alexandra Busk, Project Geologist; Alexander Fritz, Database Manager; Stephanie Mrozek, Chief Geologist
Donlin Gold LLC, 725 E Fireweed Lane, Suite 200, Anchorage, AK 99503

The Donlin project in southwestern Alaska hosts one of the world's largest undeveloped gold resources, with Proven and Probable Reserves of 32.8 Moz (505 Mt at 2.02 g/t Au) and Measured and Indicated Resources of 40.0 Moz (560 Mt at 2.22 g/t Au,100% basis, inclusive of Mineral Reserves)[1]. The intrusion-related gold deposit is hosted in Cretaceous rhyodacites and sedimentary rocks of the Kuskokwim Group. The project is owned by NovaGold Resources (60%) and Paulson Advisors (40%), following Barrick Gold's divestment of its 50% interest in June 2025. Since the ownership change, the Donlin team has accelerated technical programs to support the bankable feasibility study now underway.

Our 2026 AMA Core Shack highlights mineralized intercepts from three 2025 drill holes – DC25-2232, DC25-2245, and DC25-2270 – selected to illustrate vein-style mineralization across multiple host lithologies.

- **DC25-2232** intersects both RDX (crowded porphyry) and siltstone, cut by quartz-sulfide veins with gold grades up to 19.9 g/t and arsenic exceeding 10,000 ppm.
- **DC25-2245** features quartz-sulfide veins overprinting RDA (aphanitic porphyry), with gold up to 12.8 g/t and arsenic ranging from ~3,000 to more than 10,000 ppm.
- **DC25-2270** displays two distinct vein types: "V4" style veins characterized by orpiment, realgar, and native arsenic overprint the earlier quartz-sulfide veins. Assays for these intercepts are pending, and results will be published in upcoming company disclosures.

Downhole televiewer data from all three holes define vein, fault, and contact orientations, and a figure in our display illustrates their correspondence with core observations, improving structural continuity. In addition, Na/Al molar ratios serve as proxies for clay alteration intensity and mineralogy (e.g., NH_4-illite, illite, kaolinite). Higher gold grades correlate with increased veining and Na/Al <0.013, indicative of NH_4-illite alteration. Together, these data form part of a renewed effort to refine geologic and structural models, improve resource classification, and guide future project development under the new ownership structure. Visitors are invited to examine representative core intervals, review geologic and televiewer logs, and discuss ongoing work to integrate legacy and new data into Donlin's evolving deposit model.

References

[1]NI 43-101 / S-K 1300, 2025: https://novagold.com/donlin-gold/reserves-resources/

Silver 47

The Red Mountain Property is prospective for volcanogenic massive sulphide ("VMS") mineralization occurring in the Bonnifield District, located in the western extension of the Yukon Tanana terrane. Two advanced VMS prospects (Dry Creek and West Tundra Flats) have been the focus of exploration and drilling at the Property, in addition to at least 20 other early-stage exploration VMS prospects, and one prospect Second Chance considered to be a sedimentary-hosted exhalative SEDEX base metals deposit type, with 5 km of strike mapped at surface. Second Chance contains up to 3 sulfide horizons with disseminated sulfides in between. The regional geology consists of an east-west trending schist belt of Precambrian and Palaeozoic metasedimentary and volcanic rocks. The schist is intruded by Cretaceous granitic rocks along with Tertiary dikes and plugs of intermediate to mafic composition. Tertiary and Quaternary sedimentary rocks with coal bearing horizons cover portions of the older rocks. The VMS mineralization is most commonly located in the upper portions of the Totatlanika Schist which is of Mississippian to Devonian age. The Totatlanika Schist forms the core of a roughly NW-SE trending syncline (the Bonnifield East Syncline) within the Red Mountain Property. The Dry Creek (DC) North Horizon occurs within the Mississippian-Devonian portion of the Totatlanika Schist, can be traced for 4,500 metres and hosts the majority of mineralization defined to date. Zones of mineralization dip steeply to the north. The central 1,400 metres (on the flanks of Red Mountain) host the Fosters and Discovery lenses of VMS mineralization. At the West Tundra Flats prospect (located approximately 5 km to the northeast of Dry Creek) the mineralized zone occurs at the base of a black chloritic schist unit that is at the base of the sedimentary tuffaceous phyllite unit (MDph) and at the very top of the metarhyolite unit (MDr). The zone extends at least 1,000 metres northwest-southeast along strike and 1,600 m down dip to the southwest. The horizon dips about 10° to the southwest, is 0.3 to 4.4 m thick and remains open down dip. Massive sulphide mineralization is localized in several generally narrow exhalative units distinguished by semi-massive and massive sulphides including pyrite, sphalerite and galena. The massive sulphides are commonly rich in silver with erratic gold.

Flat Gold Project: Advancing a District-Scale Reduced Intrusion-Related Gold System from Exploration to a Maiden Resource, Southwest Alaska

Trent Newkirk, Director of Exploration, Tectonic Metals Inc.

The Flat Gold Project comprises 99,840 acres of predominantly Native-owned land held by Doyon, Ltd., in southwest Alaska, within a >20 km Late Cretaceous-age volcano-plutonic complex that contains at least six kilometre-scale, intrusion-related gold targets. The primary target, Chicken Mountain, is interpreted as a Reduced Intrusion-Related Gold System (RIRGS) hosted in a sericite-altered, variably oxidized monzonitic intrusive complex, cut by clustered sets of sheeted quartz to quartz-sulphide veins/veinlets, that was subsequently structurally modified during exhumation. The Chicken Mountain complex exhibits characteristics consistent with a bulk-tonnage, potentially heap-leachable gold deposit.

Diamond and reverse-circulation drilling since 2023 (206 holes to date) has outlined a mineralized footprint 3.3 km along strike, up to 700 m wide, and exceeding 300 m of vertical depth. Primary RIRGS gold mineralization at Chicken Mountain is flaggy in nature and generally northeast trending and dipping to the northwest. Internal higher-grade areas, ~200–300 m in strike length and up to 200 m wide, are observed and are resolved within the broader mineralized envelope, correlating with increased quartz-sulphide vein density, oxidation, and sericite alteration. The 2026 drilling program extended one higher-grade corridor to over 300 m vertical depth. The mineralized system remains open along strike, at depth, and across the majority of the mapped intrusive footprint.

Reprocessing and inversion modeling of regional magnetic surveys and a 2025 high-resolution drone magnetic survey support district-scale vectoring. Three-dimensional magnetic inversion modeling has identified zones of low magnetic susceptibility that coincide with known gold mineralization and are being used to help prioritize step-out and regional drill targets.

Figure 1: Regional geology map of the Flat Gold Project and map of the Chicken Mountain intrusion drilling area. Holes in green are new assays from 2026 up to and including those noted in the news release issued on October 15, 2026.

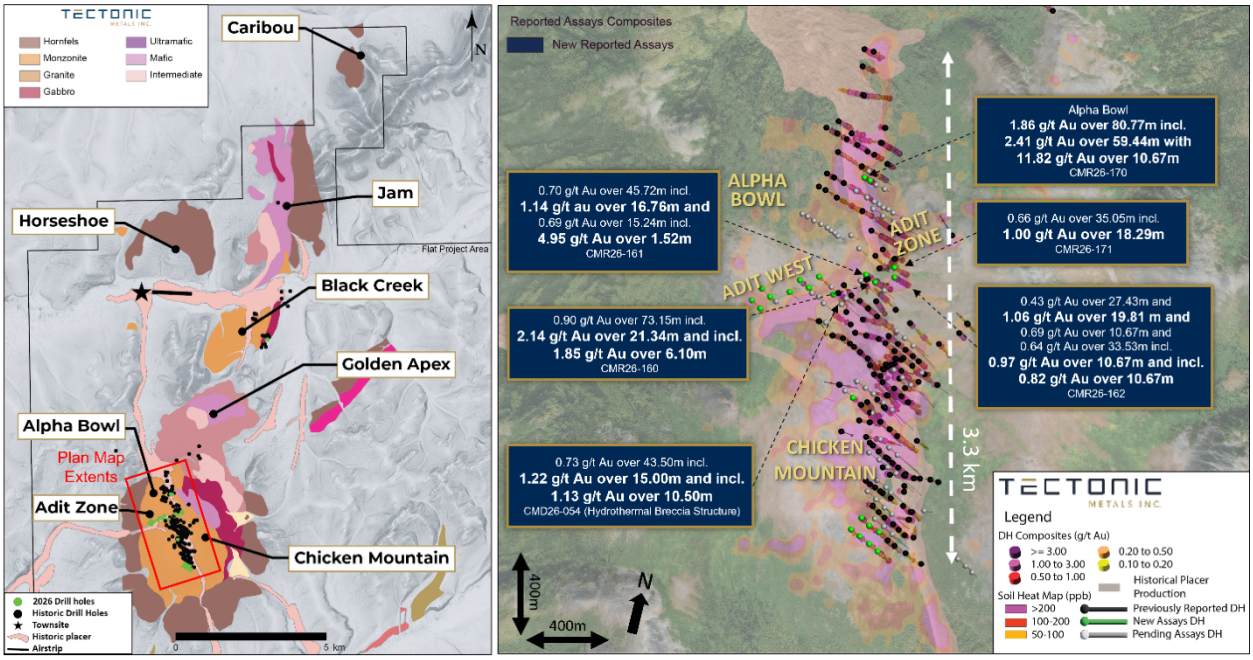
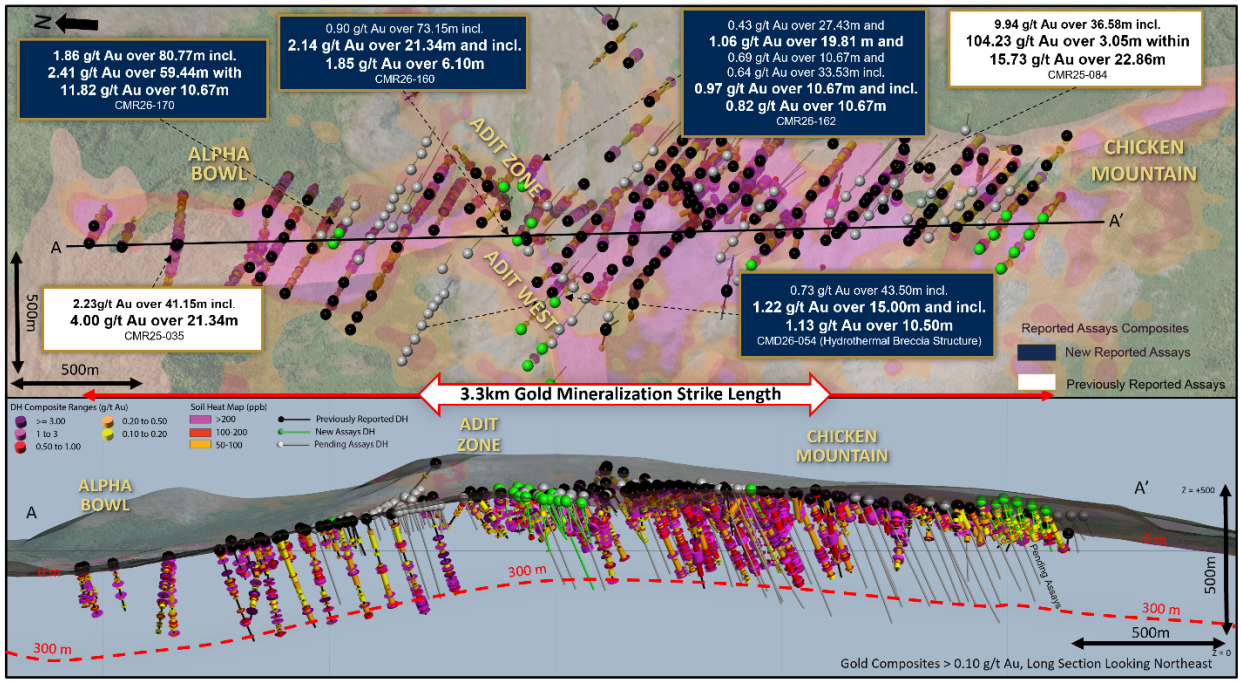


Figure 2: Chicken Mountain plan view and long section showing the mineralized drill results, 3.3 km drilled strike extent drilled to 300 m vertical depth.



Core Logging scheme within Ore Zone of Aktigiruq Deposit Resource: Mineralization vs Waste Rock

O. Smith, Project Geologist, Teck American Incorporated

The world-class Aktigiruq and Anarraaq zinc-lead deposits are located on State Lands, approximately eight miles northwest of the Red Dog zinc-lead mine in Alaska's Brooks Range. Anarraaq hosts Inferred Mineral Resources of 16.3Mt containing 14.3% Zn, 4.0% Pb and 80.4 g/t Ag, whereas Aktigiruq hosts Indicated Mineral Resources of 32.7Mt containing 16.2% Zn and 4.2% Pb and Inferred Mineral Resources of 26.6Mt @13.7% Zn and 3.5% Pb (2024 Teck Annual Information Form dated February 19, 2025). Both deposits represent an opportunity to extend the Red Dog Operations mine. Red Dog Operations were developed through an innovative operating agreement between the operator, Teck Alaska Incorporated, a subsidiary of Teck Resources Limited (Teck) and the land-owner NANA, a Regional Alaska Native corporation owned by the Iñupiat of northwest Alaska. The mine and concentrator properties are leased from and were developed under the agreement with NANA.

Mineralization in the Aktigiruq and Anarraaq deposits is texturally complex displaying a wide variability of sphalerite types, sulfide ratios, and shale content. This variability is carefully and systematically logged to interpret and accurately model the deposit mineralization distribution and support the definition of reliable mineralization domains for resource estimation and waste rock characterization. To aid with this process and ensure consistency, ten distinct mineralization textures (i.e., sulfide type and percentage, shale content and brecciation) were identified and documented.

US Antimony Corporation: 2026 Alaska Exploration and Project Advancement

Rebecca Gower, M.P.S., P.Geo.| US Antimony Corporation / Great Land Minerals LLC

Introduction

United States Antimony Corporation (USAC), through its wholly owned subsidiary Great Land Minerals LLC (GLM), advanced its Alaska mineral exploration portfolio during the 2026 field season, focusing on domestic antimony resources and associated mineral opportunities. From its logistics center in Fox, near Fairbanks, the company manages six principal project areas: Ester Dome, Maclaren River, Nolan Creek, Stibnite Creek, True North, and Dome Creek. Field exploration was conducted at Ester Dome, Maclaren River, True North, and Nolan Creek; Stibnite Creek and Dome Creek remained part of the broader project portfolio.

Ester Dome – Fairbanks Mining District

USAC completed a percussion drilling program consisting of 302 holes across five prospect areas at Ester Dome. Approximately 10 tons of bulk samples were collected from the St. Paul and Mohawk prospects, where geological observations identified stibnite veining. These observations and the 2026 exploration work will guide more advanced exploration planned for the 2027 field season.

Maclaren River – Alaska Range

At the Maclaren River Project, exploration focused on the Kathleen-Margaret copper deposit, which contains historic underground workings, including an adit. One diamond drill hole was completed to a depth of 609.5 feet to further evaluate the deposit's copper potential and provide geological information for future exploration planning.

Nolan Creek – Southern Brooks Range

USAC significantly advanced its Nolan Creek antimony-gold project near Wiseman following acquisition of the historic mining property and additional surrounding state mining claims in 2026. Nolan Creek is a priority project within the company's Alaska portfolio, with work directed toward evaluating the potential redevelopment of historic underground workings. During the 2026 season, activities included collection of an approximately three-ton surface bulk sample, LiDAR and aerial photogramitric surveying, cultural resource assessments, environmental evaluations, and improvements to existing site access and infrastructure. The company also advanced permitting, engineering, and contractor preparations for potential underground exploration and development. Planned work includes rehabilitation of existing underground workings, detailed underground geological investigations, and collection of an underground bulk sample of up to 1,000 tons for metallurgical and technical evaluation, subject to applicable authorizations.

2027 Outlook

The 2026 programs provide a foundation for continued geological evaluation and advanced exploration across USAC's Alaska portfolio, with particular emphasis on Nolan Creek and follow-up work at other identified mineralized prospects.

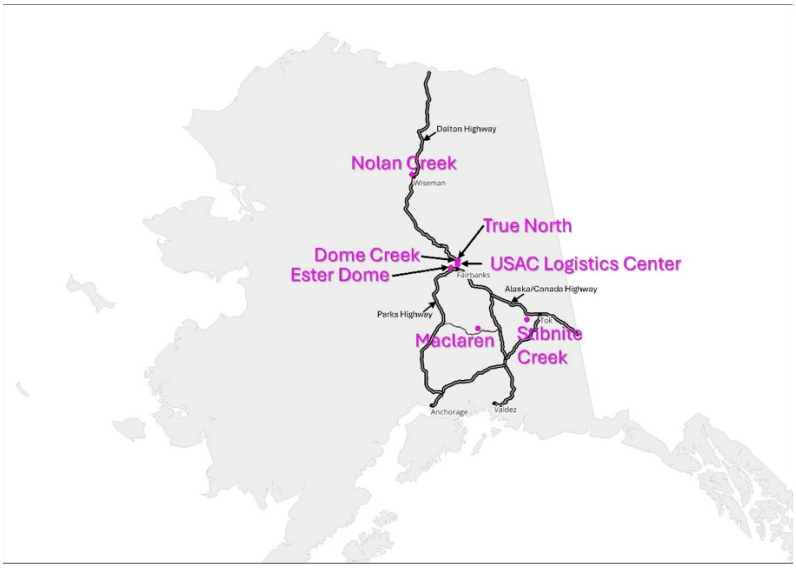


Fig 1 : USAC Project Location Map

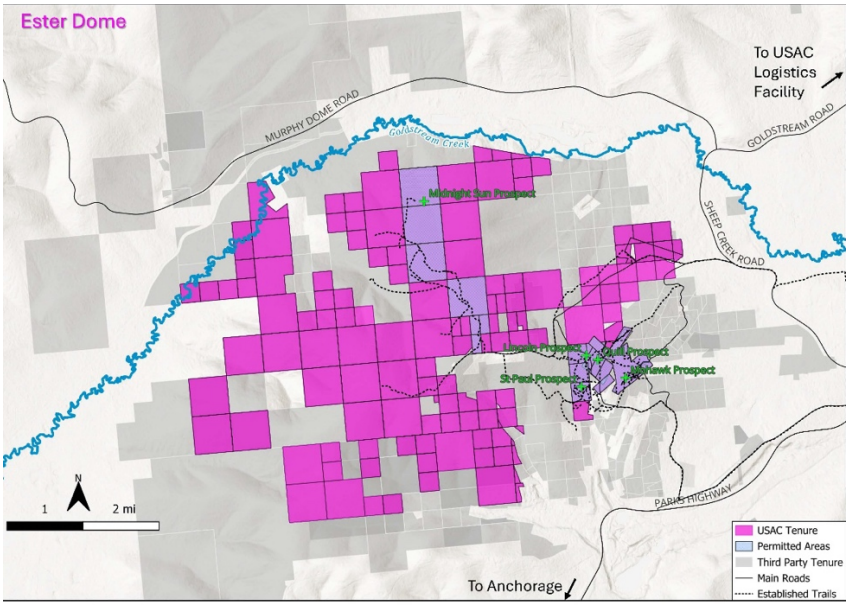


Fig 2: USAC 2026 Prospects Location Map

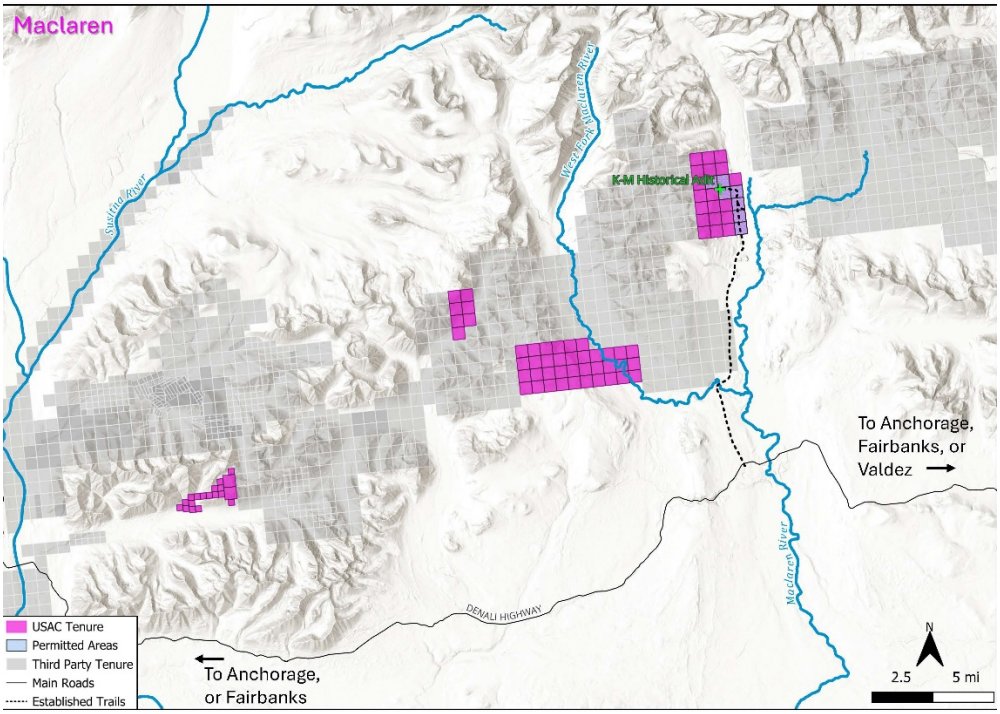


Fig 3: Maclaren Area 2026 Prospect Location Map

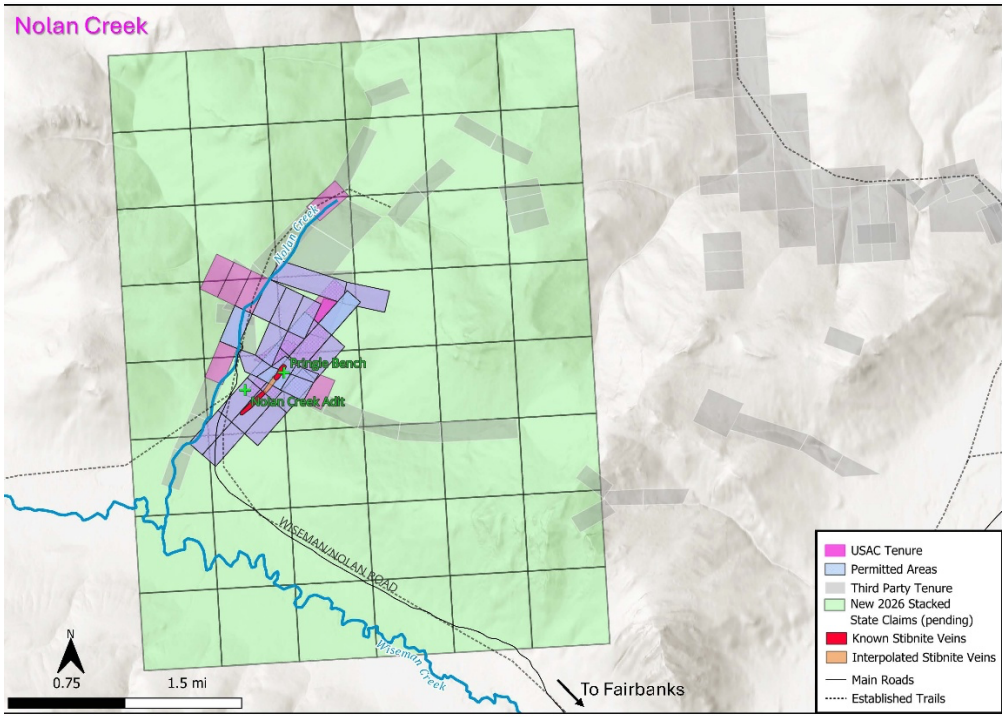


Fig 4: Nolan Creek Project Location Map

Valhalla Metals Update – Progress at Sun and Smucker Properties

Brett Tobin, Bonnie Broman, Valhalla Metals

The Sun and Smucker deposits occur on the eastern- and western-most ends, respectively, of the highly prospective Ambler District and are characterized as volcanogenic massive sulfide (VMS) deposits containing high grade copper, lead, zinc, silver and gold mineralization. Over 50 years ago mineralization was discovered on these properties and since that time these projects have gone through several periods of intense exploration followed by periods of dormancy – the most recent being Valhalla Metals Inc. acquiring Sun in 2018 and Smucker in 2026. On a worldwide comparison basis, these properties rank in the second quartile for size and the second quartile for metal value.

Historically, 96 holes (19,123m) have been drilled into the Sun deposit to define a Canadian NI 43-101 compliant indicated resource of 1.71 million tonnes (Mt) grading **4.32% Zn, 1.48% Cu, 1.11% Pb, 60.0 g/t Ag, and 0.21 g/t Au (4.09% CuEq)**; and an Inferred resource grading **9.02 Mt of 4.18% Zn, 1.21% Cu, 1.46% Pb, 81.7 g/t Ag, and 0.25 g/t Au (4.10% CuEq)*.** Ten additional holes (2,895m) have been drilled by Valhalla, which have not yet been included in any resource update. Prior to exploration by Valhalla, drilling had not been extended beyond ~200m below surface within the Main Sun deposit, offering the potential to upgrade and increase the overall size of Sun downdip and along strike. Mineralization at Sun is hosted by at least two polymetallic massive and semi-massive sulfide horizons containing primarily pyrite, sphalerite, chalcopyrite, galena, and tetrahedrite-tennantite with other accessory sulfide minerals.

At Smucker property, 40 holes (7,959m) have been drilled and has a historic resource estimate of 11.8Mt (1981) with **6.6% CuEq** historic resource grade highlighted by **6.0m at 9.48% CuEq and 10.36m at 4.12% CuEq****. Smucker mineralization is also believed to occur in two stratigraphic horizons as massive and semi-massive sulfides containing chalcopyrite, sphalerite, galena, tetrahedrite-tennantite, arsenopyrite, and minor pyrite and pyrrhotite.

With continual progress of the Ambler Mining District Industrial Access Project (AMDIAP), Valhalla intends to continue the advancement of both Sun and Smucker projects. At Sun, Valhalla intends to confirm, upgrade and expand the current resource by continuation of exploration and resource drilling along strike and down dip. Additionally, a 2022 Versatile Time Domain Electromagnetic (VTEM) survey has identified three other anomalies that present similarly to the Main Sun deposit that warrant additional exploration efforts. At Smucker, Valhalla intends to establish a 24-man camp local to the property and commence exploration drilling to confirm historic results and expand the resource based of the findings of a VTEM and Z-Axis Tipper Electromagnetic (ZTEM) surveys.

*The following metal prices were used to calculate CuEq: copper - $3.00/lb; zinc - $1.10/lb; lead - $1.00/lb; silver - $18/oz; and gold - $1,300/oz

**THE SMUCKER HISTORIC RESOURCE HAS NOT VERIFIED BY A QUALIFIED PERSON THEREFORE IS NOT NI 43-101 COMPLIANT AND SHOULD NOT BE RELIED UPON. SEE www.valhallametals.com FOR FULL CAUTIONARY NOTES

Elliott Creek Copper Prospect

Seeking a Strategic Partner for High Grade Copper Exploration in Alaska

805 acres company-owned | SRK sampling up to 17.47% copper, Road completion summer 2028

Our company is seeking a strategic partner with exploration expertise and investment capacity to advance the Elliott Creek copper prospect. Located approximately 14 air miles northeast of Chitina, Alaska, the property combines documented high-grade copper mineralization, historic underground workings, and targets for systematic exploration.

Road construction to the property is underway, with completion expected in summer 2028—an important milestone toward improved access for fieldwork, equipment, and future exploration.

Independent Technical Work Supports Further Exploration

In its December 2009 property evaluation, SRK Consulting collected 95 samples and confirmed copper grades previously reported by the company. SRK reported sample grades reaching 17.47% copper, with 18 samples exceeding 4% copper.

SRK visited less than 10% of the project area during its focused field program. Its assessment identified Rainbow Creek as the area with the greatest mineral potential, citing the most continuous mineralization observed, consistently higher grades, and comparatively favorable drilling access. Additional areas warranted mapping, sampling, and drilling.

July 2021 Sampling Reinforces the Opportunity; Sampling documented high-grade copper at multiple locations:

Location	Reported Copper	Sample Detail
Copper King	**10.66%**	0.5-meter sample; 21.4 g/t silver
Elizabeth Tunnel	**8.60%**	1-meter sample; 27.8 g/t silver
Elizabeth Trench	**6.72% / 5.25%**	Contiguous 2-meter and 1.5-meter chip channel samples
Rock sample 632984	**14.70%**	32.4 g/t silver

Copper occurs in the Nikolai Greenstone, with veins, fractures, and shear zones providing targets for testing mineralization along strike and at depth.

The Strategic Partnership Opportunity

We seek a partner to help fund and execute a disciplined exploration program that builds on SRK's recommendations and the later sampling results. Priorities include structural mapping, targeted geophysics, and drilling to establish mineralized continuity and scale, followed by additional drilling and metallurgical testing if results justify advancement.

We bring property ownership, documented high-grade occurrences, historical technical work, and road access now under development. We seek a partner who can bring the capital and technical capability to advance the next phase.

Meet with us at the Anchorage miners convention to review the technical information and discuss a strategic partnership.

Technical sources: SRK Consulting, Exploration Property Evaluation Report, December 18, 2009; Rick Van Nieuwenhuyse, July 2021 Elliott Creek sampling report. Ownership and road schedule reflect current company information. Selected sample results are not representative property-wide grades; sample lengths are not necessarily true widths. SRK did not establish an industry-standard mineral resource estimate. Mineralized continuity, tonnage, and economic viability remain to be demonstrated.

Wrangell Saint Elias at Elliott Creek Incorporated, Nick Begich II, President

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POSTER SESSION

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Peroxide-Assisted Extraction of Cobalt from Spent Lithium-Ion Batteries: Comparative Study of Citric Acid and Hydrochloric Acid Leaching

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Recovery of cobalt from spent lithium-ion batteries (LIBs) offers an important pathway for recovering critical metals while reducing dependence on primary resources. This study compared cobalt extraction from spent LIB cathodic material using citric acid as an organic leachant and hydrochloric acid (HCl) as a mineral-acid benchmark. The effects of temperature, acid concentration, hydrogen peroxide (H_2O_2) concentration, solid-to-liquid ratio, and leaching time were investigated using a one-factor-at-a-time approach. Leach solutions were analyzed by ICP-OES to quantify cobalt extraction. Citric-acid leaching was strongly influenced by temperature and H_2O_2 addition. Cobalt extraction increased from 21.1% at 30 °C to 79.7% at 90 °C after 110 min. Increasing H_2O_2 from 0 to 3 vol% increased cobalt extraction after 5 min from 20.4% to 66.4%, demonstrating the strong influence of peroxide on initial dissolution kinetics. At 90 °C and 20 g L^{-1} solids, 1.5 M citric acid achieved 73.4% cobalt extraction after 50 min. HCl exhibited substantially faster cobalt dissolution and lower sensitivity to temperature in the presence of H_2O_2, achieving approximately 87% extraction after 110 min in the temperature series. Peroxide-assisted HCl also produced rapid initial extraction, while increasing H_2O_2 beyond 1 vol% provided limited additional long-term benefit. Overall, HCl provided superior cobalt extraction kinetics, whereas citric acid offers a promising alternative where reduced corrosivity and environmental impact are prioritized. Approximately 1.5 M citric acid with 1 vol% H_2O_2 at elevated temperature provides a practical basis for further optimization of cobalt recovery from spent LIBs.

Keywords: cobalt recovery; lithium-ion batteries; citric acid; hydrochloric acid; hydrogen peroxide; hydrometallurgy; leaching

Mapping Mineral Systems To Bolster Predictive Analyses Of Critical Mineral Potential For The United States Of America

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Mineral systems are a wholistic geologic framework that relates coeval and cogenetic mineral deposits to their formation in geotectonic environments. A mineral system may generate multiple deposit types, and a single deposit type may form in multiple mineral systems – demonstrating the many to many relationships intrinsically associated with ore deposits and systems. The utility of mineral systems is that they represent geologic frameworks with regional-scale footprints contrasting with the relatively small footprints of deposits or districts. Mineral systems relate precious and base metals to critical minerals commonly found as co- or by-products.

One common schema for mineral systems describes the tectonic setting in which they form, such as convergent, divergent, and passive settings. Each tectonic setting may have multiple geotectonic stages (e.g. subduction, orogenesis, post-orogenic collapse) and settings (continental arc, island arc). Mineral systems can be broken down into various constituent components that include: 1) triggers, 2) drivers, 3) component sources, 4) transport, 5) trap, 6) and preservation. Each component can be mapped using defined geologic criteria, representing prospectivity for deposits based on the presence of portions of the system at different scales and temporal parts of the overall system.

Developing mappable criteria forms the linkage between the theoretical system and the application to resource assessments and mineral exploration. Mappable criteria involve identification of the important geologic feature(s) for each component of the system, how it can be mapped, and what datasets can be used to map the system. The U.S. Geological Survey is currently developing mappable criteria for 24 mineral systems prioritized by their importance as domestic sources of critical mineral resources. Mapping mineral systems by their fundamental components can elucidate prospectivity for concealed deposits by highlighting the presence of important system-scale components in areas that lack outcropping deposit or district-scale features – enhancing exploration and land management decisions.

Characterization of Alaska Tintina Gold Belt Stibnite Ores Using X-Ray Fluorescence (XRF), X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM), and Energy Dispersive Spectrometry (EDS) for Antimony and Rare Earth Elements

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Antimony, a critical mineral essential to U.S. defense and industrial operations, has significant potential in

Alaska to support domestic production and to strengthen national security supply chains. Intrusion-related gold systems of the Tintina Gold Belt in Alaska represent one of the most promising settings for re-establishing a domestic supply. This study presents an integrated mineralogical and geochemical characterization of the Stibnite ore, a quartz-stibnite vein sample from the Estelle gold-antimony project in the Alaska Range, using wavelength-dispersive X-ray fluorescence (XRF), powder X-ray diffraction (XRD) with Rietveld refinement, and scanning electron microscopy coupled with energy-dispersive spectrometry (SEM-EDS). Stibnite samples (Styx), 3-5 inches in size, were stage-crushed, milled, and screened to a -75 µm analytical powder, from which a pressed pellet and a slurry smear were prepared for XRF and XRD, respectively; a polished epoxy grain mount was prepared for SEM-EDS. Whole-rock chemistry is dominated by SiO_2 (50.16 wt.%), SO_3 (22.60 wt.%), and Sb (18.89 wt.%), with enrichment in As (2,930 ppm), Se (350 ppm), Ag (184 ppm), Pb (256 ppm), and light rare earth elements (LREEs) of La 307 ppm, Ce 280 ppm). Rietveld-refined XRD returned a simple two-phase modal mineralogy of quartz (81 wt.%) and stibnite (19 wt.%), and backscattered-electron imaging confirmed coarse, reticulated quartz-stibnite intergrowths with both phases free of visible inclusions. The high stibnite grade, coarse intergrowth texture, and absence of clay minerals and discrete arsenopyrite indicate a metallurgically favorable ore relative to refractory clay-rich stibnite deposits. Although elevated As and Se contents will require environmental management during processing and smelting, the results support the classification of the Stibnite prospect as part of a reduced intrusion-related gold-antimony system with meaningful critical-mineral potential.

From Madagascar to Alaska: When Technical Feasibility Is Not Enough Indigenous Knowledge and the Design of Social Impact Mitigation

Lisa Dean, North Star Group

In Alaska, resource projects unfold on lands and waters that sustain subsistence ways of life, where a single resource, such as the beach grass Yup'ik and Unangax̂ weavers gather for baskets, can carry economic, cultural, spiritual and intergenerational significance. Technical studies can show what is physically possible to restore; they cannot show what a community will accept in its place. Lisa Dean, formerly of Rio Tinto, and North Star Group (NSG), which has advised Rio Tinto, present a case from Madagascar that shows how to close that gap.

In the early 2000s, QIT Madagascar Minerals (QMM), a Rio Tinto subsidiary, prepared to mine ilmenite from coastal sand deposits near Fort Dauphin in southeastern Madagascar. Dredging would disturb the dunes, wetlands and forests on which surrounding communities depended, and mined sands would later be reprofiled and affected species re-established.

QMM's impact assessment paired ecological research with locally grounded social research. A team of Malagasy anthropologists native to the region, supported by the University of Quebec, brought language, cultural fluency and local knowledge to the work, revealing not only which resources people used, but what those resources meant. The assessment treated that knowledge as evidence capable of shaping both how impact was defined and how mitigation was designed.

One wetland reed, mahampy, exposed the limits of technical feasibility alone. Women wove it into mats, baskets, household and agricultural implements, and burial shrouds. In the Malagasy deep south, the first shroud placed around the deceased is a sacred ancestral object and an enduring symbol of identity and respect. For families who could not afford costlier alternatives, mahampy was the material within reach.

Ecological research showed that mahampy could be cultivated, but not whether cultivated reed would be culturally acceptable. Women questioned whether a God-given resource would keep its essential qualities once cultivated. Over three successive harvests, they observed the cultivation, gathered the reed, and tested its strength, resilience and suitability for traditional uses. They judged it equivalent to the natural resource, consented to its use as mitigation, and valued having it closer to their communities.

Ms. Dean and NSG bring this example forward as a tested model for Alaska. Key lessons include:

- Technical feasibility is not acceptability. Restoration science shows what can be rebuilt; affected communities determine whether it is an adequate replacement.

•Meaning is evidence. Locally grounded research can reveal the cultural and spiritual significance that subsistence evaluations under ANILCA and NEPA, which document use and abundance, often miss.

•Communities should help design and test mitigation. Their direct involvement builds credible consent and catches problems that data alone will not.

•Early understanding reduces non-technical risk. Learning what matters before mitigation is set supports more durable agreements with Tribes, Alaska Native corporations and local communities.

GeoFORCE Alaska: Field-based Geoscience Education for Rural High School Students

Sarah Fowell, Justine Schmidt, Marisa Acosta, and Sean Regan
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GeoFORCE Alaska is a four-year, field-based, summer geoscience program designed to raise graduation rates in rural Alaskan high schools, encourage participants to pursue college degrees, and develop Alaska's technical workforce. Launched in 2012 by the University of Alaska Fairbanks (UAF) in partnership with the longstanding GeoFORCE Texas program, GeoFORCE fosters scientific interest and ability through hands-on field projects, travel, and teamwork over the course of four consecutive summers. GeoFORCE Alaska students enter the program after 8th or 9th grade and embark on their Fourth-Year Academy before or immediately after their senior year of high school. The curriculum builds across the program, reinforcing grade-level expectations and giving students the opportunity to apply the scientific method to relevant questions at spectacular geological locations. Each summer, students spend a day on the UAF campus learning new concepts and skills, followed by a weeklong field trip that provides opportunities to complete practical exercises using geological tools. The First-Year Academy takes students across Alaska, from Kinross Fort Knox mine to Healy coal deposits, Denali National Park, and Portage Glacier. A capstone project at the end of the Fourth-Year Academy involves making a geologic map and cross section of tilted strata exposed at Dinosaur National Monument in Utah. Results show that participants graduate from high school at rates significantly higher than their peers, acquire skills that facilitate academic success, and gain the confidence to attend college.

GeoFORCE Alaska is supported by Alaska Native Regional Corporations and industry sponsors at a level that allows recruitment of a new cohort every four years and delivery of one summer Academy annually. Due to the quadrennial recruiting schedule and regional funding model, only 50% of students from Northwestern Alaska, North Slope, and Interior school districts currently have the opportunity to apply. The program seeks to expand the region served and increase the frequency of recruiting in order to offer the GeoFORCE experience to students from school districts throughout rural Alaska. Alternate year recruiting and delivery of two summer Academies annually would allow all interested students in these districts to apply.

Bridge Solutions for the Mining Industry (With a comparative engineering analysis)

Tom Johnstone
Spanweld Bridges

The mining industry increasingly operates in severe, off-grid environments where site access requires heavy-duty crossing solutions capable of supporting extreme axle loads. Project engineers and site managers face the complex challenge of balancing installation speed, structural reliability, cost, and stringent environmental regulations near sensitive waterways.

This presentation examines a real-world case study from Central Alaska, where a remote mining operation required multiple bridge crossings across challenging terrain, including braided glacial till rivers and remote creeks. Through this operational example, attendees will receive a technical and practical evaluation of primary bridging alternatives, including:

- Safety and Structural Risks: Evaluating the limitations and hazards of many traditional bridge models including timber bridges and crane mats.
- Comparative Material & Design Analysis: Weighing the trade-offs in structural integrity, span capability, and assembly logistics between timber truss, welded modular steel, and long-span steel truss bridges.
- Economic & Operational Evaluation: Comparative cost baselines, transport considerations, and reusability across multi-phase project lifecycles.
- Site Preparation & Selection Framework: A step-by-step practical checklist for site selection, bridge type selection, install issues, and possible environmental issues on various mining sites.

This technical session provides objective, data-informed guidance designed to help mining operators, logistics planners, and site engineers make optimal access decisions tailored to their specific geographical and regulatory constraints.

Location Map of the Alkaline Intrusive and Extrusive Rocks of the Tolovana Alkaline Province with Included Carbonatites at Idaho Gulch, Tofty Ridge, Mud Creek and Flat Creek, East-Central Alaska

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There are at least 18 centers of intrusive and minor extrusive alkaline rocks in the area encompassed by the Livengood Quadrangle and the western portion of the Circle and in the eastern portion of the Tanana Quadrangles of east-central Alaska. The alkaline rocks intrude late Proterozoic and Paleozoic highly deformed volcanic and sedimentary rocks and locally minor low grade metamorphic rocks. The location map is accompanied by a tabulation of the lithologic associations, mineralogy, elemental associations and key references. Within the Tolovana (Livengood) Mining District two clusters of small intrusions are associated with Alkaline Intrusive-Hosted gold mineralization. In the Money Knob-Amy Dome and Livengood Dome area, International Tower Hill Mines has defined a gold resource of approximately 13 million troy ounces. To the south, in the Shorty, Ranney Hollow and Steel Creek areas, Fairbanks Exploration, Inc has drilled significant intercepts of Au-Ag-Cu mineralization in association with latite porphyry dikes and sills. The mineralization includes the potential for important critical and strategic elements including: As-Sb-Bi-B-Cs-In-Hg-Mo-Sn-W-Zn, as bi-products. Majority of the boreholes have average elemental concentration ratios over average crustal abundances greater than over hundred times for multiple elements. The rock, stream sediment and heavy mineral concentrate sampling of the mining district by the Alaska Division of Geological and Geophysical Surveys (ADGGS) and the U.S. Geological Survey (USGS) indicates that the anomalous area at the Shorty Creek Project includes approximately a ten by ten (10) mile square area that is bounded on the southwest by the Tolovana Hot Spring Dome Syenite Complex with a trace element suite similar to that in the Shorty Creek Project area. To the west in the Tanana Quadrangle, the Alkaline Province contains two previously known carbonatite targets at Idaho Gulch and Tofty Ridge. To the east in the Circle Quadrangle, the Alkaline Province contains two REE targets in the Mt Prindle and Roy Creek areas. In the northern portion of the province, along the trace of the Victoria Creek strike-slip fault, Fairbanks Exploration, Inc located state mining claims in 2022 and 2024 on two very large magnetic anomalies associated with extensive areas of low relief with regolith geochemistry and mineralogy indicative of magnetic phosphatic carbonatites (phoscorites) at Flat and Mud Creeks respectively. The carbonatites intrude the Ordovician Livengood Chert with fenitization at the contact zones. The local relief from the regolith surface to the top of the plateau area of the Livengood Chert at Flat Creek is 150 meters while at Mud Creek the local relief is approximately 300 meters. A tabulation of the USGS heavy mineral concentrate sample results from the Flat and Mud Creek areas is included in the poster.

Resistivity and Structural Mapping with Passive Airborne EM: Applications to Mineral Exploration

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Expert Geophysics Surveys Inc.

Mineral exploration in Alaska commonly involves rugged terrain, extensive surficial cover, and limited bedrock exposure. In these settings, subsurface resistivity mapping can help investigate the geological architecture associated with mineralization. This poster presents a workflow for integrating broadband airborne natural-field electromagnetic measurements, resistivity inversion, and structural analysis to characterize conductive and resistive domains beneath cover.

The measurement configuration combines three components of airborne magnetic-field variation with two horizontal electric-field components recorded at a stationary reference site. Data acquired over approximately 20 Hz to 20 kHz are used to derive total-field electromagnetic responses and construct subsurface resistivity models. Depending on ground resistivity, signal quality, and survey geometry, these models can investigate structures from the near surface to depths exceeding one kilometre. The depth of investigation and spatial resolution vary across the survey area and must be considered when interpreting model features.

Structural analysis examines the geometry, continuity, and boundaries of resistivity anomalies in successive depth slices and vertical sections. Correlated anomalies and resistivity gradients are traced through the models to delineate geoelectrical trends and surfaces. Their orientations, depth persistence, intersections, offsets, and changes in continuity are then evaluated alongside magnetic data and available geological information. This analysis provides a basis for interpreting possible faults, shear zones, folds, intrusive contacts, and crosscutting structural corridors.

Resistivity contrasts have multiple geological explanations. Conductive domains may represent conductive stratigraphy, alteration, or deformation zones, while resistive domains may reflect intrusive bodies, silicification, or relatively unaltered rocks. Consequently, neither an individual anomaly nor a traced geoelectrical boundary uniquely identifies a geological structure or mineralized body. Interpretation requires consideration of geological context, inversion resolution, and consistency among independent datasets.

Field examples from porphyry, volcanogenic massive sulphide, intrusion-related gold, and magmatic nickel–copper–cobalt exploration illustrate the application of this workflow. The examples examine how resistivity distributions and interpreted structural