Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada

Report Prepared for

Alexco Resource Corporation

Report Prepared by

SRK Consulting (Canada) Inc.

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Cover: View of mill complex looking west-southwest.

IMPORTANT NOTICE

CAUTIONARY STATEMENT

This preliminary economic assessment is preliminary in nature. The "potentially mineable tonnes" disclosed in the mine plans are partly derived from Inferred mineral resources by the application of a cut-off NSR, and dilution and mining recovery factors. Inferred mineral resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that this preliminary economic assessment will be realized.

SRK estimates that Inferred mineral resources form the basis of 6 percent of the "potentially mineable tonnes" included in the plant feed schedule of this PEA.

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List of Abbreviations

Unit or Term	Abbreviation	Unit or Term	Abbreviation
cubic feet per minute	cfm	load-haul-dump	**LHD**
cubic metres per second	cms	metal leaching/acid rock drainage	**ML/ARD**
degree	**°**	metre	**m**
degrees Celsius	**°C**	micron	**µm**
dollars (Canadian)	**$ or C$**	milligram	**mg**
dollars (US)	**US$**	millimetre	**mm**
dry stack tailings facility	**DSTF**	National Instrument 43-101	**NI 43-101**
Eastern Keno Hill Silver District Project – Phase 2	**KHSD project**	net present value	**NPV**
Elsa Reclamation & Development Company Ltd.	**ERDC**	net smelter return	**NSR**
Enhanced Production Scheduler	**EPS**	non-acid or metal leaching	**N-AML**
First Nation of Na-cho Nyak Dun	**FNNND**	operating expense	**Opex**
general and administrative	**G&A**	ounce/troy ounce	**oz**
gram	**g**	parts per million	**ppm**
grams per litre	**g/L**	percent	**%**
grams per tonne	**gpt**	potentially acid or metal leaching	**P-AML**
inch	**"**	pound	**lb**
internal rate of return	**IRR**	preliminary economic assessment	**PEA**
kilogram	**kg**	Qualified Person	**QP**
kilograms per cubic metre	**kg/m^3**	SRK Consulting (Canada) Inc.	**SRK**
kilometres	**km**	square metre	**m^2**
kilotonne	**kt**	three-dimensional	**3D**
kilowatt	**kW**	ton (2000 lbs)	**ton**
kilowatt hour	**kWh**	tonne (1000 kg)	**t**
life-of-mine	**LoM**	tonnes per day	**tpd**
litre	**L**	United Keno Hill Mines Ltd.	**UKHM**
litres per second	**L/s**		

1 Summary

1.1 Introduction

Alexco Resource Corp. (Alexco) owns access to the majority of the historic Keno Hill Silver District, located in Yukon, Canada. It is comprised of polymetallic silver-lead-zinc deposits occurring in the historic Keno Hill Silver District located in the vicinity of the village of Keno City, Yukon. There are approximately 30 known deposits in the area, many of which have been subject to small scale mining operations over the last century, and numerous prospects.

Alexco's objective is to unlock value in the silver-rich Keno Hill Silver District, and is focused on growth by advancing its promising district properties to development decisions.

The Bellekeno mine is one of several mineral properties held by Alexco within the Keno Hill Silver District. The Bellekeno mine, which commenced commercial production at the beginning of calendar year 2011, operated as Canada's only primary silver mine until operations were temporarily suspended by Alexco at the end of August 2013 (refer to Alexco's July 17, 2013 news release).

The current status of Alexco's more advanced properties within the Keno Hill Silver District are listed below:

- Bellekeno mine: In production since 2011 until temporary suspension of operations at the end of August 2013. This preliminary economic assessment (PEA) assumes that production stoping will re-start in late July, 2015.
- Lucky Queen mine: Reconditioning and development work was undertaken from early 2012 into Q2 2013, with operations temporarily suspended in March 2013. The PEA assumes that pre-production development work will re-start in Q2 2016.
- Onek mine: Development work was undertaken from late 2012 into Q2 2013, with operations suspended at the end of May 2013. Onek is not included in the production plan presented in this PEA report but the mineral resources were updated to include the 2012 and 2013 drilling results.
- Flame & Moth deposit: Scoping level mine planning work has been completed by SRK Consulting (Canada) Inc. (SRK), and an internal company report has been provided to Alexco. Alexco began surface preparations earlier in 2014 which included road upgrades, installation of services, and construction of surface infrastructure and excavation of the portal. It is expected that by the end of 2014, Alexco crews will have completed the surface preparations and excavated the first 20m of the Main Lightning Ramp. The Updated PEA assumes that as of January 1st, 2015, the required men, equipment and materials will be in place to drive the ramp development at planned advance rates.
- Bermingham deposit: A historical, small scale silver producer, where additional exploration drilling has been done by Alexco and an updated resource block model has been completed. No mine planning has been completed on the new mineral resources. This deposit is not considered in this PEA report.

This PEA is based on Alexco's plan to resume underground development activities in the eastern part of the Keno Hill Silver District, specifically at the Bellekeno and Lucky Queen mines and the Flame & Moth deposit, followed by the commencement of production stoping and processing in Q3 of 2015. The project describing the development and production plans for these three properties that support the long range feed schedule for Alexco's mill facility is referred to as the Keno Hill Silver District Project – Phase 2, which in this report is abbreviated as the KHSD project.

These deposits have mineral resource block models that were constructed using a geostatistical block modelling approach with the mineralization constrained by wireframes. Mineral resources are classified as Indicated or Inferred following the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (CIM, 2014).

An updated mineral resource model for the Bellekeno deposit was constructed by Alexco during the third quarter of 2012 under the supervision of David Farrow, BSc (Hons), GDE, PrSciNat, PGeo (BC), a third party consulting geologist. The results of the mineral resource estimate are incorporated in this report.

A mineral resource estimate for the Lucky Queen deposit was previously prepared by SRK and published in an independent technical report on September 8, 2011 entitled "Technical Report on the Lucky Queen Deposit, Lucky Queen Property, Keno Hill District, Yukon" (SRK, 2011a). The results of the mineral resource estimate are incorporated in this report.

In 2013, a mineral resource block model for the Flame & Moth deposit was constructed by Alexco under the supervision of Mr. Farrow. The mineral resource estimate is documented in a March 15, 2013 technical report entitled "Updated Technical Report on the Flame & Moth Property, Keno Hill District, Yukon" (Farrow and McOnie, 2013). The results of the mineral resource estimate are incorporated in this report.

An updated mineral resource estimate for the Onek deposit was prepared by SRK and is included in this report.

A mineral resource estimate for the Bermingham deposit was prepared by SRK on August 8, 2012 and published in an independent technical report entitled "Technical Report on the Bermingham Deposit, Bermingham Property, Keno Hill District, Yukon". There has been no additional exploration work on the Bermingham deposit in the resource area since 2012 and the results of the mineral resource estimate are incorporated in this report.

This technical report documents the context and assumptions required to develop the economic analysis to support the PEA based on the three mineral resource estimates comprising the KHSD project. The report was prepared following the guidelines of the Canadian Securities Administrators National Instrument 43-101 and Form 43-101F1, and it is in conformity with the generally accepted *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines* (CIM, 2003).

1.2 Property Description and Ownership

The Keno Hill Silver District project is located near the village of Keno City, approximately 350 kilometres (km) north of Whitehorse, Yukon, within the KHSD. Alexco's administration and camp facilities are located at the historic company town of Elsa, which is accessible from Whitehorse via a 460 km all-weather road and by air via the Mayo airport, which is some 40 km to the southwest. A gravel road known as the Silver Trail Highway connects Mayo to the project area and the village of Keno City.

Alexco currently maintains an area that covers 239.016 km^2, and comprises 695 quartz mining leases (88.141 km^2) and 871 quartz mining claims (150.875 km^2). Mineral exploration at Keno Hill Silver District is permitted under the terms and conditions set out by the Yukon Government in the Class IV Quartz Mining Land Use Permit – LQ00240, issued on June 17, 2008 and valid until June 16, 2018.

Central Yukon is characterized by a subarctic continental climate with cold winters and warm summers. Average temperatures in the winter are between -15 and -20 degrees Celsius (°C) while summer temperatures average around 15°C. Exploration and mining work can be carried out year-round. The landscape around the Keno Hill Silver District is characterized by rolling hills and mountains with a relief of up to 1,600 metres (m).

1.3 History

The Keno Hill mining camp area has a rich history of exploration and mining with 21 deposits having documented silver production in excess of 3,110 kilograms (100,000 ounces). Silver was first found in 1901 but small-scale mining only began in 1913. High silver prices at the end of World War I led to renewed and ultimately successful exploration activity in the area. Since then, at least 65 deposits and prospects have been identified within the area. Many small silver deposits were mined independently of each other throughout the area between 1913 and 1925.

The Treadwell Yukon Company Limited (TYC) consolidated a number of small mines and properties in the area in the 1920s. TYC continued to be the dominant company in the mining camp until it ceased operations in 1942 upon the untimely death of its founder Livingston Wernecke.

Keno Hill Mining Company Limited (KHM) acquired the interests formerly controlled by TYC in 1945. KHM was reorganized in November 1947 as United Keno Hill Mines Limited (UKHM) and by 1958 UKHM had acquired several properties, interests in properties, and other companies, including the assets of Galkeno Mines Limited and Canadian Northwest Mines and Oil.

Ventures Limited (later Falconbridge Nickel Mines Limited and Falconbridge Limited) acquired a controlling interest in UKHM in 1960 and assumed management control.

UKHM ceased all production in the area in 1989 and placed the active mines on care and maintenance, but continued to conduct limited underground exploration and development at the Bellekeno and Silver King mines. On February 18, 2000, UKHM was granted bankruptcy protection with PricewaterhouseCoopers Inc. (PwC) being appointed by the court as the interim receiver and receiver-manager of UKHM in 2001.

In June 2005, Alexco was selected as the preferred purchaser of the assets of UKHM by PwC. In February 2006, Alexco’s purchase of UKHM’s assets through a wholly-owned subsidiary, Elsa Reclamation & Development Company Ltd. (ERDC), was approved. Under the Keno Hill Subsidiary

Agreement, ERDC is indemnified against all historical liability, has property access for exploration and future development, and is not required to post security against pre-existing liabilities. ERDC received a water licence from the Yukon government in November 2007, giving Alexco free and clear title to surface and subsurface claims, leases, free-hold land, buildings, and equipment at the Keno Hill Silver District.

Alexco embarked on an aggressive surface exploration program in 2006 with continued yearly exploration programs through 2013. The Bellekeno mine reached commercial production in January 2011 with at a nominal rate of 250 tonnes per day (tpd).

1.4 Regional and Local Geological Setting

The Keno Hill mining camp is located in the northwestern part of the Selwyn Basin in an area where the northwest-trending Robert Service Thrust Sheet and the Tombstone Thrust Sheet overlap. The area is underlain by Upper Proterozoic to Mississippian rocks that were deposited in a shelf environment during the formation of the northern Cordilleran continental margin. The area underwent regional compressive tectonic stresses during the Jurassic and the Cretaceous, producing thrusts, folds, and penetrative fabrics of various scales.

The Robert Service Thrust Sheet lying to the south of the Keno Hill Silver District is composed of a Late Proterozoic to Cambrian coarse grained quartz rich turbidite succession with interbedded shales and locally limestone of the Hyland Group, Yusezyu Formation.

The Tombstone Thrust Sheet that lies to the north and underlies the Keno Hill Silver District consists of Devonian phyllite, felsic meta-tuffs, and metaclastic rocks of the Earn Group that is conformably overlain by the Mississippian Keno Hill Quartzite. This latter unit is locally thickened due to folding and/or thrusting and is the predominant host of the silver-lead-zinc mineralization of the Keno Hill district. Four intrusive suites intrude the sedimentary sequence:

- Late Triassic gabbro to diorite sills.
- Early Cretaceous Tombstone granite to granodiorite.
- Mid Cretaceous diabase dykes and sills.
- Upper Cretaceous McQuesten peraluminous porphyritic granite.

The Mississippian Keno Hill Quartzite is composed of a thick Basal Quartzite Member that is overlain by the Sourdough Hill Member. The sequence was metamorphosed to greenschist facies during the Cretaceous. The Basal Quartzite Member is up to 1100 m thick and comprises quartzite interbedded with minor graphitic phyllite and is intruded by Triassic greenstone sills. The Basal Quartzite Member is the dominant host to the silver mineralization in the Keno Hill Silver District. The overlying Sourdough Hill Member comprises graphitic and sericitic phyllite, chloritic quartz augen phyllite, and thin limestone units. To the south, the Robert Service Thrust Fault separates the Keno Hill Quartzite from the overthrust Upper Proterozoic Hyland Group, which is comprised of predominantly meta-sedimentary chlorite and quartz-rich schist. The Keno Hill Quartzite is intruded by quartz-feldspar aplite sills or dykes that are correlated with the Early Cretaceous intrusive suite found elsewhere in the district.

Three phases of folding are identified in the Keno Hill Silver District. The two earliest phases consist of isoclinal folding with subhorizontal, east- or west-trending fold axes. The later phase consists of a subvertical axial plane and moderate southeast-trending and plunging fold axis. In the Keno Hill Silver District, the first phases of folding formed structurally dismembered isoclinal folds of which the Basal Quartzite Member outlines synforms at Monument Hill where the Lucky Queen mine is located and at Caribou Hill, while the Bellekeno mine and the Flame & Moth prospect are located on the upper limb of a large scale anticline that closes to the north.

Within the Keno Hill Silver District, up to four periods of faulting are recognized. The oldest fault set consists of south-dipping foliation-parallel structures that developed contemporaneously with the first phase folding. The Robert Service Thrust Fault truncates the top of the Keno Hill Quartzite and sets the Precambrian schist of the Yusezyu Formation of the Hyland Group above the Mississippian Sourdough Hill Member of the Keno Hill Quartzite. The mineralization in the Keno Hill Silver District is hosted by a series of northeast-trending pre- and syn- mineral vein faults that display apparent left lateral normal displacement. These are commonly offset by post-mineralization high angle cross faults, low angle faults, and bedding faults. Most commonly, these comprise northwest-striking cross faults that show apparent right-lateral displacement.

1.5 Deposit Types and Mineralization

The Keno Hill Silver District is a polymetallic silver-lead-zinc vein district with characteristics analogous to Kokanee Range (Slocan), British Columbia; Coeur d'Alene, Idaho; Freiberg and the Harz Mountains, Germany; and Príbram, Czech Republic. Common characteristics include the proximity to crustal-scale faults, affecting thick clastic metasedimentary rocks, and intrusion of felsic rocks that may have acted as a heat source driving the hydrothermal system. In the Keno Hill Silver District, the largest accumulation of silver, lead, and zinc minerals occurs in faults in structurally prepared competent rocks.

In general, gangue minerals include manganiferous siderite, minor calcite, and quartz. Silver occurs in argentiferous galena and argentiferous tetrahedrite. In supergene assemblages, silver can be native or in polybasite, stephanite, and pyrargyrite. Lead occurs in galena, and zinc in iron-rich sphalerite. Other sulphides include minor pyrite, arsenopyrite, and chalcopyrite.

At the district scale, the hydrothermal system exhibits sharp lateral mineralogical changes equivocally associated with temperature gradients around magmatic rocks. The hydrothermal veins also exhibit sharp vertical mineralogical zoning, historically interpreted to be lead-rich at the top to more zinc-rich at depth.

1.6 Exploration Status

Most past exploration work in the Keno Hill Silver District was conducted as support to the mining activities until the mines closed in 1989. This historic work involved surface and underground drilling designed to explore areas surrounding the main underground working areas.

The current exploration program conducted by Alexco is the first comprehensive exploration effort in the Keno Hill Silver District since 1997. Alexco has conducted surface diamond drilling programs in the district every year since 2006.

No additional surface drilling has been completed on the Lucky Queen deposit since the independent technical report was published as the intent was to access the orebody and begin development. The updated mineral resource estimate on the Bellekeno deposit incorporated the knowledge gained in the last three years of production and the results of additional underground and surface exploration drilling. The Flame & Moth updated resource estimate incorporated all drilling completed through to the end of 2012.

1.7 Development and Operations Status

Commercial production started at the Bellekeno silver mine on January 1, 2011 and continued at a nominal rate of 250 tpd with some 158,346 tonnes (t) being milled in 2011 and 2012. The average head grades for this period have been 794 gpt silver, 9.9% lead, and 5.3% zinc. Operations at the site were temporarily suspended at the end of August 2013. The following is an excerpt from Alexco's July 17, 2013 news release.

"…Alexco has developed a contingency plan to operate through the summer while beginning preparations to undergo a temporary and orderly suspension of operations at the Bellekeno mine and mill prior to the onset of winter. This avoids selling silver at current or weaker market prices, and positions the mine and mill for a re-opening after the winter, assuming the silver market has improved from current levels and underlying fixed costs have been reduced. Alexco plans to use the winter period to significantly restructure the underlying fixed costs at Keno Hill, as well as refine plans for a production ramp-up to 400 tonnes per day in the 2014 -- 2015 time period."

Readers are referred to the complete text of the July 17, 2013 news release, available on Alexco's website www.alexcoresource.com.

This Updated PEA is based on Alexco's plan to resume production in the eastern portion of the Keno Hill Silver District in Q3 of 2015 and it describes mining plans for the Bellekeno and Lucky Queen mines, and the Flame & Moth deposit.

Alexco expects to resume commercial production at the Bellekeno mine in Q3 2015.

The permit and amendments to existing permits required to bring the Lucky Queen deposit into commercial production were received in Q4 2012.

Development of the Lucky Queen deposit began in January 2012 with Alexco re-establishing the existing portal, installing services, and beginning rehabilitation of the existing drift, which was driven in the 1980's by UKHM. Reconditioning of this drift progressed more slowly than planned with a bypass driven in one caved area, and ice occupying much of the 1,000 m length ultimately reconditioned. Despite these setbacks, the reconditioning was advanced to the planned ramp collar location prior to receiving the required permits and underground development began in early November 2012. The project was temporarily suspended in early March 2013, partly due to a need to amend the mining licence to allow storage of waste rock at the site to reduce waste haulage and storage constraints. These amendments have been put in place. The project is planned to resume during Q2 2016 and reach commercial production in Q3 of 2017.

Preliminary mine planning has been completed for the Flame & Moth deposit, and the required mining permit and amendments to existing permits/are expected to be recieved by the end of Q2, 2015. Earlier in 2014, Alexco began surface preparations including upgrading roads, installing utilities and other services to the site, installation of an office and dry facility and excavation of the portal site. By the end of 2014, Alexco expects to have advanced the Main Lightning Ramp approximately 20m from the portal. Flame and Moth mine is expected to reach commercial production in Q2 of 2016.

Mined tonnes produced from these three mine sites will be trucked to Alexco's nearby 400 tpd mill facility as scheduled in the PEA life-of-mine (LoM) plan. Prior to resuming production, several upgrades will be made to the mill including installation of a second ball mill which was purchased in 2013.

Development of the Onek deposit began in August 2012 with the building of a new road to access the proposed portal collar location, construction of a new haul road, excavation of the portal bench, establishing the ramp face, and the installation of ground support and services. The first ramp round was taken in early November 2012 and underground development began with the goal of reaching the target vein at the 960 elevation. On May 31, 2013, Alexco announced that operations at Onek would be temporarily suspended. Onek is not included in the PEA production plan.

1.8 Mineral Resources and Mineral Reserve Estimates

This PEA technical report is based on mineral resource estimates for three deposits that are part of Alexco's KHSD project:

- Bellekeno deposit;
- Lucky Queen deposit; and
- Flame & Moth deposit.

The mineral resources have been estimated in conformity with the generally accepted CIM *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines* (CIM, 2003) and are reported in accordance with the Canadian Securities Administrators' National Instrument 43-101. Mineral resources are not mineral reserves and have not demonstrated economic viability. There is no certainty that all or any part of the mineral resource will be converted into mineral reserve.

In the opinion of SRK, the resource evaluations reported herein are a reasonable representation of the global polymetallic mineral resources in the Bellekeno and Lucky Queen mines, and Flame & Moth deposit at the current level of sampling.

1.8.1 Bellekeno Mineral Resources

The updated Bellekeno Mineral Resource Statement (Table 1.1) presented herein represents the third mineral resource evaluation prepared for the Bellekeno deposit in accordance with the Canadian Securities Administrators' National Instrument 43-101. The mineral resource model was prepared by Alexco personnel under the supervision of a third party consulting geologist David Farrow, BSc (Hons), GDE, PrSciNat, PGeo (BC), of GeoStrat Consulting Services Inc. The model considers 405 core drill holes drilled by Alexco during the period of 2006 to 2012 as well as historical drilling and chip data collection during production both historically and by Alexco. The resource estimation work was completed by Mr. Farrow, a Qualified Person as defined in National Instrument 43-101.

Table 1.1: Updated Mineral Resource Statement for the Bellekeno Deposit, September 30, 2012

Class	Tonnes	Ag (gpt)	Pb (%)	Zn (%)
Indicated*	365,000	658	5.3	5.3
Inferred*	243,000	428	4.1	5.1

* Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates.

** Reported at a cut-off value of C$185 (US$1 = C$1)/t using consensus long term metal prices (US$) and recoveries of Ag US$22.50/oz, recovery 96%; Pb US$ 0.85/lb, recovery 97%; Zn US$ 0.95/lb, recovery 88%; Ag grades capped at 5,000 gpt.

SRK notes that since the date of the Bellekeno deposit mineral resource statement, Alexco reports actual tonnes processed from the Bellekeno mine of 124,000 t at average grades of 701 gpt silver, 8.3% lead, and 4.3% zinc (from June 1, 2012 to the temporary shutdown on September 1, 2013).

1.8.2 Lucky Queen Mineral Resources

The mineral resource estimate for the Lucky Queen deposit was previously prepared by SRK and published in an independent technical report on September 8, 2011 entitled "Technical Report on the Lucky Queen Deposit, Lucky Queen Property, Keno Hill District, Yukon," which is available on SEDAR. The Mineral Resource Statement from this report is restated below.

Table 1.2: Mineral Resource Statement for the Lucky Queen Deposit, July 27, 2011

Class	Tonnes	Ag (gpt)	Au (gpt)	Pb (%)	Zn (%)
Indicated*	124,000	1,227	0.17	2.57	1.72
Inferred*	150,000	571	0.16	1.37	0.92

* Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates.

** Reported at a cut-off value of $185 (US$1 = C$1)/t using long term metal prices (US$) and recoveries developed for the nearby Bellekeno deposit (Ag US$18.50/oz, recovery 96%; Pb US$ 0.90/lb, recovery 97%; Zn US$ 0.95/lb, recovery 88%; Au US$ 1,100/oz, recovery 72%). Ag grades capped at 6,300 gpt; Pb capped at 14.8%, Zn capped at 7%, Au grades capped at 2 gpt.

1.8.3 Flame & Moth Mineral Resources

The mineral resource estimate for the Flame & Moth deposit was previously prepared by Alexco under the supervision of Mr. Farrow and published in the technical report entitled "Updated Technical Report on the Flame & Moth Deposit, Flame & Moth Property, Keno Hill District, Yukon" (Farrow and McOnie, 2013) on March 15, 2013, which is available on SEDAR. The Mineral Resource Statement from this report is restated below.

Table 1.3: Mineral Resource Statement for the Flame & Moth Deposit, January 30, 2013

Class	Tonnes	Ag (gpt)	Au (gpt)	Pb (%)	Zn (%)
Indicated*	1,378,000	516	0.42	1.72	5.70
Inferred*	107,000	313	0.27	0.86	4.21

* Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates.

** Reported at a cut-off value of $185 (US$0.96 = C$1)/t using consensus long term metal prices (US$) and recoveries developed for the nearby Bellekeno deposit (Ag US$24.00/oz, recovery 96%; Pb US$ 0.85/lb, recovery 97%; Zn US$ 0.95/lb, recovery 88%; Au US$ 1,400/oz, recovery 72%).For all veins, Ag grades capped at 3,000 gpt; Pb and Zn capped at 15% and 20%, respectively; Au grades not capped.

1.8.4 Onek Mineral Resources

A mineral resource for the Onek deposit was prepared by SRK in 2011 and published in a technical report entitled “Technical report on the Onek deposit, Onek Property, Keno Hill District, Yukon” and filed on Sedar. The 2011 mineral resource was re-estimated as part of this report and is restated below in Table 1.4.

Table 1.4: Mineral Resource Statement for the Onek deposit, SRK Consulting, October 15, 2014

Class	Tonnes	Ag (gpt)	Au (gpt)	Pb (%)	Zn (%)
Indicated*	654,000	200	0.62	1.29	12.30
Inferred*	234,000	134	0.44	1.24	8.86

* Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates.

Reported at a dollar cut-off grade of C$185.00/t using metal prices (USD) and recoveries of Ag US$20.00/oz, recovery 96%; Pb US$ 0.90/lb, recovery 97%; Zn US$ 0.95/lb, recovery 88%; Au US$ 1,250/oz, recovery 72%. Confidence in the estimate of Inferred mineral resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure.

1.8.5 Bermingham Mineral Resources

A mineral resource estimate for the Bermingham deposit was prepared by SRK on August 8, 2012 and published in an independent technical report entitled “Technical Report on the Bermingham Deposit, Bermingham Property, Keno Hill District, Yukon”. There has been no additional exploration work on the Bermingham deposit in the resource area since 2012 and the results of the mineral resource estimate are incorporated in this report. The Mineral Resource Statement from this report is restated below in Table 1.5.

Table 1.5: Mineral Resource Statement for the Bermingham deposit, SRK Consulting, October 15, 2014

Class	Tonnes	Ag (gpt)	Au (gpt)	Pb (%)	Zn (%)
Indicated*	257,000	460	0.06	2.00	2.10
Inferred*	102,000	372	0.09	1.12	1.83

* Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates.

Reported at a dollar cut-off grade of C$185.00/t using metal prices (USD) and recoveries of Ag US$20.00/oz, recovery 96%; Pb US$ 0.90/lb, recovery 97%; Zn US$ 0.95/lb, recovery 88%; Au US$ 1,250/oz, recovery 72%. Confidence in the estimate of Inferred mineral resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure.

1.8.6 Mineral Reserves

This PEA does not support a mineral reserve estimate. The “potentially mineable tonnes” on which the economic evaluation is based include both Indicated and Inferred mineral resources from all three deposits.

1.9 Mining

1.9.1 Mine Geotechnical and Hydrogeology

- The Keno Hill Silver District is known for locally challenging ground conditions that limit the choice of mining methods to fully supported methods with limited spans such as cut and fill and small scale longhole stoping with backfill.
- The Bellekeno mine was in production for close to three years. In that time, Alexco has successfully gained an understanding of the structural context of the deposit, how the ground responds to mining, and the best means of controlling the ground.
- Alexco has developed detailed and effective standards for ground support.
- In all mining areas, weak, wet ground conditions will result in elevated mining risk. Areas exhibiting these conditions will need to be exposed early and dewatered.
- The Flame & Moth deposit is in part situated below the floor of a valley and there is potential for water ingress from faulting, overburden materials, and surface water features.

1.9.2 Mining

- Planned underground mining methods include mechanized cut and fill, and drift and fill, where spans are greater than 7 m, and small scale longhole stoping.
- Net smelter return (NSR) estimates were used as a measure of resource block value.
- All three deposits exhibit good vein continuity after application of cut-off NSR values.
- Nominal production rates are: Bellekeno mine 250 tpd, Lucky Queen 100 tpd, and Flame & Moth 320 to 370 tpd.
- Potentially mineable tonnes total of 812.9 kilotonnes (kt) with average metal grades of 754 gpt silver, 0.40 gpt gold, 2.71% lead, and 4.53% zinc, and an average NSR value of $398 per tonne (/t).
- The NSR value accounts for the impact of the renegotiated Silver Purchase Agreement with Silver Wheaton Corp. (Amendment No.7).
- Contained silver in potentially mineable tonnes is estimated at 19.7 million ounces.
- The average percentage of Inferred mineral resources in the LoM plan is approximately 6%.
- Estimated average external dilution by deposit is Bellekeno 19%, Lucky Queen 44%, and Flame & Moth 15%.

- The LoM production schedule from July 2015 forward averages 398 tpd for 5.7 years through to March 2021.
- Waste development requirements for 2015 average 8 m/d and peak at 12 m/d in Q3.
- Average advance rates drop through 2016 and stabilize in the 4-6 m/d range from Q1 2017 until Q3 2019.

Bellekeno

- The Bellekeno deposit was being mined by underground methods including mechanized cut and fill and small scale longitudinal retreat longhole incorporating full backfilling.
- Bellekeno potentially mineable tonnes, 11% of LoM plant feed, are estimated at 86 kt with average metal grades of 660 gpt silver, 6.74% lead, and 4.15% zinc, and NSR value of $381/t.
- The mine reached commercial production at the start of 2011. Operations were temporarily suspended at the end of August 2013. A July 2015 production re-start is planned.

Lucky Queen

- The Lucky Queen deposit requires the use of mechanized cut and fill methods in order to extract the mineral resource due to the average 45 degree (°) dip of the deposit. Cemented rockfill is planned to provide adequate support to the hangingwall.
- Lucky Queen potentially mineable tonnes, which account for 17% of LoM plant feed, are estimated at 142 kt with average metal grades of 1,059 gpt silver, 0.12 gpt gold, 2.40% lead, and 1.42% zinc, and NSR value of $530/t.
- Based on a Q2 2016 development re-start, the project is expected to begin providing plant feed as of Q4 2016, with commercial production (+70% of its planned production rate) achieved by Q3 2017.

Flame & Moth

- The Flame & Moth deposit can be mined by underground methods incorporating full backfilling without causing surface disturbance that could put the mill at risk.
- Flame & Moth's potentially mineable tonnes, 72% of LoM plant feed, are estimated at 585 kt with average metal grades of 693 gpt silver, 0.52 gpt gold, 2.19% lead, and 5.35% zinc, and NSR value of $368/t.
- Based on work completed to date in 2014 and forecast development rates, the project is expected to begin providing plant feed in Q4 2015, with commercial production scheduled for Q2 2016.

1.10 Mineral Processing

Metallurgical testwork has been conducted on each of the three deposits independently. Testwork performed from 1996 through 2009 was the basis for the design and construction of Alexco's mill facility in 2010. Results of this testwork have been compared to actual performance in the mill, which has been processing Bellekeno ore since late 2010. Since 2011, samples from Lucky Queen and

Flame & Moth mineralization were tested to assess flotation performance only. To date, no testwork has been conducted on a blended sample from any of the three deposits.

As all three deposits appear to follow similar relationships between concentrate grade and recovery versus head grade, this suggests similar mineralogy but at significantly different grades and metal ratios. Mineralogical investigations should be conducted to confirm this assumption.

Testwork results indicated that a primary grind size finer than that currently achieved by the mill facility could increase flotation selectivity, especially for zinc, resulting in higher recoveries and concentrate grades.

The current PEA study assumes the mill facility's production will increase to the design capacity of 400 tpd once the additional ball mill is commissioned in Q1 2015.

The LoM plan is generally based on the mill processing a variable blend of two deposits at a time, first a Bellekeno and Flame & Moth blend, and later a blend of Lucky Queen and Flame & Moth. Flame & Moth represents 72% of the total plant feed.

Relationships between silver, lead, and zinc recovery and head grade were used to estimate the concentrate recoveries for the blends expected in the PEA production plan. In addition, based on the concentrate mass recovery, the grade of minor elements was also estimated on an annual basis for the PEA production plan. These relationships are preliminary in nature and it is SRK's opinion that they need to be verified with metallurgical testwork on actual blended samples.

1.11 Environmental and Permitting

Key environmental and socio-economic considerations associated with this project include water quality, noise/traffic/dust, land/resource use and heritage resources, and community and First Nations relations. Discharges from the underground mines typically have neutral pH levels, but elevated concentrations of zinc, and sometimes cadmium. Due to the close proximity of this site to the community of Keno City, noise, dust, and traffic have been high profile issues for the project, and are the subject of ongoing discussions with the community. Several specific issues were raised during the *Yukon Environmental and Socio-economic Assessment Act* (YESAA) process, and these will need to be addressed during permitting and the ongoing consultation with the community. Access to and through the site are key issues for the local community. Alexco has signed a comprehensive Cooperation and Benefits Agreement with the First Nation of Na-cho Nyak Dun to address environmental and social issues associated with the project.

The tailings and portions of the waste rock are a potential source of metal leaching. The Bellekeno mine tailings are currently stored in the dry stack tailings facility (DSTF), where they will be covered at closure. Progressive reclamation has already begun on the DSTF and the completed areas of the DSTF have been covered with soil and revegetated. This facility can be expanded to accommodate future production from other new mines (Lucky Queen and Flame & Moth). The Bellekeno underground mine practice was to use uncemented waste rock and a cemented waste rock/tailings blend as backfill. This same practice is planned to continue in future at the Bellekeno mine, but with more effort on utilizing tailings as backfill. A similar strategy is planned for the Flame and Moth deposit, while Lucky Queen requires the use of a cemented rockfill product that will be compacted to provide hangingwall support.

Waste rock generated at Bellekeno (and all of the planned mines) that has a minimal potential for metal leaching/acid rock drainage (ML/ARD) will be used in construction or stored in surface waste rock storage facilities. There are surface storage pads for temporary storage of mineralized waste rock prior to their transport underground for backfilling.

The development of the Flame & Moth deposit will generate relatively large amounts of waste rock in comparison to the Bellekeno mine, and will require a temporary stockpile (waste rock set aside for underground backfill) and a permanent stockpile for excess waste rock (potentially reduced by waste rock used for surface construction projects). Alexco plans to use the majority of the excess waste rock to construct a toe berm for the expansion of the DSTF.

Alexco recently revised its reclamation and closure plan to address the closure liabilities associated with the further development of Bellekeno and Lucky Queen (Alexco, 2012c). As part of the Quartz Mining Licence, the Government of Yukon currently holds $4.2 million in security for these operations, including the mill area and dry stack facility. This is a reasonable level of security given the current understanding of liabilities at this site. Development of the Flame & Moth deposit may require additional financial security to cover the potential costs of additional liabilities from the site – principally, the expanded DSTF and additional waste rock storage facility. However, Alexco has indicated that the additional costs are likely be be offset by reclamation credits and security that is currently in place but no longer required for Onek. Post closure water treatment is not expected to be required at Flame & Moth.

All of the regulatory approvals required for mining activities associated with the Bellekeno and Lucky Queen deposits are currently in place. The required expansion of the DSTF and the addition of the Flame & Moth development have been reviewed under the YESAA process. YESAB has made a recommendation to the Yukon Government to allow the Project to proceed, subject to a number of specified terms and conditions (YESAB 2014). Pending formal approval, the Flame and Moth development will also require amendments to the Quartz Mining Licence and Water Use Licence, which could take two to three months and six-to nine months respectively from the time of submission. The terms and conditions for the Flame and Moth development, as recommended in the YESAB report include additional water treatment requirements, provision for a liner under the DSTF, additional equipment to reduce noise from the mill area crusher, and increased air quality and noise monitoring and community consultation and mediation to address community concerns regarding air quality and noise related issues.

1.12 Capital and Operating Costs

1.12.1 Capital Cost Estimate

Capital costs have been estimated in 2013 dollars on a quarterly basis for the period from January 1, 2015 to the end of the planned plant feed schedule in Q1 2021. In 2014, Alexco began surface preparations for the Flame and Moth deposit and is expected to complete the portal excavations and first 20m of the Lightning Main Ramp by the end of 2014, these costs are considered as sunk costs. In Q3 2015, production will start, sourced from the Bellekeno mine. The Flame & Moth mine will begin delivering tonnes in Q4 2015. The Lucky Queen mine will begin producing plant feed in Q4 2016, just as Bellekeno production is ending. For the two new mine start-ups, SRK considers commercial production to have begun in the quarter that 70% of the planned production rate is achieved. This defines the following pre-production periods:

- Q3 2014 through Q1 2016 for the Flame & Moth mine, reaching commercial production in Q2 2016
- Q2 2016 through Q2 2017 for the Lucky Queen mine, reaching commercial production in Q3 2017.

Table 1.6 shows the LoM estimate of total capital. It is important to note that initial capital is distributed in time as defined by the pre-production periods described above. It is not all front-end loaded in the cash flow model.

Table 1.6: Capital Cost Summary

Area	Capital Costs (CDN$x1,000,000)		
	Initial	Sustaining	Total
Silver Wheaton Payment	$22.5		$22.5
Bellekeno Mine		$5.2	$5.2
Lucky Queen Mine	$9.3	$9.8	$19.0
Flame & Moth Mine	$26.2	$10.7	$36.9
Mill		$2.0	$2.0
Site Services		$0.9	$0.9
Health & Safety		$0.9	$0.9
Contingency	$5.8	$2.2	$8.0
Total Capital	**$63.8**	**$31.8**	**$95.6**

Capital cost estimation work was undertaken as follows:

- Mine capital by SRK, representing more than 90% of the total estimate.
- Mill, site services, and health and safety capital by Alexco with review by SRK.

SRK considers the accuracy of the capital cost estimate components to be at a scoping level.

1.12.2 Operating Cost Estimate

Site operating costs have been estimated in 2013 dollars based on SRK's review of Alexco's 2012 and 2013 operating budgets and on actual reported operating costs for 2011 and 2012. SRK's operating cost estimates reflect Alexco's ongoing and planned initiatives aimed at reducing the site unit operating cost.

These initiatives include:

- Future mine operations including development and production are planned as owner operated (instead of contractor) using Alexco's own equipment and workforce.

- Direct purchasing of new and used equipment for Lucky Queen and Flame & Moth instead of paying contractor monthly rental costs.
- Establishing long term supply contracts with suppliers and eliminating dependence on a contractor to supply basic materials such as ground support, explosives, and other materials.
- Upgrading the mill facility to ensure that it can reliably process 400 tpd.
- Table 1.7 shows the LoM site operating cost estimate. It is based on a LoM plant feed of 812.9 kt as shown in the economic model.

Table 1.7: LoM Site Operating Cost Summary

Area	LoM Site Opex ($M)	Unit Cost ($/tonne)
Mine	$127.6	$157
Mill	$56.5	$70
G&A	$23.0	$28
LoM Total Site	**$207.1**	**$255**

SRK's operating cost estimates for the three individual mines are shown in Table 1.8. The tonnes shown in the table exclude tonnes mined during pre-production. The Flame & Moth mine operating cost includes $8.1 M for equipment lease payments, equivalent to $14.39/t.

Table 1.8: Individual Mine Operating Cost Estimates

Mine	Individual Mine Opex ($M)	Operating Period kt	Mine Unit Cost ($/tonne)
Bellekeno Mine	$12.3	85.7	$143
Lucky Queen	$32.56	142.2	$228
Flame & Moth	$82.9	585.0	$142
Subtotal Mines	**$127.6**	**812.9**	**$157**

1.13 Economics

Alexco and Silver Wheaton Corp. (Silver Wheaton) entered into an agreement on October 2, 2008 (the "Silver Purchase Agreement") whereby 25% of all future silver production from Keno Hill Silver District properties owned or controlled by Alexco at the time of the consummation of the Silver Purchase Agreement will be delivered to Silver Wheaton in exchange for a payment of US$3.90 per ounce (/oz) as well as a payment by Silver Wheaton of US$50 M in 2009 and 2010 used for development and construction of the Bellekeno mine.

On June 16, 2014, the terms of this agreement were agreed to be altered, subject to as yet unfulfilled terms. The revised agreement becomes effective upon receipt by Silver Wheaton from

Alexco a payment of US$20,000,000. After the payment has been received, the agreement will be modified as follows:

During the period commencing on the earlier of (i) the first date from and after June 16, 2014 that the Owners receive payment or Refined Silver from an Offtaker for Payable Silver pursuant to and in accordance with any Mineral Offtake Agreement, and (ii) the date that is six (6) weeks from when the Mine first produced saleable concentrates at any time after June 16, 2014 (such earlier date being referred to as the "**Re-Commencement Date**"), which date shall be confirmed by way of written notice from the Owners to Silver Wheaton, and ending 10 years from such date (as may be adjusted pursuant to Section 5B) (the "**Fixed Price Amendment Term**"), the definition of "**Fixed Price**" set out at Section 1(nn) of this Agreement shall have the following meaning (with "**Minimum Silver Price**" meaning US$3.90, subject to increase by one percent annually (compounded) beginning three years after the date of completion of the 400 tonne per day final completion test):

"Fixed Price" means:

(a) if the Spot Silver Price is less than or equal to US$19.45, the amount equal to the greater of: (A) (US$18.00 + (Spot Silver Price - US$19.45) x 0.91); and (B) the Minimum Silver Price; or

(b) if the Spot Silver Price is greater than USUS$19.45, the amount equal to the greater of: (A) (US$18.00 - (Spot Silver Price - US$19.45) x 0.91); and (B) the Minimum Silver Price.

This PEA is preliminary in nature. Approximately 6% of the "potentially mineable tonnes" disclosed in the mine plans are derived from Inferred mineral resources by the application of a cut-off net smelter return (NSR) value ($/t), and dilution and mining recovery factors. Inferred mineral resources are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that this PEA will be realized.

Inputs to the economic assessment include:

- The terms of the amended Silver Purchase Agreement, Amendment No.7 dated June 16, 2014.
- LoM plant feed of 812.9 kt averaging 754 gpt silver, 0.40 gpt gold, 2.71% lead, and 4.53% zinc.
- The LoM production schedule from January 1, 2015 forward averages 398 tpd through to Q1 2021.
- Average NSR value of plant feed of US$398/t using the prices and exchange rate listed below.
- Metal prices of US$18.50/oz silver, US$1210/oz gold, US$0.98 per pound (/lb) lead, and US$1.00/lb zinc.
- Exchange rate of US$0.89/C$1.00.
- Payable silver amounting to 17.1 million ounces.
- LoM revenue of US$321 million (CDN$361 million);
- A LoM average site operating cost of $255/t processed comprised of $157/t mining, $70/t milling, and $28/t G&A.

- Capital costs totalling CDN$95.6 million including a CDN$22.5 million payment to Silver Wheaton Corp. to finalize Amendment No.7 of the Silver Purchase Agreement.
- Equivalent to CDN$117/t processed including Amendment No.7 payment, or CDN$90/t processed excluding the Amendment No.7 payment.

The KHSD project indicative economic results on an after tax basis are:

- Net cash contribution of $35.7 million.
- Internal rate of return (IRR) of 22.1%.
- Net present value (NPV) (5%) of $23.3 million.
- Payback period is 3.75 years from January 1, 2015.

SRK notes that the LoM impact of the Silver Purchase Agreement is an undiscounted revenue reduction of $5.85 million for Alexco.

SRK further notes that the PEA is based on a specifically selected mine sequencing strategy, however there are other possible scenarios for defining an overall production schedule that may warrant further study, particularly if changing metal prices or exploration results alter the mine planning context.

1.14 Risks and Opportunities

1.14.1 Risks

Mining

- Assessments of ground conditions at Lucky Queen and Flame & Moth are based solely on drill core review.
- As the overall level of extraction increases at the Bellekeno mine, it is likely that some stress induced failures will be encountered.
- Poor ground conditions, associated with a weak and wet rock masses, could increase mining costs and reduce planned extraction at Bellekeno and Lucky Queen.
- There is a possibility of significant water inflow to the planned Flame & Moth underground workings from faulting, overburden materials, and surface water features.
- Poor ground conditions, associated with a weak and wet rock mass, could increase Flame & Moth mining costs and reduce planned extraction.
- Alexco must build up a skilled underground workforce to achieve the planned development and production ramp up in 2015 and 2016. There is a risk that some contractor support could be needed, increasing operating costs.

Processing

- Estimates of plant performance include uncertainty since they are based on metallurgical testwork conducted on unblended samples of grades much higher and lower than the production plan averages.
- No assessment of ball mill grindability has been done for Lucky Queen or Flame & Moth material.
- To date, only one composite sample from Flame & Moth has been tested and the results indicate that the current mill flowsheet could result in poor zinc flotation performance.

Environmental and Permitting

- There is potential for additional post-closure costs related to water treatment at the Bellekeno workings.
- The potential for high groundwater inflows to the Flame & Moth mine could create additional costs related to management and treatment of mine water.
- Development of the Flame & Moth deposit as well as the expansion of the DSTF from the currently permitted size of 322,000 t to a capacity that will accommodate Flame & Moth (estimated at a minimum of 750,000 t) will require additional permitting and possibly environmental assessment. SRK considers this a low risk, and significant delays are not anticipated.

Project Economics

- Unless underlying fixed costs are significantly reduced, project economic results will be significantly impacted by a 15% drop in metal prices below those used in this PEA.
- The KHSD project has relatively high fixed costs related to location, climate, and the fact that operations are spread out over a large area. Overall economic results are closely linked to plant throughput rate. The risk is in maintaining the necessary plant throughput from multiple mines that are characterized by narrow vein mining in locally poor ground conditions.

1.14.2 Opportunities

Mining

- Depending on the impact of hydrogeology on the Flame & Moth mine plan, there may be an opportunity to achieve more than the 50% planned extraction of the barrier pillars along the Mill fault, and within crown pillar areas. Refer to report Section 0.
- Actual mining experience at Bellekeno mine has yielded more tonnage at a similar grade than predicted by previous versions of the underground mine plan (based on the same resource block model) such that the currently planned mine life could be extended.
- At the Bellekeno mine, the East zone represents an opportunity if economic conditions were to improve, particularly silver and zinc prices higher than the study prices.

- The Flame & Moth underground mine plan should be optimized based on the results of any additional metallurgical testwork and the results of further hydrogeology and mine geotechnical assessments. There may be an opportunity to increase the potentially mineable tonnes.
- Flame & Moth mining shapes are sensitive to the cut-off criteria, and higher metal prices or reduced royalties would increase the potentially mineable tonnes.
- In two of the three deposits there are some potentially mineable tonnes that were excluded from the PEA production plan for various reasons. This excluded tonnage amounts to 143 kt with average metal grades of 517 gpt silver, 3.00% lead, 4.00% zinc, and 0.07 gpt gold, representing a potential future mining opportunity.

Processing

- Additional testing of blended samples representative of the LoM production plan blends and grades may result in better flotation results than the ones estimated in this PEA.
- Additional hardness tests on Lucky Queen and Flame & Moth samples may reveal better grindability than the current expectation. Better ball mill grindability has the potential to decrease power consumption, improve mill throughput, achieve finer flotation feed size and, therefore, higher recoveries and concentrate grades.

Project Economics

- The project is sensitive to higher metal prices. A 20% increase in prices compared to the prices used in the study (silver price of US$28.80/oz for example) would increase estimated after tax net cash flow by roughly 2.2 times.
- Within the Keno Hill Silver District, Alexco has identified several high grade silver exploration/development targets that represent a pipeline of potential projects. These represent a potential opportunity to sustain a nominal plant feed rate of 400 tpd beyond Q1 2021 (Table 16.23), thus improving the project economics.

1.15 Recommendations

Mining

- Mining sequences, monitoring, and tactical support requirements will need to be evaluated for the later stages of the Bellekeno mine plan.
- Additional hydrogeological and geotechnical evaluation needs to be undertaken at Flame & Moth to assess the impact of the hydrogeology on the proposed mining plan.
- For Flame & Moth, a system of barrier pillars will need to be designed along the Mill fault and below the overburden areas to minimize the potential for water inflow.
- The Lucky Queen underground mine plan should be optimized based on the results of additional metallurgical test results and increased understanding of the geology and geotechnical conditions resulting from planned sill drifting on vein.

- The Flame & Moth underground mine plan should be optimized based on the results of any additional metallurgical testwork and the results of further hydrogeology and mine geotechnical assessments.

Processing

- Further metallurgical testing and mineralogical analysis are recommended on additional samples representing the blends of deposits and expected grades shown in the LoM production plan.
- Additional testwork should also include ball mill grindability, flotation performance, and a range of samples to measure variability.
- Flotation conditions for Flame & Moth zinc concentrate production need to be optimized.
- Testing of additional samples for settling and geochemical characteristics is also warranted.

Environmental and Permitting

- Alexco has already initiated investigations on groundwater conditions at Flame & Moth, and geochemical characterization of waste rock from Flame & Moth. These studies will be important for developing appropriate waste and water management plans for these areas.
- Additional geochemical sampling and testing of both potentially acid or metal leaching and non-acid or metal leaching rock from all of the mines would provide a more robust data set for use in updating future closure plans.

2 Introduction

Alexco owns access to the majority of the historic Keno Hill Silver District, located in Yukon, Canada, approximately 350 kilometres (km) north of Whitehorse. The district surrounds the village of Keno City, Yukon (63˚55'N, 135˚29'W). The closest town is Mayo, approximately 40 km to the southwest of the project via an all-weather road.

The Keno Hill Silver District is comprised of polymetallic silver-lead-zinc deposits with approximately 30 known deposits and numerous prospects in the area, many of which have been subject to small scale mining operations over the last century.

Alexco's objective is to unlock value in the silver-rich Keno Hill Silver District, and is focused on growth by advancing its promising district properties to development decisions to provide long term plant feed for its mill facility, which has the capacity of 400 tonnes per day (tpd).

The Bellekeno mine is one of several mineral properties held by Alexco within the Keno Hill Silver District. The Bellekeno mine, which commenced commercial production at the beginning of calendar year 2011, operated as Canada's only primary silver mine until operations were temporarily suspended by Alexco at the end of August 2013 (refer to Alexco's July 17, 2013 news release).

The following is an excerpt from the news release.

"…Alexco has developed a contingency plan to operate through the summer while beginning preparations to undergo a temporary and orderly suspension of operations at the Bellekeno mine and mill prior to the onset of winter. This avoids selling silver at current or weaker market prices, and positions the mine and mill for a re-opening after the winter, assuming the silver market has improved from current levels and underlying fixed costs have been reduced. Alexco plans to use the winter period to significantly restructure the underlying fixed costs at Keno Hill, as well as refine plans for a production ramp-up to 400 tonnes per day in the 2014 -- 2015 time period."

Readers are referred to the complete text of the July 17, 2013 news release, available on Alexco's website www.alexcoresource.com.

The current status of Alexco's more advanced properties within the Keno Hill Silver District are listed below:

- Bellekeno mine: In production since 2011 until temporary suspension of operations at the end of August 2013. The preliminary economic assessment (PEA) assumes that production stoping will re-start in late July 2015.
- Lucky Queen mine: Development work was undertaken from late 2012 into Q2 2013, with operations temporarily suspended in March 2013. The PEA assumes that pre-production development work will re-start in Q2 2016.
- Onek mine: Development work was undertaken from late 2012 into Q2 2013, with operations temporarily suspended at the end of May 2013. Onek is not included in the production plan discussed in this PEA report.

- Flame & Moth deposit: Scoping level mine planning work has been completed by SRK, and an internal company report has been provided to Alexco. Alexco has initiated the permitting process. The PEA assumes that pre-production development work will begin on January 1, 2015.
- Bermingham deposit: A historical small scale silver producer, where additional exploration drilling has been completed by Alexco and an updated resource block model has been completed. Mine planning on the new mineral resources has not been done. This deposit is not considered in this PEA report.

This PEA is based on Alexco's plan to resume underground development activities in the eastern part of the Keno Hill Silver District, specifically at the Bellekeno and Lucky Queen mines and the Flame & Moth deposit beginning January 1, 2015, followed by the commencement of production stoping and processing in Q3, 2015. The project describing the development and production plans for these three properties is referred to as the Keno Hill Silver District Project – Phase 2, which in this report is abbreviated as the KHSD project.

For reference, the period of production at the Bellekeno mine from 2011 into 2013, along with development activities at the Onek and Lucky Queen mines, is referred to as Phase 1.

In 2006, Alexco acquired the exploration and future development rights to many of the historic mines in the Keno Hill Silver District through ERDC, a wholly-owned subsidiary. This gave Alexco free and clear title to surface and subsurface claims, leases, free-hold land, buildings, and equipment located on various properties in the Keno Hill Silver District.

On December 2, 2009, Alexco issued the report "Bellekeno Project - Updated Preliminary Economic Assessment Technical Report" (Wardrop, 2009) to provide an overview of the economic potential of extracting and processing mineralized material from the Bellekeno polymetallic deposits.

In June 2012, Alexco commissioned SRK to visit the property and prepare an updated PEA for the current mine operations including mine planning and production scheduling.

In February 2013, Alexco commissioned a second group of SRK consultants to visit the property and prepare mine plans and development and production schedules specifically for the Flame & Moth deposit. A report for internal company use was included in the scope of work.

In April 2013, Alexco requested a change order to the KHSD project PEA scope of work in that SRK's recently prepared Flame & Moth mine plans be added to the overall PEA production plan. SRK was in agreement and work on the PEA was completed on the basis of including the Flame & Moth deposit.

In August 2014, Alexco requested that the KHSD project PEA report be amended to include exploration information for the Onek and Bermingham deposits and that the economics of the PEA be updated to reflect current metal prices and costs.

The purpose of this technical report is to present the current status of operations at the KHSD project, and describe the mining and processing plans for the Bellekeno, Lucky Queen and Flame & Moth deposits that support the long range feed schedule for the mill facility.

All five deposits have mineral resource block models that were constructed using a geostatistical block modelling approach with the mineralization constrained by wireframes. Mineral resources are classified as Indicated or Inferred following the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (CIM, 2014).

An updated mineral resource model for the Bellekeno deposit was constructed by Alexco during the third quarter of 2012 under the supervision of David Farrow, PGeo (APEGBC), an independent consulting geologist.

The mineral resource estimate for the Lucky Queen deposit was prepared by SRK and published in an independent technical report on September 8, 2011 entitled "Technical Report on the Lucky Queen Deposit, Lucky Queen Property, Keno Hill District, Yukon."

The mineral resource for the Bermingham deposit was prepared by SRK and published in an independent technical report on August 8, 2012 entitled "Technical Report on the Bermingham Deposit, Bermingham Property, Keno Hill District, Yukon".

In 2013, a mineral resource block model for the Flame & Moth deposit was constructed by Alexco under the supervision of Mr. Farrow. The mineral resource model is documented in a March 15, 2013 technical report entitled "Updated Technical Report on the Flame & Moth Property, Keno Hill District, Yukon" (Farrow and McOnie, 2013).

The mineral resources for the Onek deposit were prepared by SRK on September 8, 2011 and are being updated in this report to include additional drilling carried out by Alexco in 2012 and 2013.

This current technical report also documents the context and assumptions required to develop the economic analysis to support a PEA based on the mineral resource estimates of three deposits (Bellekeno, Lucky Queen, and Flame & Moth). The report was prepared following the guidelines of Canadian Securities Administrators' National Instrument 43-101 and Form 43-101F1, and in conformity with generally accepted CIM *Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines* (CIM, 2003).

2.1 Basis of Technical Report

This PEA technical report is based on the following sources of information:

- SRK's inspection of the Bellekeno mine, including surface facilities and underground mine operations.
- Inspection of the Lucky Queen mine area, including the surface infrastructure, portal, and underground access drift.
- SRK's inspection of the Onek and Bermingham deposits and drill core.
- Five mineral resource block models described above in report Section 2.
- Previous, publicly available technical reports.
- Discussions with Alexco management and technical personnel.

- Information provided by Alexco including drawings, maps, exploration data, production data, metallurgical results from the mill facility, concentrate marketing agreements, annual operating budgets, and actual operating cost details.
- Review of environmental and permitting data provided by Access Consulting Group, which is a wholly-owned subsidiary of Alexco.
- Additional information from public domain sources.

This report is based on metric units of measurement unless otherwise stated, and with the exceptions for industry standards such as troy ounces (oz) for precious metals and pounds (lb) for base metals. All currency values are in Canadian dollars unless otherwise noted.

This report uses many abbreviations and acronyms common in the mining industry, most of which are defined in the body of the text. Further explanations are listed in the List of Abbreviations following the Table of Contents.

2.2 Contributors to the Technical Report

This PEA technical report is a collaborative effort between Alexco and SRK with contributions by Access Consulting Group and an independent consultant. Areas of responsibility are outlined in general below. The PEA technical report was compiled by SRK.

2.2.1 Qualifications of SRK

The SRK Group comprises of more than 1,600 professionals, offering expertise in a wide range of resource engineering disciplines. The independence of the SRK Group is ensured by the fact that it holds no equity in any project it investigates and that its ownership rests solely with its staff. This permits SRK to provide its clients with conflict-free and objective recommendations. SRK has a proven track record in undertaking independent assessments of mineral resources and mineral reserves, project evaluations and audits, technical reports and independent feasibility evaluations to bankable standards on behalf of exploration and mining companies, and financial institutions worldwide. The SRK Group has established a reputation for providing valuable consultancy services to the global mining industry.

2.2.2 SRK Contributions to the Technical Report

Contributions to this PEA technical report by SRK independent consultants are listed below.

Mr. Stephen Taylor, BEng, MSc, PEng, Principal Mining Engineer, was responsible for mine planning, scheduling, and cost estimation for the Bellekeno and Lucky Queen deposits. Mr. Taylor also set up the technical-economic model for the project.

Mr. Ken Reipas, PEng, Principal Mining Engineer, was responsible for mine planning, scheduling, and cost estimation for the Flame & Moth deposit. Mr. Reipas had primary responsibility for compiling the technical report.

Dr. Gilles Arseneau, PGeo, Principal Consultant, was responsible for geology, resource estimation, and reporting for the Lucky Queen deposit.

Mr. Bruce Murphy, FSAIMM, Principal Consultant (Rock Mechanics), was responsible for geotechnical assessment and mine design recommendations for all three deposits included in the production plan. Mr. Murphy has been advising Alexco on geotechnical aspects at the Bellekeno mine since 2009.

Ms. Denise Nunes, Senior Consultant, Metallurgy, was responsible for metallurgical performance estimates and reporting based on review of testwork and actual performance data from Alexco's mill facility.

Dr. Adrian Dance, PEng, FAusIMM, Principal Consultant (Metallurgy), was responsible for senior review of SRK's work related to metallurgy and processing.

Ms. Kelly Sexsmith, PGeo, Senior Environmental Geochemist, was responsible for reporting on the waste management, environmental, permitting, and closure aspects of the project. Her work included reviewing and reporting on work completed by Access Consulting Group, which is a wholly-owned subsidiary of Alexco.

2.2.3 Technical Report Contributions by Others

Contributions to this PEA technical report by Alexco included:

- Mr. David Farrow, BSc (Hons), GDE, PrSciNat, PGeo, of GeoStrat Consulting Services Inc., a third party geology consultant retained by Alexco, acted as Qualified Person (QP) for resource estimation and was responsible for both the updated Bellekeno mineral resource estimate and the Flame & Moth mineral resource estimate.
- Ms. Laura J. Battison, BSc (Hons), PGeo, former Senior Mine Geologist, Alexco, acted as QP for the Bellekeno data used in the mineral resource model conducted by Mr. Farrow.
- Mr. Alan McOnie, FAusIMM, VP Exploration, Alexco, acted as QP for the Flame & Moth geology and data used in the construction of the Flame & Moth mineral resource model.
- Mr. Richard Trimble, PEng, Tetra Tech EBA Inc., acted as QP for the DSTF expansion section.
- Alexco provided estimates of future capital costs related to the mill facility, the dry stack tailings facilities, surface infrastructure for Lucky Queen, and site sustaining capital.
- Alexco set up the taxes section of the economic model.

Contributions to this PEA technical report by Alexco's wholly-owned subsidiary Access Consulting Group included:

- Planning and reporting on waste management (tailings and waste rock), surface water management, permitting, and other environmental aspects of the project.

2.3 Site Visits

In accordance with National Instrument 43-101 guidelines, the following site visits were made by the contributing independent consultants acting as QPs:

- Mr. Reipas visited the site from March 7 to 13, 2013.
- Mr. Taylor visited the site from June 25 to 27, 2012.
- Dr. Arseneau visited the site from July 26 to 28, 2010 and from May 7 to 8, 2012.
- Mr. Murphy visited the site from June 25 to 27, 2012.
- Ms. Sexsmith visited the site from August 15 to 16, 2012.
- Mr. Farrow visited the site during October 2011.

2.4 Declaration

SRK's opinion contained herein and effective November 15, 2014 is based on information collected by SRK throughout the course of SRK's investigations. The information in turn reflects various technical and economic conditions at the time of writing the report. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. Consequently, actual results may be significantly more or less favourable.

This report may include technical information that requires subsequent calculations to derive subtotals, totals, and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, SRK does not consider them to be material.

SRK is not an insider, associate or an affiliate of Alexco, and neither SRK nor any affiliate has acted as advisor to Alexco, its subsidiaries or its affiliates in connection with this project. The results of the technical review by SRK are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings.

3 Reliance on Other Experts

SRK has not performed an independent verification of land title and tenure information as summarized in Section 4 of this report, but has relied on Macdonald & Company as expressed in a legal opinion provided to Alexco on January 28, 2013. The reliance applies solely to the legal status of the rights disclosed in Sections 4.1 and 4.2 below. SRK did not verify the legality of any underlying agreement(s) that may exist concerning the permits or other agreement(s) between third parties.

SRK was informed by Alexco that there are no known litigations potentially affecting the KHSD project.

4 Property Description and Location

The Keno Hill Silver District project is located approximately 350 km north of Whitehorse, Yukon, Canada (Figure 4.1). The nearest town is Mayo, which is accessible from Whitehorse via a 460 km all-weather road and by air via the Mayo airport. An all-weather gravel road known as the Silver Trail Highway connects Mayo to the project area and the village of Keno City. Alexco has administration, maintenance, and camp facilities at the location of the historic mining town of Elsa, which is located just off of the Silver Trail Highway. The area is covered by NTS map sheets 105M/13 and 105M/14.

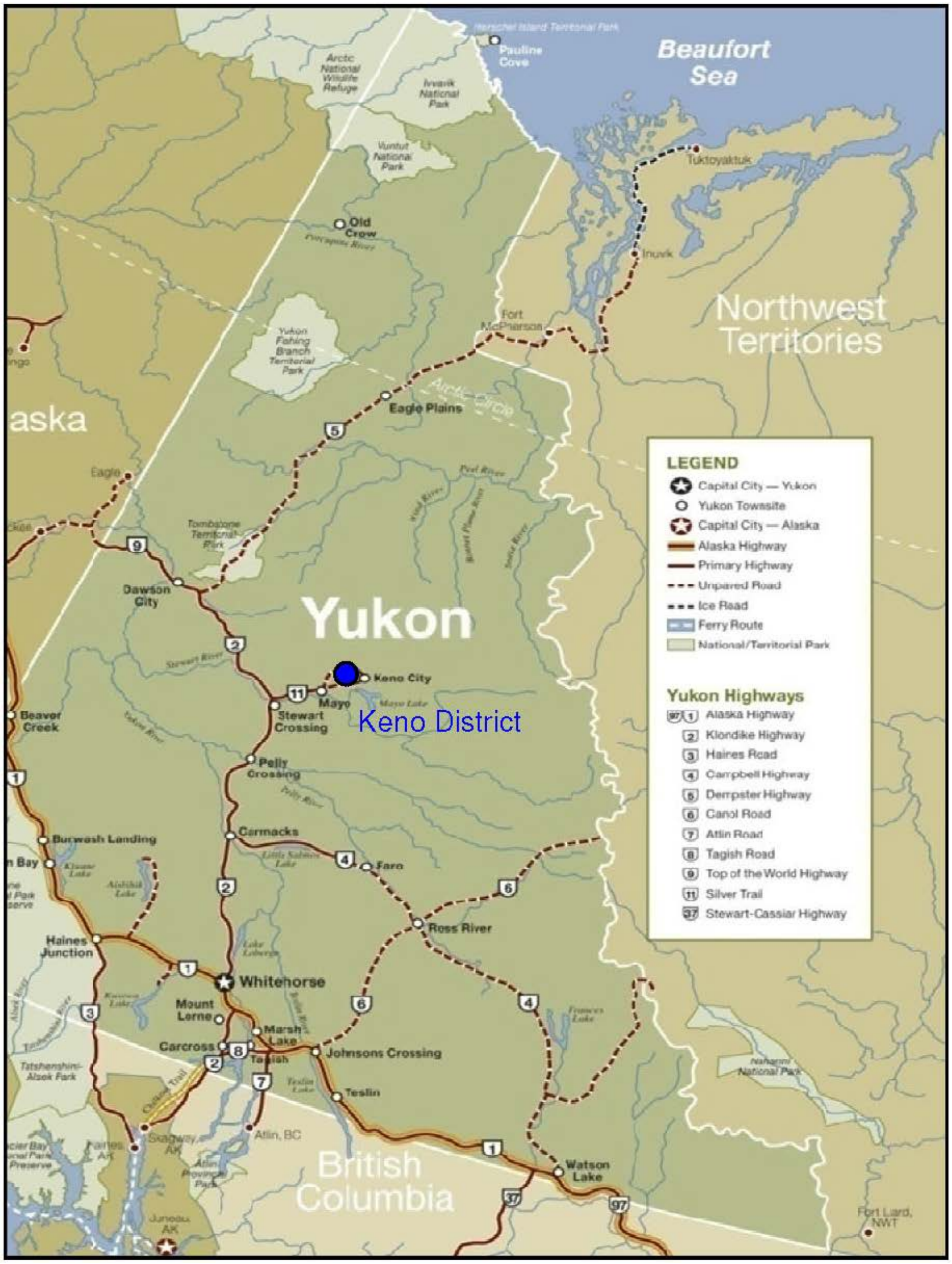


Figure 4.1: Keno Hill Silver District Location Map (Alexco, 2013)

4.1 Mineral Tenure

Mineral exploration in the Keno Hill Silver District was initially permitted under the terms and conditions set out by the Yukon Government in the Class III Quartz Mining Land Use Permit – LQ00186, issued on July 5, 2006 and valid until July 4, 2011. Alexco subsequently obtained a Class IV Quartz Mining Land Use Permit – LQ00240 on June 17, 2008. The two permits were amalgamated on December 8, 2008 under #LQ00240, which is valid until June 16, 2018.

All quartz mining leases have been legally surveyed; the quartz mining claims have not been legally surveyed.

The KHSD quartz mining claims and quartz mining leases are held by one of three wholly-owned subsidiaries of Alexco: Elsa Reclamation & Development Company Ltd. (ERDC), Alexco Keno Hill Mining Company (AKHM), or Alexco Exploration Canada Corp. (AECC), except for holding a 50% share with third party individuals in three leases (Rico, Kiddo and Argentum) (Appendix 1).

The Alexco Keno Hill property covers an area of 239.016 km^2, and comprises 695 quartz mining leases (88.141 km^2) and 871 quartz mining claims (150.875 km^2) as shown in Figure 4.2 (also attached separately with claim label detail).

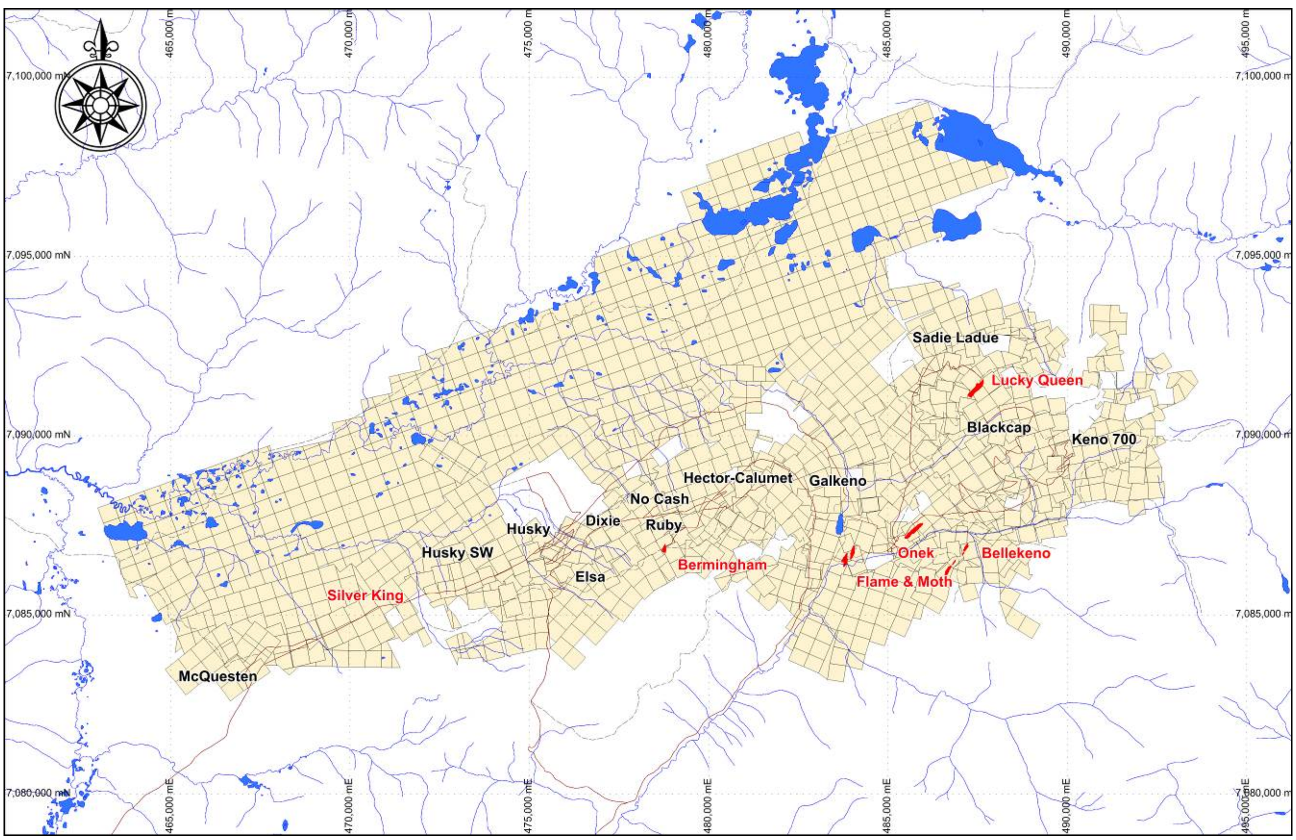


Figure 4.2: Alexco Claim and Lease Holdings in the Keno Hill Silver District Excluding the Tailings Property (Alexco, 2014)

The Bellekeno mine is centred at Latitude 63.90853 degrees north; Longitude 135.26201 degrees west. The mineral resources for the Bellekeno deposit reported herein are located on the following quartz mining leases: SAM 55327, TUNDRA 12838, WHIPSAW 14081, and NOD FR. 16170.

The Lucky Queen deposit is centred at Latitude 63.94786 degrees north; Longitude 135.25421 degrees west. The mineral resources for the Lucky Queen deposit are located on the following quartz mining leases: ANTHONY 12909, OK FRACTION 13094, UNCLE SAM 12923, MATHOLE 12937, and MAYO 12919.

The Flame & Moth deposit is centred at Latitude 63.90588 degrees north; Longitude 135.32931 degrees west. The mineral resources for the Flame & Moth deposit are located on the MOTH, FLAME, FRANCES 5, and FRANCES 7 quartz mining leases and the BLUE claim.

The Onek deposit is centred at Latitude 63.91293 degrees north; Longitude 135.29134 degrees west. The mineral resources for the Onek deposit are located on the following quartz mining leases: FISHER, ELI, GALENA FARM and LONE STAR.

The Bermingham deposit is centred at Latitude 63.908° N, Longitude 135.434° W. The mineral resources for the Bermingham prospect reported herein are located on the ATLANTIC, ARCTIC, ETTA, and MASTIFF quartz mining leases.

4.2 Underlying Agreements

Alexco's rights to much of the Keno Hill Silver District properties are held through ERDC, an Alexco wholly-owned subsidiary.

In June 2005, PwC, a court appointed interim receiver and receiver-manager of United Keno Hill Mines Limited and UKH Minerals Limited (collectively UKHM), selected Alexco as the preferred purchaser of the assets of UKHM.

PwC and Alexco entered into an agreement (the "Purchase Agreement") dated August 4, 2005, as amended November 2, 2005 and January 31, 2006. Alexco assigned the Purchase Agreement to its wholly owned subsidiary ERDC on February 6, 2006.

In February 2006, following the negotiation of a Subsidiary Agreement between the Government of Canada, the Government of Yukon, and Alexco, the Supreme Court of Yukon approved the purchase of the assets of UKHM by Alexco through its wholly-owned subsidiary ERDC. The UKHM assets comprised two Crown grants, 674 mining leases, 289 mineral claims, a concentration plant, various buildings and equipment, as well as partial ownership interest in three mining leases, 36 mineral claims, in addition to a leasehold interest in one mineral claim.

Interim closing of the UKHM transaction was completed on April 18, 2006. Alexco assumed responsibility for care and maintenance operations at the UKHM property. On the initial closing, among other things, Alexco:

- Deposited C$10 M in trust to be used exclusively to fund ERDC's contribution to the cost of the reclamation of the pre-existing environmental liabilities of the UKHM property.

- Obtained possession of the mineral claims and leases, titled property, and Crown grants of UKHM and the equipment on the UKHM properties for the purposes of contracted care and maintenance and exploration by ERDC of the UKHM property.

Title to all UKHM assets was transferred to Alexco (final closing) in late November 2007, following the approval of a Type B Water Licence by the Yukon Water Board.

Alexco is formulating an Existing State of Mine Closure Plan for the entire Keno Hill Silver District as part of its agreements with different levels of government.

All quartz mining leases have been legally surveyed, whereas most of the quartz mining claims have not.

Future production from the Keno Hill Silver District, including the Bellekeno silver mine, is subject to a 1.5% NSR royalty, capped at C$4.0 M, payable to the Government of Canada. This royalty is a condition of the Subsidiary Agreement. Payment of the royalty does not begin until all pre-production capital has been recouped plus an additional allowance for Keno Hill Silver District exploration of approximately C$6.2 M.

Alexco and Silver Wheaton entered into an agreement on October 2, 2008 (the “Silver Purchase Agreement”) whereby 25% of all future silver production from Keno Hill Silver District properties owned or controlled by Alexco at the time of the consummation of the Silver Purchase Agreement will be delivered to Silver Wheaton in exchange for a payment of US$3.90/oz as well as a payment by Silver Wheaton of US$50 M for use in the development and construction of the Bellekeno silver mine.

On June 16, 2014, the terms of this agreement were agreed to be altered, subject to as yet unfulfilled terms. The revised agreement becomes effective upon receipt by Silver Wheaton from Alexco a payment of US$20,000,000. After the payment has been received, the agreement will be modified as follows:

During the period commencing on the earlier of (i) the first date from and after June 16, 2014 that the Owners receive payment or Refined Silver from an Offtaker for Payable Silver pursuant to and in accordance with any Mineral Offtake Agreement, and (ii) the date that is six (6) weeks from when the Mine first produced saleable concentrates at any time after June 16, 2014 (such earlier date being referred to as the “**Re-Commencement Date**”), which date shall be confirmed by way of written notice from the Owners to Silver Wheaton, and ending 10 years from such date (as may be adjusted pursuant to Section 5B) (the “**Fixed Price Amendment Term**”), the definition of “**Fixed Price**” set out at Section 1(nn) of this Agreement shall have the following meaning (with “**Minimum Silver Price**” meaning US$3.90, subject to increase by one percent annually (compounded) beginning three years after the date of completion of the 400 tonne per day final completion test):

“Fixed Price” means:

(a) if the Spot Silver Price is less than or equal to US$19.45, the amount equal to the greater of: (A) (US$18.00 + (Spot Silver Price - US$19.45) x 0.91); and (B) the Minimum Silver Price; or

(b) if the Spot Silver Price is greater than USUS$19.45, the amount equal to the greater of: (A) (US$18.00 - (Spot Silver Price - US$19.45) x 0.91); and (B) the Minimum Silver Price.

Alexco and Glencore Ltd., Stamford (Glencore), a branch of a wholly-owned subsidiary of the Swiss-based international resources group Glencore International AG, entered into a lead and zinc concentrate off-take agreement in December 2010, coincident with the initiation of concentrate shipments from Alexco's Bellekeno operations.

4.3 Permits and Authorization

Refer to report Section 20.2 Environmental Assessment and Permitting.

4.4 Environmental Liabilities

Refer to report Section 20.1 Site and Regulatory Context.

5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Accessibility

The Keno Hill Silver District is located in central Yukon. The closest sizable town is Mayo, located on the Steward River, approximately 40 km to the southwest. Mayo is accessible from Whitehorse via a 460 km all-weather road and is also serviced by the Mayo airport, which is located just to the north of Mayo. An all-weather gravel road known as the Silver Trail Highway leads from Mayo to the Keno Hill Silver District, the historic company town of Elsa, and the village of Keno City.

5.2 Local Resources and Infrastructure

The Keno Hill Silver District is well connected by a network of public and private gravel roads including the Silver Trail Highway and the Bellekeno haul road, which was built to skirt the village of Keno City. A large number of roads constructed for past mining operations are still serviceable.

The historic company town of Elsa, located toward the western end of the Keno Hill Silver District, comprises several buildings that are currently being used for administrative offices, staff accommodations, core logging facilities, maintenance facilities, and storage. Warehousing and refueling facilities are also located at Elsa.

The main camp and kitchen are located at Flat Creek approximately 1 km west of Elsa.

The 400-tonne-per-day Keno Hill silver mill facility and associated tailings facilities are located in a valley near the village of Keno City, approximately 9.2 km east of Elsa.

Three phase power is available in many parts of the Keno Hill Silver District.

Radio communication is well established throughout the Keno Hill Silver District with phone service to key locations.

Local resources in terms of manpower, rental equipment, materials, and supplies are very limited.

5.3 Climate

The central Yukon is characterized by a subarctic continental climate with cold winters and warm summers. Average temperatures in the winter are between -15 and -20 degrees Celsius (°C) but can reach -60°C. The summers are moderately warm with average temperatures in July around 15°C. Exploration and mining work can be carried out year-round.

Because of its northern latitude, winter days are short with the sun low on the horizon such that north-facing slopes can experience ten weeks without direct sunlight around the winter solstice. Conversely, summer days are very long, especially in early summer around the summer solstice. Annual precipitation averages 28 centimetres (cm); half of this amount falls as snow, which starts to accumulate in October and remains into May or June.

5.4 Physiography

The landscape around the Keno Hill Silver District is characterized by rolling hills and mountains with a relief of up to 1,600 metres (m) (Figure 5.1). The highest elevation is Keno Hill at 1,975 m. Slopes are gentle except the north slopes of Keno Hill and Sourdough Hill.

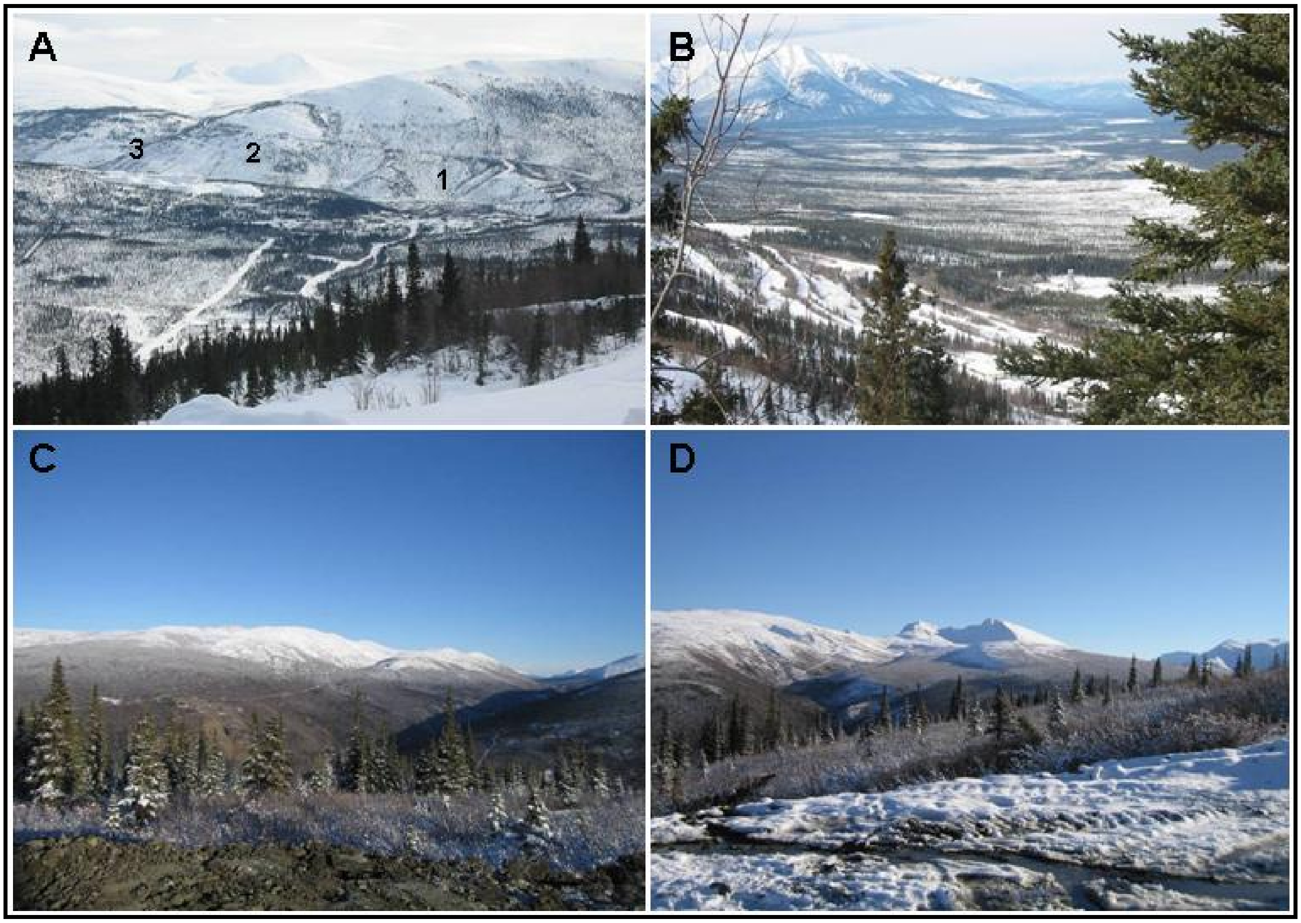


Figure 5.1: Typical Landscape in the Keno Hill District (SRK, 2011)

Photo A: Taken from Galkeno 300, looking southeast at (1) Keno City, (2) Lightning Creek Valley, (3) Bellekeno 600 adit is just out of sight from this view angle.

Photo B: View from road above Elsa, looking northwest.

Photo C and Photo D: Views looking north from the drilling sites at Bellekeno.

6 History

The history of the Keno Hill mining camp is described in Cathro (2006); the information presented in this section draws heavily from that source.

The Keno Hill mining camp area has a rich history of exploration and mining dating back to the beginning of the 1900s. Earliest prospectors had been working the area around Mayo for gold, especially after the Klondike gold rush of 1898. The first silver was found in 1901; however, interest was low due to the prospector's interest in gold alone — despite an assay from 1905 yielding more than 11 kilograms per tonne (kg/t) silver. Small-scale mining finally commenced in 1913 with the first shipment of 50 tonnes of vein material to a smelter in San Francisco. Due to the shallow depth of the deposit and the First World War, interest in the area had dwindled by 1917.

The end of the First World War and high silver prices led to renewed and ultimately successful exploration activity in the area with the Yukon Gold Company and later Keno Hill Limited as the first truly commercial operators. Success at the Keno mine led to a staking rush, resulting in the discovery of a number of rich deposits.

In the early 1920s, the TYC became interested in the Keno Hill Silver District area and under the leadership of Livingston Wernecke acquired a number of claims and started mining.

Wernecke's death and the Second World War resulted in a sharp decline in activity in the Keno Hill camp until a new company, Keno Hill Mining Company Ltd., later UKHM, spearheaded by Thayer Lindsley, purchased all TYC properties and started production. Very good results led to another staking rush and the formation of a large number of junior exploration companies, many of which were purchased by UKHM.

The 1950s proved to be the most successful time of the mining camp. Starting in the early 1960s, new discoveries and additions to mineral inventory lagged production.

In 1972, the Husky mine went into production and, in 1977, open pit operations were introduced into the camp mainly in order to recover crown pillars. From 1982 to 1985 (Sadie-Ladue and Shamrock mines) and 1989 to 1990 (Shamrock, Silver King, Hector-Calumet, Lucky Queen, and Keno mines) float trains were mined on a small scale basis.

UKHM stopped production from the Keno Hill District permanently in early 1989. Production of greater than 1000 tons prior to 1989 from deposits in the district is shown in Table 6.1.

Table 6.1: District Production through to 1989 (Cathro, 2006)

Mine	Tons	Recovered Grades Ag oz/t	Pb %	Zn %	Ag Ounces	Pb pounds	Zn pounds
Hector-Calumet	2,721,288	35.4	7.5	6.1	96,219,690	406,912,502	334,570,797
Elsa	491,009	61.4	4.9	1.4	30,158,040	47,708,019	13,484,869
Husky	429,367	41.7	3.9	0.4	17,889,418	33,290,002	3,309,284
Sadie Ladue	244,330	52.1	6.5	4.5	12,725,633	31,923,607	22,029,310
Keno	283,762	44.4	10.7	3.7	12,602,298	60,549,038	21,189,428
.Lucky Queen	123,590	89.2	7.0	2.7	11,019,368	17,223,250	6,653,462
Silver King	207,618	53.0	7.7	0.8	10,995,915	31,917,957	3,510,383
No Cash	166,530	29.8	3.6	1.9	4,969,107	11,912,346	6,188,199
Galkeno	167,063	27.2	5.2	2.7	4,544,142	17,437,410	8,999,204
Bermingham	186,266	20.3	4.2	0.6	3,777,932	15,575,525	2,157,714
Bellekeno	40,502	42.6	9.8	2.3	1,724,371	7,966,619	1,828,776
Black Cap	48,576	27.4	1.6	0.3	1,331,131	1,560,359	269,402
Onek	95,290	13.6	5.5	3.4	1,299,333	10,456,254	6,452,107
Ruby	40,652	25.2	3.0	1.3	1,024,141	2,420,577	1,022,818
Shamrock	5,336	180.3	37.6	0.3	962,396	4,013,179	36,523
Comstock	22,863	39.7	10.7	3.8	907,176	4,891,434	1,719,131
Dixie	23,872	20.2	3.8	5.1	481,942	1,813,155	2,455,694
Husky Southwest	10,461	39.6	0.3	0.1	414,261	56,193	17,300
Townsite	18,570	16.4	4.3	2.0	305,423	1,583,393	730,014
Mt. Keno	1,588	139.3	17.7		221,152	561,770	
Miller (UN & Dragon)	9,390	15.1	2.2	0.7	141,358	419,702	139,638
Flame & Moth	1,590	18.3	1.1	0.9	29,120	35,363	28,895

Between 1990 and 1998, the Dominion Mineral Resources and Sterling Frontier Properties Company of Canada Limited (Dominion), after acquiring a 32% interest in UKHM, carried out extensive reclamation, remediation, and exploration work at the Bellekeno, Husky Southwest, and Silver King mines in order to reopen the camp. Lack of financing forced Dominion to abandon its rights, in effect reverting back the rights to UKHM. Environmental liabilities and site maintenance costs drove UKHM into bankruptcy; the federal government inherited the assets.

A historical resource estimate completed for the Silver King deposit during this time is shown in Table 6.2.

Table 6.2: Historical resource estimate for Silver King property.

Class	Tonnes	Ag (gpt)	Au (gpt)	Pb (%)	Zn (%)
Proven, Probable and Indicated	98,998	1,354	n/a	1.6	0.1
Inferred	22,581	1,456	n/a	0.1	n/a

Historical resources for Silver King were estimated by United Keno Hill Mines Limited, as documented in an internal report entitled “Mineral Resources and Mineable Ore Reserves” dated March 9, 1997. The historical resources were estimated based on a combination of surface and underground drill holes and chip samples taken on the vein and calculated using the polygonal (block) model and the 1997 CIM definitions for resource categories. These estimated historical resources include a total of 55,674 tonnes classified as proven and probable reserves and 43,324 tonnes classified as indicated resources, plus an additional 22,581 tonnes classified as inferred categories. Verification of the estimate would require new drill holes into a statistically significant number of the historical resource blocks and/or a combination of on-vein sampling. A qualified person has not done sufficient work to classify this estimate of historical resources as current, nor is Alexco treating this historical estimate as a current mineral resource.

In June 2005, Alexco was selected as the preferred purchaser of the assets of UKHM by PwC, the court-appointed interim receiver and receiver-manager of the Keno Hill Silver District holdings. In February 2006, following lengthy negotiations with federal and territory governments, the Supreme Court of the Yukon approved Alexco’s purchase of UKHM’s assets through Alexco’s wholly-owned subsidiary ERDC.

Interim closing of the Keno Hill Silver District transaction was completed on April 18, 2006, and an agreement governing management and future reclamation of the Keno Hill Silver District was signed. Under the Keno Hill Subsidiary Agreement, ERDC is indemnified against all historical liability, has property access for exploration and future development and is not required to post security against pre-existing liabilities. ERDC will also be reimbursed for its future environmental reclamation activities — estimated at more than C$50 M — while itself contributing C$10 M to the clean-up of the Keno Hill Silver District. ERDC has also assumed responsibility for ongoing environmental care and maintenance of the site under contract to the Yukon Government, and is actively conducting a baseline environmental assessment and site characterization program.

To finalize the Keno Hill Silver District acquisition, ERDC applied for and received a water licence in November 2007. Upon receipt of the license, ERDC received clear title to surface and subsurface claims, leases, free-hold land, buildings, and equipment at the Keno Hill Silver District.

During 2006, Alexco embarked on an aggressive exploration program in the Keno Hill Silver District, targeting the historical resources at Bellekeno and Husky Southwest and subordinately other former mines in the Keno Hill Silver District.

6.1 History of the Bellekeno Mine

The Bellekeno area hosts ten veins on the north facing slope of Sourdough Hill, across the Lightning Creek valley from the Keno mine. Initially staked in 1919 by Andrew Johnson following the discovery of the Tundra vein, the nearby Ram vein was staked the following year. During 1921, Alex Gordon staked the Eureka, Whipsaw, and Extension mining claims. Combined, these five claim groups covered all of the known veins in the Bellekeno deposit.

The Bellekeno deposit was mined during four periods between 1921 and 2011. Each period of mining was followed by a period of extensive exploration to replace exhausted mineral inventory.

Between 1921 and 1928, 495 tonnes of hand sorted, vein material grading 9621 gpt silver was sacked and shipped to San Francisco.

The Depression, World War II, and perhaps some litigation marked the transition into larger scale mining. In 1947, the claims were purchased by Mayo Mines Ltd. After extensive exploration and adit development, production briefly recommenced. Under the ownership of Mayo Mines, the Bellekeno mine extracted two products: a direct shipping high grade product, and a lower grade concentrate that was processed at the nearby Mackeno mill. With high development requirements, small deposits and poor milling recovery (<70%), the company operated at a net loss between 1947 and 1954.

Between 1955 and 1965, the property changed owners a number of times, as production attempts proved unsuccessful, before it was purchased by UKHM. After acquiring the deposit, UKHM began intermittent exploration, development, and rehabilitation programs, and the development of the Bellekeno 625 adit. Exploration programs included surface overburden drilling, soil and geophysics surveys, trenching, and core drilling. Bellekeno was in production between 1988 and 1989, until UKHM was forced into bankruptcy in 2000 and its assets were inherited by the Canadian federal government. Purchased in 2006 by Alexco, the small mineral inventory has been expanded and it was in commercial production from 2011 to 2013. Mining to date has extracted 5.6 million ounces of silver along with lead, zinc and gold. Production results are summarized in Table 6.3.

Table 6.3: Bellekeno Mine Production Summary, 1919 to 2013 (Data compiled from internal documents)

Year	Shipper	Claims	Tonnes	Ag (gpt)	Pb (%)[3]	Ag (Oz)
1921-27	Gordon	Eureka	186	10,900	73.9	65,200
		Whipsaw	6.8	8,280	61.9	1,810
		Extension	0.9	7,820	75.4	230
		Chance	1.4	5,420	71.1	240
1927-28	Johnson	Ram	266	8,850	64.0	75,690
			460	**9,660**	**68.0**	**143,100**
1947-52	Mayo Mines	Ram	several 100			
	Bellekeno - DS[1]		113	6,000	70.0	21,800
1953	Bellekeno - DS		131	6,690	72.0	28,200
	Bellekeno - MK[2]		4,690	1,880	11.6	283,500
1954	Bellekeno - DS		91	7,280	74.0	21,300
	Bellekeno - MK		4,980	2,030	9.3	325,000
			10,010	**2,110**	**12.5**	**679,800**
1966	UKHM		3,450	250		27,700
			170	2,430		13,300
			3,620	**352**		**41,000**
1988	UKHM		11,600	1,510		563,200
1989	UKHM		17,100	1,510		830,100
			28,700	**1,510**		**1,393,300**
2010	Alexco		18,600	210	9.2	125,600
2011	Alexco		71,992	834	10.2	1,930,400
2012	Alexco		86,354	760	9.6	2,110,000
2013	Alexco		65,206	705	7.7	1,478,000
			242,150	**725**	**9.2**	**5,644,000**
Grand Total			**284,940**	**862**	**8.4**	**7,901,200**

1 Direct shipping
2 Material processed at the historic Mackeno Mill
3 Pb grade based on tonnes with known production grades

6.2 History of the Lucky Queen Deposit

The Lucky Queen deposit was mined from 1927 to 1932 when mineral inventory was exhausted, producing 112,100 tonnes of vein material at 3,060 gpt silver from two mineralized shoots. Four levels of underground workings (50, 100, 200, and 300) totalling approximately 1,085 m, were developed, with level development roughly coincident with extensive stoping, resulting in the Lucky Queen production totals listed in Table. There were no historical mineral resources or mineral reserves remaining at the Lucky Queen mine.

Table 6.4: Past Production Records for the Lucky Queen Property

Mine	Tonnes	Ag	Pb	Zn	Ag	Pb	Zn
		(gpt)	(%)	(%)	(Oz)	pounds	pounds
Lucky Queen	112,100	3,060	7.0	2.7	11,020,000	17,220,000	6,650,000

The Lucky Queen vein and strike extensions were explored intermittently by surface overburden drilling, trenching, and soil sampling throughout the decades from 1950 to the early 1980s.

A 500 level exploration drift, collared near the Black Cap prospect and totalling approximately 1,800 m, was developed by UKHM in 1985-1987. It was designed to come in underneath the historical Lucky Queen workings and to drive a raise up to the 300 level and connect with the No 2 inclined shaft. Poor ground conditions around the shaft, combined with difficulty in locating the vein and an urgent need for miners elsewhere in the Keno Hill Silver District caused the adit to be abandoned.

Drilling by Alexco in the Lucky Queen prospect area totalled four surface core drill holes (875 m) in 2006, three surface core drill holes (557 m) in 2007, 12 surface core drill holes (2,999 m) in 2008, 14 surface core drill holes (3,048 m) in 2009, and 14 surface core drill holes (3,625 m) in 2010.

Following rehabilitation of most of the 500 level, four underground core holes (210.50m) were drilled in 2012 outside of the resource area.

6.3 History of Flame & Moth Deposit

Claim staking and prospecting began at Flame & Moth in 1920. By 1923, numerous surface workings and a 13-metre inclined shaft had been sunk with a 4.6 m crosscut developed from it on the Moth claim. It is believed that a second shaft to a depth of 30.5 m was also sunk in this vicinity. An adit was developed along 12.2 m on the Frances 7 claim. Production for this period is not known.

Subsequent to this early work, little or nothing appears to have happened on the property until the acquisition by UKHM just prior to 1950. A 27.4-metre inclined shaft was sunk to a vertical depth of 21.3 m along the footwall of what was likely the Moth vein. A crosscut, through the zone 13.7 m below surface and 42.7 m of drifting 22.9 m below surface, identified quartz-carbonate vein hosted mineralization averaging 343 gpt silver, 1.6% lead, 5% zinc developed in quartzite and greenstone along a zone approximately 30.5 m long and up to 9.1 m wide. Thirteen horizontal core drill holes totalling 193 m were drilled from the drift, but the core recovery was poor.

During 1954 and 1955, mineralization of pyrite and minor arsenopyrite was reported up to 240 m along strike to the north. This was explored by bulldozer trenching, soil sampling, and ground geophysics, but was unsuccessful because of the depth of gravel overburden, reported to a 12 m depth.

UKHM returned to Flame & Moth in 1961 with a program of soil sampling and ground geophysics (self-potential, magnetics, Ronka EM), and drilled five surface core drill holes located around the shaft to test the mineralization at depth. The soil samples and geophysics yielded little information, and no veining was intercepted in the drilling.

In 1965, 28 vertical overburden drill holes were drilled, along with another attempt at soil sampling and geophysics. A proposal to excavate an open pit was first made at this date, based on a calculated resource of 3,360 tonnes grading 573 gpt silver, 1.4% lead, and 5.6% zinc. The pit would have reached to 18.3 m below the surface.

In 1974, four lines of angled overburden drill holes totalling 989 m were drilled for extensions along a 180 m strike length with limited success due to deep overburden and broken ground conditions, although a weakly mineralized structure was located at 76 m in the footwall of the main vein.

More overburden drilling was completed along strike in 1984 and four core drill holes were sited to test the downward projection of the known mineralization. The deeper drilling (60 to 90 m below surface) returned only very low values from a wide but diffuse pyritic vein zone. A small amount of vein material (368 tonnes at 699 gpt silver, 1.39% lead, 0.72% zinc) was sent to the mill, which may have come from vein material exposed during stripping of overburden in preparation for the open pit development. In May 1987, the open pit mineral resources were re-evaluated at 12,600 tonnes at 699 gpt silver and 4.0% lead to a depth of 24.4 m. The key assumptions used to estimate this historical estimate are not known. This historical estimate was prepared before the adoption of National Instrument 43-101 and therefore should not be relied upon. That estimate is superseded by the mineral resources reported herein.

Total production at the Flame & Moth property is listed (Table 6.5) as 1,440 tonnes grading 627 gpt silver, 1.1% lead, and 0.9% zinc (Cathro, 2006). It is assumed most of these figures came from the underground work in the 1950s.

Table 6.5: Past Production Records for the Flame & Moth Property

Mine	Tonnes	Ag (gpt)	Pb (%)	Zn (%)	Ag (Oz)	Pb pounds	Zn pounds
Flame & Moth	1,440	627	1.1	0.9	29,100	35,400	28,900

Drilling by Alexco in the Flame & Moth resource area totalled 14 surface core drill holes (3,986.2 m) in 2010, 32 surface core drill holes (7,149.2 m) in 2011, and 43 surface core drill holes (8,753.1 m) in 2012. The drilling completed in 2013 totalled 1,836 m in eight drill holes. 2014 drilling completed to date (25/8) totals 6,570 m in 25 drill holes.

6.4 History of Onek Deposit

The Onek Mining Company Ltd. was organized in 1922 to explore the core Onek claims via a number of open cuts and shallow underground workings in two shafts. In 1950 to 1952, United Keno Hill Mines Ltd. (“UKHM”) reopened the shafts and drove an adit in from the northwest to drift along the vein strike at the 400 Level for about 396 m, driving raises up into the historic workings along the way. Some developmental ore was removed. The Onek Mine was revisited in the early 1960's with limited success due to manpower shortages and poor ground support, as the timbers from the 1950's had been left in place. All mining at Onek ceased in 1965 until the late 1980's when a 20 - 40 m deep open pit was developed over the length of the majority of the Onek workings around the historical shafts. Historical production from the Onek deposit is shown in Table 6.6. Surface exploration consisted of extensive overburden drilling along the vein strike as exploration stepouts and as infill drilling for open pit delineation.

Table 6.6: Past production records for Onek Property.

Mine	Tonnes	Ag (gpt)	Pb (%)	Zn (%)	Ag ounces	Pb pounds	Zn pounds
Onek	86,447	466	5.5	3.4	1,299,333	10,456,254	6,452,107

Drilling by Alexco in the Onek prospect area totalled thirteen surface core drill holes (2,803 m) in 2007, twenty-nine surface core drill holes (5,127 m) in 2008,twenty-five surface core holes (2,913 m) in 2010, twelve surface core holes (1,138 m) in 2011, and two surface core holes (531.98m) in 2012.

A 220m decline was driven towards the Onek deposit in 2012 and 2013 following the drilling of a single 236.77m surface core portal cover hole. In 2013, twelve underground core holes (738.50m) were drilled.

6.5 History of Bermingham Deposit

The first claims in the Bermingham area, Arctic and Mastiff mineral claims were staked by C. H. Bermingham and C. R. Settlemier in 1921, but no underground exploration was conducted until 1923 when vein float was discovered. When TYC optioned the Mastiff claim group in 1928, a 30 m shaft and 223 m of drifting had been completed on three separate levels and 1894 tonnes at 4951 gpt Ag, 55.50% Pb, 0.6% Zn, had been extracted from the Bermingham Vein. The underground workings showed a structure with a maximum width of 17 m on the 100 level that contained multiple bands of ore with interstitial waste that was cut off at its southwest extent by the strong Mastiff fault.

Trenching and prospect shafts identified the offset vein about 91 m to the west-northwest, where TYC sank the No. 1 shaft and completed 22 m of drifting. Below the location of the future main Bermingham pit was an oxidized siderite-pyrite vein with some galena, but no ore was reported, with 127 m of drifting completed on the 200 level. TYC relinquished the lease in 1930 due to low silver prices and the absence of ore grade material. A variety of individual workers extracted another 676 tonnes at 7875 gpt Ag and 70% Pb between 1930 and 1940; however, this work was poorly documented but is known to include considerable trenching, shafting and drifting during 1930, 1932 to 1937, and 1939 to 1940.

United Keno Hill Mines (UKHM) subsequently purchased the property as part of the district consolidation, and during 1948 to 1951 drove an adit and drift about 9 m below the bottom of the TYC workings. Lacking a good understanding of the complexity of the structure and geology, UKHM decided to drift into the footwall and raise up into the older workings where considerable milling ore appeared available. In 1952, many of the old TYC workings were surveyed and sampled, but the adit level was subsequently abandoned after very little ore grade material was realized, although almost 4536 tonnes of ore was salvaged from dumps between 1952 and 1954. In total, UKHM milled 4686 tonnes of ore at 1620 gpt Ag, 8% Pb, and 1.3% Zn of which all but 54 tonnes was recovered from the old mine dumps.

Between 1955 and 1960, trenching and soil sampling traced the vein from the Bleiler shaft to the North Star Mineral Claim. In 1956 three diamond drill holes were attempted on the western edge of the Lily Claim to investigate a geochemical anomaly but all were abandoned due to poor ground conditions. From 1965 to 1982, 874 overburden drill holes totalling 19,931 m were drilled in the Bermingham area, as well as 27 core holes totalling 2407 m. Poor ground conditions prevented many of these holes from adequately penetrating the vein zone however the work essentially outlined an open pit resource above the underground workings.

Stripping began on the main Bermingham pit in 1977, and until 1983 produced 82,649 tonnes at 572 gpt Ag. Overburden drilling and open pit mining led to a much better understanding of the geology. The feasibility of deepening the Bermingham pit was evaluated during 1980 to 1982 with several percussion drill holes testing the vein below the pit and two diamond drill holes testing the Bleiler extension to the northeast. The drill holes indicated a narrowing of the vein to 3 to 4.5 m wide and did not encounter ore grade. A resource was constructed by extrapolating chip assays taken at the bottom of the pit to a depth of 6 m. A potential resource of 15,117 tonnes at 476 gpt Ag was calculated but not deemed economic and the pit was not extended.

To the southwest of the open pit and in the hangingwall of the Mastiff Fault, several historic shafts had tested the offset extension of the Bermingham Vein. These included the No. 3 shaft, sunk by TYC, which included 22 m of drifting on the 45 level. The vein was reported to be 2.4 m wide and to mainly consist of siderite with small bunches of galena, however no ore was encountered. A small open pit did operate on this segment of the vein in the mid-1980s, and an intended second pit located 150 m to the southwest was stripped to bedrock in 1983. However, the veins exposed there appeared weak and un-mineralised. Mining was never initiated although drilling indicated shallow ore containing a resource of 274,000 oz silver to exist below this elevation. The historical mineral resource estimate does not use mineral resource categories stipulated by NI43-101. SRK is not aware of the parameters and assumptions used in preparing this estimate. The historical estimate should not be relied upon; it is only stated here for historical completeness.

In total, the Bermingham property produced 3,777,932 oz of silver from 168,979 tonnes (6-7) (Cathro, 2006).

Table 6-7: Past production records for Bermingham property.

Mine	Tonnes	Ag (gpt)	Pb (%)	Zn (%)	Ag (oz)	Pb (lb)	Zn (lb)
Bermingham	168,979	695	4.2	0.6	3,777,932	15,575,525	2,157,714

Drilling by Alexco in the Bermingham prospect area totalled two surface core drill holes (523 m) in 2009, nine surface core drill holes (3,046 m) in 2010, and 25 surface core holes (6,888 m) in 2011. Seventeen drill holes were completed in 2012 for 5,576 m targeting southwesterly extensions of the vein system and areas in the footwall of the Mastiff fault.

7 Geological Setting and Mineralization

7.1 Regional Geology

The Keno Hill mining camp is located in the northwestern part of the Selwyn Basin in an area characterized by the Robert Service and the Tombstone Thrust Sheets that are overlapping and trend northwest. The area is underlain by Upper Proterozoic to Mississippian rocks that were deposited in a shelf environment during the formation of the northern Cordilleran continental margin (Figure 7.1).

A compressional regime that possibly existed during the Jurassic, but certainly during the Cretaceous, produced thrusts, folds, and penetrative fabrics of various scales. Early large scale deformation (D1 and D2) produced recumbent folds, resulting in local structural thickening of strata. A third deformational event (D3) produced gentle southwest-plunging syn- and antiform pairs (Roots, 1997). The dominant structural fabric (foliation) is essentially axial planar to the early recumbent folds.

The Robert Service Thrust Sheet lying to the south of the Keno Hill Silver District is composed of a Late Proterozoic to Cambrian coarse grained quartz rich turbidite succession with interbedded shales and locally limestone of the Hyland Group, Yusezyu Formation.

The Tombstone Thrust Sheet that lies to the north and underlies the Keno Hill Silver District consists of Devonian phyllite, felsic meta-tuffs, and metaclastic rocks of the Earn Group that is conformably overlain by the Mississippian Keno Hill Quartzite. This latter unit is locally thickened due to folding and/or thrusting and is the predominant host of the silver-lead-zinc mineralization of the Keno Hill Silver District.

Intrusive rocks formed during four episodes of plutonism. During the Late-Triassic, gabbro to diorite formed sills of various sizes in the Tombstone Thrust Sheet. A second phase of plutonism took place around 92 million years ago (My) in the early Cretaceous and resulted in widespread and voluminous Tombstone intrusions of commonly granitic to granodioritic composition. Cretaceous fine-grained lamprophyre dated at 89 My occurs as metre-scale dykes and sills. The youngest intrusions are the McQuesten intrusive suite that occurred around 65 My in the Upper Cretaceous and resulted in the formation of peraluminous megacrystic potassium feldspar granite.

In addition to the polymetallic veins of the Keno Hill mining camp, the area hosts a number of other mineral occurrences and showings of tungsten, copper, gold, lead, zinc, antimony, and barite.

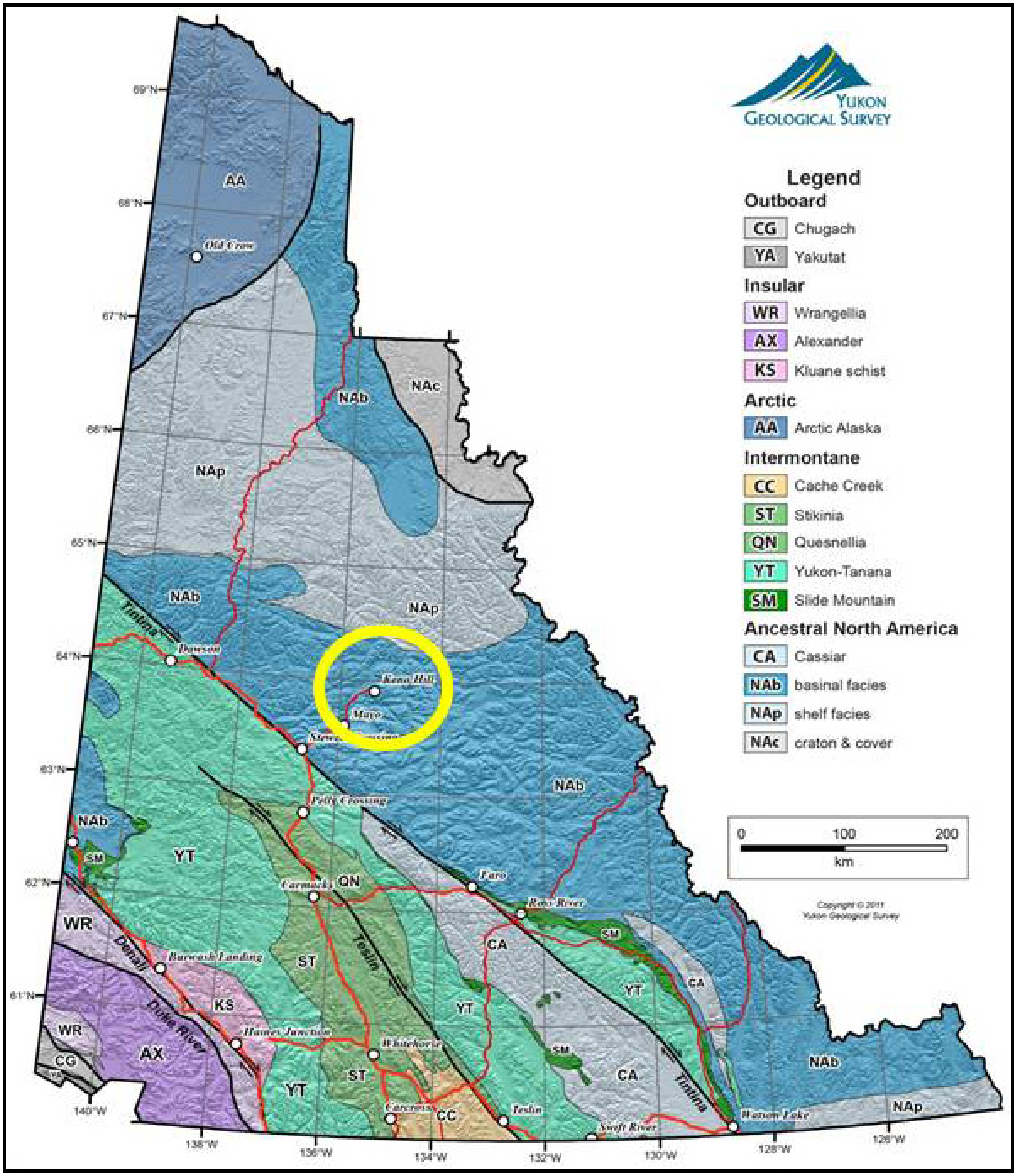


Figure 7.1: Regional Geology of the Keno Hill Area (Yukon Geological Survey)

7.2 Property Geology

The Keno Hill Silver District geology is dominated by the Mississippian Keno Hill Quartzite comprising the Basal Quartzite Member and conformably overlying Sourdough Hill Member. The unit is overthrust in the south by the Upper Proterozoic Hyland Group Yusezyu Formation and is conformably underlain in the north by the Devonian Earn Group (McOnie and Read, 2009) as shown in the local stratigraphic column in Figure 7.2.

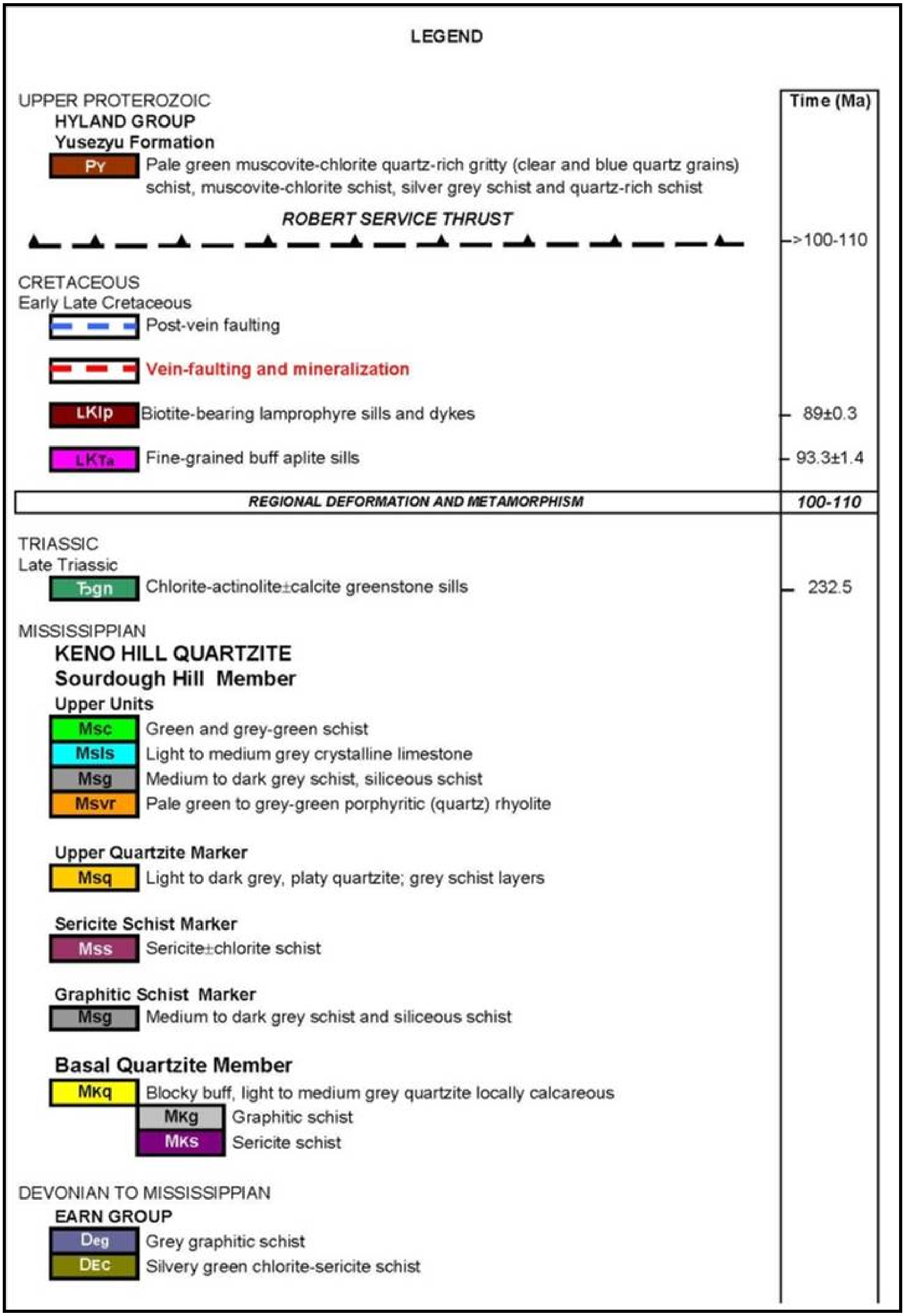


Figure 7.2: Keno Hill Silver District Simplified Stratigraphy (Alexco, 2013) (Light yellow is alluvial cover)

The Yusezyu Formation of the Precambrian Hyland Group that comprises greenish quartz-rich chlorite-muscovite schist with locally clear and blue quartz-grain gritty schist is separated from the Keno Hill sequence by the Robert Service Thrust Fault.

The Earn Group formerly mapped as the “lower schist formation” (Boyle, 1965) is typically composed of recessive weathering grey graphitic schist and green chlorite-sericite schist with an upper siliceous graphitic schist found locally.

Within the Keno Hill Quartzite, the Basal Quartzite Member is up to 1,100 m thick where structurally thickened and comprises thick to thin-bedded quartzite and graphitic phyllite (schist). This is the dominant host to the silver mineralization in the Keno Hill Silver District. The overlying Sourdough Hill Member, formerly mapped as the “upper schist formation” (Boyle, 1965) is up to approximately 900 m in thickness and comprises predominantly graphitic and sericitic phyllite, chloritic quartz augen phyllite, and minor thin limestone.

The Earn Group and Keno Hill Quartzite are locally intruded by Middle Triassic greenstone sills. The sequence was metamorphosed to greenschist facies assemblages during Cretaceous regional deformation, and later intruded by quartz-feldspar aplite sills or dikes that are correlated with the 92 My Tombstone intrusive suite found elsewhere in the Keno Hill Silver District.

Three phases of folding are identified in the Keno Hill Silver District. The two earliest phases consist of isoclinal folding with subhorizontal, east- or west-trending fold axes. The later phase consists of a subvertical axial plane and moderate southeast-trending and plunging fold axis. In the Keno Hill Silver District, the first phases of folding formed structurally dismembered isoclinal folds of which the Basal Quartzite Member outlines synforms at Monument Hill where the Lucky Queen mine is located and at Caribou Hill, while between Galena Hill and Sourdough Hill the Bellekeno mine and the Flame & Moth prospect are located on the upper limb of a large scale anticline that closes to the north..

Within the Keno Hill Silver District, up to four main periods of faulting are recognized. The oldest fault set consists of south-dipping foliation-parallel structures that developed contemporaneously with the first phase folding. The Robert Service Thrust Fault truncates the top of the Keno Hill Quartzite and sets the Precambrian schist of the Yusezyu Formation above the Mississippian Sourdough Hill Member. The silver mineralization in the Keno Hill Silver District is hosted by a series of north-east–trending pre- and syn- mineral vein-faults that display apparent left lateral normal displacement locally referred to as longitudinal veins that, depending on the competency of the host rock, can be up to 30 m wide with an anastomosing system of subveins. A related set of faults, known as transverse faults that strike north-northeast and dip moderately to the southeast, can reach up to 5 m in thickness.

High angle cross faults, low angle faults, and bedding faults offset veins and comprise post-mineralization faults. Most commonly, these comprise northwest-striking cross faults recognized by offset veins that show apparent right-lateral displacement. The geology of the KHSD area is shown in Figure 7.3.

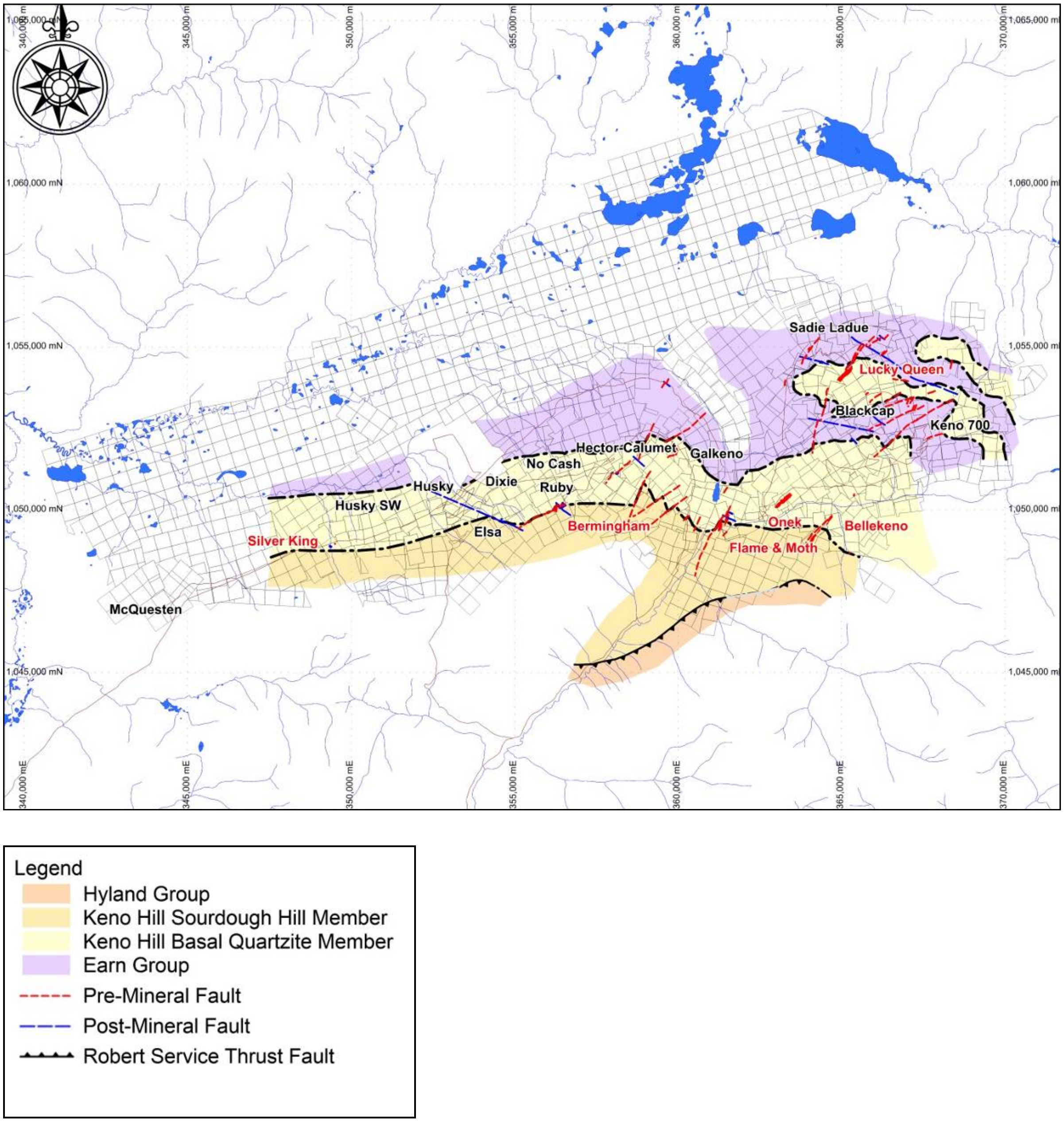


Figure 7.3: Geology of the Keno Hill Silver District (Alexco, 2014)

7.3 Mineralization

Summaries of the Keno Hill Silver District silver-lead-zinc mineralization can be found in Boyle (1965), Cathro (2006), Murphy (1997), and Roots (1997). Mineralization in the Keno Hill mining camp is of the polymetallic silver-lead-zinc vein type that typically exhibits a succession of hydrothermally precipitated minerals from the vein wall towards the vein centre. However, in the Keno Hill Silver District, multiple pulses of hydrothermal fluids or fluid boiling, probably related to repeated reactivation and breccia formation along the host fault structures, have formed a series of vein stages with differing mineral assemblages and textures. Supergene alteration may have further changed the nature of the mineralogy in the veins. Much of the supergene zone may have been removed due to glacial erosion.

In general, common gangue minerals include (manganiferous) siderite and, to a lesser extent, quartz and calcite. Silver predominantly occurs in argentiferous galena and argentiferous tetrahedrite (freibergite). In some assemblages, silver is also found as native silver, in polybasite, stephanite, and pyrargyrite. Lead occurs in galena and zinc in sphalerite, which at the Keno Hill Silver District can be either an iron-rich or iron-poor variety. Other sulphides include pyrite, pyrrhotite, arsenopyrite, and chalcopyrite.

Cathro (2006) suggested that the mineralized veins may exhibit a vertical zonation in mineralogy with a typical mineralized shoot displaying a vertical zoning from lead-rich at the top to zinc-rich at the bottom. He reported mineralogical changes to the mineralization with increasing depth from galena to galena-freibergite, to galena-freibergite-sphalerite-siderite, to sphalerite-freibergite-galena-siderite, to sphalerite-siderite, to siderite-pyrite-sphalerite that have been historically interpreted to indicate a silver-poor, sphalerite-rich base to the economic mineralization. Historically, it was also believed that economic mineralization in the Keno Hill mining camp was restricted to a shallow zone of about 120 m thickness. However, the 370 m depth of production from the Hector-Calumet mine and drill indicated mineralization to over 350 m depth at Flame & Moth demonstrate that silver-rich veins exist over greater vertical intervals and that other known veins exhibit exploration potential at depth.

Across the district, favourable environments for mineralization are considered to be:

- Quartzite or greenstone present on one wall of the vein-fault. (Veins pinch down significantly in schist bound structures);
- Adjacent to, or in the footwall of cross faults (015° vein sets);
- Where the vein splits or forms cymoid loops;
- Where the vein changes dip.

7.3.1 Bellekeno Mine Mineralization

The Bellekeno vein system consists of ten known veins with variable characteristics. Vein material has been extracted from the Ram, Eureka, Tundra, 48, 49, and 50 veins. Veins generally strike 030° to 040°, with dip directions varying 60° to 80° southeast or northwest. Mechanized mining has focused on the larger 48 vein structure, while conventional (historical) mining has focused on the smaller, higher grade vein structures.

Within the 48 vein structure, there are three main zones: Southwest, 99, and East, as shown in Figure 7.4. The zones have distinctive silver to lead ratios, zinc content, and accessory mineral assemblages within the 48 vein structure. Vein true thickness ranges between a few centimetres to upwards of 5.5 m. Post- and syn- vein-faults have been observed during mining activities. Post-vein faults typically show intense iron carbonate alteration and local brecciation, while syn-vein-faults have a strong impact on silver grades and mineral textures (Figure 7.5). Left oblique-normal movement along the 48 vein structure is estimated at 35 m.

Mineralized zones are commonly hosted within manganese-rich siderite structures that may have pervasive limonitic alteration when exposed to ground water. Minerals of economic interest include silver-bearing sulphosalts, galena, and sphalerite. Common accessory minerals include pyrite, arsenopyrite, and chalcopyrite. Anglesite, cerrussite, smithsonite, malachite, and azurite have been occasionally observed. The mineralized shoots within the vein structures are not continuous.

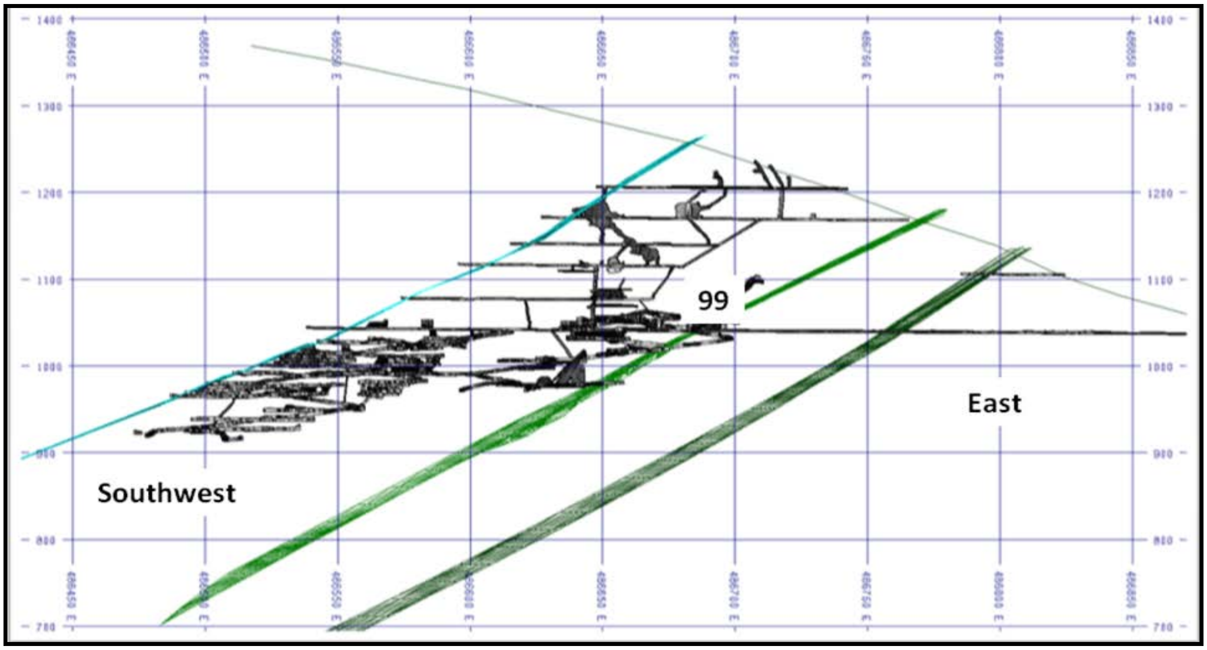


Figure 7.4: Schematic Longsection of the Bellekeno Mine (View west-northwest [290°]. Distribution of active mining zones within the 48 vein. Workings as of May 2012) (Alexco, 2013)

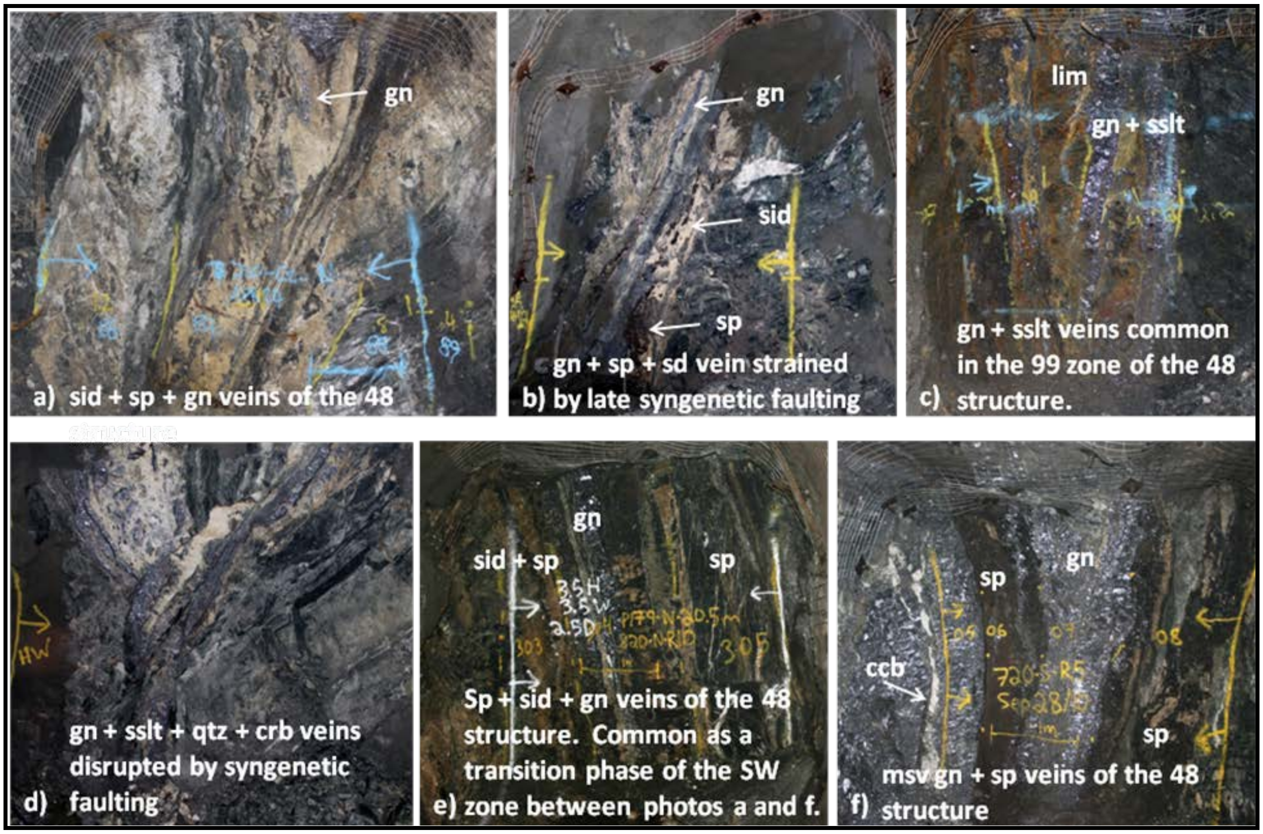


Figure 7.5: Vein Structures and Major Mineralogies Commonly Observed in the 48 Structure of the Bellekeno Mine Abbreviations are: (gn) galena; (sid) manganese rich siderite; (sp) iron rich; (Fe 65) sphalerite; (lim) limonitic alteration of carbonate facies; (sslts) non-specific sulphosalts; (qtz) siliceous floods and concretions associated with late breccias; (ccb) white carbonate. (Alexco, 2013)

7.3.2 Lucky Queen Mineralization

The Lucky Queen vein structure has an average strike of approximately 043˚ with local variations ranging from 025˚ to 060˚, and an average dip of around 045˚ to the southeast, within a range of 30° to 55˚. The main structure has a strike length, as defined by drilling, of approximately 650 m and is open along strike to both the northeast and southwest. Stratigraphic units correlated across the structure show a normal separation of approximately 30 – 35 m. Reported vein thickness ranges from just a few centimetres to several metres. Mineralized zones are largely composed of brecciated wall rock, siderite (± limonite), vein quartz, and minerals of economic interest including silver sulphosalts, galena, sphalerite, and native silver, as seen in Figure 7.6. Minor primary minerals present include arsenopyrite and pyrite.

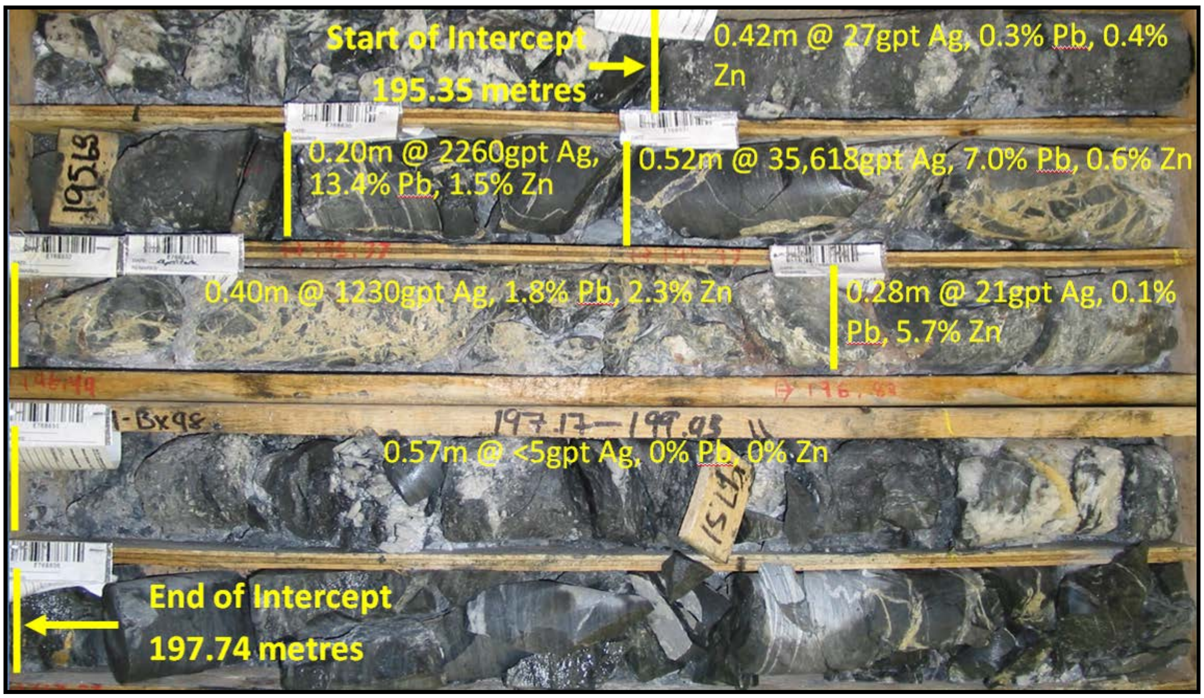


Figure 7.6: Vein-Fault Intercept in Drill Hole K-07-0114, in the Central Part of the Lucky Queen Deposit (Alexco, 2013)

7.3.3 Flame & Moth Mineralization

Two main styles of banded and locally brecciated mineralized veining are noted. An early phase comprises dominantly quartz gangue with abundant but irregular pyrite, sphalerite, and arsenopyrite, while a later phase is siderite-dominant with abundant sphalerite and irregular pyrite and galena development. Other minerals commonly observed include pyrrhotite and chalcopyrite, with trace amounts of the argentian tetrahedrite, pyrargyrite, jamesonite, boulangerite, and cassiterite identified in petrologic samples. The veining often displays multiple periods of brecciation and re-healing (Figure 7.7).

Figure 7.7: Vein-Fault Intercept in Drill Hole K-12-0432, in the Flame & Moth Deposit (Alexco, 2013)

7.3.4 Onek Mineralization

The Onek vein system comprises at least three individual vein-faults occurring within a broad northeast striking, southeast dipping structural zone. The vein-faults occur over a strike length of at least 600 m and are characterized by brittle fractured or milled zones, locally containing massive sulphide vein material in or associated with siderite, consisting of sphalerite and galena along with minor pyrite, arsenopyrite and quartz. Mineralized breccias zones are also present, consisting of wall rock fragments and siderite-sulphide cement. These zones are often surrounded by brittle fractured zones cemented by siderite and minor sphalerite stringers (Figure 7.8.

Figure 7.8: Vein-Fault Intercept in Drill Hole K-10-0306, in the Onek Deposit (Alexco, 2014)

7.3.5 Bermingham Mineralization

In the Bermingham area, three mineralized veins have been identified - the Aho, Bermingham, and Bermingham Footwall veins.

The Aho Vein comprises predominantly quartz, and occurs over several metres width within a wide halo of structurally damaged rocks. Sulphides are present but constitute only a small proportion of the vein, usually less than about 2%, of which arsenopyrite and pyrite are the most abundant, followed by galena and sphalerite. While milky white quartz is the predominant gangue mineral and constitutes the majority of the vein, calcite is also observed with siderite as masses less than a centimetre in diameter. The Aho Vein intercepts proximal to the Bermingham Vein and Bermingham Footwall Vein can host more abundant iron-rich carbonates, likely due to later overprinting by hydrothermal fluids related to these veins. Silver, lead, and zinc values are anomalous within the Aho Vein but are uneconomic, typically returning values of a few tens of grams per tonne of silver. The gold/silver ratio in the Aho Vein is higher than observed in the other Bermingham veins, and the gold is likely associated with arsenopyrite. Pressure solution features (stylolites) are noticeable within the Aho Vein.

The Bermingham Vein and Bermingham Footwall Vein typically exist within a wide 5 to 10 m wide structurally damaged zone containing numerous stringers, veinlets, breccias, and gouge. In most cases, a discrete vein 0.5 to 2.5 m wide exists within this zone, consisting predominantly of carbonate (dolomite, ankerite, and siderite), quartz and calcite gangue, and sulphides: sphalerite, galena, pyrite, and arsenopyrite, with accessory, chalcopyrite, argentian tetrahedrite (freibergite), jamesonite, ruby silver, and native silver. High silver values are common within the vein and in stringers, and veinlets within the wider and lower grade damage zone (Figure 7.9).

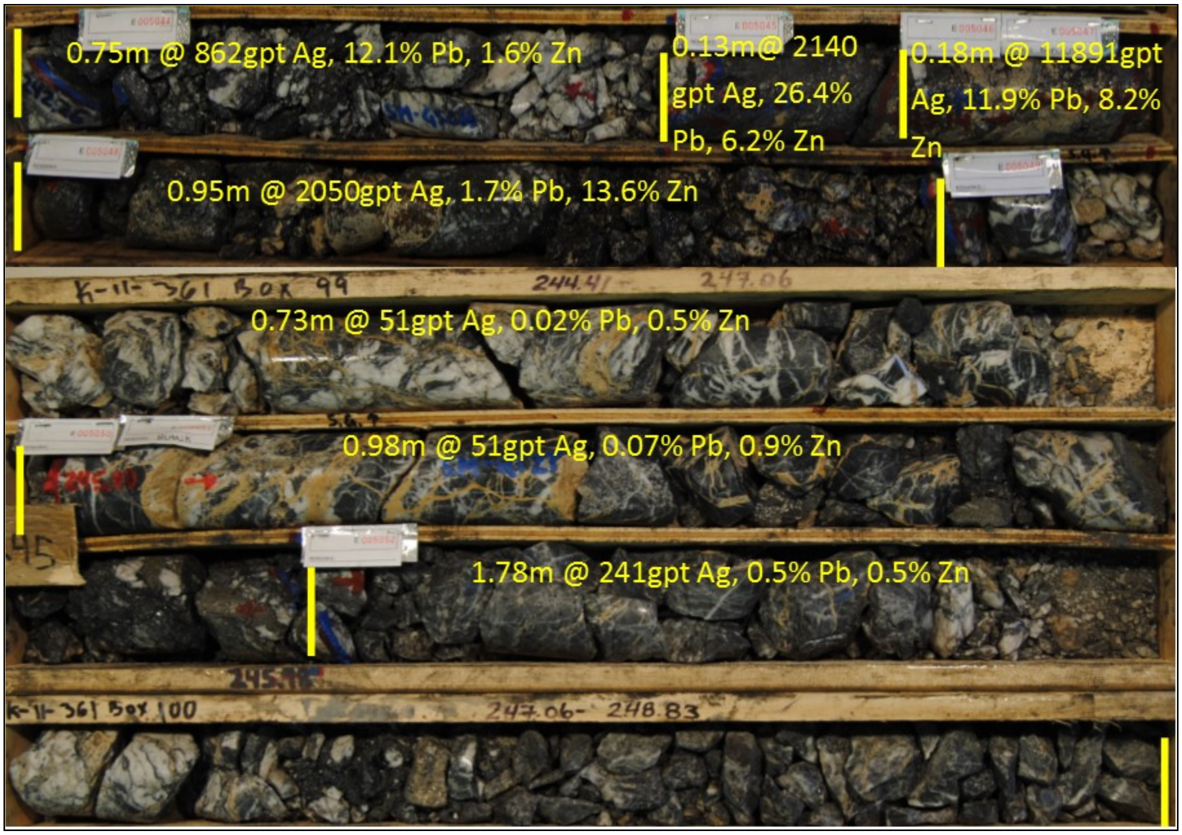


Figure 7.9: Vein-Fault Intercept in Drill Hole K-11-0361, in the Bermingham Deposit (Alexco, 2014)

8 Deposit Types

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

The common characteristics of these locales are their proximity to crustal-scale faults and the occurrence in a package of monotonous clastic metasedimentary rock, which have been intruded by plutons. The intrusions may have acted as a heat source for hydrothermal circulation, and the mineralization may be locally related to the intrusions. Mineral precipitation occurred where metal-laden hydrothermal fluids, with a temperature of 250 to >400°C, travelled through open fractures caused by a local tensional stress regime in an otherwise compressional environment and precipitated metals as in multiple pulses as pressure and temperature changed and boiling or fluid mixing took place (Lynch, 2009). The metals were likely leached from crustal rocks by hot circulating fluids with mineral precipitation occurring at estimated depths of up to 11 km.

In the Keno Hill Silver District, the largest accumulation of minerals of economic interest occurred in areas of increased hydrothermal fluid flow in structurally prepared competent rocks such as the Basal Quartzite Member and Triassic Greenstone. Incompetent rocks like phyllites tended to produce fewer and smaller (if any) open spaces, limiting fluid flow and resulting mineral precipitation.

9 Exploration

Most past exploration work in the Keno Hill Silver District was conducted as support to the mining activities until the mines closed in 1989. A good summary of the early exploration work is provided by Cathro (2006). This historic work involved surface and underground drilling designed to explore areas surrounding the main underground working areas. It is beyond the scope of this report to describe all historical exploration work completed in the district and only the relevant historical work is referred to below.

The exploration conducted by Alexco since 2005 is the first comprehensive exploration effort in the Keno Hill Silver District since 1997. During the initial phase of Alexco's involvement at the Keno Hill Silver District, a program of geologic data compilation, aerial geophysical surveying, and surface core drilling was completed.

Past operator UKHM accumulated a large number of maps and documents relating to nearly 70 years of district mining, but the documentation and data were never assembled into a coherent database that could be used to evaluate the geology on a district scale. Beginning in late 2005 and continuing through 2008, Alexco converted this historic data to over 300 gigabytes of digital form by scanning and data entry that has been used to construct district scale maps and three-dimensional (3D) mine models.

Since acquiring the Keno Hill property, Alexco completed, a total of 1,018 drill holes for a total of 163,294 metres up until April 2014 as detailed in Table 9.1 and shown in Figure 4.1Figure 9.1. Apart from 34 RC holes for a total of 1,151 m and some additional minor RC pre-collaring at Flame and Moth, drill holes have essentially all been diamond cored in HQ size.

This includes a total of 389 underground holes for 24,878 m completed mainly at Bellekeno.

Table 9.1: Distribution of Drill holes 2006 to August 2014

	Surface Holes	Surface Metres	Underground Holes	Underground Metres	Total Holes	Total Metres
Bellekeno	70	19,808	373	23,693	443	43,501
Lucky Queen	47	11,105	4	210	51	11,315
Onek	83	12,674	12	975	95	13,649
Flame and Moth	127	29,647			127	29,647
Bermingham	58	17,619			58	17,619
Other	210	46,412			210	46,412
RC	34	1,151			34	1,151
Total	**629**	**138,416**	**389**	**24,878**	**1,018**	**163,294**

Exploration drilling by Alexco has primarily been conducted to test immediate targets adjacent to historic resource areas, or to a lesser extent to evaluate targets based on interpretation of historic exploration data (Figure 9.1). In each case the objective has to been to locate structurally controlled narrow vein mineralization that is known to occur across the entire district.

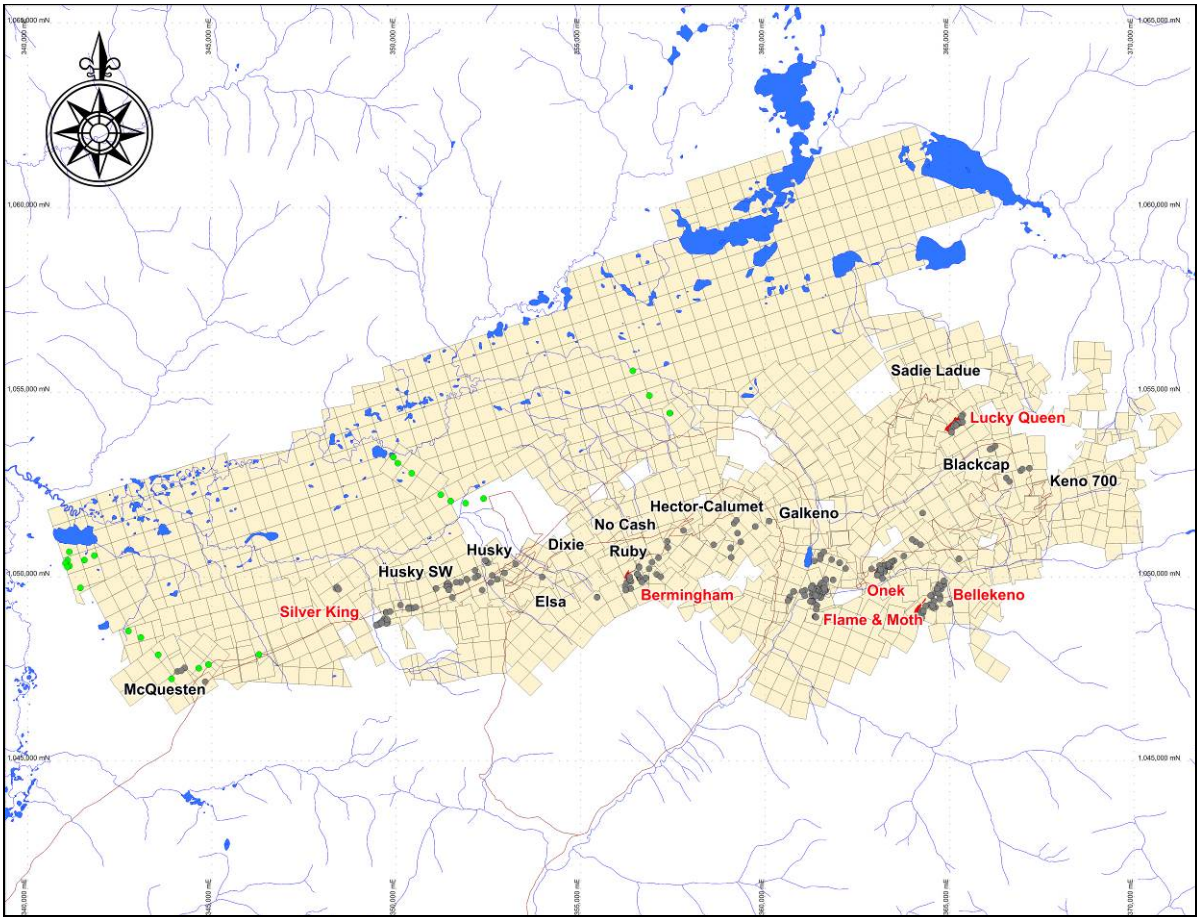


Figure 9.1: Keno Hill Silver Project Distribution of Drill Holes (Diamond holes grey, RC holes green) (Alexco, 2014)

At Silver King, drilling of 10,450 m in 42 drill holes has mainly focused on extending the historic resource in the No 5 Vein located in the hanging wall to the historically mined mineralization. Some significant intercepts indicate that further exploration is required on this structure, as well as along the extensions of the past producing No 1 and No 2 veins.

Along the Husky – Husky SW vein system, the northeastern extension of the Silver King structure, Alexco has completed 13,800 m of drilling in 38 drill holes. The results of this drilling has confirmed that in places the historically mined veins extend to depth below mine workings and thus the potential for locating additional mineralization is open.

The mineralized Bermingham vein structure is considered to be spatially related to the southwest extension of the major historic producing Hector – Calumet mine vein system. The structure is complex and a number of different veins are known. To date Alexco has completed 4,330 m drilling in 16 drill holes on targets on Galena Hill, mostly related to exploring the area between the Bermingham and Hector Calumet areas. Some significant intercepts have been obtained that require additional work to reconstruct the vein geometries and target most prospective locations in further drilling.

On Keno Hill, Alexco has completed a total of 1,500 m drilling on the Keno and Shamrock vein systems. Alexco has also completed drilling on a number of other areas, including strike extensions to the Flame, Flame West and Onek veins and in the Runer, Leo and McQuesten areas. In each of these locations results indicate that additional exploration work would be justified.

A district-wide surface geological mapping and structural study, started in 2007, was continued through the 2012 field season.

9.1 Exploration of Bellekeno Deposit

A series of core drilling programs and geophysical surveys have been conducted on the Bellekeno deposit since 2006. The combined drilling programs have produced 43,501 m of drill core from 443 drill holes. Drill holes targeted mineralized zone extensions and were used to verify historical results and to estimate mineral resources.

Five surface core drilling campaigns since 2006 totalling 19,808 m delineated regions of the Bellekeno deposit and adjacent targets. Underground drill campaigns were initiated in 2009 with major targets including the Ram, Eureka, and the 48 vein systems, including the projected 48 vein extension, known as the Thunder zone. Mining activities have allowed for structural mapping that, in conjunction with daily geologic mapping and sampling of all active faces, has been used to continually update the Bellekeno geologic model.

9.2 Exploration of Lucky Queen Deposit

Drilling by Alexco in the Lucky Queen prospect area totalled four surface core drill holes (875 m) in 2006, targeting the vein structure below the southwest end of the historical workings and around the lowermost reaches of the internal winze.

Core drilling at Lucky Queen late in the season in 2007 consisted of three surface core drill holes (557 m), of which only one reached the target depth before inclement weather forced an end to the drilling season. In 2008, twelve surface core drill holes (2,999 m) were drilled as stepouts along the vein strike to the southwest. Closer spaced and infill drilling around the 2007 drill hole intercept was the focus of the 2009 (fourteen surface core drill holes for 3,048 m) and 2010 (fourteen surface core drill holes for 3,625 m) drill campaigns that formed the basis for the resource estimate.

Following rehabilitation of most of the 500 level in 2013, four underground core holes (210.50m) were drilled in 2012 outside of the resource area.

A district-wide surface geological mapping and structural study, started in 2007, was continued through the 2012 field season with findings incorporated into the Lucky Queen geologic model where applicable.

9.3 Exploration of Flame & Moth Deposit

Field mapping by Alexco (McOnie and Read, 2009) identified the possible presence of northeast-trending vein-faults thought to have movement of approximately 450 m based on the offset of local stratigraphy. In conjunction with review of the past exploration results on the property, this led to the generation of drill targets with 3,986 m of drilling in 14 drill holes completed in 2010 that provided the Flame Vein discovery hole (K-10-0264) intercepting 693 gpt silver over a 4.64 m interval (Alexco Press Release, 16 February 2011).

During 2010 a soil geochemical and a ground magnetic geophysical survey were also completed over the area. A further 32 drill holes for 7,150 m were drilled in 2011 with the results leading to the publication of the initial resource estimate (SRK, 2012). Follow up drilling of 43 drill holes for 8,753 m completed in 2012 supported a revised resource estimate (Alexco, 2013).

Drilling completed in 2013 (3 holes, 1,257 m) has extended the strike length of the mineralization for at least 220 m to the southwest to over 900 m, but these results are not included in the current resource estimate. Several ground geophysical surveys undertaken in 2013 were not particularly successful in delineating the mineralization.

During 2014 some the ground geophysical surveys were extended. Additional drilling is currently in progress but results are not yet available.

9.4 Exploration of Onek Deposit

Drilling by Alexco on the Onek prospect in 2007 totalled thirteen surface core drill holes (2,803 m) targeting the down-plunge extension of the mineralization outlined in the historical workings. Twenty-nine surface core drill holes (5,127 m) were drilled in 2008 as infill and extension around the well-mineralized 2007 intercepts as well as targeting the historical resource blocks around the historical workings with a view to doing a new resource calculation. No work was done in 2009, but renewed focus on Onek in 2010 saw twenty-five surface core holes (2,913 m) drilled with exploration success along strike to the southwest of the historical workings. Infill drilling around the newly identified mineralization to the southwest was completed in twelve surface core holes (1,138 m) in 2011. Two surface core holes (531.98 m) were drilled along strike to the southwest outside of the resource area in 2012.

A 220 m decline was driven towards the Onek deposit in 2012 and 2013 following the drilling of a single 236.77 m surface core portal cover hole. In 2013, twelve underground core holes (738.50 m) were drilled.

Detailed pit mapping at Onek was used in constructing the geological model.

9.5 Exploration of Bermingham Deposit

The first targets generated in the Bermingham area were drilled by Alexco in 2009, targeting the Bermingham Vein at depth in the hangingwall of the Mastiff Fault below an area with an historic shallow open pit resource outlined. Results of this drilling were sufficiently encouraging to continue exploration in 2010 and 2011.

The results of the district-wide surface geological mapping and structural studyhave been used in conjunction with the drill results to resolve the stratigraphy and structural complications at Bermingham and to further refine vein targeting.

In 2010, a soil-gas survey was conducted along the Bermingham trend. This survey was completed over a 2,200 m long, by 175 m wide corridor stretching from Coral-Wigwam, over the Bermingham pit area, to the Townsite mine. An induced polarity and resistivity geophysical survey was conducted over the same area. As a result of these surveys some anomalies were identified on the Bermingham trend along strike southwest of the open pit workings that remain as future drilling targets.

Seventeen drill holes were completed in 2012 for 5,576 m, targeting southwesterly extensions of the vein system and areas in the footwall of the Mastiff fault.

10 Drilling and Trenching

10.1 Trenching

Limited historical trenching work was completed along vein strike extensions, with very limited assaying and little geological information was documented.

In 2013 Alexco completed a six trench program totalling 375 m on Galena Hill between the Bermingham and Hector-Calumet historic mines.

10.2 Drilling

In 2006, core drilling was performed by Peak Diamond Drilling, based out of Courtney, British Columbia, utilizing two skid mounted drill rigs, a LF-70 drill, and an EF-90 drill. Drilling employed the wireline method using N-size equipment (NQ2).

In 2007 and 2008, core drilling was performed by Quest Diamond Drilling, based out of Abbotsford, British Columbia, utilizing four skid mounted drill rigs, two LF-70 drills, and two LF-90 drills in 2007; and two skid mounted drill rigs, one LF-90, and one QD-4 drills in 2008. Drilling employed the wireline method using H-size equipment (HQ).

The 2009 surface drilling was performed by Kluane Drilling of Whitehorse, Yukon, utilizing two skid mounted KD-1000 drills. Drilling employed the wireline method using N- and H-size equipment.

Surface drilling in 2010 was split among three contractors: Cabo Drilling based in Surrey, BC, Kluane Drilling out of Whitehorse, Yukon, and Ensign Encore Drilling from Calgary, Alberta.

Boart Longyear, based in Calgary, Alberta, completed the 2011 to 2014 drilling programs using LF70, LF90 wireline drill rigs or a LX11 multipurpose RC/core drill rig. All core was recovered in PQ, HQ and NQ sizes.

For all campaigns the drilling was well supervised, the drill sites were clean and safe, and the work was efficiently done. Diamond drill operational safety inspections were conducted on each drill rig at various times throughout the drilling programs.

Underground core drilling at Bellekeno, Lucky Queen and Onek in 2009, 2010, 2011, 2012, and 2013 was completed in NQ or HQ core size by Boart Longyear utilizing skid-mounted LM90 diamond drill rigs.

Proposed surface drill hole collars were located using a hand held Garmin GPS device, with the completed collars being surveyed with either an Ashtech GPS device utilizing post-processing software or a Sokkia GRX1 RTK GPS.

All underground collars and drill stations were surveyed by underground surveyors (employed by Procon Mining & Tunnelling Ltd. or Alexco) using a total station survey instrument.

All coordinates are recorded in the Universal Transverse Mercator UTM NAD 83 Zone 8 map projection coordinate system. Down hole surveys are recorded using Reflex survey tools at regular intervals of between 15 – 30 m depending on the hole location and geologic conditions.

Standard logging and sampling conventions are used to capture information from the drill core. Between 2006 and 2010 core was logged in detail using paper forms with the resulting data entered into a commercial computerized logging program either by the logging geologist or a technician. Since then all core logging data has been directly digitally entered to the geology database with data including comments captured in separate tables including:

- Lithology: rock type, including significant Fault or Mineralized vein-faults, and textural modifiers.
- Structure: type of structure and measurements relative to core axis.
- Mineralization to identify type and intensity of oxidation, metamorphic, hydrothermal, or disseminated phases, and abundance of veining.
- Alteration.
- Stratigraphy: units consistent with the surface mapping.
- Geotechnical: percentage recovery and rock quality determination and fracture intensity. Additional more detailed geotechnical data has been recorded from the Flame & Moth drilling.

Alexco systematically measured core bulk density (CBD) of mineralized material as well as basic rock types. Bulk density was measured using a balance and measuring the weight of core pieces in air and in water. The core weighted in water was not covered by wax or plastic film. Pulp bulk density (PBD) measurements were obtained by pycnometry on select assay intervals of mineralized zones for Alexco drilling by ALS Laboratories and AGAT Labs.

10.2.1 Historical Drilling at the Bellekeno Mine

Historical percussion and core drilling for the Bellekeno area extended from 1975 to 1996. Although all of the data has been compiled, sections are most likely incomplete.

Between 1975 and 1996, UKHM drilled four surface, and two underground percussion programs. These drill holes were logged, sampled and assayed at 4- and 5-foot intervals, respectively (1.22 m and 1.52 m). Originally, percussion drilling and sampling was undertaken to mitigate loss of vein material observed in coring programs. However, the nature of chip logging, recirculation of water and rock material within these types of drill holes are considered poor data sources for technical reports and were not used for the resource estimation.

Coring programs between 1986 and 1996 were drilled from underground totalling 4,944 m across 60 drill holes under UKHM. Drill holes were drilled with BQ and NQ bits, but generally resulted in moderate to poor recovery in areas where foliation and stratigraphy were subparallel to the core angle, heavily fractured, and or friable material was encountered. Drill holes were generally designed to test for the downward extension of the 99 zone, and smaller programs for the Southwest and East zones, as illustrated in Figure 10.1. Archived drilling data and procedures were briefly reviewed by G. David Keller, PGeo, of SRK as part of the updated PEA technical report issued by Wardrop in 2009.

As part of this review, Mr. Keller discussed the drill core sampling procedures with UKHM staff active during the mining operations at Bellekeno. The drilling procedures were deemed reasonable based upon the limited information available (Wardrop, 2009), and thus considered reliable for geologic interpretation and resource calculations.

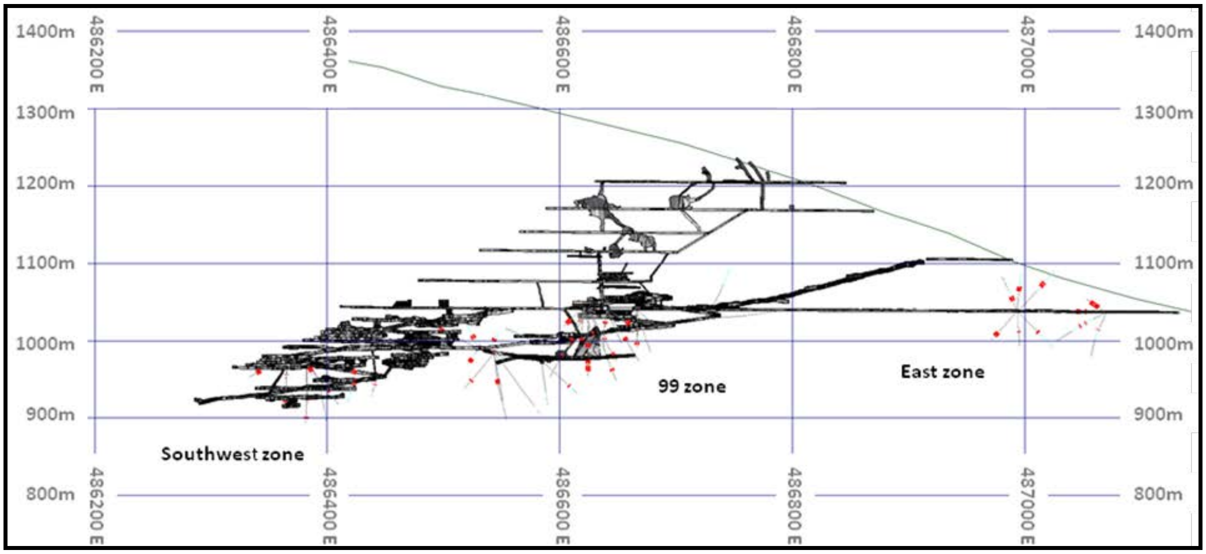


Figure 10.1: Bellekeno Mine Long Section, 1986 – 1996 UKHM Core Drill Holes (48 vein intercepts highlighted in red. Image view is 312 AZ, looking northwest.) (Alexco, 2013)

10.2.2 2006 – 2013 Alexco Drilling at the Bellekeno Mine

A total of 43,501 m of drilling from both surface and underground was completed at the Bellekeno deposit between 2006 and 2013 (Table 10.1).

Table 10.1: 2006 to 2013 Bellekeno Property Core Drilling Summary

Year	No of Drill Holes	Length (m)
Surface Drilling		
K-2006	9	3728
K-2007	37	11,063
K-2008	2	782
K-2009	17	2,729
K-2010	5	1,559
Total	**70**	**19,808**
Service	**1**	**230**
Underground Drilling		
2009	135	7,718
2010	49	4,938
2011	89	4,610
2012	64	4,520
2013	36	1,907
Total	**373**	**23,693**

An aggressive core drilling program by Alexco began in 2006 to confirm and test the 1997 historical mineral inventory and block model, as well as to extend the known mineralization for the 2009 PEA of the Bellekeno resource. Between 2006 and 2009, 200 drill holes of HQ and HQ3 size were drilled resulting in 25,967 m focussed on the 48 and 49 vein structures from underground and surface platforms. The drill core sampling and logging procedures were reviewed, and later compared against the UKHM drilling programs, and active mining. The larger core diameter, along with triple tube chambers helped to limit core loss in the vicinity of the vein, but did not fundamentally change core recovery. Drill core programs, surveying, and sampling procedures were considered reliable for geological modelling and mineral resource estimation.

More recent core drilling on the Bellekeno property has focused on resource definition, and to a lesser degree exploration programs. The underground drilling programs included infill, geotechnical, and exploration targets between 2010 and 2013. Surface drill holes are illustrated on Figure 10.2, while underground core drill hole traces are shown in Figure 10.3. Drilling procedures and results were reviewed and considered reliable for geologic interpretations and resource calculations.

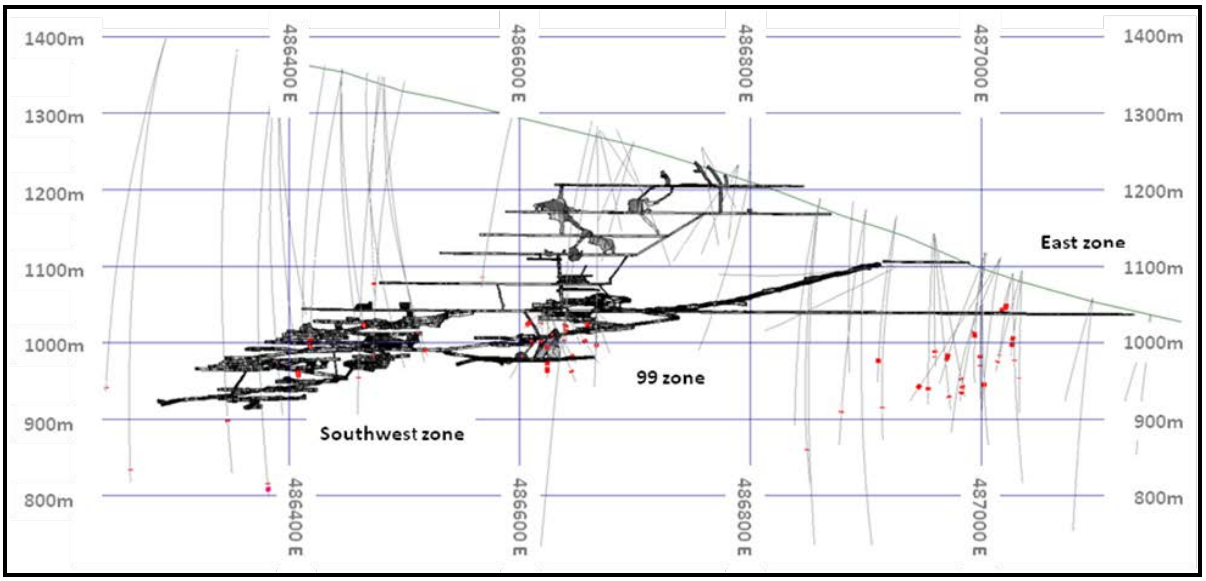


Figure 10.2: Bellekeno Mine Long Section, Surface Core Drill Holes, 2006 – 2013
(Vein intercepts are highlighted in red. Image view is 312AZ, looking northwest.) (Alexco, 2013)

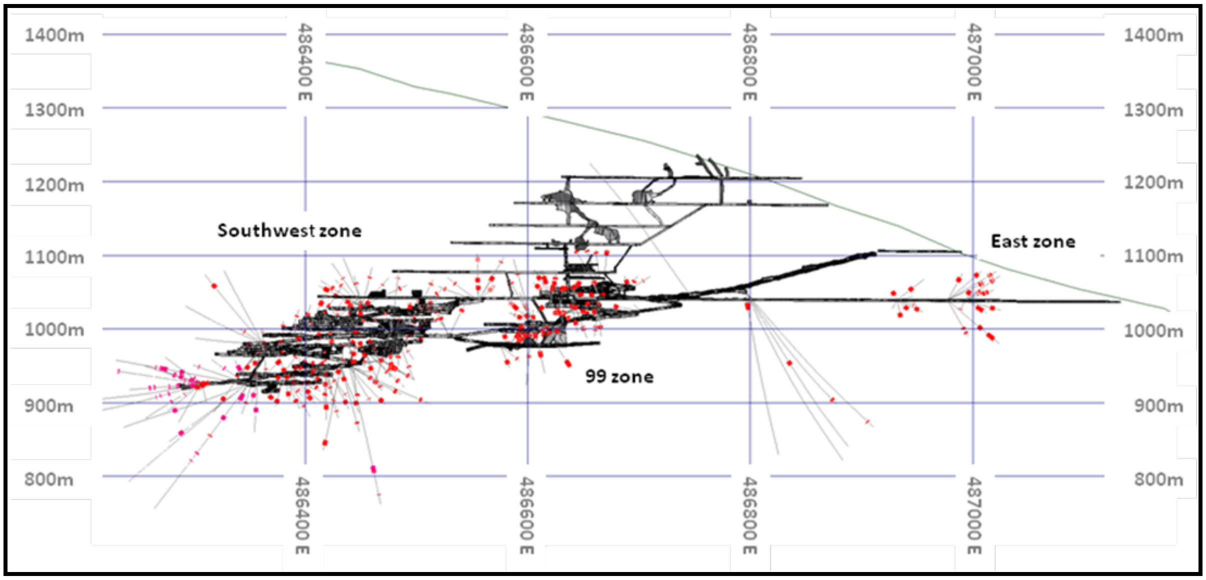


Figure 10.3: Bellekeno Mine Long Section, Underground Core Drill Holes, 2006 – 2013
(Vein intercepts are highlighted in red. Image view is 312 AZ, looking northwest.) (Alexco, 2013)

During 2010, five surface core drill holes were drilled (1,599 m): two drill holes on the southern offset of the 48 vein structure, and three drill holes to the north of the 99 zone. The drill holes ranged in length from 124 to 615 m, generally oriented northwest to southeast, with a declination between -55 to -72°. These orientations provided drilling intercepts almost perpendicular to the vein structure strike and resulted in vein intercepts that are as close as possible to true thickness. Down-hole surveys were generally taken every 30 m, using a Reflex down-hole survey tool.

Underground core drill holes were drilled almost continuously from 2010 through 2013. During this time, 238 drill holes were drilled with completed lengths between 12 and 285 m. Resource infilling drill holes were typically targeted on 15-metre centres, while larger step outs of 25 and 50 metres were more common on exploratory drill holes. Attempts were made to intersect the vein structures at orientations that would provide intercepts close to true thickness. Orientations generally ranged from northwest to southeast, with declinations between +65 to -55°, as depicted in Figure 10.3. Resource definition drill holes were generally drilled on a 15-metre dice pattern, while geotechnical and stratigraphic drilling targets were placed as required. This drilling pattern is considered operationally feasible and an accurate strategy for resource estimations given the heterogeneity over the vein composition. A summary of core recovery by year is summarized in Table 10.2 and Table 10.3.

Table 10.2: Summary of Surface and Underground Core Recovery Statistics 1996 – 2009

Zone	Core Recovery		NQ	HQ
	%*	%**	Intervals	Intervals
East	81	83	5	0
99	67	75	30	5
SW	79	88	45	13
Average	**76**	**83**	**Sum 80**	**18**

NR Zones are treated as 0% recovery
NR Zones are excluded

Table 10.3: Summary of Underground Core Recovery Statistics 2009 – 2012

Zone	**Core Recovery Percent**			
	2009	**2010**	**2011**	**2012**
East Zone				
Number	14	3		
Avg	67	21		
Min	24	2		
Max	91	34		
99 Zone				
Number	44		13	20
Avg	72		58	62
Min	44		26	36
Max	89		99	86
SW Zone				
Number	64	27	53	4
Avg	80	73	62	80
Min	25	16	36	74
Max	98	98	86	84

Vein heterogeneity and moderate to poor vein recovery during drilling has been overcome by the incorporation of chip data into the geological model. An example of vein heterogeneity is illustrated in Figure 10.4.

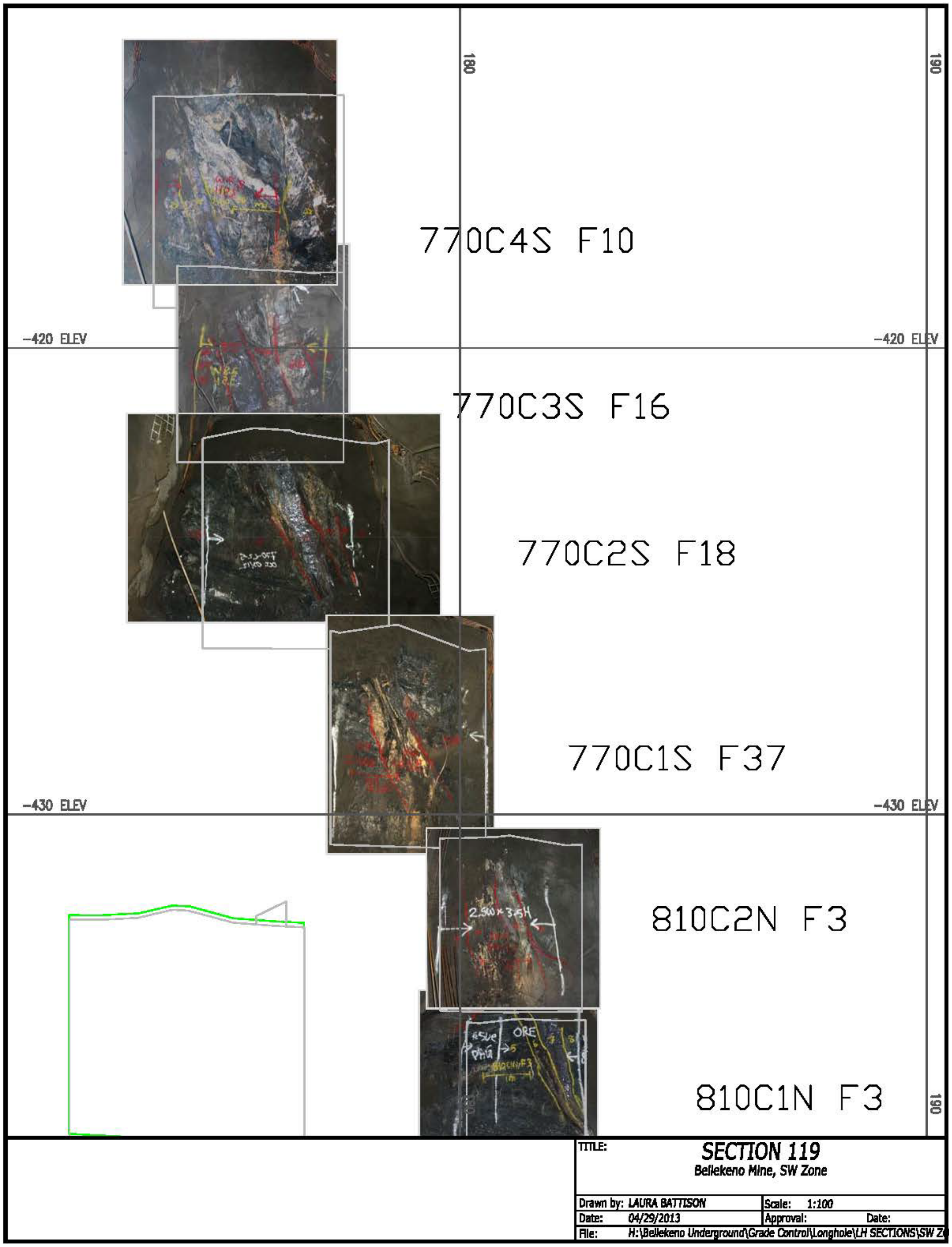


Figure 10.4: Photographic Section of 48 Vein Heterogeneity, Bellekeno Mine (Alexco, 2013)

10.2.3 Historical Drilling at Lucky Queen

For the Lucky Queen area, historical drilling information is available from the 1950s through the 1980s.

In 1957, UKHM drilled two surface core drill holes (LQ2 and LQ4) that intercepted the main Lucky Queen structure below the existing 300 level workings; however, core recovery was very poor. For example, across a 50.90 m interval (from a depth of 156.06 m to 206.96 m in drill hole LQ4), in the approximate vicinity of the vein, recorded recovery averaged only 22%. The fractured, friable nature of vein material makes its retrieval very unlikely given the already poor recovery conditions. No assays exist for drill holes LQ2 or LQ4 because vein material was either not intercepted or was not recovered and, thus, assaying was likely deemed unnecessary. In addition, survey control for these drill holes is sparse. For the above reasons the historical surface core drilling data was not used in the Lucky Queen resource estimate.

In 1985 – 1987, UKHM drilled underground test drill holes from the Lucky Queen 500 level adit. These percussion drill holes were sampled and assayed at 4-foot intervals. Percussion drilling does not present reliably the accurate location of a sample. No recovery data was obtained by UKHM. On this basis, historic assays were not used in this resource estimate. The test drill holes did provide some useful geological information and were used to help constrain the geometry of the main Lucky Queen structure and associated splay structures during wireframe construction.

Shallow, rotary percussion surface drill holes were also drilled in the Lucky Queen area in the 1970's through 1980 totalling approximately 20,400 m in 507 drill holes. As with the underground rotary percussion drill holes, these data were not deemed reliable for mineral resource estimation. The data were used in select geostatistics (variography) and in construction of mineralization and geological models, where applicable.

10.2.4 2006 – 2012 Alexco Drilling at Lucky Queen

Alexco conducted surface core drilling programs at Lucky Queen from 2006 to 2010 with 47 core drill holes totalling 11,104 m drilled (Figure 10.5). The drilling was designed to test along strike and down-plunge of the historical workings.

Surface drill holes ranged in length from 18 to 324 m, averaging 235 m. Most drill holes were drilled on a northwest azimuth with a declination of between 45 and 80°. In most cases, the drill holes were designed to intercept the mineralized zones perpendicular to the strike direction to give as close as possible a true thickness to the mineralized interval. Down-hole surveys were taken approximately every 60 m in 2006, 30 m in 2007 and 2008, and 15 m in 2009 and 2010 using a Reflex survey tool.

Drilling was designed to have a regular grid pattern with vein pierce point spacing on the order of 20 to 30 m.

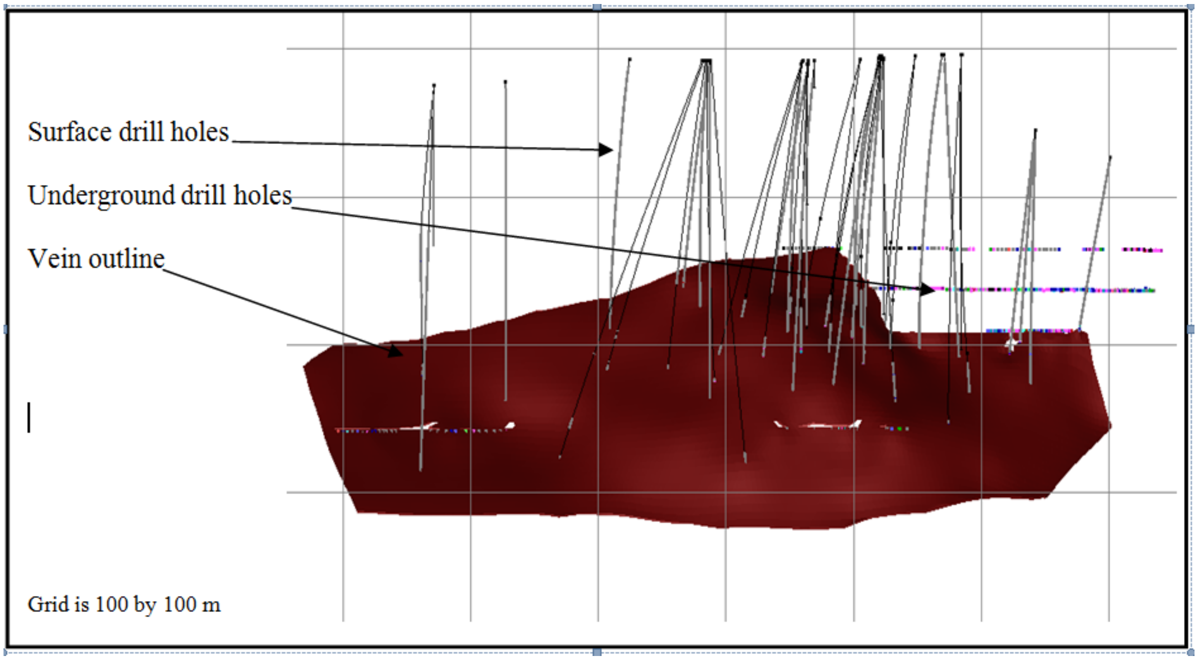


Figure 10.5: Location of Surface Drill Holes Drilled from 2006 to 2010 at Lucky Queen, Section is Looking Northwest (SRK, 2011)

Following rehabilitation of most of the 500 level, four underground core holes (210.50m) were drilled in 2012 outside of the resource area.

10.2.5 Historical Drilling at Flame & Moth

Historical drilling at Flame & Moth was predominantly shallow surface percussion overburden drill holes with 133 overburden drill holes totalling 4,044 m drilled on an average azimuth of 320°. Nine core drill holes totalling 731 m were drilled from surface and thirteen drill holes totalling 193 m were drilled from underground. Core recovery was generally poor, particularly in mineralized zones, which were the only intervals assayed.

Due to recovery issues for the historical core drill holes, lack of careful sampling techniques, and the open-hole nature of the percussion drilling, drilling data from these programs were not deemed reliable for use in the mineral resource estimation, although the data were used in the construction of geological models where applicable.

10.2.6 2010 – 2014 Alexco Drilling at Flame & Moth

Alexco conducted surface core drilling programs within the resource area at Flame & Moth in 2010, 2011, 2012, 2013 and currently in 2014. To date (August, 2014) the programs have initiated 127 drill holes (29,647 m). These drill holes were used in the geological modelling to develop the wireframes for resource estimation. The exploration drilling was initially designed to test geologically derived targets in the vicinity of the historical Flame & Moth workings. Following new discoveries, additional drilling was successful in outlining two zones of silver-lead-zinc mineralization on the Flame vein that were offset by the post-mineral Mill fault. Sufficient density of drilling has been completed to support mineral resource estimation.

In 2010, 14 drill holes were collared to target the structure identified by surface mapping. After losing the first drill hole in deep overburden, 11 other drill holes intercepted silver-lead-zinc mineralization that defined a mineralized structure striking 025° and dipping 62° southeast (Christal zone). One drill hole that was drilled furthest to the southwest, encountered mineralization much deeper than anticipated and implied a right lateral fault offset of the structure. In total, thirteen drill holes were drilled to target depth in 2010 for a total of 3,974 m.

In 2011, 32 drill holes were collared; however, eight were lost or abandoned. The majority of these drill holes targeted the up-dip extension of the mineralized vein located in the hangingwall of the Mill fault (Lightning zone) located in the 2010 drilling campaign. In total, 24 drill holes were completed to target depth for a total of 6,708 m.

In 2012, 43 drill holes were collared to infill and extend the initially defined resource. Of these four were abandoned. About half of the drill holes targeted the upper part of the Lightning zone not previously drill tested, while the remaining drill holes were drilled in the lower and southwestern part of the Lightning zone and various infill areas in the Christal zone. In total, 39 drill holes were drilled to target depth in 2012 for a total of 8,610 m. Refer to Figure 10.6.

In 2013, eight drill holes were completed outside the resource area for a total of 1,835 m to better define the upper part of the Christal Zone and the southwest extension of the Lihtning Zone.

Surface core drill holes in the mineral resource area that were drilled to target depth ranged in length from 74 to 482 m. Most drill holes were drilled on a northwest azimuth with a declination of between 45 – 80°. In most cases, the drill holes were designed to intercept the mineralized zones perpendicular to the strike direction to give as close as possible a true thickness to the mineralized interval. Drill hole spacing is on the order of 25 to 60 m, with a closer spaced grid pattern in the core of the higher grade mineral resource areas.

Since completing the latest resource estimate, a further 33 drill holes have been completed (8,404 m) primarily to explore the southwest strike extension of the Lightning Zone. This work is still in progress.

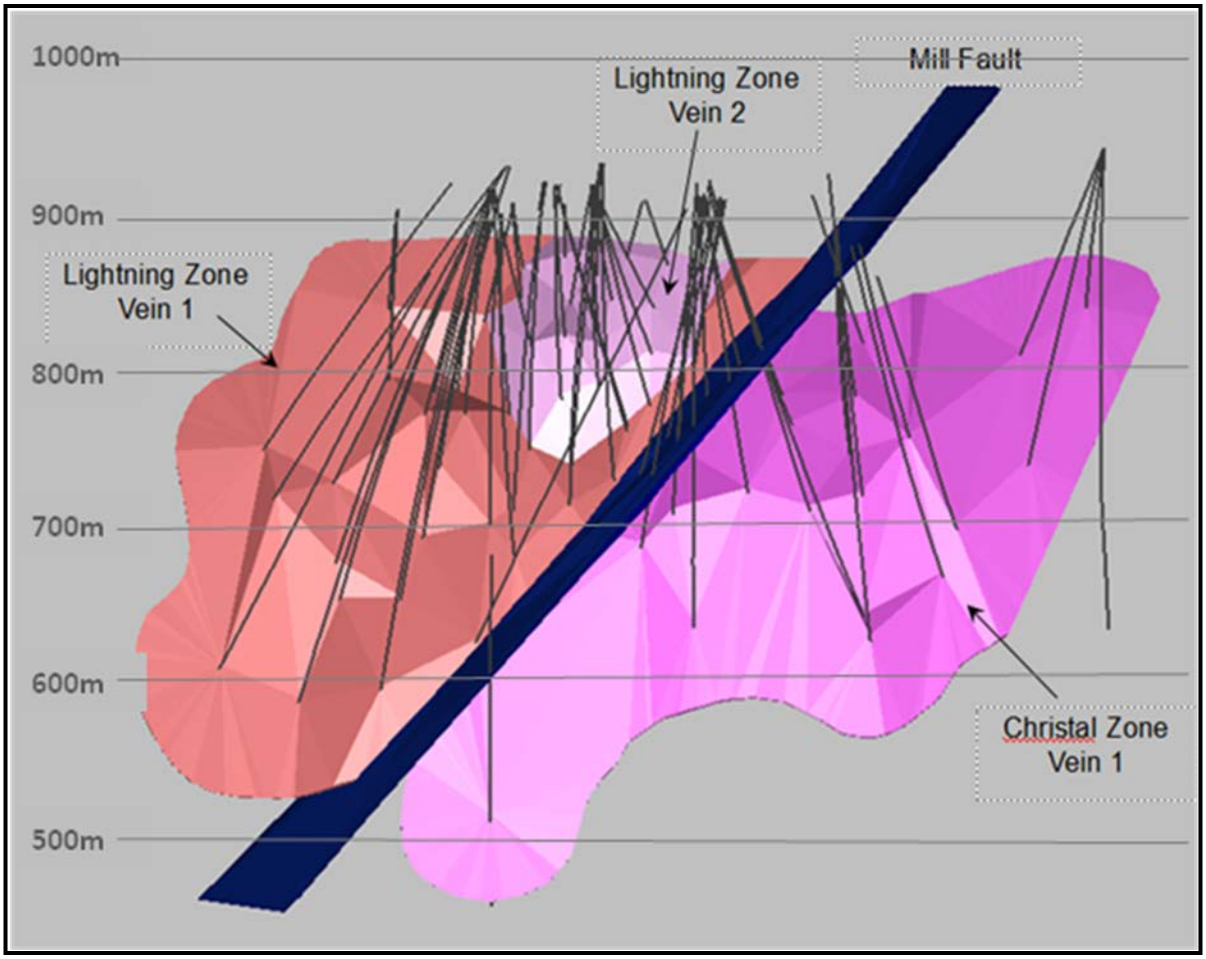


Figure 10.6: Location of Surface Drilling from 2010 to 2012 at Flame & Moth Used in Resource Estimation, Section is Looking North-Northwest (Alexco, 2013)

10.2.7 Historical Drilling at Onek

Historical core drilling at Onek is limited to 10 short, underground, horizontal drill holes. The holes were drilled at various azimuths and did not include downhole surveys. Drill recovery was generally poor, particularly in ore zones, and core assays were restricted to well-mineralized zones.

Short, open-hole, underground test holes and percussion holes were commonly drilled during development of the underground workings. Shallow, open-hole, surface percussion drilling was also done in the Onek area, mainly during the 1970’s, totalling approximately 13,000 m in 319 holes.

Due to recovery issues for the core holes, lack of careful sampling techniques, and the open-hole nature of the test/percussion, drilling data from these programs was not deemed reliable for use in the resource calculation. The data were used in select geostatistical analyses (variography) and in construction of mineralization/geologic models, where applicable.

10.2.8 2010 – 2014 Alexco Drilling at Onek

Alexco conducted surface diamond drilling programs at Onek in 2007, 2008, 2010 and 2011 with seventy eight core holes totalling 11,981 m drilled (Figure 10.7). The drilling was designed to confirm and test historic reserve/resource blocks and extend known mineralization along strike and down plunge in order to produce a robust geological model and new resource calculation in keeping with current standards.

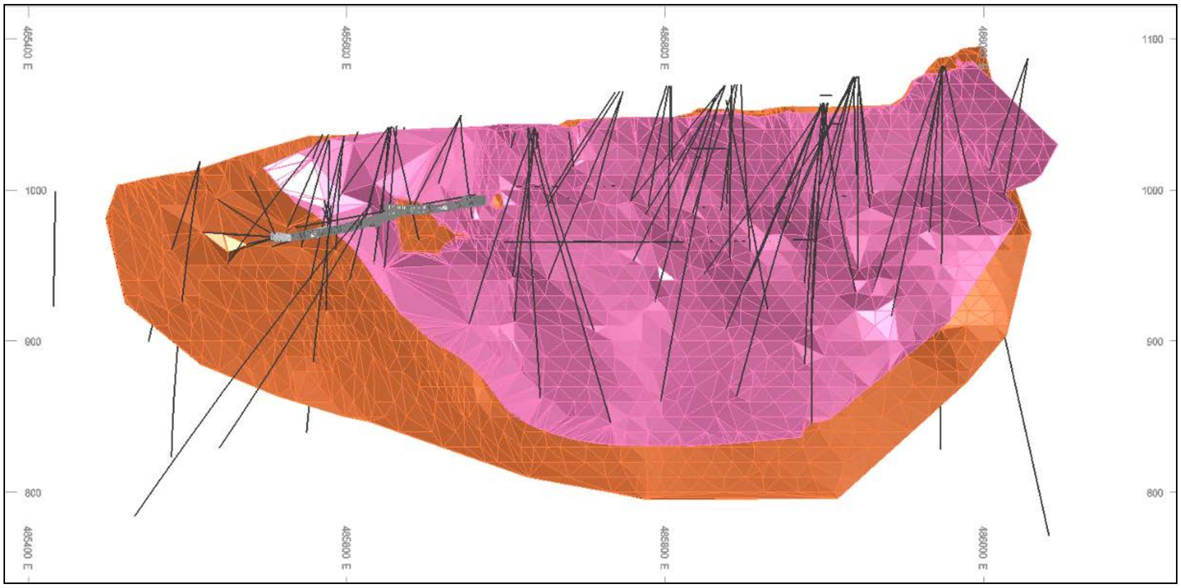


Figure 10.7: Location of Surface and Underground Drilling from 2007 to 2013 at Onek. Section is looking north. (Alexco 2014)

Two surface core holes (531.98 m) were drilled along strike to the southwest outside of the resource area in 2012.

A 220m decline was driven towards the Onek deposit in 2012 and 2013 following the drilling of a single 236.77 m surface core portal cover hole. In 2013, twelve underground core holes (975 m) were drilled.

10.2.9 Historical Drilling at Bermingham

Historical core drilling at Bermingham in the resource estimation area is limited to 16 core drill holes dating from 1969. The holes were drilled at an average azimuth of 323° and did not include down hole surveys. The average hole length was approximately 80 m with several holes ranging up to 146 m. Drill recovery was generally poor, particularly in mineralized zones, and core assays were restricted to well mineralized zones.

A small portion of the 874 shallow, open-hole, surface percussion drill holes completed historically in the Bermingham area were focussed on the present resource area, first as vertical holes in a grid pattern on approximately 30 m centers followed later by a definition drill program of inclined holes along strike of the vein to define an open pit target.

Due to recovery issues for the core holes, lack of careful sampling techniques, and the open-hole nature of the percussion drilling, drilling data from these programs was not deemed reliable for use in the resource calculation. The data were used in construction of mineralization/geologic models, where applicable.

10.2.102010 – 2014 Alexco Drilling at Bermingham

Alexco conducted surface diamond drilling programs at Bermingham in 2009, 2010, and 2011 with 36 core holes totalling 10,456 m drilled (Figure 10.8). The drilling was designed to test along strike and down plunge of historic near surface reserve/resource blocks, open pit workings, and around the historic underground mine workings. Drilling was successful in outlining an area of silver-lead-zinc mineralization developed in the hangingwall of the Mastiff Fault such that a new resource estimate could be completed in keeping with current standards. Of the 36 holes drilled in the area, 23 totalling 6,442 m were used in the resource estimate.

Alexco drilled two core holes in 2009, for a total of 523 m, which were designed to test the Bermingham Vein at depth in the hangingwall of the Mastiff Fault. Silver-lead-zinc mineralization encountered in both holes was deemed significant enough to warrant follow-up drilling the next year. Thus, in 2010 eight core holes totalling 2,588 m were completed, of which six intercepted the Bermingham Vein, one was abandoned due to bad ground and one missed the target due to unforeseen structural complexity. Re-interpretation of the data at this time led to the recognition of a subparallel second vein, referred to as the Aho Vein located in the hangingwall of the Bermingham Vein. Encouraging assays led to an expanded 2011 drill program with 25 holes completed for a total of 6,889 m. Of this, 3,217 m (13 holes) drilled in the hangingwall of the Mastiff Fault were largely used to explore and infill in the vicinity of the 2009 and 2010 drilling. The additional data obtained from this drilling necessitated interpretation of a third vein structure developed in the footwall of the Bermingham Vein that is referred to as the Bermingham Footwall Vein.

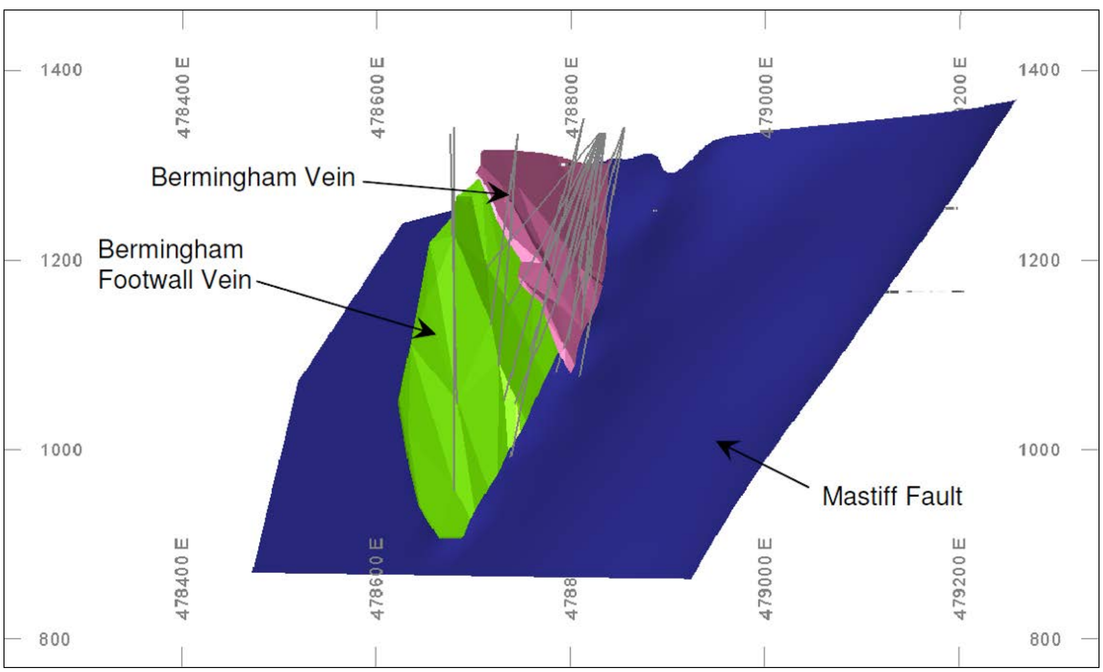


Figure 10.8: Location of Surface Drilling from 2009 to 2011 at Bermingham. Section is looking north

Surface drill holes in the resource area that were drilled to target depth ranged in length from 203 to 469 m. Most holes were drilled on a northwesterly azimuth with a declination of between 50° and 80°. In most cases, the drill holes were designed to intercept the mineralized zones perpendicular to the strike direction to give as close as possible a true thickness to the mineralized interval. Down hole surveys were taken at approximately 15 to 20 m intervals using a Reflex survey tool. SRK Comments

SRK reviewed the geological models and drill hole database for the Bellekeno and Flame & Moth deposits and is of the opinion that the drilling density at both deposits is sufficient for the estimation of mineral resources.

11 Sample Preparation, Analyses, and Security

11.1 Sample Preparation and Analyses

11.1.1 Historical Sampling (Pre-Alexco)

Information regarding historical (pre-Alexco) sampling approach and methodology is limited. The available documentation is outlined below.

A 1965 UKHM document outlines the sampling procedures for a newly purchased percussion drill. It was found that in most cases the frozen ground gave sufficient support for the drill hole without additional casing. In a few cases where the ground was not frozen, casing was advanced with the drill bit.

Drill cuttings were collected using a locally designed cone-shaped deflector with a catch pan shaped to fit around the casing. During drilling operations, cuttings were blown upwards between the drill rod and the casing, where they hit the deflector and were caught by the catch pan. Runs were 5 feet (1.5 m) in length, and provided 10 to 15 lb of sample material. At the end of each shift, several hundred grams were split from each sample in the geochemical laboratory; the remainder of the sample material was screened to -14 mesh. Constituents of the fine and coarse fraction were identified separately.

A document dated 1994 by Watts Griffiths and McQuat (WGM) outlines sampling procedures for the reverse circulation drilling. Two samples were to be collected for each 5-foot interval. One sample was sent to the laboratory while the other sample stayed at the drill for reference. The samples were collected in porous plastic bags and were dried prior to analysis. The document stresses cleanliness during the sampling procedure in order to avoid contamination.

An undated UKHM document outlines underground chip sample procedures as well. In addition to the above information, emphasis is put on clean faces in order to prevent sample contamination from previous blasting activities. Samples were to be taken within a 1.5 feet (0.5 m) wide area across the rock face. In addition to separate samples per rock type, this undated document requires separate samples for a change in structure. The sample location was to be measured from the nearest survey station; the resulting distance measurement was used to plot the samples (and assay results) on level plans. More detailed information was listed regarding the direction in which samples were to be taken for various kinds of underground openings.

11.1.2 Alexco Core Drilling Sampling - Exploration Programs (2006 – 2014)

The sampling protocol has remained relatively unchanged for the 2006 – 2014 surface and underground drill programs conducted by Alexco.

Core logging and sampling is completed by Alexco staff, where a logging geologist marks the sample intervals on the core. After logging, the core is digitally photographed and sawn in half lengthwise using a diamond saw where possible with attention paid to core orientation, or for broken core, manually split in half. One half is returned to the core box for storage at the site and the other bagged for sample shipment. No further on-site processing is performed.

Samples are typically two metres in length within major rock types. Sample intervals are broken at lithological contacts and at significant mineralization changes, and where identified, exclude zones of no recovery. Sample intervals within mineralized zones range from 0.10 to 1.0 m, based on consistency of mineralization. In initial work at the prospects, drill holes are sampled top to bottom. However, once a considerable body of geochemical data is available and the nature and distribution of the mineralization better understood, some intervals of barren material are not sampled where in close proximity to adjacent drill holes that has been sampled continuously.

Some minor modification in the sample shipment procedure has occurred over time, primarily in response to changing laboratory locations and the logistics surrounding available commercial transport. In all cases, approximately four to five individual samples are placed in rice bags (grain sacks) for shipment.

In 2006, samples were sent to Whitehorse, Yukon via Kluane Transport then to the ALS-Chemex facility in North Vancouver, British Columbia for preparation and analysis via Manitoulin Transport. Beginning in 2007, each rice bag was sealed with a numbered security tag. Bags were then placed on pallets and wrapped for shipping.

In 2007/2008, samples were transported to the Canadian Freightways facility in Whitehorse, Yukon by Alexco personnel. Canadian Freightways then trucked the samples to the ALS-Chemex facility in Terrace, British Columbia for preparation. Pulverized subsample splits were then sent to the ALS-Chemex facility in North Vancouver, British Columbia for analysis.

In 2009, samples were transported to the Eco Tech Labs preparation facility in Whitehorse, Yukon by Alexco personnel. Pulverized subsample splits were then sent to the Eco Tech facility in Kamloops, British Columbia for analysis.

In 2010, samples were shipped via Manitoulin Transport to Whitehorse, Yukon where they were couriered to the preparation facilities of either AGAT Labs or ALS Minerals in Whitehorse. The pulverized subsample splits were then sent to the AGAT Labs facility in Mississauga, Ontario, or the ALS facility in North Vancouver, British Columbia, for analysis.

Between 2011 and 2013, samples were shipped via Manitoulin Transport to Whitehorse, Yukon where they were delivered directly to the preparation facilities of ALS Minerals in Whitehorse. The pulverized subsample splits were then sent under seal by the lab to the ALS facility in North Vancouver, British Columbia, for analysis.

In 2014, samples are being shipped in sealed wooden boxes containing approximately 100 samples, directly by Alexco employees to the ALS Minerals sample preparation facility in Whitehorse and again the assay pulp is transported under seal by the lab to the North Vancouver analytical facility.

ALS Minerals, Eco Tech, and AGAT Laboratories are all accredited to ISO 17025 by the Standards Council of Canada for a number of specific test procedures, including fire assay for gold and silver with atomic absorption and gravimetric finish; multi-element inductively coupled plasma optical emission spectroscopy; and atomic absorption assays for silver, copper, lead, and zinc. ALS Minerals laboratories also participate in a number of international proficiency tests, such as those managed by CANMET and Geostats.

Sample preparation and analyses have been consistent for the 2006 – 2014 Alexco programs. Sample preparation consists of initial fine crushing of the sample to better than 70% passing 2 millimetres (mm) with the crusher cleaned with “barren material” after every sample. A nominal 250-gram split of this material is then pulverized to greater than 85% passing 75 micron (µm) for analyses with the pulverizer cleaned with “barren material” after every sample. Duplicate samples are prepared at the preparation facility by collecting a second 250-gram split from the crushed material taken from the preceding sample when noted.

Samples are analyzed for gold by fire assay and atomic absorption spectrometry on 30-gram subsamples and for a suite of 27 to 48 elements by four acid digestion and either inductively coupled plasma atomic emission spectroscopy (ICP-AES) or induced coupled plasma mass spectroscopy (ICP-MS) (on 0.5-gram subsamples). Elements exceeding the concentration limits of ICP-AES or ICP-MS are re-assayed by single element four acid digestion and atomic emission spectroscopy. Silver results exceeding ICP-AES limits are re-assayed by fire assay and gravimetric finish on 30-gram subsamples. Lead and zinc results exceeding concentration limits are analyzed by volumetric titration.

11.2 Quality Assurance and Quality Control Programs

Alexco implements standard assay quality control procedures for all Keno Hill Silver District drilling campaigns. Each 20-sample batch sent for assaying includes three control samples: a commercial standard reference material (SRM), a blank, and a duplicate. The location of control samples in the sample stream is defined by the logging geologist (standard reference material or SRM, blank, and duplicate). Control samples are inserted when the core is sawn or when the whole core is sampled. The SRM is already processed to a pulp and is inserted as ~50-100–gram sample. The blank is commercially purchased “landscape rock,” either dolomite or basalt with approximately 0.35 to 1.5 kg of this material inserted. An empty sample bag is inserted at the location of the duplicate, which is prepared during sample preparation at the laboratory prep facility. The duplicate consists of a coarse reject split of the preceding sample.

11.3 SRK Comments

The quality control program developed by Alexco is considered mature and overseen by appropriately qualified geologists. The data collected by Alexco on the KHSD project was acquired using adequate quality control procedures that generally met or exceeded industry best practices for an exploration property at the resource delineation stage.

In the opinion of SRK, the sampling preparation, security, and analytical procedures used by Alexco are consistent with generally accepted industry best practices and are, therefore, adequate for inclusion in this study.

12 Data Verification

12.1 Verifications by Alexco

During almost 100 years of exploration and mining in the Keno Hill Silver District, large amounts of data and documents were produced; much of this material is accessible to Alexco.

Large amounts of data were scanned by Alexco with documents initially labelled with the location where they were found (e.g., file cabinet number and drawer) before being moved from the storage sites to the scanning facility. The scans of large maps and sections were stored as image files (JPEG format) where the file name contained original title block information. Individual files were stored in directories that mimicked the physical storage location. Smaller maps and reports were scanned and saved as Adobe® PDF files.

Naming convention and file hierarchy were the same as for the large maps. Each file was also given a five digit number that was added in front of the file name. These numbers were listed in an Excel spreadsheet that also contained the file name, the file extension, the file size, the scanning date, the directory location, and a key word index for each file. The scans were also organized into descriptive folders for each mine/prospect.

12.1.1 Historical Core Drilling Data

All accessible core drill hole logs were transcribed onto standardized spreadsheets as close to verbatim as possible; the original logs were scanned and file names and numbers were recorded in the new spreadsheets as well. These first spreadsheets were then inspected by geologists for consistency. The next step was to “normalize” the original transcribed data in order to match current nomenclature; data verification was ongoing. Collar information, as well as survey, assay, and recovery data were then verified by a person other than the original data entry person; the final step was to amalgamate separate spreadsheets into one global database.

12.1.2 Bellekeno Historical Core Drilling Data

Bellekeno underwent three phases of core drilling: 1986, 1994 – 1996, and 2006 – 2013. Alexco’s access to mine workings in 2009 allowed resurveying of the 1986 and 1994 – 1996 historical (UKHM) drill hole collars in UTM coordinates, thereby assuring all collar locations were tied to a common datum.

In instances where 2009 underground drilling and historical drilling were twinned, the positioning of the 2009 composite locations were honoured, as historically down-hole surveying was irregularly spaced or not done at all.

In instances where surface drilling and underground drilling had conflicting contact locations, 2009 underground drilling was honoured. This was the case in the Southwest zone with surface drill hole K-07-0101. The vein intercept in this drill hole is 376 m down-hole. Within 15 to 20 m on each side are two Alexco underground drill holes of 15 m length of similar grade and thickness. In this case, the grade from K-07- 0101 was used in the estimation but its position is assumed to be defined by the adjacent underground drill holes.

Drilling programs under the supervision of UKHM were given careful scrutiny prior to being incorporated into the Alexco resource estimation. Historic data was evaluated and checked by processing paper drilling logs into electronic formats, resurveying of underground drill hole collars, and twinning of historical vein pierce points. Early programs were deemed reasonably complete and accurate for the purpose of resource and geologic modelling.

Two phases of underground core drilling occurred at the Bellekeno mine under UKHM management, 1986 and 1994-1996. During this time, most of the drilling operated off the local Treadwell grid system. For verification purposes, Alexco resurveyed the collar positions of the core and percussion drill holes in 2009 on the areas where the mine rehabilitation had been completed. The collar data was then verified against the UTM NAD 83 Zone 8 map projection coordinates. Only minor discrepancies were found in the underground percussion drilling. While the collar positions were updated, these drill holes were not included in the resource evaluation.

As part of the due diligence for the 2009 updated PEA conducted by Wardrop, twinning of the core drill hole vein pierce points were conducted. Twinned intercepts were commonly within 0.5 to 1.5 m of the original pierce point. In most cases, the intercepts of both drill holes were commonly useable for interpretations. However, in instances where the two pierce points were significantly different, the 2009 underground drilling was given precedence. Surface drill holes were assumed to have more deviation because of down-hole depth, and irregularly spaced or incomplete down-hole survey data.

12.1.3 Lucky Queen Historical Core Drilling Data

Historical drilling data are not deemed reliable and, therefore, was not considered for mineral resource estimation.

12.1.4 Flame & Moth Historical Core Drilling Data

Historical drilling data are not deemed reliable and, therefore, was not considered for mineral resource estimation.

12.1.5 Onek Historical Core Drilling Data

Historical drilling data are not deemed reliable and, therefore, was not considered for mineral resource estimation.

12.1.6 Bermingham Historical Core Drilling Data

Historical drilling data are not deemed reliable and, therefore, was not considered for mineral resource estimation.

12.1.7 Historical Chip Sample Data

Data verification by Alexco personnel was done on the TYC and UKHM underground chip sample data from the assay plan maps for each deposit where they were available. The verification procedure consisted of cross-checking the assay values in the database to the values on the original scanned historic assay plan maps. The sample interval points and respective silver assays were imported from the database and overlain on the original maps. All points were visually inspected to ensure that chip sample lines fell within the boundaries of the drift outlines. Then all assay intervals in the database were checked to ensure they matched with what was originally written on the maps.

12.1.8 Bellekeno Historical Chip Sample Data

Both historical (UKHM) chip sample and Alexco chip sample data was used in the grade estimation. Historical chip samples were commonly analyzed for silver, lead, and zinc only. Chip samples were generally taken as cuts across the vein and into the hangingwall and footwall rocks. The wireframe was constructed regardless of chip sample location. Chip samples were not used to define wireframe contacts or wireframe width. The determination of which chip samples to use in the grade estimation was made by “capturing” the chip sample intervals within the wireframe and tagging those intervals for composite. An interval had to be at least 25% within the wireframe to be tagged and used for compositing. The 25% rule was used because of the location uncertainty in the historical surveying of upper levels and stopes that were inaccessible to Alexco.

The high density of chip sample composites warranted declustering so that drill hole data influence on estimation would be honoured and chip sampling bias would be reduced. Chip sample composites were declustered on a 10 x 6 x 10 m grid.

Historical chip sample data was extensively reviewed by Alexco as part of the 2009 updated PEA. Chip assay values and string traces were visually referenced against the grades plotted on level plan view maps. During this early review, chip data was accepted if: a) the chip lines matched the UTM co-ordinates in the database within 0.1 m; b) the chip lines fell within the boundaries of the drift outline; c) the assays were real values; and d) the grades checked against the face grade sheets. Literary reviews of UKHM practices suggest a strong emphasis was placed on chip sampling, and chip sample protocols were well established by the time stoping began at Bellekeno in 1988. Mine correction factors issued across the Keno Hill Silver District suggest the chip samples from Bellekeno were very representative of the vein material received; the mine was assigned a correction factor of 1.0.

Chip samples collected by UKHM were commonly analyzed for silver, lead, and zinc, while chip samples above the 400 level were commonly only analyzed for silver. Data tracking for Bellekeno during 1988 – 1989 included car sampling of the vein material before it was transported to the mill. A production review of the data showed a 12% variance between the car and chip data. Further analyses of the chip data using declustered data by zones are summarized in Table 12.1. This table summarizes a 14 to 40% variance in silver assay by zone. Results are significantly higher than anticipated, and do not reflect the chip sample to mill sample variations currently observed with active production. Sampling tests conducted by Alexco in 2011 showed a good mixing trend between chip samples, truck samples, and belt samples taken at the mill over a one month period. After reviewing the historical statistical data, the declustering analysis was considered excessively conservative given the reconciliation of the active chip samples with smelter products, and the chip-truck-belt cut mixing curves observed. Alexco considers the historical chip data from the Bellekeno resource area to be reliable.

Table 12.1: Statistical Review of UKHM Bellekeno Production Chip Data

	Mean		
	Ag (ppm)	Pb (%)	Zn (%)
99 Zone			
Chip Sample Data	1,269	6.93	2.89
Declustered Chip Sample Data	897	5.19	2.31
Difference	-29%	-25%	-20%
Southwest Zone			
Chip Sample Data	1,047	10.15	3.53
Declustered Chip Sample Data	626	5.85	2.58
Difference	-40%	-42%	-27%
East Zone			
Chip Sample Data	391	0.57	6.83
Declustered Chip Sample Data	338	0.49	6.2
Difference	-14%	-14%	-9%

12.1.9 Lucky Queen Historical Chip Sample Data

No historical chip data were used for mineral resource estimation. The data were used in select geostatistical analyses (variography) and in the construction of mineralization and geological models, where applicable.

12.1.10Flame & Moth Historical Chip Sample Data

No historical chip data were available for the Flame & Moth deposit.

12.1.11Onek Historical Chip Sample Data

SRK reviewed the historical chan data for the Onek deposit and because of the apparent bias associated with the chips sample data, SRK decided only to use the chip data to model the vein contacts. None of the historical chip samples were used to estimate the mineral resource.

12.1.12Bermingham Historical Chip Sample Data

No historical chip data were available for the Bermingham deposit.

12.1.13Verification of 2006 to 2014 Data by Alexco

Alexco maintains an SQL database of all Keno Hill Silver District drill and sample data. Each property is assigned an identifier to extract property specific subsets from the master database. Until 2010, all data was entered or imported into the database via Datashed database management software, and subsequently via customized GeoSpark software. The data for individual properties is exported from the SQL database by scripted routine to comma separated values (CSV) files, which are imported into MineSight. The following drill hole files are generated: collar, survey, drill hole assay, chip sample assay, lithology, mineralization, structure and geotechnical. During the 2006 – 2012 drilling programs, Alexco personnel conducted routine visual verifications to ensure the reliability of the drilling data, including a 100% check of the collar and survey tables and a minimum 10% verification of the remaining exported tables. The process uncovered a low level of data entry errors, which were corrected.

The Alexco assay quality control procedures are outlined in Section 11.2. Three control samples (standard, blank, duplicate) were included in each 20-sample batch sent for assaying. During the 2006 – 2012 drill campaigns, Alexco used one of 16 standard reference material (SRM) purchased from WCM Sales Limited of Burnaby, British Columbia: eight polymetallic copper, lead, zinc, and silver reference materials (PB 111, PB 112, PB 113, PB 116, PB 129, PB 131, and PB 137) and eight silver reference materials (PM 1107, PM 1108, PM 1116, PM 1117, PM 1128, and PM 1133) for inclusion in each 20-sample batch (Table 12.2).

Table 12.2: Commercial Standard Reference Material Used by Alexco for the 2006 – 2012 Drilling Programs for the KHSD project

SRM	Cu (%)	S.D.	Pb (%)	S.D.	Zn (%)	S.D.	Ag (gpt)	S.D.	Ag (oz/t)	S.D.	Au (gpt)	S.D.
PB111	0.69	0.01	2.12	0.04	0.45	0.02	195	6				
PB112	0.85	0.01	0.92	0.02	1.27	0.03	222	2				
PB113	0.47	0.01	1.11	0.02	1.40	0.05	22	1				
PB116	0.43	0.01	1.40	0.06	0.85	0.02	22	1				
PB129	0.28	0.01	1.24	0.02	2.00	0.06	23	1.7				
PB131	0.47	0.01	1.04	0.04	1.89	0.06	262	11				
PB137	0.21	0.01	2.62	0.09	2.69	0.115	111	2				
PB141	1.02	0.013	6.68	0.146	3.78	0.136	173	3				
PM1107							1194	34	34.8	1.0		
PM1108							658	10	19.2	0.3		
PM1116							769	23	22.4	0.7		
PM1117							386	16	11.3	0.5		
PM1123	0.31	0.0082					31	1.2851			1.42	0.046
PM1128							592	12	17.3	0.4		
PM1132							2287	54.334	66.69	1.5847		
PM1133							757	19	22.1	0.5		

In 2012, Alexco also started using a series of certified standard reference material developed from the Bellekeno deposit: polymetallic standards (Table 12.3), that were certified by Smee & Associates Consulting Ltd. (BK-C, BK-M, BK-S, BK-R and BK-W) that are now commercially available, and CDN Resource Laboratories Ltd. (ME-4, ME-5) that are used as internal lab standards at the Keno Hill Silver District assay lab. These standards were tested internally before insertion into batches containing commercial SRMs.

Table 12.3: Standard Reference Material Used by Alexco during the 2012 Drilling Program for the Bellekeno mine

SRM	Pb (%)	S.D.	Zn (%)	S.D.	Ag (gpt)	S.D.	Ag (oz/t)	S.D.
BK-C	14.62	0.58	12.32	0.23	1162	23.5		
BK-M	14.02	0.63	7.85	0.20	971	19		
BK-R	36.19 (Provisional)	2.33	5.08	0.13	2224	47		
BK-S	12.47	0.38	13.17	0.41	1094	20		
BK-W	3.06	0.06	1.79	0.05	270	10		
ME-4	4.25	0.12	1.10	0.03	402	12.5		
ME-5	2.13	0.06	0.579	0.01	206.1	6.55		

Assay results for quality control samples were monitored on an ongoing basis during all drill programs (2006 to 2012). Each potential quality control failure was investigated and appropriate remedy action was taken, including the re-assaying of batches containing abnormal quality control samples. In some instances, the potential failures occurred in batches of samples outside potentially mineralized areas. In such cases no remedy actions were taken.

All mineralized chip samples collected concurrent with mining activities between 2011 and 2012 that were included in the Bellekeno mineral resource were sent to external laboratories for check assays. Duplicate pulp samples were made at the Alexco laboratory facility from coarse reject material and submitted for external assay checks. All standards submitted with the chip sample assaying returned within +/- 2 standard deviations of the mean. Duplicate pulp sample results suggest the silver, lead and zinc grades are reasonably reproducible.

The Bellekeno 2006 – 2012 analytical quality control data produced by Alexco are summarized in Table 12.4.

Table 12.4: Quality Control Data Produced by Alexco from 2006 to 2012 for Bellekeno

Quality Control Type	Count	Ratio
Core Samples	4,627	
Blanks	230	5.0% (1:20)
Standards	313	6.8% (1:15)
Duplicates	380	8.2% (1:12)
Chip Samples	2,078	
Blanks	21	1.0% (1:100)
Standard Reference Material	228	11.0% (1:9)
Coarse Reject Duplicate	109	5.2% (1:19)

The Lucky Queen 2006 to 2010 external analytical quality control data produced by Alexco are summarized in Table 12.5.

Table 12.5: Quality Control Data Produced by Alexco from 2006 to 2010 for Lucky Queen

Quality Control Type	Count	Ratio
Core Samples	3,144	
Blanks	185	1:17 (5.9%)
Standard Reference Material	183	1:17 (5.8%)
Coarse Reject Duplicate	186	1:17 (5.9%)

The Flame & Moth quality control data produced by Alexco are summarized in Table 12.6.

Table 12.6: Quality Control Data Produced by Alexco from 2010 to 2012 for Flame & Moth

Quality Control Type	Count	Ratio
Core Samples	3996	
Blanks	248	1:16 (6.2%)
Standard Reference Material	240	1:16 (6.0%)
Coarse Reject Duplicate	251	1:16 (6.3%)

All standards consistently returned values within ±2 standard deviations of the mean, with only occasional values falling outside this limit, but then within ±3 standard deviations of the mean.

Analysis of assays from coarse reject duplicate samples suggests that silver, lead, and zinc grades can be reasonably reproduced with no apparent bias.

The Onek quality control data produced by Alexco are summarized in Table 12.7

Table 12.7 Quality Control Data Produced by Alexco from 2007 to 2014 for Onek

Quality Control Type	Count	Ratio
Core Samples	4,730	
Blanks	282	1:16 (6.0%)
Standard Reference Material	302	1:16 (6.4%)
Coarse Reject Duplicate	286	1:16 (6.1%)

All standards consistently returned values within ±2 standard deviations of the mean with only occasional values within ±3 standard deviations of the mean.

Analysis of assays from coarse reject duplicate samples suggests that silver, lead and zinc grades can be reasonably reproduced from the coarse reject split of the original samples with no apparent bias.

The Bermingham 2009 to 2011 external analytical quality control data produced by Alexco are summarized in Table 12.8.

Table 12.8 Quality Control Data Produced by Alexco from 2009 to 2011 for Bermingham

Quality Control Type	Count	Ratio
Core Samples	1,427	
Blanks	84	1:16 (5.9%)
Standard Reference Material	84	1:16 (5.9%)
Coarse Reject Duplicate	84	1:16 (5.9%)

12.2 Verifications by SRK

12.2.1 Site Visits

Dr. Gilles Arseneau and Chris Elliott of SRK carried out a visit to examine the Lucky Queen, Bellekeno and Onek deposits. In total, SRK spent two and half days at the sites between July 26 and 28, 2010 examining drill core, core logging and sampling procedures; visiting drill sites; and examining the mineralization exposed in surface cuts. Alexco provided SRK with information related to these activities during the site visit. Dr. Arseneau carried out a second site visit on May 7 and 8, 2012 to examine the surface geology and drill core for the Bermingham deposit.

12.2.2 Verifications of Analytical Quality Control Data for Lucky Queen

SRK reviewed and verified the Lucky Queen drill hole data and quality control assay data from 2006 to 2010 and found the data to be reliable for resource estimation purposes.

The 2006 to 2010 quality control data collected by Alexco was considered comprehensive and the assaying results delivered by ALS Chemex and AGAT Laboratory are considered reliable for the purpose of resource estimation.

SRK aggregated the assay results for the external quality control samples and duplicate assay pairs. Time series bias charts and assay pair precision plots were constructed for applicable elements.

A total of 185 samples of unknown composition designated as blanks were submitted by Alexco during the drilling operations. Performance of the blank samples was reasonably good, with no systematic failures noted for silver, lead, or zinc. For gold assays, 6% of the submitted blanks returned a grade higher than 0.01 gpt.

A total of 183 commercial standard reference samples were submitted by Alexco during the drilling operations. All reference standards used by Alexco were purchased from WCM Minerals, Burnaby, British Columbia. Performance of the commercial standard reference samples was reasonably good, with only the analytical results for one standard (PM-1107) being consistently less than the average grade of the standard.

A total of 186 samples were analyzed as duplicates by Alexco. No significant discrepancies were noted between the original and duplicate analyses, and the correlation between samples is good.

Upon completion of the review, SRK considered that the analytical data produced by Alexco are sufficiently reliable to support mineral resource estimation.

12.2.3 Verification of Analytical Quality Control Data for Onek

In November 2010, June 2011 and August 2014, SRK completed audits of the Alexco analytical and quality control data acquired with the sampling of the Onek deposit. This involved analysis of the drill hole and assay database, review of the assay certificates received directly from the ALS Chemex and AGAT Laboratories, and review of assay results for blank, standard and duplicate samples.

SRK conducted routine verifications to ascertain the reliability of the electronic borehole database provided by Alexo. All assays in the current database were verified against the independently sourced sample certificates from ALS Chemex and AGAT Laboratories. The silver, lead, zinc and gold values in the assay table were found to match the laboratory certificates. In addition, SRK verified the conversion of units between different methods utilized in the laboratories and believes the conversions were done correctly.

Several assay batches were received from AGAT labs in 2010, where any one or more of the standards, blanks and duplicates included in the batch did not pass Alexco's quality control standards, and were sent for re-assay either through AGAT labs or submitted to ALS Chemex. A very minor number of batches showed sample preparation errors that were either resolved through the lab in question or by quarter-coring the remaining core and submitting new samples to ALS Chemex.

The review of analytical quality control data produced by ALS Chemex, AGAT and Alexco, suggests that silver, gold, lead and zinc grades can be reasonably reproduced, suggesting that the final assay results reported by ALS Chemex and AGAT are generally reliable for the purpose of resource estimation

After the review, SRK is of the opinion that the Onek drilling database is sufficiently reliable for resource estimation.

12.2.4 Verification of Analytical Quality Control Data for Bermingham

SRK completed an audit of the Alexco analytical and quality control data acquired during the sampling of the Bermingham deposit; this audit conducted of routine verifications to ascertain the reliability of the electronic drill hole database provided by Alexco. All assays in the current database were verified against independently sourced sample certificates from ALS, Echo-Tech, and AGAT Laboratories. The silver, lead, zinc, and gold values in the assay table were found to match the laboratory certificates with a few exceptions where samples had been re-assayed and the database had not been updated with the re-assay certificate number. Alexco corrected this and the samples values were found to match the re-assay certificates.

After the review, SRK is of the opinion that the Bermingham drilling database is sufficiently reliable for resource estimation.

13 Mineral Processing and Metallurgical Testing

13.1 Background

Metallurgical testwork has been conducted independently on each of the three deposits included in the production plan independently. The Bellekeno Development Plan reported by Wardrop in 2009 summarized the metallurgical program results at that time. Testwork performed from 1996 through 2009 was the basis for the design and construction of the mill facility in 2010. Alexco's Bellekeno silver-lead-zinc mine and mill complex achieved commercial production in January 2011, processing an average of 253 tpd in 2012. Since 2011, samples from Lucky Queen and Flame & Moth mineralization were tested to assess flotation performance only.

To date, no testwork has been conducted on a blended sample from any of the three deposits. The production schedule discussed in report Section 17 Recovery Methods indicates that significant blending of the different deposits is planned.

Historical testwork program reports are listed in report Section 27 References.

Table 13.1 summarizes the total tonnes, contribution by deposit, and average head grades for the life-of-mine (LoM) production plan incorporated in this PEA technical report.

Table 13.1: Summary of LoM Grades and Tonnes per Deposit

PEA LoM	Bellekeno	Lucky Queen	Flame & Moth	Total
Ore (kt)	86	129	593	807
Lead grade (%)	6.7	2.4	2.2	2.7
Zinc grade (%)	4.1	1.5	5.4	4.7
Gold grade (gpt)	-	0.1	0.5	0.4
Silver grade (gpt)	660	1,054	690	745
Total mass (%)	11	16	73	100

As shown in Table 13.1, the average head grades among the three deposits vary considerably. For example, compared to the lead grades currently being processed by the mill facility, the two new deposits have less than half the lead grade. Mill performance will be sensitive to the feed blend especially for zinc recovery. Lucky Queen material will lower the zinc grade leading to a decrease in zinc recovery.

At 73% of the total mill feed, Flame & Moth material will significantly impact the project economics, as it will represent a large portion of the mill feed blend from the last quarter of 2015 onwards. To date, only one composite sample has been tested with variable results and additional testing on the Flame & Moth mineralization is warranted.

13.2 Hardness Testwork

Three test programs included Bond rod work index, Ball work index and abrasion testwork for grindability on Bellekeno samples. The test results are summarized in Table 13.2. The hardness results are considered to be in the soft to medium-soft range with low variability.

No hardness testing has been completed on Lucky Queen or Flame & Moth samples.

Table 13.2: Grindability Test Results

Test Program	Deposit	Sample	Ball Mill (kWh/t)	Rod Mill (kWh/t)	Abrasion Index (g)
1996	Bellekeno	BK Comp	9.3 *		
2007	Bellekeno	Bellekeno Comp	9.5**		
2008/2009	Bellekeno	Master Comp		8.7	0.438
	Bellekeno	East Zone Comp	8.7**		
	Bellekeno	SW Zone Comp	9.0**		

*At closing screen size of 106 µm; ** at closing screen size of 150 µm

13.3 Mineralogy

Mineralogical investigations were included in the 2007 and 2008/2009 testwork programs. In 2007, SGS completed a QEMSCAN™ analysis on Bellekeno samples indicating galena and sphalerite as the principal lead and zinc minerals. Pyrite accounted for less than 4% of the mass and trace sulphide minerals included chalcopyrite, bornite, chalcocite, tetrahedrite, and arsenopyrite.

The 2008/2009 microscope examination confirmed galena and sphalerite as the main minerals for the Southwest zone composite. Proustite-pyrargyrite was identified as the only specific silver mineral found, and was present as small inclusions in galena. Tennantite-tetrahedrite and sphalerite may be additional silver carriers. Native gold was found as fine inclusions in chalcopyrite.

Both studies reported coarse texture with the 2007 data indicating liberation at a relatively coarse size. At an 80% passing (P80) grind size of 170 µm, 96% of the sphalerite and 95% of the galena particles analyzed were present as liberated phases.

No mineralogical work has been completed to date on Lucky Queen or Flame & Moth to confirm if the deposits share the same characteristics and liberation sizes as Bellekeno.

13.4 Flotation Testwork

All three deposits have been individually tested for flotation performance. The testwork program for Bellekeno was completed in 2009 and is detailed by Wardrop in their report (Wardrop, 2009). The Bellekeno program included an assessment of primary grind size, regrinding, reagent schemes, and variability on bench-scale, open cycle flotation test performance. The open cycle flotation tests included cleaning of lead and zinc concentrates. The Bellekeno flotation program also included bench-scale, locked cycle tests (LCTs), which were part of the 1996, 2007, and 2008/2009 test programs.

Primary grind size was investigated in the 2007 and 2008/2009 test programs. The results indicated rougher flotation performance was not sensitive to primary grind up to a P80 size of 174 µm.

The effect of regrinding on both lead-silver and zinc cleaner flotation was investigated in all three test programs. The effect of regrinding lead-silver rougher concentrate down to a P80 size of 15 µm was variable. Similarly, regrinding down to a P80 size of 65 µm in the 2007 test program showed a slight improvement in zinc concentrate grade.

The mill facility operated in 2012 with a target primary grind P80 size of 175 µm without regrinding of any flotation concentrates prior to cleaning. It should be noted that most of the testwork to date has been conducted at a finer primary grind size than is being achieved by the mill facility. However, an additional ball mill will be commissioned in Q1 2015 to increase the grinding circuit capacity to achieve the design throughput of 400 tpd. In addition, any effects observed in the testwork of regrinding flotation concentrates prior to cleaning cannot be applied to the current Bellekeno flowsheet. While the design criteria for the mill facility included a regrind circuit, it is not part of the current process flowsheet.

Since 2011, Lucky Queen and Flame & Moth samples have been tested at the Inspectorate laboratory in Vancouver, British Columbia (only raw datasheets were made available to SRK for review). The open cycle flotation tests included rougher and cleaning stages using a flowsheet similar to the current mill facility. Testwork results were provided but no formal reports were provided to SRK for review.

The details and results for the Bellekeno LCTs, as well as the Lucky Queen and Flame & Moth test results are discussed separately in the following sections.

13.4.1 Bellekeno Locked Cycle Testwork

Bench-scale LCTs were part of the test programs of 1996, 2007, and 2008/2009. The 1996 LCT was performed on a blended sample from the Bellekeno and Silver King deposits and is described in the 2009 Wardrop report. Table 13.3 below shows the measured head grades for the 2007 and 2008/2009 LCT samples.

Table 13.3: Head Grades for Bellekeno Locked Cycle Test Samples

Test Program	Sample	Test #	Head Assay		
			Lead (%)	Zinc (%)	Silver (gpt)
2007	Bellekeno Comp	LCT	12.2	11.6	1227
2008/2009	Master Comp	LCT 1	13.1	11.2	933
	Master Comp	LCT 2	13.8	10.5	964
	East Zone Comp	LCT 3	1.9	17	270

The flowsheet for the 2007 LCT is shown in Figure 13.1. The 2007 test was performed at a primary grind P80 size of 175 µm with regrind ahead of the lead cleaning circuit to a P80 size of 23 µm and zinc rougher concentrate regrinding to a P80 size of 83 µm.

The 2008/2009 test program included three LCTs. Two different flowsheets were tested on the Master composite and one test was completed with the East zone composite. Figure 13.2 illustrates the flowsheet for LCT 1 on the Master composite. LCT 1 was at a primary grind P80 size of 144 µm, with regrinding to a P80 size of 6 µm for lead cleaning and zinc rougher regrind to a P80 size of 26 µm. LCT 2 test had a simplified flowsheet, as illustrated in Figure 13.3. LCT 2 kept the same primary grind as LCT 1 without any regrind. The lead cleaner scavenger stage was also eliminated. LCT 3 followed LCT 2 procedure with a primary grind P80 size of 130 µm.

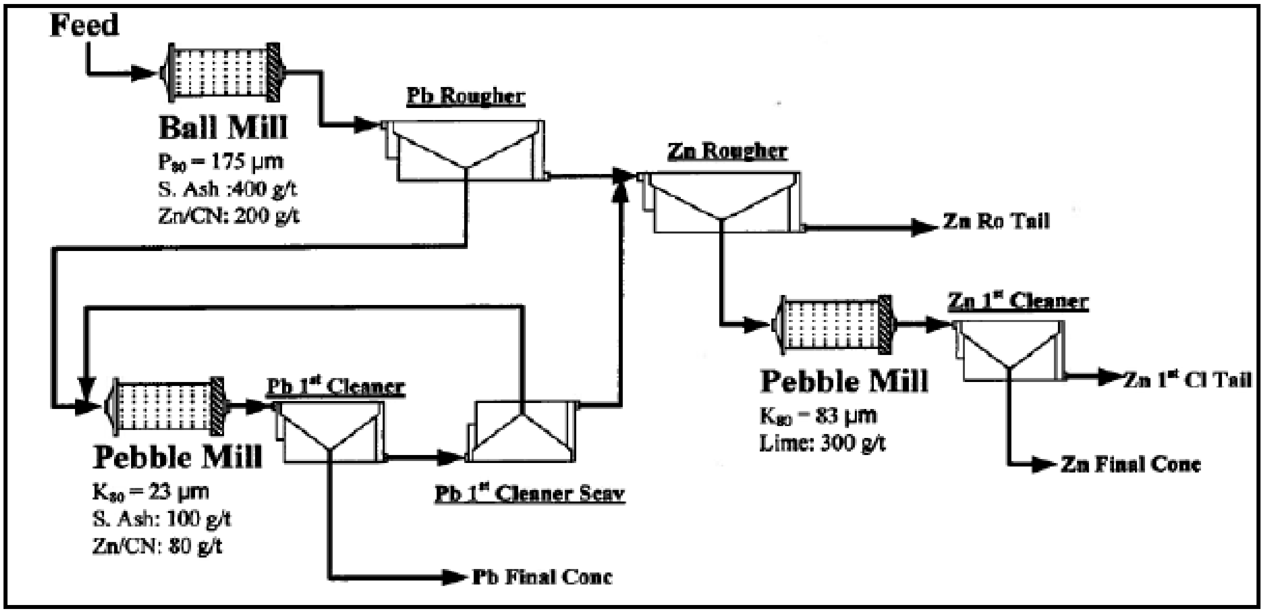


Figure 13.1: Bellekeno Locked Cycle Test Flowsheet for LCT (SGS, 2008)

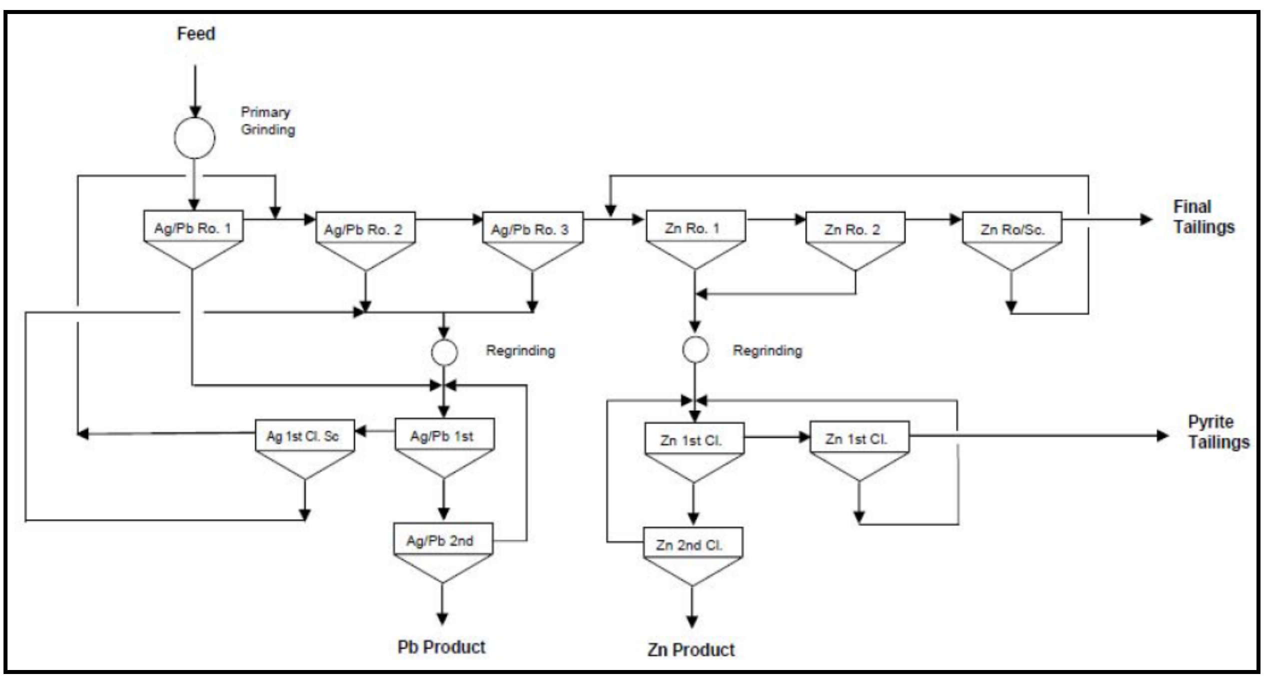


Figure 13.2: Bellekeno Flowsheet for LCT 1 (Inspectorate, 2009)

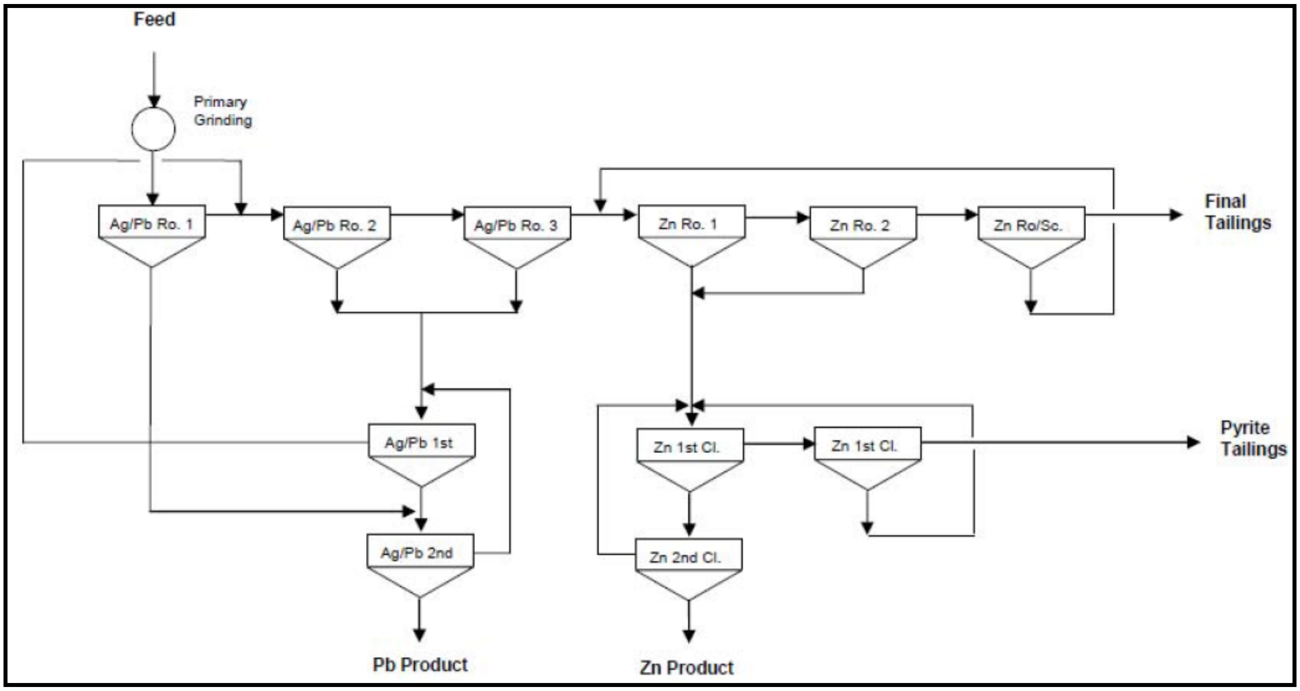


Figure 13.3: Bellekeno Flowsheet for LCT 2 and LCT 3 (Inspectorate, 2009)

Figure 13.4 shows the lead recovery and grade of lead concentrate against head grade. The Bellekeno Master composite responded well to all three flowsheets tested with an average lead recovery of about 95% at a concentrate grade of 72%. The East zone composite (with lower lead head grade) achieved 90% recovery at a lead concentrate grade of 53%.

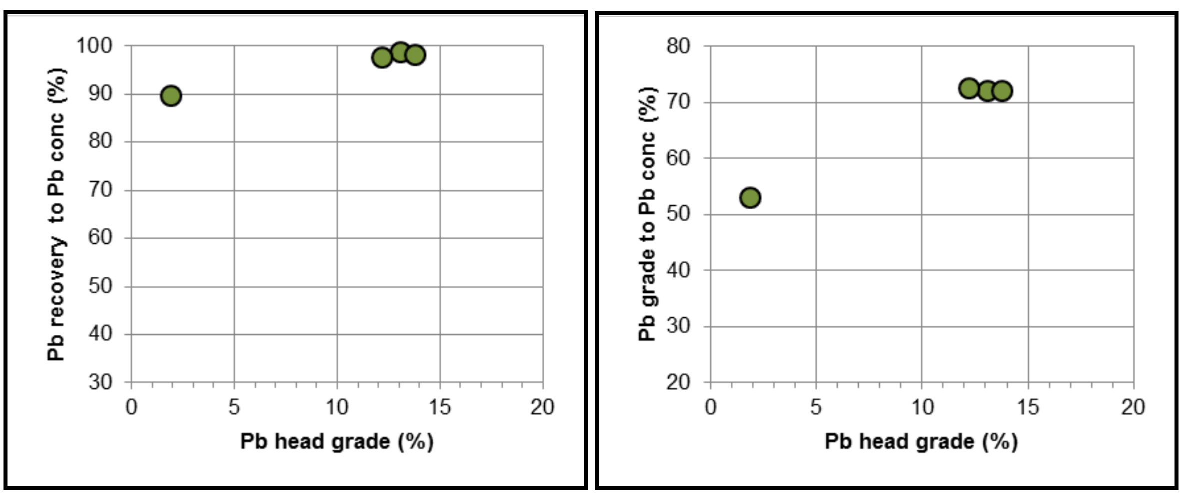


Figure 13.4: Bellekeno Lead Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

Figure 13.5 shows zinc recovery and zinc concentrate grades for the LCTs against head grade. The zinc recovery for all the 2008/2009 tests were above 92% with concentrate grade between 53% and 61% zinc. The 2007 LCT reached 72% recovery at a concentrate grade of 56% zinc. LCT 3 achieved the best zinc recovery at 98% with a concentrate grade of 59% zinc.

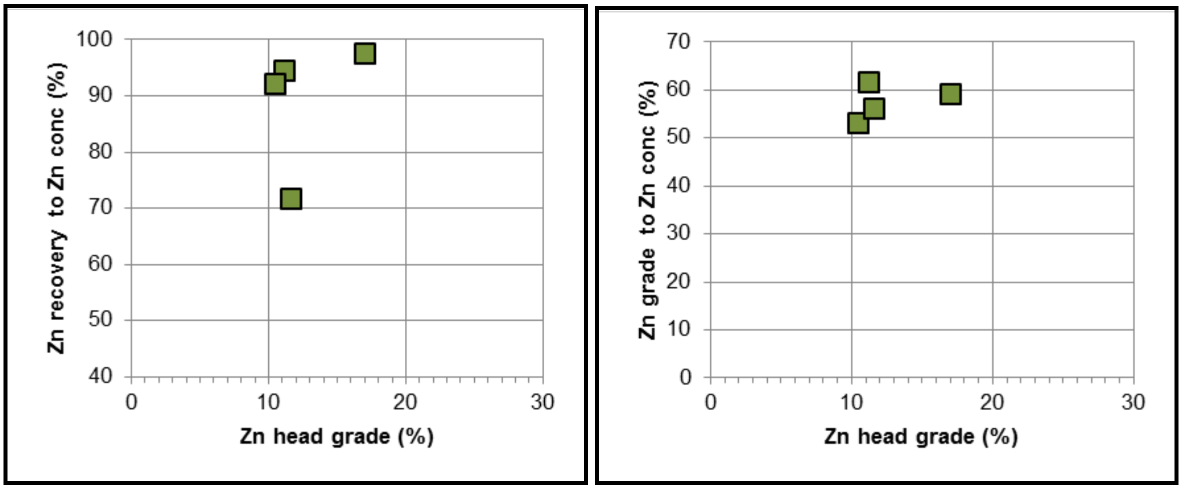


Figure 13.5: Bellekeno Zinc Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

Figure 13.6 shows silver recovery to lead concentrate and the silver grades of the lead concentrate against head grade. The 2007 LCT silver recovery to lead concentrate was 78% at a concentrate grade just below 6,000 gpt. The metallurgical performance of the Master composite for silver recoveries and grades to lead concentrate for the 2008/2009 tests was not affected by changes in the test flowsheet.

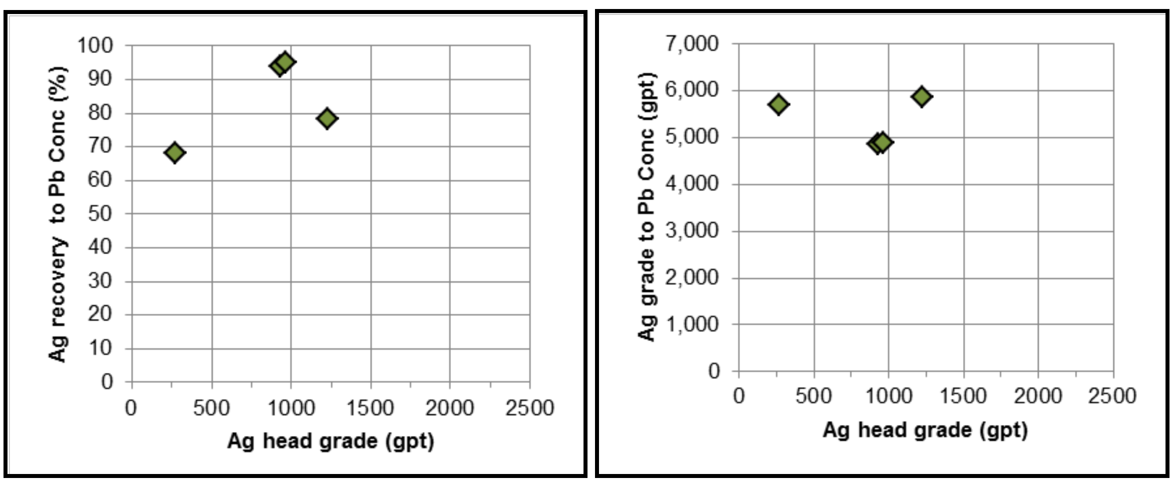


Figure 13.6: Bellekeno Silver Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

13.4.2 Lucky Queen Testwork

In 2011, two samples from the Lucky Queen mineralization were tested. Grinding conditions were kept constant and the flotation tests were performed following the standard mill facility procedure with the aim of recreating the mill facility flowsheet.

Flotation performance was assessed on open circuit, bench-scale testwork, not locked cycle testing as described above for Bellekeno. Flotation was performed at an average P80 size of 83 µm without regrinding of rougher concentrates. The Lucky Queen samples were also tested under optimized conditions for increased zinc recovery. Table 13.4 shows the calculated head grades for the Lucky Queen samples.

Table 13.4: Head Grades for Lucky Queen Test Samples

Test - Sample	Calc Head Assay		
	Lead (%)	Zinc (%)	Silver (gpt)
F9 - LQ Global comp (opt)	4.5	3.4	2,322
F10 - LQ HG comp (opt)	9.7	4.8	4,965

The grind sizes reported in the flotation program were finer than the mill facility design criteria of P80 size of 175 µm. The Lucky Queen test average primary P80 size was 83 µm and testwork did not include regrinding. The testwork results showed that a finer primary grind could increase flotation selectivity, resulting in higher recoveries and concentrate grades.

Figure 13.7 shows lead recovery and lead concentrate grade and Figure 13.8 shows the silver grade and recovery to lead concentrate against head grade. Silver recovery to lead concentrate averaged 89%, while lead recoveries to lead concentrate averaged 91%. Lead concentrate grade was 68% lead and 34,000 gpt silver.

Figure 13.9 shows zinc recoveries and concentrate grades for the Lucky Queen testwork against head grade. The zinc recovery was 73% at a concentrate grade of 59% zinc.

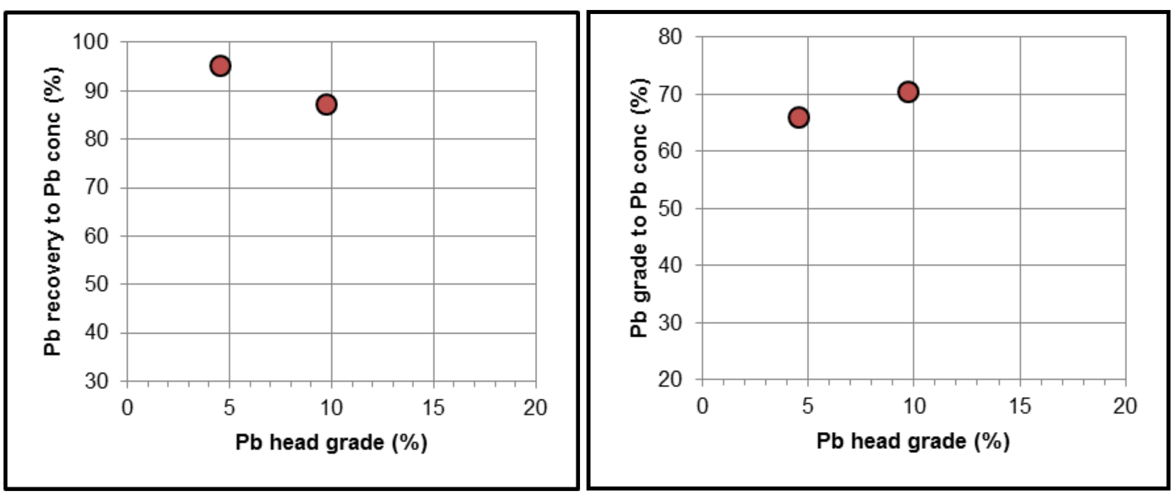


Figure 13.7: Lucky Queen Lead Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

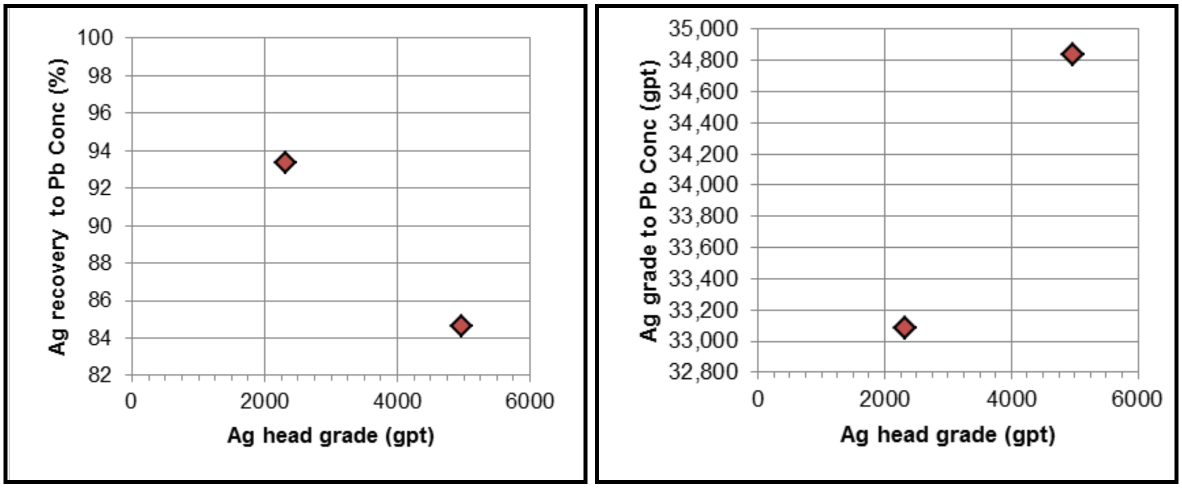


Figure 13.8: Lucky Queen Silver Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

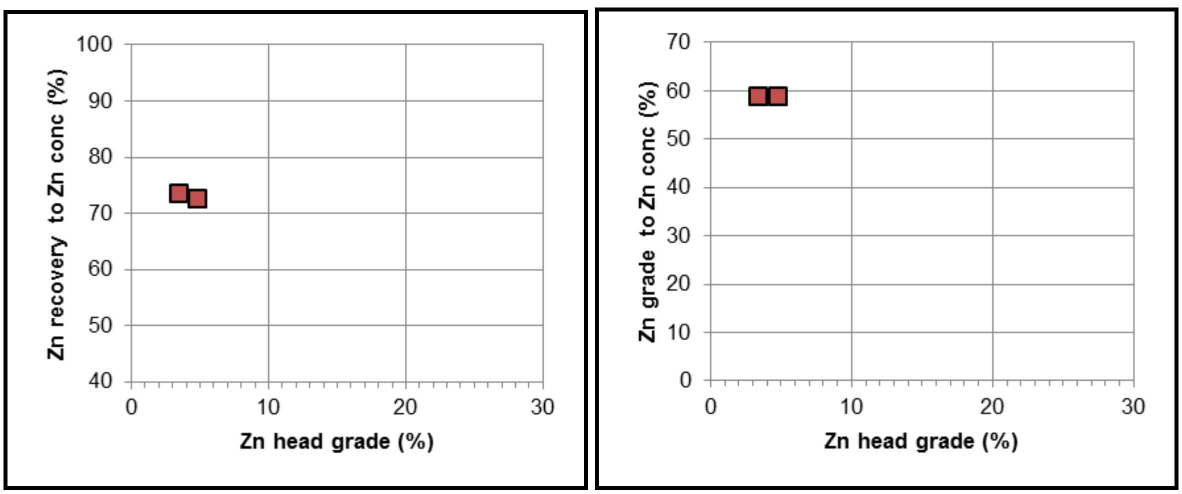


Figure 13.9: Lucky Queen Zinc Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

13.4.3 Flame & Moth Testwork

In 2013, one composite sample from the Flame & Moth mineralization was tested at the Inspectorate laboratory in Vancouver, British Columbia (only raw datasheets were made available to SRK for review). Test procedures were initially the same as the Lucky Queen program, however, changes were made to improve zinc recovery and concentrate grade for subsequent tests. The grinding time was kept constant for all tests and the average P80 grind size was 115 µm. Table 13.5 shows the calculated head grades for the Flame & Moth samples.

Table 13.5: Head Grades for Flame & Moth Test Samples

Test – Samples Flame & Moth	Calc Head Assay		
	Lead (%)	Zinc (%)	Silver (gpt)
F4 - master comp	2.2	7.2	593
F5 - master comp	2.3	5.9	613
F6 - master comp (regrind)	2.2	7.2	609

Flame & Moth tests F4 and F5 followed the same procedure as the Lucky Queen optimized tests. Test F6 included regrinding of the zinc rougher concentrate. The regrinding of rougher concentrates was to a P80 size of 72 µm and tests F5 and F6 had an additional zinc cleaning stage at a higher pH of 12.

Figure 13.10 shows lead grade and recovery to lead concentrate for the Flame & Moth test F4, while Figure 13.11 shows silver grade and recovery to lead concentrate. As the values achieved for lead concentrate were considered satisfactory, no further lead cleaning tests were performed on the Flame & Moth sample.

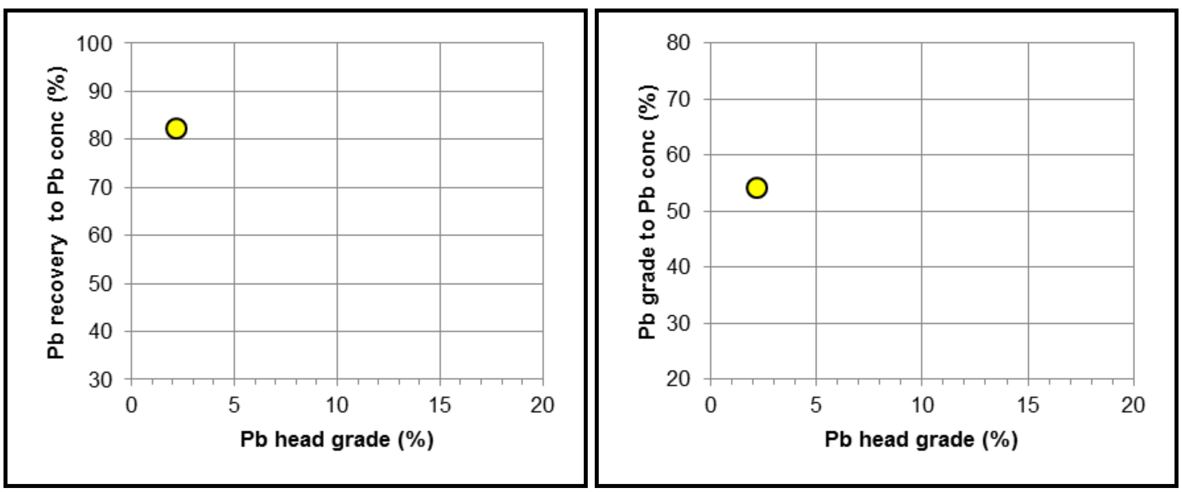


Figure 13.10: Flame & Moth Lead Recovery and Concentrate Grade vs. Head Grade (Test F4) (SRK, 2013)

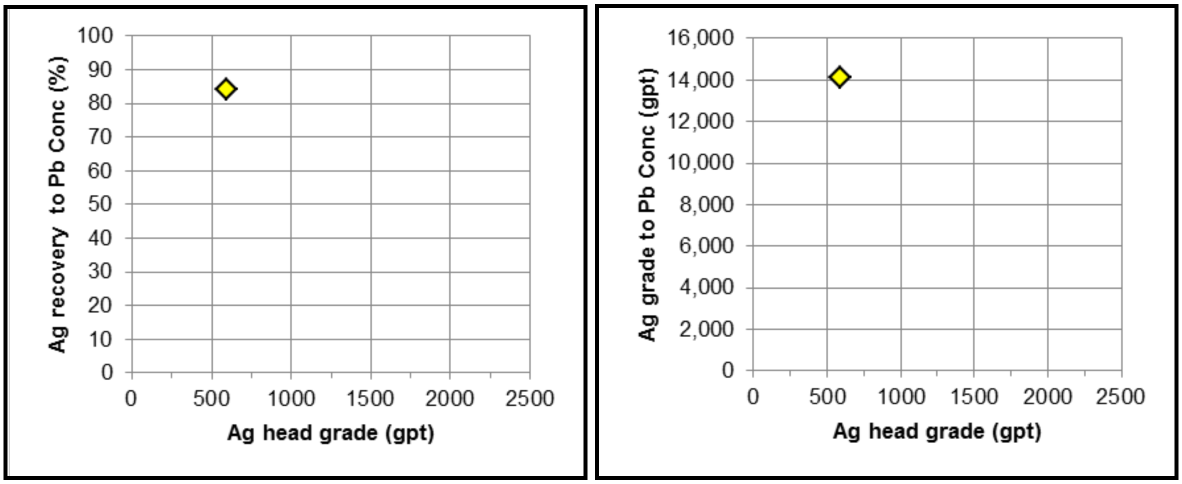


Figure 13.11: Flame & Moth Silver Recovery and Concentrate Grade vs. Head Grade (Test F4) (SRK, 2013)

Figure 13.12 shows zinc recoveries and concentrate grades for the Flame & Moth testwork. Test F4 achieved the best zinc recovery of 59% at a concentrate grade of only 24% zinc. Regrinding improved the zinc recovery from 30% to 38% and concentrate grade from 23% to 46% zinc. Test F5 and F6 were conducted with an additional cleaning stage and the results are marked in Figure 13.12 with an asterisk. The additional cleaning stage on test F6 improved concentrate grade to about 54% zinc at only 30% zinc recovery. These results suggest that Flame & Moth material could be sensitive to regrinding and zinc cleaning capacity in terms of zinc recovery and final concentrate grade.

Based on the variability and, in general, poor response of the Flame & Moth composite sample, additional testwork is warranted to determine the effect of regrinding on zinc performance.

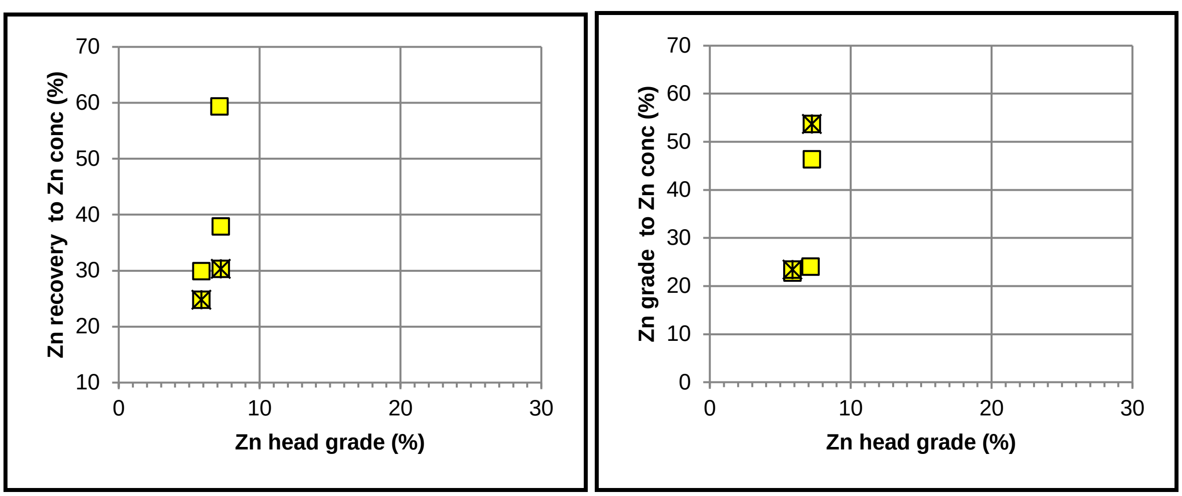


Figure 13.12: Flame & Moth Zinc Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)
*Icons marked with an asterisk had one additional cleaning stage

13.4.4 Onek Testwork

In the same program as the two Lucky Queen samples, four Onek samples (Master, Low, Medium, and High-grade composites) were tested under two sets of flotation conditions. The initial flotation tests were performed according to the standard district mill procedure and the second sequence of tests (labelled Onek Opt) had the reagent dosage optimized for improved zinc recoveries. The grinding time was kept constant for all tests and the average P80 size for the Onek samples was 106 µm.

Table 13.6 shows the calculated head grades for the Onek test samples.

Comparing the head grades in Table 13.1 and Table 13.6, the test sample grades are lower in lead and silver compared to the LoM average grades.

Table 13.6: Head Grades for Onek Test Samples

Test - Sample	Calc Head Assay		
	Lead (%)	Zinc (%)	Silver (gpt)
F1 - Onek master comp	1.2	22.2	144
F2 - Onek SW 1 comp	0.6	15.0	107
F3 - Onek SW 2 comp	0.2	24.9	72
F4 - Onek SW 3 comp	1.9	11.8	304
F5 - Onek opt master comp	1.2	20.7	181
F6 - Onek opt SW 1 comp	0.7	15.7	104
F7 - Onek opt SW 2 comp	0.2	23.3	79
F8 - Onek opt SW 3 comp	3.5	11.5	308

Figure 13.13 shows lead recovery and lead concentrate grade and Figure 13.14 shows the silver grade and recovery to lead concentrate against head grade. Silver recovery to lead concentrate ranged from 30% to 70%, while lead recoveries to lead concentrate were between 40% and 83%. Lead concentrate grade varied significantly from 21% to 72% lead.

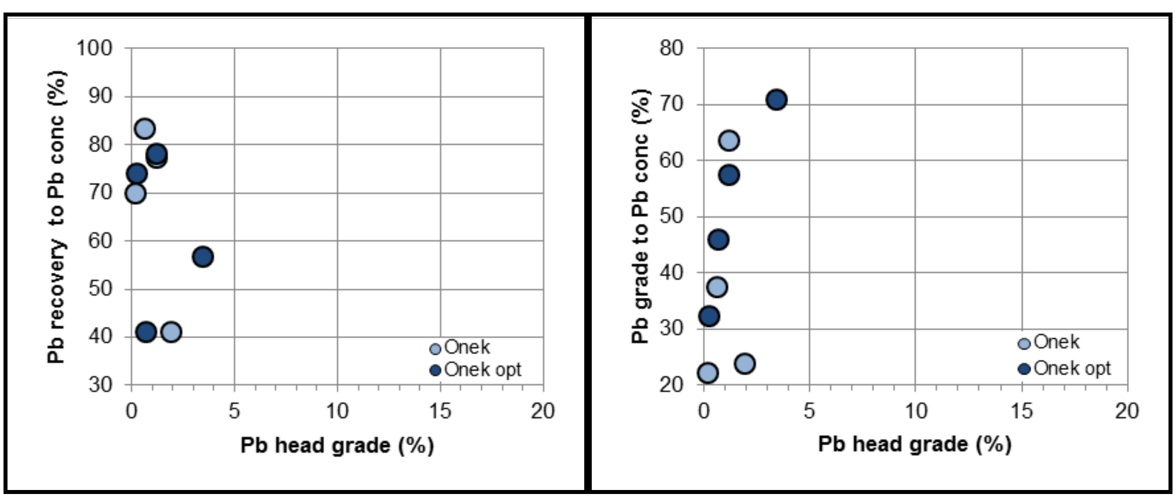


Figure 13.13: Onek Lead Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

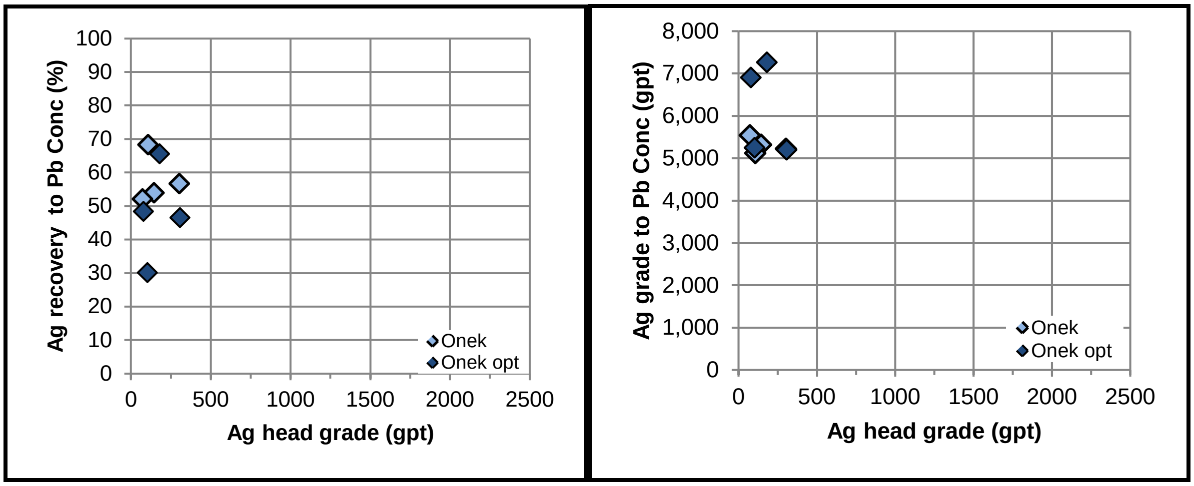


Figure 13.14: Onek Silver Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

Figure 13.15 shows zinc recovery and concentrate grades for the Onek samples against head grade. For the optimized conditions (Onek Opt), an average increase in recovery of almost 30% was observed compared to the standard test conditions. The improved recovery did not impact the zinc concentrate grade.

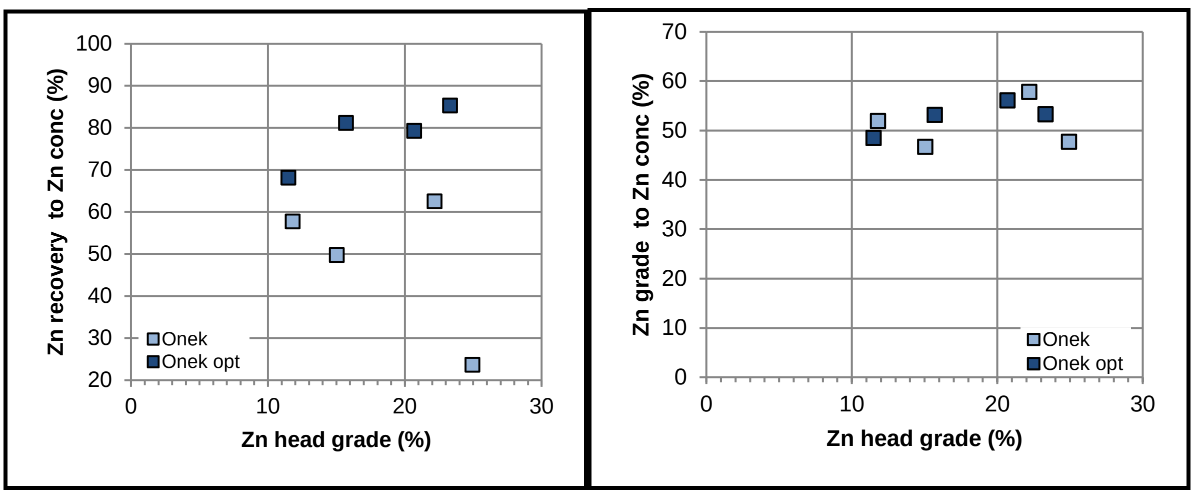


Figure 13.15: Onek Zinc Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

13.4.5 Bermingham Testwork

There is no metallurgical test work for the Bermingham deposit

13.4.6 Comparison of Deposits for the PEA

Figure 13.16 shows lead recovery and lead concentrate grade against head grade for all three testwork programs. When looking at the full data set, all deposits show a similar flotation response considering the differences in head grade. Variations in performance are also expected due to differences in test conditions as well as different grind sizes.

Figure 13.17 shows silver grade and recovery to lead concentrate against head grade for all three deposits. The left graphs of Figure 13.16 and Figure 13.17 show a very similar non-linear relationship for lead and silver recovery to lead concentrate, as recovery increases with head grade. A strong relationship with good continuity can be observed between lead grade in concentrate versus head grade in Figure 13.16.

Figure 13.18 shows the zinc recovery and concentrate grade relationships against zinc head grade for all three deposits. Although good continuity can be observed in zinc performance, a wider variability in the results is expected due to variations in test procedures to optimize zinc recovery.

The results to date for Flame & Moth indicate the potential for low zinc recovery; particularly with the existing mill facility flowsheet.

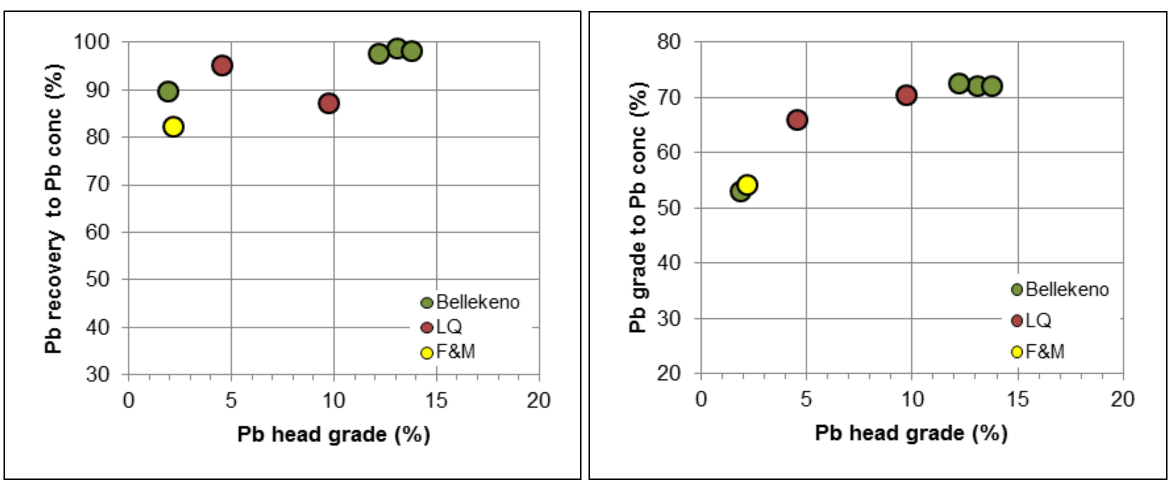


Figure 13.16: All Deposits – Lead Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

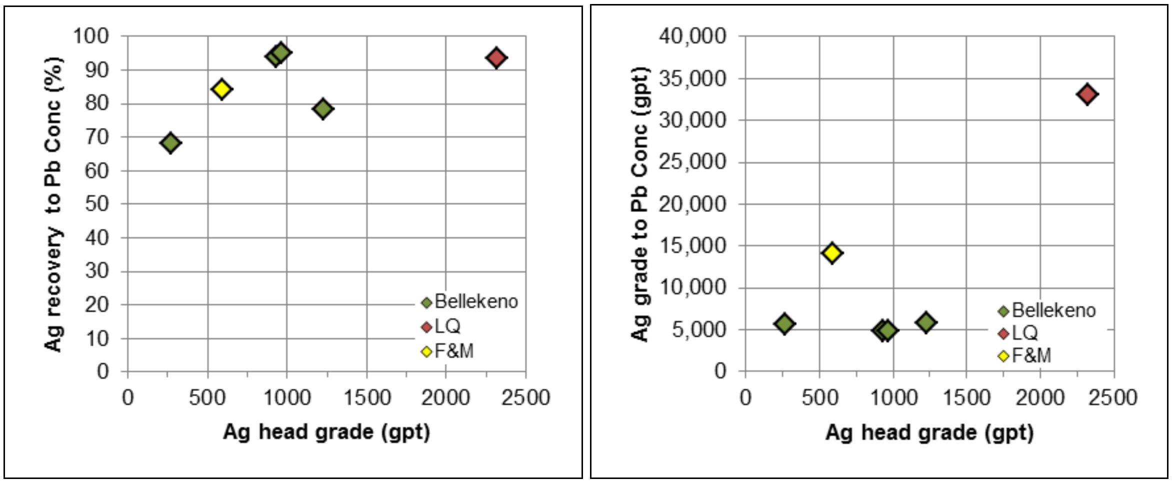


Figure 13.17: All Deposits – Silver Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

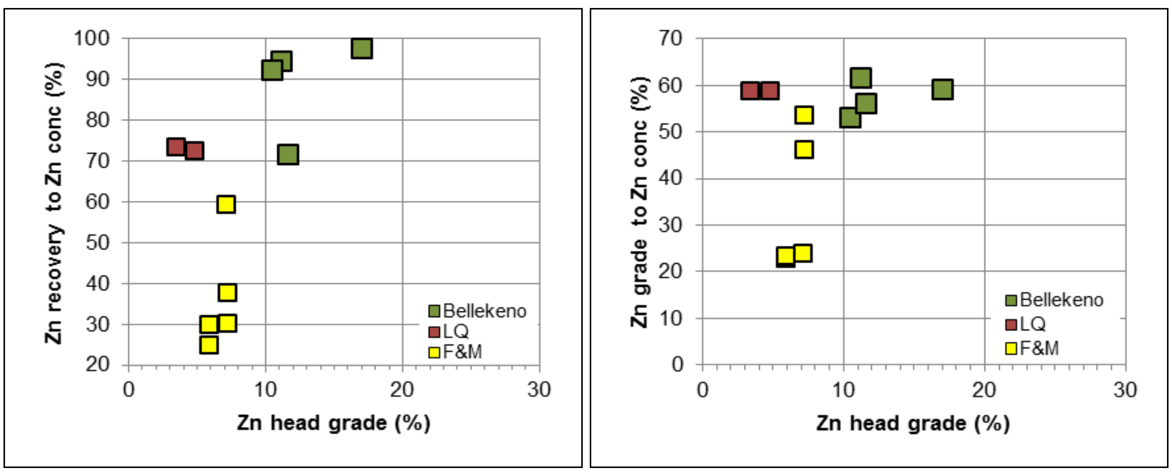


Figure 13.18: All Deposits – Zinc Recovery and Concentrate Grade vs. Head Grade (SRK, 2013)

As all three deposits appear to follow similar relationships between concentrate grade and recovery versus head grade, this suggests similar mineralogy but at significantly different grades. Mineralogical investigations should be conducted on the two new deposits to confirm this assumption. In particular, the liberation of the lead and zinc minerals at the design grind P80 size of 174 µm for the mill facility. The data presented in Figure 13.16 through Figure 13.18 were used to generate preliminary recovery estimates for the blended feed conditions expected in the PEA production plan (refer to report Section 17).

Testwork results indicated that a primary grind size finer than that currently achieved by the mill facility could increase flotation selectivity, resulting in higher recoveries and concentrate grades. The test results reported by Inspectorate may not be achievable in the mill facility without a finer primary grind size and possibly the inclusion of regrinding ahead of flotation cleaning to a final concentrate.

13.5 Miscellaneous Testwork

The 2008/2009 test program included a series of miscellaneous tests and the results are presented in greater detail in the Wardrop report.

Settling tests were performed on samples of both Bellekeno concentrates and tailings. Two flocculants were tested and an average unit thickener area of 0.02 square metres (m^2)/t/d was identified for the mill design criteria. Filtration tests were also performed on samples of lead-silver and zinc concentrates without any issues reported.

Whole rock assay and inductively coupled plasma analysis were performed on bulk tailings samples with the main components identified as being silicon and iron. The tailings water was also assayed by inductively coupled plasma scan. Acid base accounting tests were performed on low and high sulphide tailings samples to determine their acid generating potential. In the mill facility flowsheet design described in report Section 17, the circuit generates both a high pyrite and low pyrite tailings stream for separate impoundment.

13.6 Recommendations for Further Testwork

The current PEA study assumes the mill facility production will increase to a nominal rate of 400 tpd once the additional ball mill is commissioned in Q1 2015 and production from Flame & Moth comes on line.

The LoM plan is generally based on the mill processing a variable blend of two deposits at a time, first a Bellekeno and Flame & Moth blend, and later a blend of Lucky Queen and Flame & Moth. Flame & Moth represents 73% of the total plant feed.

To date, testwork has only been conducted on samples from individual deposits with no blends being tested to better predict mill performance over the production plan. Future testing should include samples of different blends with head grades within the planned range to properly assess flotation performance and concentrate qualities. Mineralogical studies are recommended to verify the assumed similar mineralogy among all deposits.

Variability in feed hardness has been reported by mill personnel and fluctuations in mill throughput were observed in the plant production data for 2012, possibly due to hardness. If core samples become available, hardness testwork should be performed to improve confidence in mill throughput forecasting.

Further optimization work is necessary for the Flame & Moth zinc flotation, as recoveries were low and zinc concentrate grades below 45% zinc will incur lower payables.

Mineralogical studies should be conducted on the Lucky Queen and Flame & Moth deposits to confirm their similarity to Bellekeno. In particular, liberation of the lead and zinc minerals at the current design grind size of the mill facility.

Testing of additional samples for settling and geochemical characteristics is also warranted.

14 Mineral Resource Estimates

14.1 Introduction

This section describes the assumptions and methodologies used to prepare the mineral resource estimates for the three deposits included in this PEA technical report and two additional deposits not included in the PEA economic analysis (Section 22):

- Bellekeno deposit;
- Lucky Queen deposit;
- Flame & Moth deposit;
- Onek deposit (not part of the PEA economic analysis);
- Bermingham deposit (not part of the PEA economic analysis).

The mineral resources have been estimated in conformity with the generally accepted CIM *Estimation of Mineral Resources and Mineral Reserves Best Practices Guidelines* (CIM, 2003) and are reported in accordance with the Canadian Securities Administrators' National Instrument 43-101. Mineral resources are not mineral reserves and have not demonstrated economic viability. There is no certainty that all or any part of the mineral resource will be converted into mineral reserve.

In the opinion of SRK, the resource evaluations reported herein are a reasonable representation of the global polymetallic mineral resources in the Bellekeno, Lucky Queen mines, the Flame & Moth, Onek and Bermingham deposit given the current level of sampling.

The updated Bellekeno Mineral Resource Statement presented herein represents the third mineral resource evaluation prepared for the Bellekeno deposit in accordance with the Canadian Securities Administrators' National Instrument 43-101. The mineral resource model was prepared by Alexco personnel under the supervision of a third party consulting geologist and considers 405 core drill holes drilled by Alexco during the period of 2006 to 2012 as well as historical drilling and chip sampling data collection during production undertaken both historically and by Alexco. The resource estimation work was completed by David Farrow, PGeo, of GeoStrat Consulting Services Inc, a QP as defined in National Instrument 43-101.

The updated resource model for the Bellekeno mine was reviewed by Dr. Gilles Arseneau, P. Geo., of SRK and found to be completed to a standard acceptable to SRK and in accordance with the Canadian Securities Administrators' National Instrument 43-101

The mineral resource model for the Lucky Queen deposit was prepared by SRK and published in an independent technical report on September 8, 2011. The author of the report was Dr. Arseneau. The report is entitled "Technical Report on the Lucky Queen Deposit, Lucky Queen Property, Keno Hill District, Yukon."

The mineral resource model for the Flame & Moth deposit was prepared by David Farrow, PGeo, GeoStrat Consulting Services Inc, and published in an independent technical report entitled

"Updated Technical Report on the Flame & Moth Deposit, Flame & Moth Property, Keno Hill District, Yukon" on March 15, 2013.

The mineral resources for the Onek deposit were prepared by SRK and published in an independent technical report on September 8, 2011. The author of the report was Dr. Arseneau. The report is entitled "Technical Report on the Onek Deposit, Onek Property, Keno Hill District, Yukon." The Onek mineral resource has been updated in this report to include the results of additional drilling carried out in 2012 and 2013.

The mineral resources for the Bermingham deposit were prepared by SRK and published in an independent technical report on August 8, 2012. The author of the report was Dr. Arseneau. The report is entitled "Technical Report on the Bermingham Deposit, Bermingham Property, Keno Hill District, Yukon." There has been no new exploration work on the Bermingham resource area since the date of the last technical report. Information for the Bermingham property has been mostly extracted from the previous technical report filed on SEDAR.

The databases used to estimate the Bellekeno mine updated mineral resource and the Flame & Moth updated mineral resource were audited by SRK. SRK is of the opinion that the current drilling information is sufficiently reliable to interpret with confidence the boundaries for the polymetallic mineralization and that the assay data are sufficiently reliable to support mineral resource estimation.

Mintec's MineSight software was used to construct the geological solids for all five deposits. The Lucky Queen, Onek and Bermingham geological models and database were imported into GEMS format Access databases for geostatistical analysis, block model construction, metal grades estimates, and the tabulation of the mineral resources. Isatis was used for geostatistical analysis and variography, block model construction, estimating metal grades, and mineral resource tabulation for Bellekeno and Flame & Moth. The Lucky Queen, Onek and Bermingham were estimated using GEMS.

14.2 Resource Estimation Procedures

The resource evaluation methodology for the three deposits employed the following procedures:

- Database compilation and verification.
- Construction of wireframe models for the boundaries of the polymetallic mineralization.
- Definition of resource domains.
- Estimation of bulk density.
- Data conditioning (compositing and capping) for geostatistical analysis and variography.
- Block modelling and grade interpolation.
- Resource classification and validation.
- Assessment of "reasonable prospects for economic extraction" and selection of appropriate cut-off grades.
- Preparation of the Mineral Resource Statement.

14.3 Resource Database

14.3.1 Database for the Bellekeno Mine

The Bellekeno database comprises a cumulative database from all sampling campaigns undertaken on the deposit to May of 2012. These data include recent exploration drilling, from both surface and underground, and underground face (chip) samples, both recent and historical. Summary of the data available is shown in Table 14.1. Samples from within the defined geological solids were used in the resource estimation and are summarized in Table 14.2.

Table 14.1: Bellekeno Deposit Sample Database

Sample Type	Count	Number of Samples	Length (m)
Chip	1,666	5,232	4,226.9
Core (Surface)	65	8,541	15,273.9
Core (Underground)	348	7,645	12,003.6
Total	2,079	21,418	31,504.4

Table 14.2: Bellekeno Deposit Samples Used for Mineral Resource Estimation

Sample Type	Count	Number of Samples	Length (m)
Chip	1,064	2,617	2,006.7
Core (Surface)	37	156	135.0
Core (Underground)	183	776	649.9
Total	1,284	3,549	2,791.6

The mineral resource database was imported into a ISATIS database, and validated by checking for inconsistencies in naming conventions, analytical units, duplicate entries, length, distance values, or sample intervals less than or equal to zero, blank or zero-value assays, out-of-sequence intervals, intervals or distances greater than the reported drill hole length, inappropriate collar locations, and missing interval and coordinate fields. A few minor inconsistencies were noted and corrected. No other significant validation errors were noted in the supplied database.

14.3.2 Database for the Lucky Queen Mine

The Lucky Queen data were exported from the SQL database by scripted routine to CSV files, which were imported into MineSight. The following drill hole files were generated: collar, survey, drill hole assay, chip sample assay, geology, and geotechnical.

The Lucky Queen database comprises descriptive information and assay values both from historical underground sampling and from exploration drilling carried out by Alexco from 2006 through 2010. The database was provided to SRK as an Excel format spreadsheet and contains a total of 558 records encompassing 47 core drill holes and 511 historical underground channel samples (Table 14.3). From the drilling results, Alexco has identified a total of 106 core drill hole intervals as primary vein intercepts and 26 intervals as secondary splay intercepts, based on a combination of geological logging and assay grades.

Table 14.3: Lucky Queen Deposit Sample Database

Type	Count	Ag (gpt)	Au (gpt)	Pb (ppm)	Zn (ppm)	Vein Width (m)
Historical Chip	511	2,175	NA	50,661	39,216	1.20
Alexco Core Vein	106	1,426	0.19	36,523	21,222	0.67
Alexco Core Splays	26	1,128	0.06	18,340	6,905	0.78
Alexco Core other	3,012	3.6	0.02	322	378	1.84

The mineral resource database was imported into a GEMS format Access database and validated by checking for:

- inconsistencies in naming conventions or analytical units;
- duplicate entries;
- overlapping intervals;
- length or distance values less than or equal to zero;
- blank or zero-value assay results;
- out-of-sequence intervals;
- intervals or distances greater than the reported drill hole length;
- inappropriate collar locations; and
- missing interval and coordinate fields.

Two trivial terminal interval survey distances were noted and corrected; no other significant validation errors were noted in the supplied database. Assay intervals marked as below detection limit were assigned a nominal grade of 0.001 parts per million (ppm) prior to importing into GEMS.

14.3.3 Database for the Flame & Moth Deposit

The Flame & Moth drill hole database comprises descriptive information and assay values from exploration drilling carried out by Alexco from 2010 through 2012. The database was provided to GeoStrat as an Excel format spreadsheet and contains 104 core drill holes (Table 14.4) drilled in the Flame & Moth area, of which 89 were used in the geological modelling in the resource area with 84 intercepts used in the resource estimation (Table 14.5).

Table 14.4: Flame & Moth Deposit Sample Database

Drill Hole Type	Drill Hole		Number of
	Number	Length (m)	Samples
Core	104	23,521	4,857

Table 14.5: Flame & Moth Deposit Core Drill Hole Vein Intercepts

Vein	Drill Hole		Number of
	Number	Length (m)	Samples
Flame Vein - Christal Zone	26	124	178
Flame Vein - Lightning Zone 1	46	208	337
Flame Vein - Lightning Zone 2	12	25	63
Total	**84**	**578**	**367**

The mineral resource database was imported into ISATIS, and validated by checking for inconsistencies in naming conventions, analytical units, duplicate entries, length, distance values, or sample intervals less than or equal to zero, blank or zero-value assays, out-of-sequence intervals, intervals or distances greater than the reported drill hole length, inappropriate collar locations, and missing interval and coordinate fields. A few minor inconsistencies were noted and corrected by Alexco. No other significant validation errors were noted in the supplied database. Assay intervals marked as below detection limit were assigned nominal grades as per Table 14.6 prior to importing into ISATIS.

Table 14.6: Values Assigned to Flame & Moth Sample Assays below Detection Limit

Metal	Detection Limit	Assigned Value
Au ppm	-0.002	0.001
Au ppm	-0.01	0.005
Ag ppm	-0.5	0.25
Pb ppm	-2.00	1.00
Pb ppm	-1.00	0.5

14.3.4 Database for the Onek Deposit

The Onek data were exported from the SQL database by scripted routine to CSV files, which were imported into MineSight. The following drill hole files were generated: collar, survey, drill hole assay, chip sample assay, geology, and geotechnical.

The Onek database comprises descriptive information and assay values both from historical underground sampling and from exploration drilling carried out by Alexco from 2007 through 2013. The database was provided to SRK as an Excel format spreadsheet and contains a total of 1567 records encompassing 92 core drill holes and 1302 historical underground channel samples, 10 historical drill holes, 29 percussion holes and 134 test holes (Table 14.7). From the drilling results, Alexco has identified a total of 106 core drill hole intervals as primary vein intercepts and 26 intervals as secondary splay intercepts, based on a combination of geological logging and assay grades.

Table 14.7: Onek Deposit Sample Database Average Assay Values Inside Veins

Type	Count	Sample inside Veins	Ag (gpt)	Au (gpt)	Pb (ppm)	Zn (ppm)
Historical Chip	1302	1156	275	NA	23,283	111,645
Alexco Drilling	92	633	215	0.57	17,134	112,434
Historical Drilling	10	8	NA	NA	6	3,250
Percussion Test holes	29	72	NA	NA	NA	29,014
Test Holes	134	97	NA	NA	3,277	32,439
Total	1,567	1,966				

The mineral resource database was imported into a GEMS format Access database and validated by checking for:

- inconsistencies in naming conventions or analytical units;
- duplicate entries;
- overlapping intervals;
- length or distance values less than or equal to zero;
- blank or zero-value assay results;
- out-of-sequence intervals;
- intervals or distances greater than the reported drill hole length;
- inappropriate collar locations; and
- missing interval and coordinate fields.

A few minor inconsistencies were noted and corrected by Alexco. No other significant validation errors were noted in the supplied database. Assay intervals marked as below detection limit were assigned a nominal grade of 0.001 parts per million (ppm) prior to importing into GEMS.

14.3.5 Database for the Bermingham Deposit

The Bermingham data were exported from the SQL database by scripted routine to CSV files, which were imported into MineSight. The following drill hole files were generated: collar, survey, drill hole assay, chip sample assay and geology.

The Bermingham drill hole database comprises descriptive information and assay grades from exploration drilling carried out by Alexco from 2009 through 2011. The database was provided to SRK as an Excel format spreadsheet and contained 23 diamond drill holes (Table 14.8) used in the resource estimation (Table 14.59).

Table 14.8: Bermingham Deposit Sample Database

Type	Number	Length (m)	Samples
DDH	23	6442	1427

Table 14.9 Bermingham Deposit Diamond Drill Hole Vein Intercepts

Vein	Number	Length (m)	Samples
Bermingham	13	80	116
Bermingham Footwall	12	62	82
Aho	18	67	83
TOTAL	43	209	281

The supplied mineral resource database was imported into a GEMS Access database, and validated by checking for inconsistencies in naming conventions, analytical units, duplicate entries, length, distance values, or sample intervals less than or equal to zero, blank or zero-value assays, out-of-sequence intervals, intervals or distances greater than the reported drill hole length, inappropriate collar locations, and missing interval and coordinate fields. A few minor inconsistencies were noted and corrected by Alexco. No other significant validation errors were noted in the supplied database. Assay intervals marked as below detection limit were assigned nominal grades as per Table 14.10 prior to importing into GEMS.

Table 14.10: Grades Assigned to Bermingham Sample Assays below Detection Limit

Metal	Detection Limit	Assigned Value
Au ppm	–0.01	0.005
Au ppm	–0.03	0.015
Ag ppm	–0.5	0.25
Ag ppm	–0.2	0.10
Pb ppm	–2	1
Zn ppm	–2	1

14.4 Solid Body Modelling

3D wireframe solids were constructed by Alexco to accurately represent the geometry of the Bellekeno mine, Lucky Queen and Flame & Moth vein structures. These wireframes were reviewed and validated by SRK before mineral resource estimation.

14.4.1 Solid Body Modelling for the Bellekeno Mine

Wireframes were constructed for three portions of the Bellekeno deposit: the Southwest (SW) vein and splay, 99 vein and splay, and the East vein and splay (Figure 14.1). The wireframes were constructed using Mintec's MineSight 3D software. All points of construction on the veins are from Alexco's core drilling and mapping of underground exposure during mining. Individual points were constructed on the hangingwall and footwall of each drill hole vein/structure intercept. These points were chosen based on the fault/vein structure where, in most cases, the hangingwall and footwall contacts were clear and the mineralization was contained within a well-defined structure.

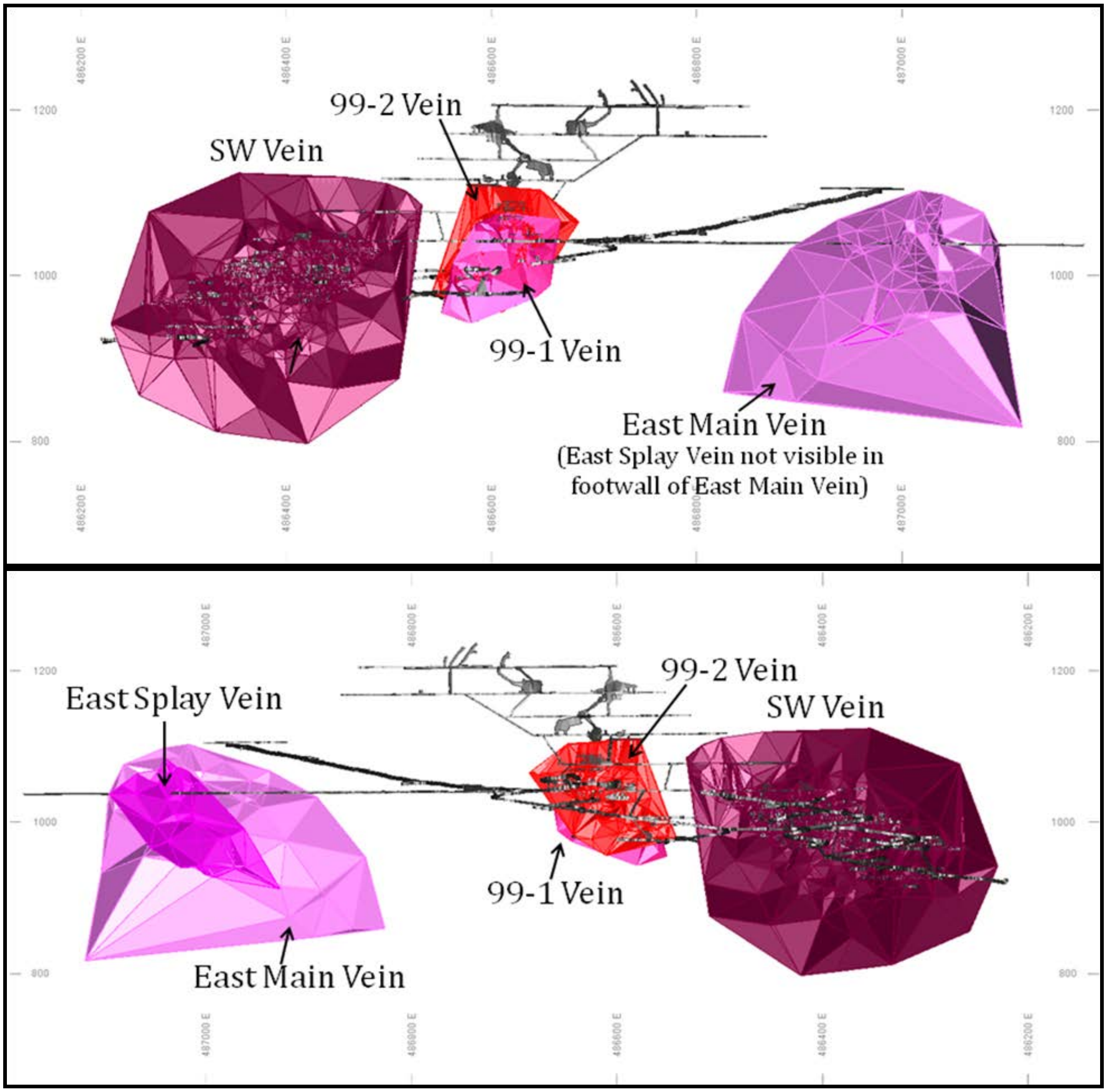


Figure 14.1: Bellekeno Mine Long Section, Wireframes, Looking North-Northwest (top) and Looking South-Southeast (bottom) (Alexco, 2013)

14.4.2 Solid Body Modelling for the Lucky Queen Mine

At Lucky Queen, the majority of high-grade, silver-bearing vein material is confined between relatively intact rock of the hangingwall and footwall and is manifested as vein mineral and highly deformed fault rock (in varying proportions). High silver values are only rarely found outside the main structure as stringer zones or splays. Coincidence of high grade mineralization within identifiable structural limits made it sensible to base the wireframe interpretation on structural and geological controls, and contacts were chosen accordingly. In addition to Alexco drill hole data, historical drill hole data and geological mapping conducted by UKHM were used to constrain the geometry of the main Lucky Queen structure and associated splay structures, where applicable.

Historical drift and stope mapping is considered by Alexco to be accurate and representative. Field verification of the mapping could not be performed by Alexco geologists because the underground workings are inaccessible. However, historical maps of other mines in the Keno Hill Silver District have been verified and found to be generally accurate in their representation of the geology. Historical maps were scanned, geo-referenced, and imported into MineSight. The images were then draped onto drift solids at the appropriate elevation. This mapping was used to tag hangingwall and footwall contacts on the wireframe.

The main Lucky Queen mineralized body occupies a central part of the primary wireframe and the most important constraints delineating it are the lower grade drill intercepts that occupy locations above, below, and to the northeast. Beyond these drill holes, the wireframe is cut off (approximately) along the deepest extents of the 200 and 300 level historic workings. Fault 3 and 5 cut off the wireframe to the northeast and at shallow elevations, respectively. The earlier Lucky Queen workings include extensive stoping. As a result, it was decided to exclude the entire area containing the 50, 100, 200 and 300 level workings from the wireframe solid. Those areas of the 500 level workings that intersect the wireframes were also removed from the wireframe solid (Figure 14.2).

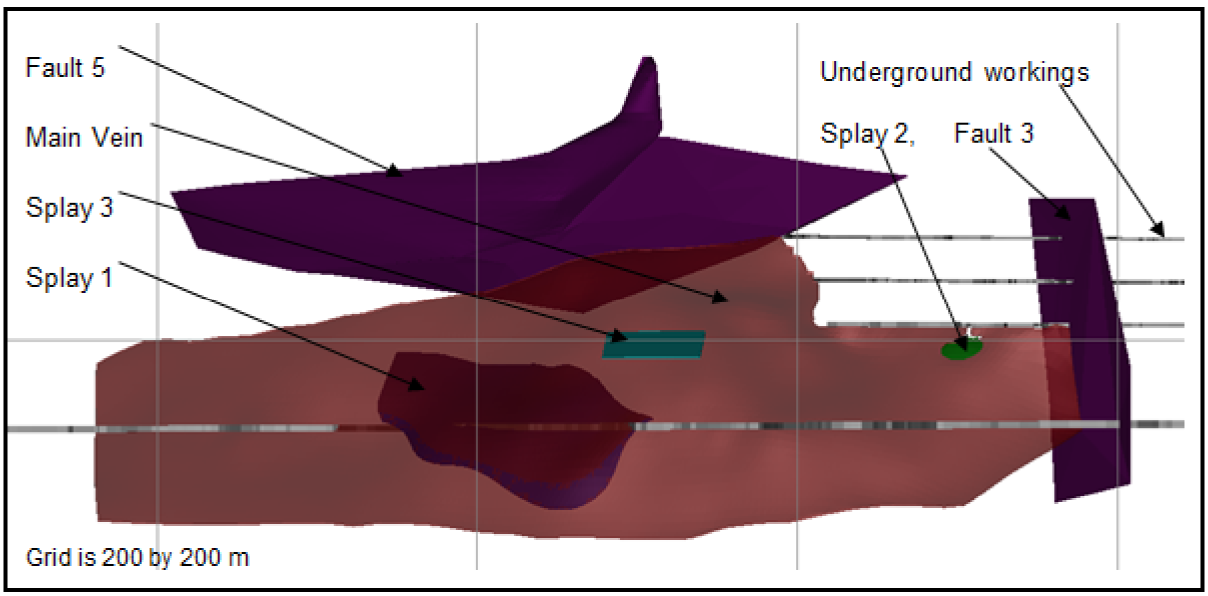


Figure 14.2: Section of Lucky Queen Wireframes Looking Northwest (SRK, 2011)

14.4.3 Solid Body Modelling for the Flame & Moth Deposit

Wireframes were constructed for two portions of the Flame vein offset along the Mill fault in the geology model for the Flame & Moth prospect. The Flame vein in the hangingwall of the Mill fault was termed the Lightning zone while the portion in the footwall of the Mill fault was termed the Christal zone (Figure 14.3).

GeoStrat reviewed and validated the wireframes and concluded that the wireframes of the Flame & Moth deposit are fair representations of the mineralized veins. The wireframes were constructed using MineSight software. All points of construction on the Flame vein are from Alexco's core drilling. Individual points were constructed on the hangingwall and footwall of each drill hole vein/structure intercept. These points were chosen based on the fault/vein structure where in most cases, the hangingwall and footwall contacts are clear and the mineralization is contained within a well-defined structure. The Flame vein strikes between 025° and 027° and dips between 62° and 66° to the southeast.

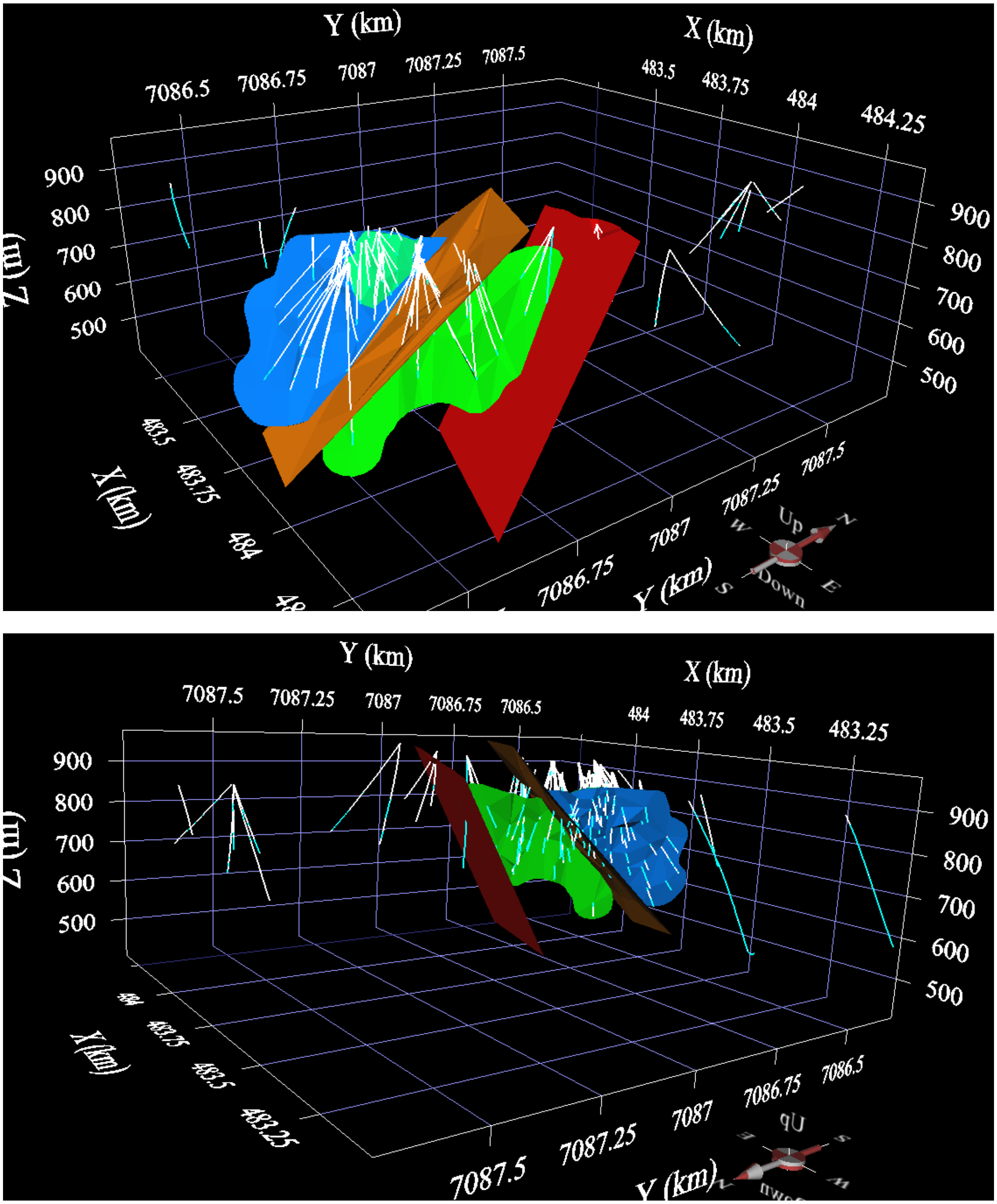


Figure 14.3: Oblique View of Flame & Moth Wireframes Looking North-Northwest (top) and Looking South-Southeast (bottom) (Alexco, 2013)

14.4.4 Solid Body Modelling for the Onek Deposit

Three dimensional wireframe solids for the Onek deposit were constructed by Alexco to accurately represent the geometry of Onek vein structures. SRK reviewed and validated the wireframes before resource estimation. SRK concluded that the wireframes of the Onek deposit were fair representations of the mineralized veins and acceptable for resource estimation.

Wireframes for three separate veins were constructed for Onek: Vein 1, Vein 2 and Vein 1FW. Vein 1 is the dominant vein-fault structure at Onek, extending over 600 m in length and up to 260 m in depth. The vein is interpreted to extend through all drilling done to date and to encompass the drifts, stopes, and raises of the historical workings. The vein-fault thickness varies from approximately 7.5 m to less than a metre but, on the whole, is fairly thick and persistent. The farthest southwest drilling contains very little grade and acts as a constraint to the strike extent of the mineralization. On the northeastern end of the deposit, the underground mapping on the 400 Level shows the vein narrowing and splitting into two, with the likely more dominant structure curving to the south-east and ending with sporadic mineralization in a possible cross fault (Figure 14.4).

Vein 2 forms an anastomosing structure in the hangingwall of Vein 1, with repeated convergence and divergence from the Vein 1 structure, as seen in the drill holes and underground level plan mapping. Vein 2 thickness is much smaller and less consistent than Vein 1 and the mineralization has much less continuity. This is regarded as a secondary structure in the Onek deposit. Vein 2 also bends sharply to the east at the northeastern end of the deposit where intercepts in the drill holes are much more sporadic. Several small weakly mineralized vein intercepts were noted in the hangingwall of Vein 2 but continuity of mineralization could not be established and they are not modeled at this time (Figure 14.5).

Two drill holes, K-08-0149 and K-10-0244, were drilled from separate collar locations but passed within 0.5 m of each other within the Vein 2 shape. As the location of Vein 2 in hole K-08-0149 could not be reconciled with the Vein 2 location in hole K-10-0244 without significant deviation in the wireframe, and since the K-10-0244 intercept had better survey control and was less oblique to the vein surface, the K-08-0149 Vein 2 intercept was excluded from the wireframe.

A third vein, Vein 1FW, was identified in several drill holes at the southwestern end of the deposit, likely splaying sharply off Vein 1, and was modelled for resource estimation.

Several weakly mineralized vein fault intercepts were identified in drill holes in the footwall to Vein 1 in the central portion of the deposit, in the vicinity of the historical workings. The continuity of these intercepts could not be established with the information available and these veins are regarded as small splays off the main Vein 1 structure. These intercepts were not modeled for resource purposes at this time.

Each of the vein shapes were wireframed independently, with a hangingwall surface and a footwall surface constructed using the drill hole intercepts, the shapes of the veins mapped in the levels and raises, and surface pit mapping. Where there was less information available, a contour tool was used to interpolate the vein shape and width every 10 metres in elevation and to smooth the vein surface. The vein shapes were extended to approximately 50 metres beyond known drilling and given a nominal vein thickness.

Veins 2 and 1FW were clipped against the Vein 1 shape. Veins 1 and 1FW were also clipped against the topographic that was based on casing depth in nearby diamond drill holes and interpreted overburden depths in proximal historic overburden (rotary) holes.

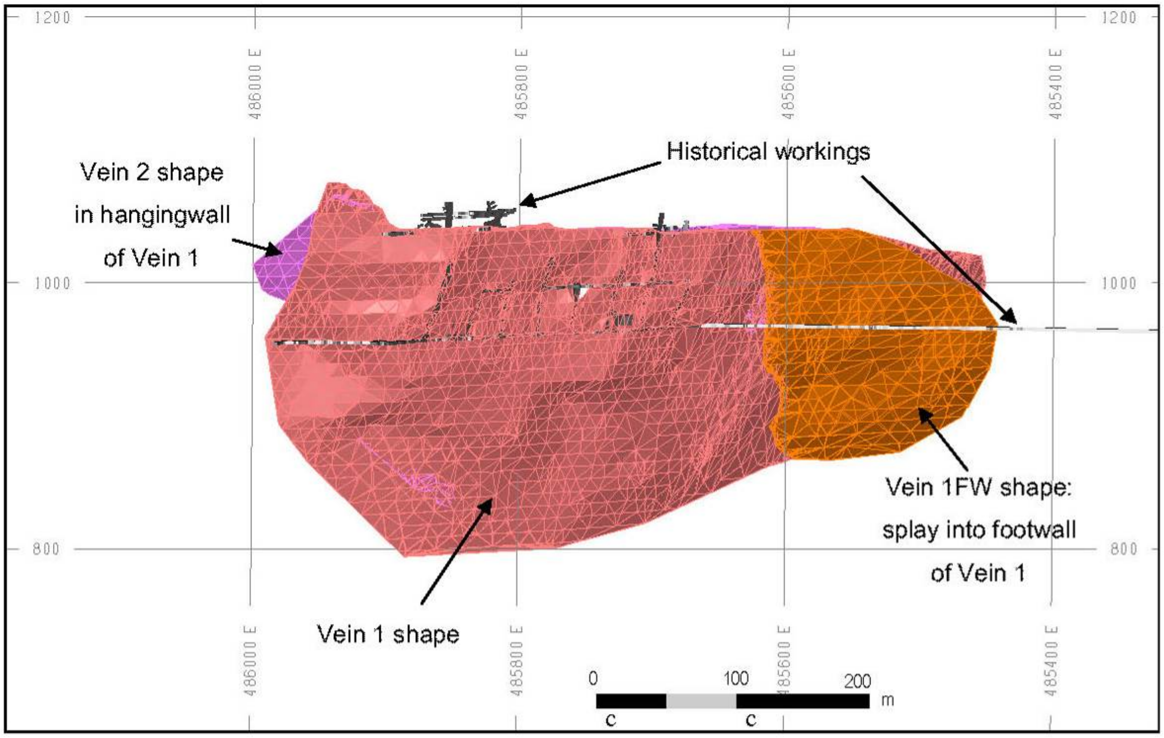


Figure 14.4 Long Section of Onek Wireframes Looking South (SRK 2014)

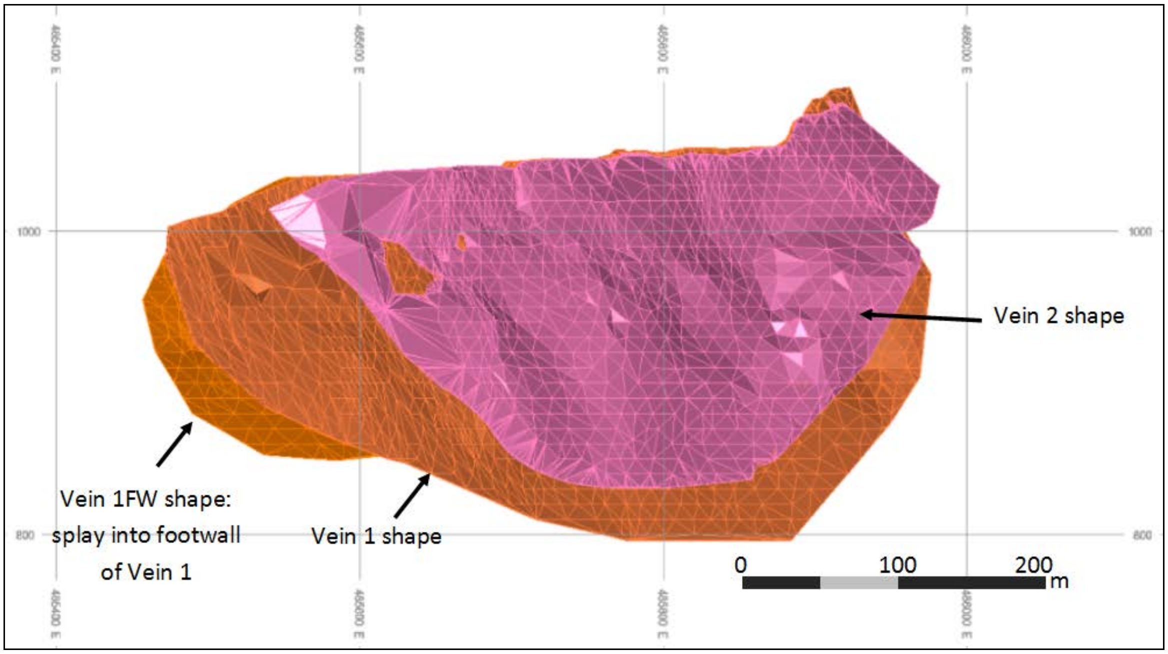


Figure 14.5: Long section of Onek Wireframes Looking North

Historical drift and stope mapping is considered by Alexco to be accurate and representative. Field verification of the mapping could not be performed by Alexco geologists because of the current inaccessibility of the underground workings, however; historical maps of other mines in the Keno Hill district have been verified and found to be generally accurate in their representation of the geology. Historical maps were scanned, geo-referenced and imported into MineSight. The images were then draped onto drift solids at the appropriate elevation. This mapping was used to tag hangingwall and footwall contacts on the wireframe. Historical (UKHM) chip sample data were not used to define wireframe contacts or wireframe width.

14.4.5 Solid Body Modelling for the Bermingham Deposit

The Bermingham wireframes were constructed for three mineralized vein structures in the geological model for the Bermingham prospect: the Bermingham, Bermingham Footwall and Aho veins in the Etta Zone. Two of these vein structures, Bermingham and Bermingham Footwall veins, were used for resource estimation. SRK reviewed and validated the wireframes before resource estimation. SRK concluded that the wireframes of the Bermingham deposit were fair representations of the mineralized veins and acceptable for resource estimation. The wireframes for resource modelling were constructed using Mintec's MineSight 3D software. For the most part, potentially economic mineralisation was confined within a halo of structurally damaged rocks surrounding the vein. The damage zone has fairly discrete and identifiable limits for each vein, often terminating in a minor fault or breccia zone. Therefore, the wireframe geometries were based upon these structural-geological contacts. In addition to Alexco geological mapping and drill hole data, historical drill hole data and historic geological mapping conducted by UKHM were used to constrain the geometries of the main Bermingham and Bermingham Footwall Vein structures.

The area comprises of a structurally complex zone of vein – fault splays, and it is not yet clear as to which of the veins might be the master vein structure or to what extent they might merge or extend to the southwest of the resource area.

Within the area of interest, the Bermingham Vein has a strike of between 029° and 042° and dips between 57° and 64° to the southeast. At its most southwestern extent, it converges with the Aho structure, while to the Northeast; it converges with the Bermingham Footwall Vein and terminates on the Mastiff Fault. The maximum strike length of the Bermingham Vein segment between the Mastiff Fault hangingwall and the Aho Vein is 240 m at surface, tapering to a point about 215 m down-dip from surface (Figure 14.6 and Figure 14.7).

The Bermingham Footwall Vein has a strike between 050° and 059° and dips between 63° and 69° to the southeast. It appears to join or terminate against the Bermingham Vein up-dip and to the northeast, and is offset by the Mastiff Fault. To the southwest, the Bermingham Footwall Vein structure is projected to intersect or merge with the Aho Vein, giving a strike length of at least 340 m.

The Aho Vein has a strike of 067° and dips 72° to the south.

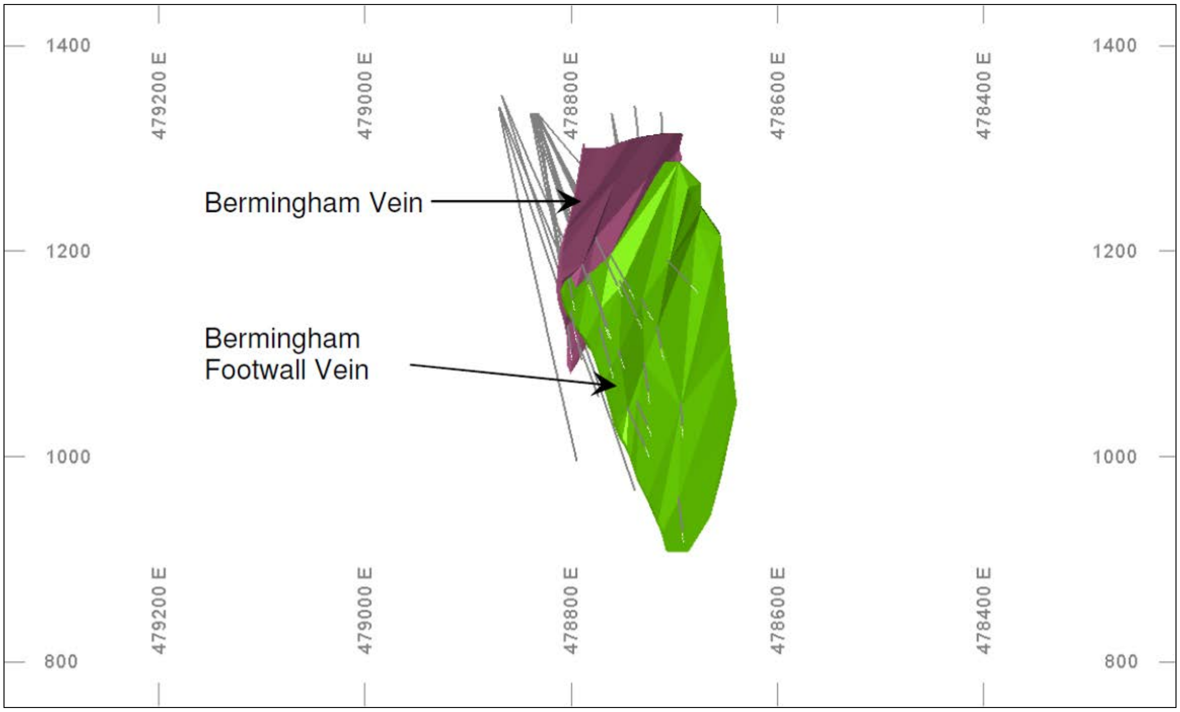


Figure 14.6 Long Section of Bermingham Wireframes Looking South

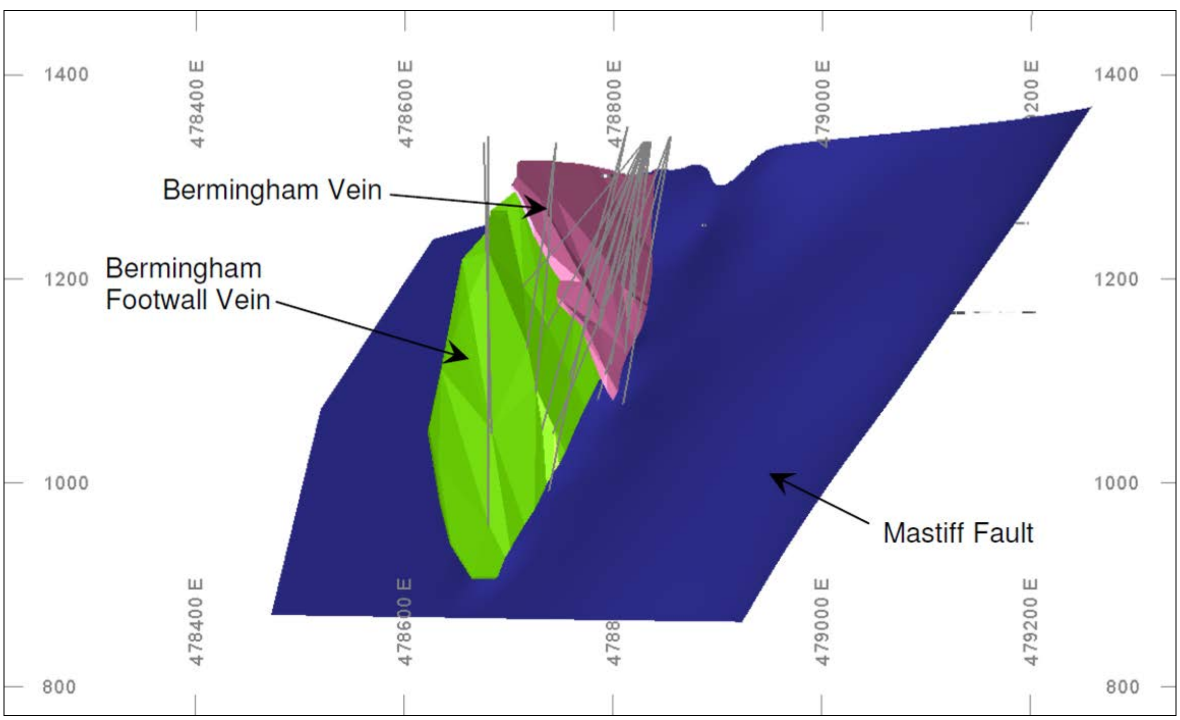


Figure 14.7: Long Section of Bermingham Wireframes Looking North

14.5 Bulk Density Data

14.5.1 Bulk Density for the Bellekeno Mine

The bulk density of vein material at the Bellekeno mine is very sensitive to the lead, zinc, and iron concentrations. To accommodate for these variations, regression analyses were done using metal grades and bulk density measured on pulp (PSG) for the Southwest and 99 zones of the Bellekeno mine. The relationships were used to calculate rock mass bulk density. A comparison of the smelter returns, production tonnage, and metal content for January 2011 to May 2012 shows a less than a 1% variance between metal tonnes. Production tonnes are calculated from the bulk density lead-based regression equations.

Bulk density measured on core samples (CBD) has a limited application for estimating block bulk density and production results. However, the in situ rock mass density can be back calculated from metal assays using the regression relationships between the measured PBD and the CBD for the Southwest and 99 zones, respectfully. The relationships are as summarized:

Southwest zone: PBD = (0.000004) x Pb (ppm) + 3.336689

CBD = 0.834456 x PSG + 0.683904

99 zone: PBD = (0.00005) x Pb (ppm) + 3.040291

CBD = 0.795686 x PBD + 0.509225

Although limited PBD and CBD data has been collected on the East zone, there is a poor regression correlation between assay results and measured CBD. An average bulk density of 3.45 was assigned to East zone vein material based upon the average CBD measured. The poor correlation is most likely the result of poor core recovery in the vein areas. Once mining has actively commenced in the area, a new bulk density study will begin.

Material outside of the veins was assigned a bulk density of 2.7. This measurement is based upon the average CBD measured.

14.5.2 Bulk density for the Lucky Queen Mine

The bulk density data for Lucky Queen included a total of 191 bulk density measurements (Table 14.11) on core samples. Bulk density was measured by Alexco using a laboratory scale and recording the mass of core pieces in air and in water. Core was not covered by wax or plastic film prior to immersion. Regression analysis of the bulk density measurements shows a moderately strong correlation between the lead assay results and the reported bulk density, with a correlation coefficient of 0.62 (Figure 14.8). Therefore, a linear correlation was used to assign a bulk density value to each block based on the following relationship:

Bulk density = Pb (ppm) x 0.00006 + 2.617

Table 14.11: Lucky Queen Bulk density Measurements

Count	Bulk Density Measured on Core			
	Minimum	Maximum	Average	Median
191	1.24	6.81	2.74	2.60

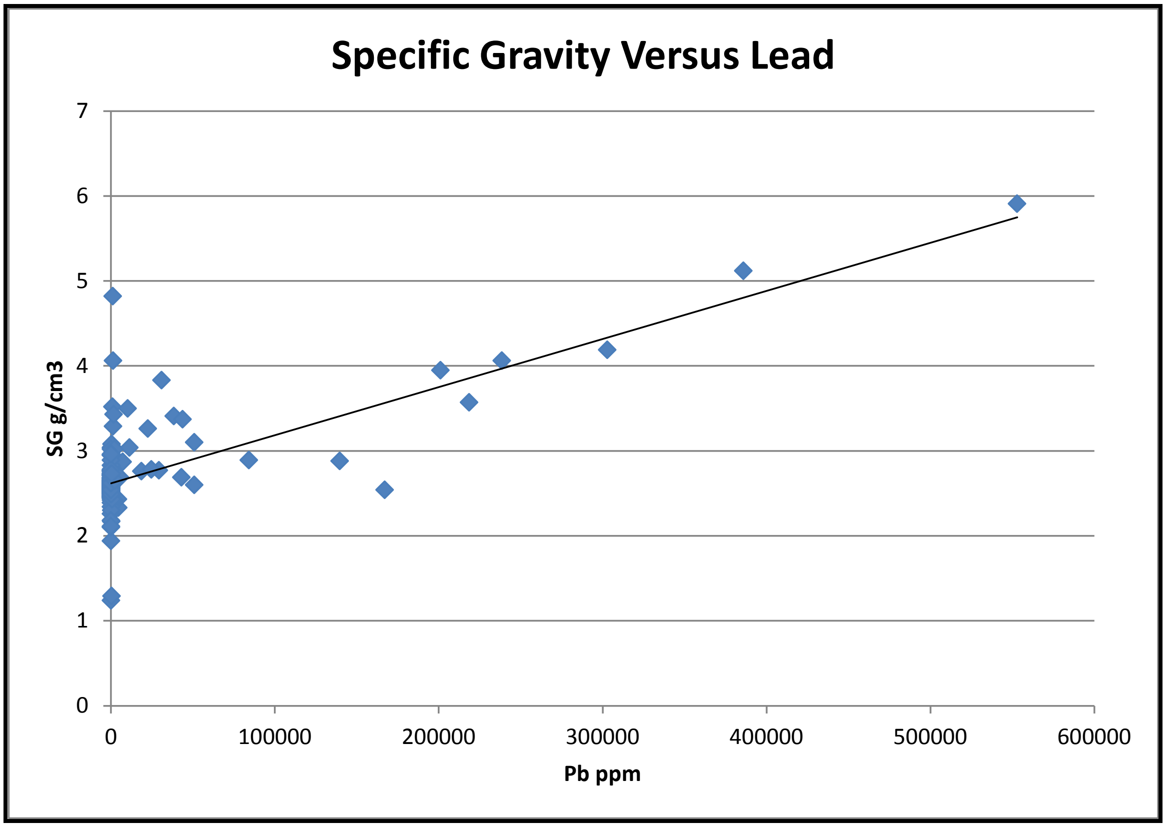


Figure 14.8: Scatter Plot of Lead Assay Results and Bulk Density Measurements (SRK, 2011)

14.5.3 Bulk density for the Flame & Moth Deposit

The data supplied by Alexco for Flame & Moth included a total of 523 bulk density measurements on core samples and 2,461 pulp bulk density measurements, 178 and 528 of which, respectively, fall within the modelled vein solids (Table 14.12).

Table 14.12: Flame & Moth Bulk density Measurements

Zone	Type of material	Count	Bulk density			
			Minimum	Maximum	Average	Median
Christal	Pulp	120	2.53	4.93	3.7	3.66
	Core	53	2.62	4.66	3.67	3.74
Lightning V1	Pulp	337	2.65	5.71	3.53	3.45
	Core	110	2.62	5.24	3.51	3.51
Lightning V2	Pulp	71	2.84	4.6	3.47	3.39
	Core	16	2.87	4.23	3.53	3.49
Total	**Pulp**	**528**	**2.53**	**5.71**	**3.56**	**3.49**
	Core	**178**	**2.62**	**5.24**	**3.56**	**3.54**

Bulk density was measured on core samples by Alexco using a laboratory scale and recording the mass of core pieces in air and in water. Core was not covered by wax or plastic film prior to immersion. Pulp bulk density measurements were measured by pychnometry at ALS in North Vancouver. No strong correlation exists between bulk density measurements and lead or zinc assay results. A linear regression between core and pulp bulk density measurements calculated by SRK (2012) was used, where:

- Core Bulk density = Pulp Bulk density/1.0385

Core bulk density measurements were used where available for the interpolation of bulk density into blocks. Because pulp bulk density measurements often overestimate bulk density, these were corrected using the above equation for those samples with no core bulk density measurements and the corrected bulk density measurements were used for interpolation of bulk density into blocks.

14.5.4 Bulk density for the Onek Deposit

The data supplied by Alexco for Onek included a total of 626 bulk density measurements on core samples, of which 182 are inside the wireframe, and 1549 pulp bulk density measurements, 521 of which are inside the wireframe (Table 14.13). Bulk density was measured on core samples by Alexco using a laboratory scale and recording the mass of drill hole core pieces in air and in water. Drill hole core was not covered by wax or plastic film prior to immersion. Pulp bulk density measurements were measured by pynometer at ALS Chemex in Vancouver. No strong correlation between bulk density measurements and lead or zinc assay results was noted.

A linear regression of the core versus pulp bulk density measurements for samples was calculated, where:

Core Bulk density = 0.8532*Pulp Bulk density + 0.408

Core bulk density measurements were used where available for interpolation of bulk density into blocks. Pulp bulk density measurements often over estimate bulk density. For those samples with no core bulk density measurements, the pulp bulk density measurements were corrected using the above equation and the corrected bulk density measurements were used for interpolation of bulk density into blocks.

Table 14.13 Onek Bulk density Measurements

Vein	Type	No of Samples	Minimum	Maximum	Average	Median
Vein 1	Pulp	385	2.54	4.92	3.44	3.47
	Core	140	2.47	7.32	2.67	3.45
Vein 1FW	Pulp	12	2.25	4.08	3.25	3.22
	Core	1	3.75	3.75	3.75	3.75
Vein 2	Pulp	124	2.59	4.90	3.17	2.96
	Core	41	2.55	5.07	3.28	3.21
All Samples	Pulp	521	2.25	4.92	3.37	3.35
	Core	182	2.47	7.32	3.36	3.42

SRK evaluated the bulk density data to see if there existed a correlation between SG and metal content. Figure 14.9 shows the correlation between the bulk density of samples collected from the Onek vein protted against lead, zinc and iron content. As can be seen from the figure there is a strong positive correlation between bulk density and metal content. For this reason, SRK decided to weight the composites against density as well as length for the resource estimation.

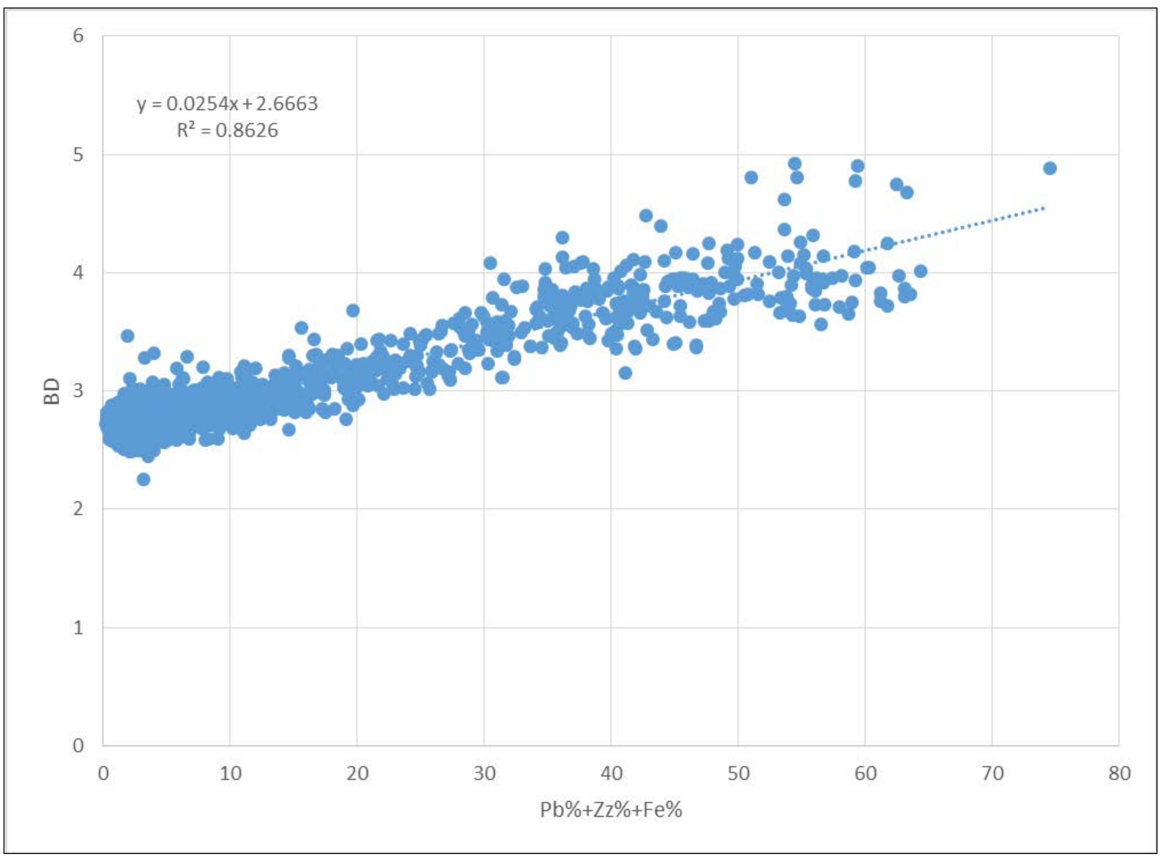


Figure 14.9 Correlation between Bulk density and Metal Content for Onek Veins

There are 633 assay samples within the veins at Onek and only 182 core BD measurements and 521 pulp density measurements. There are 161 samples with both core and pulp measurements which leaves 91 samples with no bulk density measurements. For the estimation of bulk density into the block model SRK used core measurement if both core and pulp measurements were present, pulp measurements where core measurements were missing and SRK calculated a bulk density based on the metal content where both core and pulp measurements were absent.

SRK acknowledges that pulp measurements are slightly higher than core density measurements where both sample types are present and that using pulp measurement without correction could lead to a slight (3 to 5%) over estimation of the bulk density (Figure 14.10). However, SRK is of the opinion that the difference is minimal and not material.

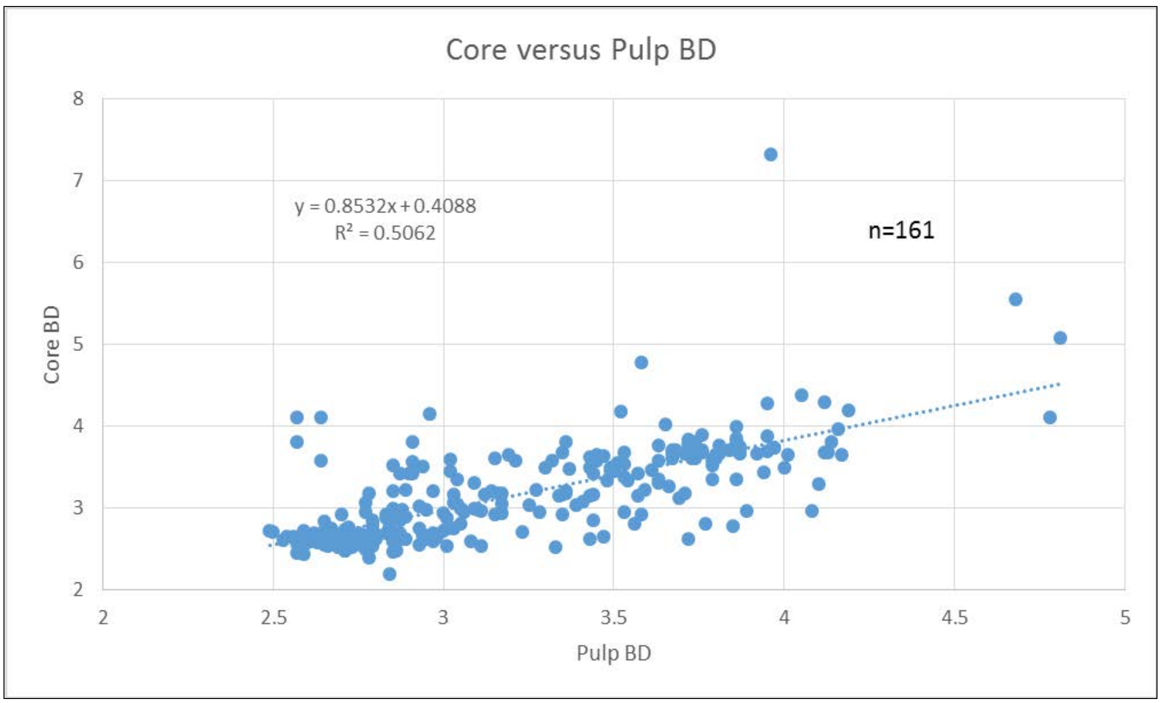


Figure 14.10 Comparison of Core and Pulp Density Measurements

14.5.5 Bulk density for the Bermingham Deposit

The data supplied by Alexco for Bermingham included a total of 202 bulk density (BD) measurements on core samples and 1083 pulp bulk density measurements. A total of 59 of the former and 163 of the latter fall within the modelled vein solids (Table 14.14). Bulk density was measured on core samples by Alexco using a laboratory scale, and the mass of the drill hole core pieces were measured in air and in water. Drill core was not covered by wax or plastic film prior to immersion. Pulp bulk density measurements were measured by pycnometer at ALS in Vancouver. No strong correlation between bulk density measurements and lead or zinc assay results was noted.

A linear regression of the core versus pulp bulk density measurements for samples was calculated, where:

Core Bulk density = Pulp Bulk density/1.0287

Core bulk density measurements were used where available for interpolation of bulk density into blocks. Because pulp bulk density measurements often over estimate bulk density, pulp bulk density measurements were corrected using the above equation for those samples with no core bulk density measurements and the corrected bulk density measurements were used for interpolation of bulk density into blocks.

Table 14.14 Bermingham Bulk density Measurements

Vein	Type SG Measurement	Total Samples	Minimum	Maximum	Average	Median
Bermingham	Pulp	106	2.64	4.31	3.11	3.05
	Core	34	2.67	4.42	3.14	3.04
Bermingham Footwall	Pulp	57	2.61	3.82	3.00	2.92
	Core	25	2.60	3.61	2.93	2.86
All Samples	Pulp	163	2.61	4.31	3.07	3.00
	Core	59	2.60	4.42	3.05	2.98

14.6 Compositing

14.6.1 Compositing for the Bellekeno Mine

Alexco identified a total of 3,549 assay intervals as vein intercepts. These assay intervals were imported into ISATIS, and assays were then composited to 1-metre length-weighted intervals within the defined vein wireframes. A histogram of sample length for the mineralized zones can be seen in Figure 14.11.

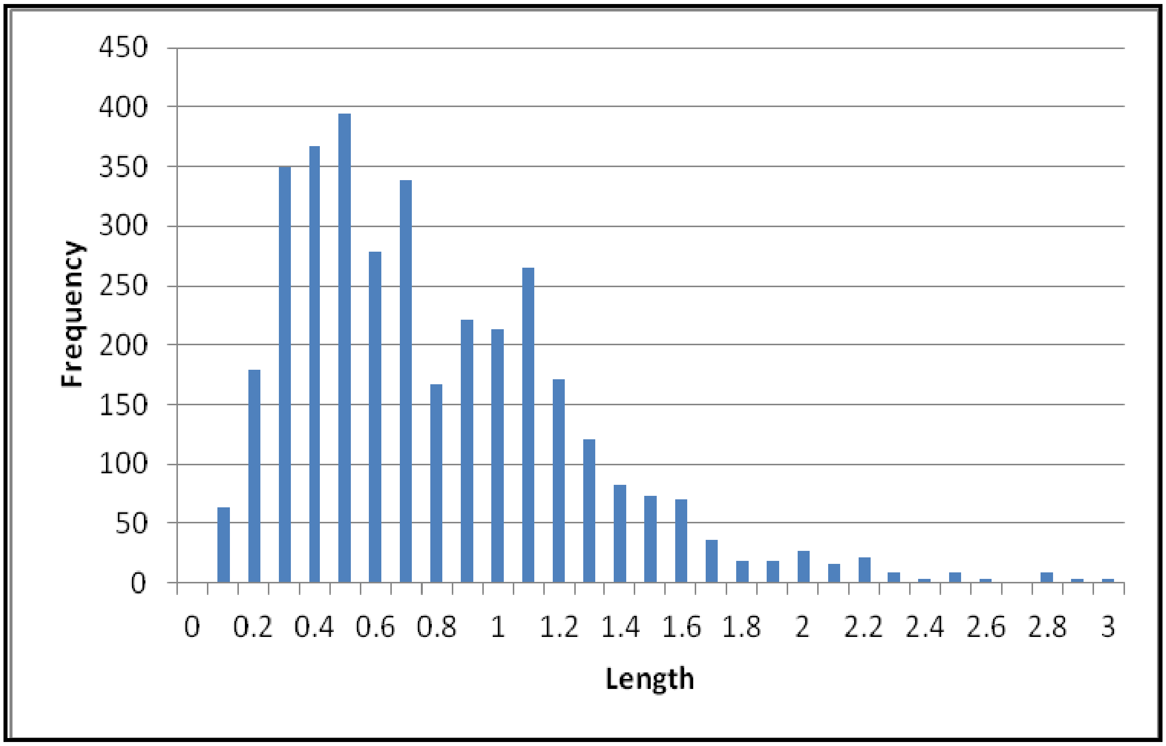


Figure 14.11: Histogram of Sample Length for the Mineralized Zones (Alexco, 2013)

14.6.2 Compositing for the Lucky Queen Mine

Alexco identified a total of 106 core drill hole assay intervals as primary vein intercepts and 26 intervals as secondary splay intercepts. These assay intervals were imported into GEMS, and assays were then composited to 1-metre length-weighted intervals within the defined vein wireframes. Terminal composites with a length of less than 50 cm were merged with the preceding composite in order to avoid a short sample bias during estimation. Missing sample intervals were assigned a nominal value of 0.001 during compositing.

14.6.3 Compositing for the Flame & Moth Deposit

Alexco identified a total of 478 core drill hole assay intervals as vein intercepts. These assay intervals were imported into ISATIS, and assays were then composited to 1-metre length-weighted intervals within the defined vein wireframes. Histograms of sample length for the Christal zone, and the Lightning zone's Vein 1 and Vein 2 can be seen in Figure 14.12, Figure 14.13, and Figure 14.14, respectively.

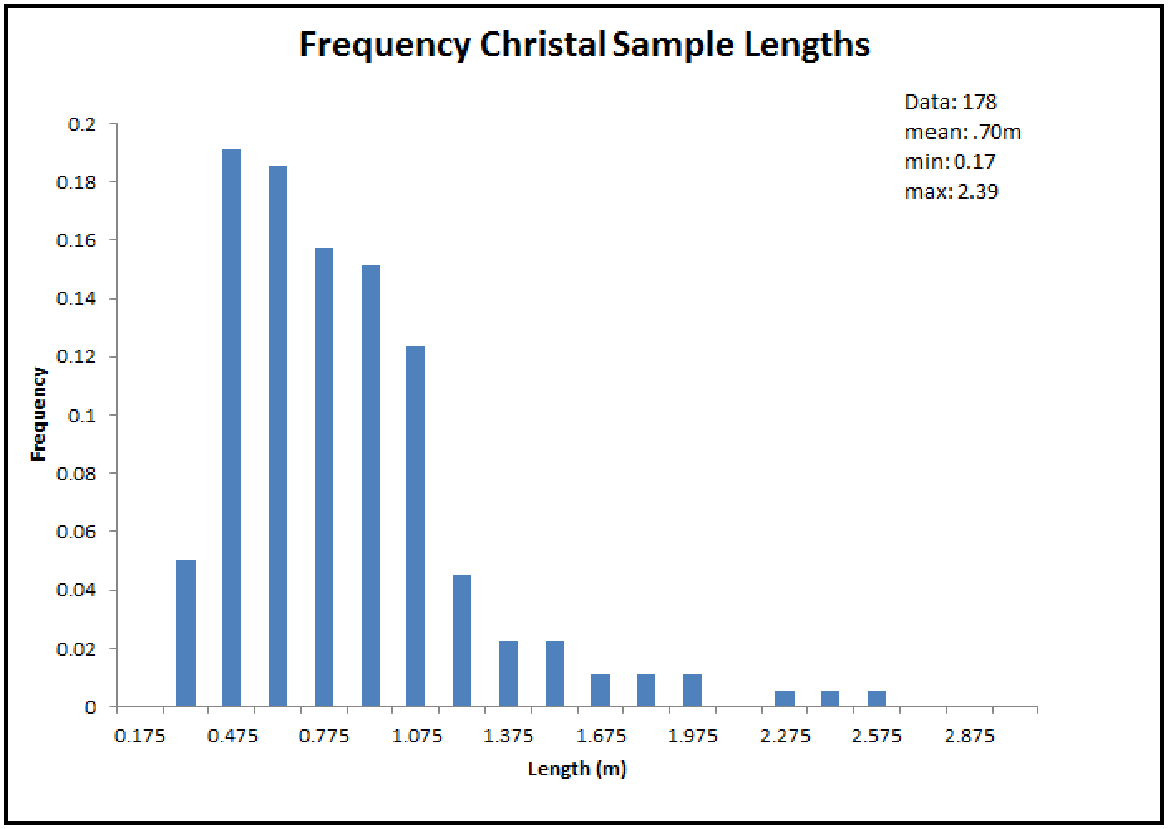


Figure 14.12: Histogram of Sample Length for the Christal Zone (Alexco, 2013)

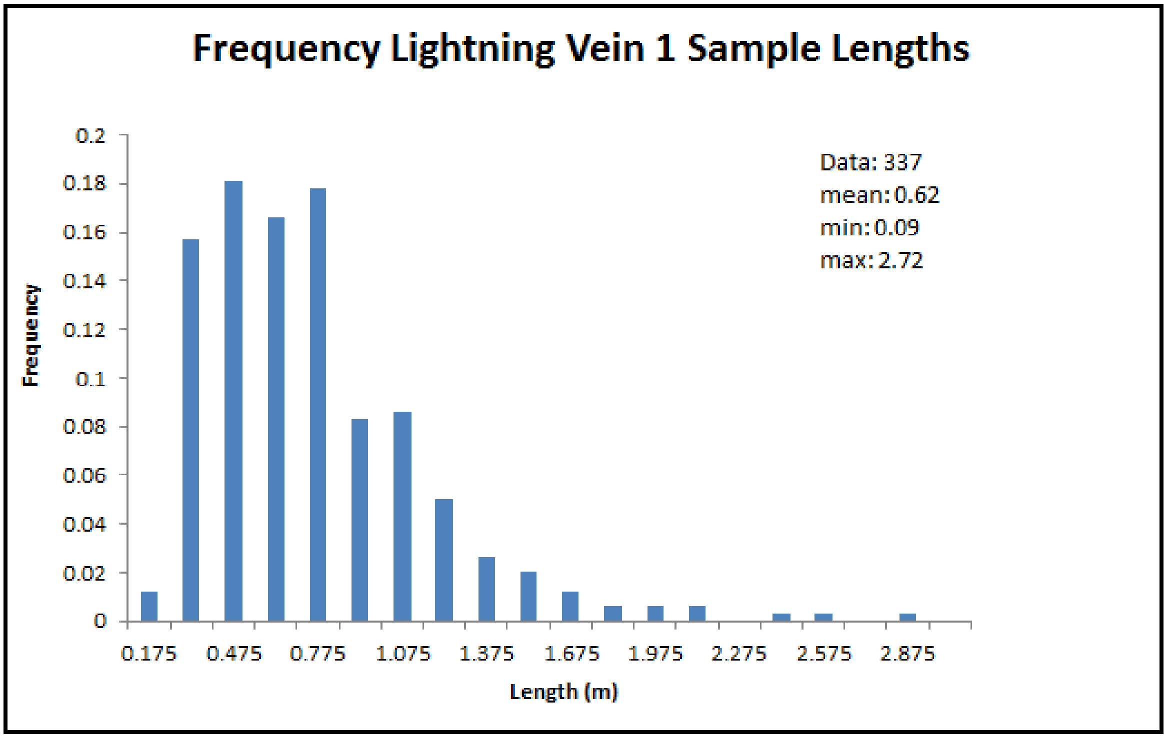


Figure 14.13: Histogram of Sample Length for the Lightning Zone Vein 1 (Alexco, 2013)

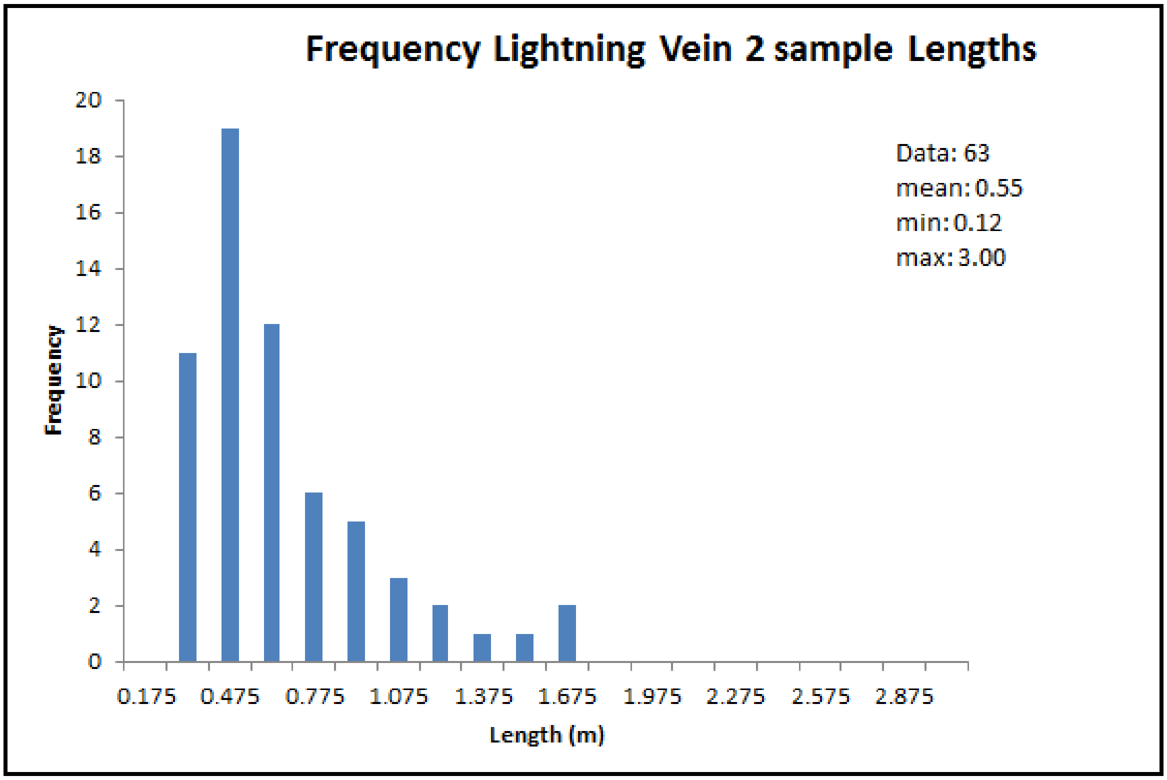


Figure 14.14: Histogram of Sample Length for the Lightning Zone Vein 2 (Alexco, 2013)

14.6.4 Compositing for the Onek Deposit

Alexco identified a total of 633 diamond drill hole assay intervals as vein intercepts. These assay intervals were imported into GEMS, and assays were then composited to one metre length and density-weighted intervals within the defined vein wireframes. A histogram of sample length can be seen in Figure 14.15 below.

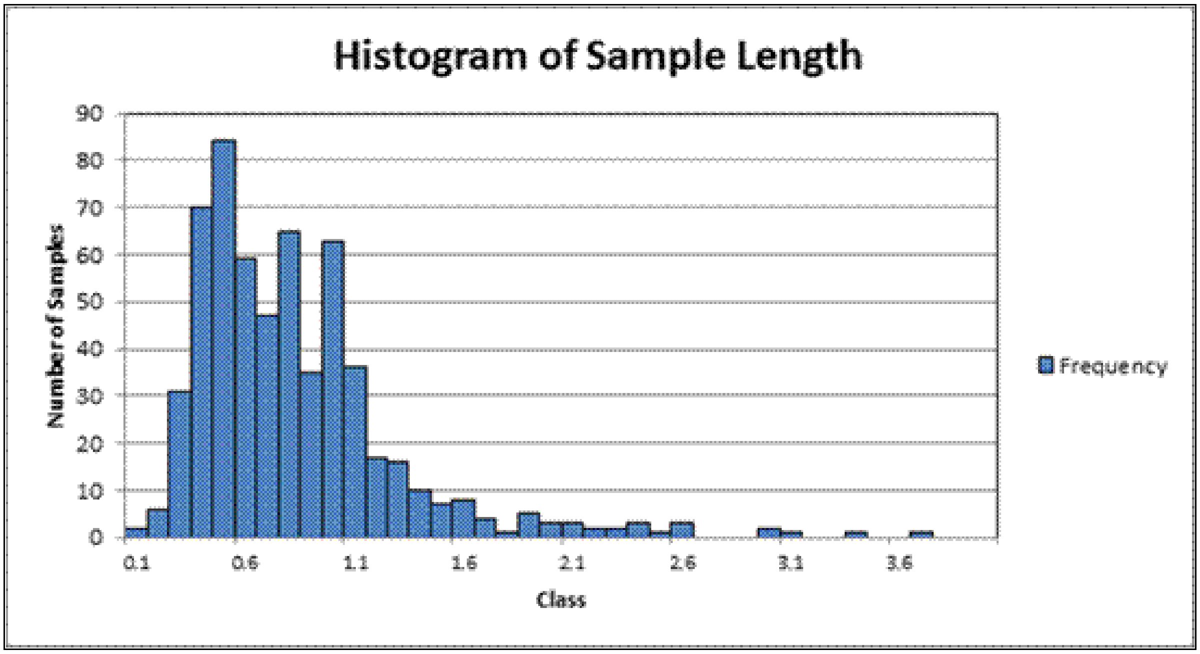


Figure 14.15 Histogram of Sample Lengths within Onek Veins

14.6.5 Compositing for the Bermingham Deposit

Alexco identified a total of 198 diamond drill hole assay intervals as vein intercepts. These assay intervals were imported into GEMS, and assays were then composited to one metre length weighted intervals within the defined vein wireframes. Histograms of sample length for the Bermingham and Bermingham Footwall veins are presented in Figure 14.16 and Figure 14.17 respectively.

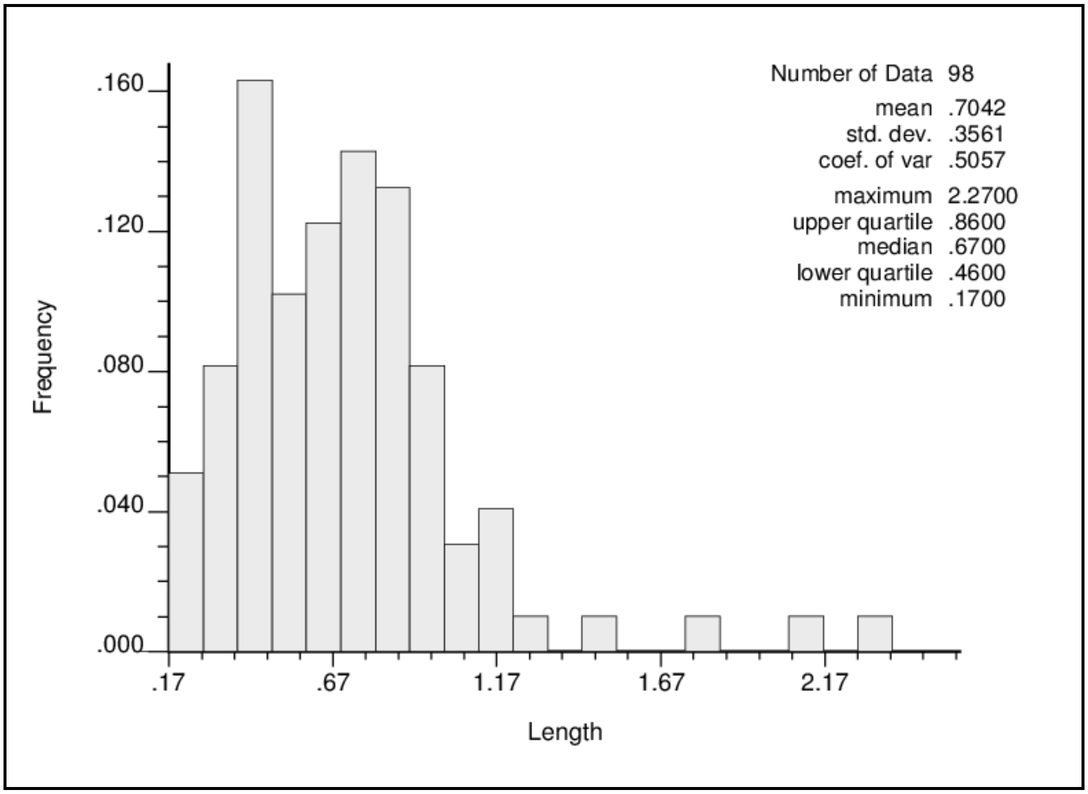


Figure 14.16 Histogram of Sample Length for theBermingham Vein

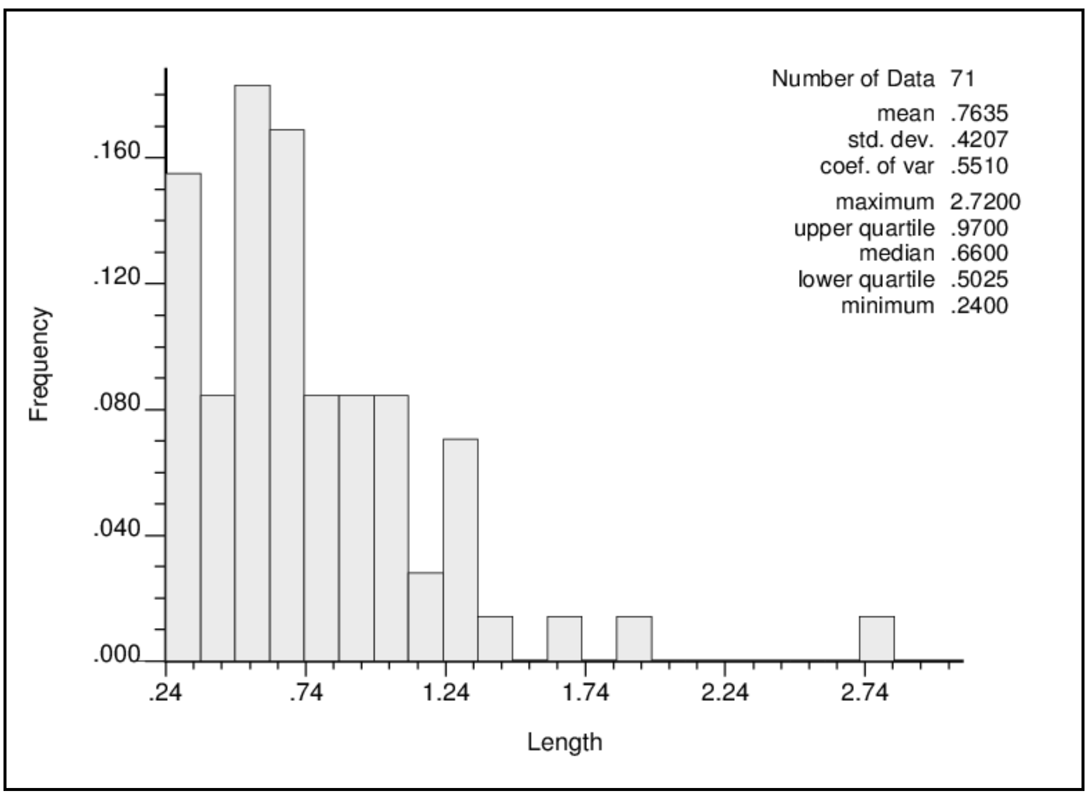


Figure 14.17: Histogram of Sample Length for the Bermingham Footwall Vein

14.7 Evaluation of Outliers

14.7.1 Evaluation of Outliers for the Bellekeno Mine

Grade capping analysis was conducted on the domain-coded sample assay and composites data in order to limit the influence of extreme assay values during estimation. The assays were examined using histograms and cumulative frequency plots. After analysis, only silver composites were capped at a value of 5,000 gpt (Table 14.15). This capping threshold value was selected to minimize changes in the sample distribution. Composites were capped prior to estimation.

Table 14.15: Composite Capping Levels for the Bellekeno Mine

Element	Maximum	Cap	Mean	Mean Capped	Number	Lost Metal*
	Value	Value			Capped	
Ag (gpt)	10,128	5,000	1,044	1,025	21	1.82%

Lost metal is (Average – Averaged Capped)/Average * 100 where Average is the average grade of the assays before capping and Average Capped is the average grade of the assays after capping.

14.7.2 Evaluation of Outliers for the Lucky Queen Mine

Grade capping analysis was conducted on the domain-coded and composites data in order to limit the influence of extreme assay values during estimation. The combined composite sample population for the main Lucky Queen vein and splay was examined using histograms, probability graphs, and capping plots. Capping threshold values were selected that minimize changes in the sample distribution, and sample values were capped to these values prior to compositing and estimation (Table 14.16). For lead, the capping threshold was set to the percentile used for grade capping of silver in order to maintain the observed correlation between these two elements.

Table 14.16: Composite Capping Levels for Lucky Queen

Element	Maximum Value	Cap Value	Mean	Mean Capped	Number Capped	Lost Metal*
Ag (gpt)	13,998	6,300	960	834	2	13.1%
Au (gpt)	3.00	2.00	0.16	0.15	1	10.0%
Pb (ppm)	303,963	148,000	20,831	18,461	2	11.4%
Zn (ppm)	210,100	70,000	13,944	10,143	3	27.2%

Lost metal is (Average – Averaged Capped)/Average * 100 where Average is the average grade of the assays before capping and Average Capped is the average grade of the assays after capping.

14.7.3 Evaluation of Outliers for the Flame & Moth Deposit

Grade capping analysis was conducted on the domain-coded sample assay and composited assay data in order to limit the influence of extreme assay values during estimation. The assays from the Christal and Lightning zones were examined using histograms and cumulative frequency plots. Capping threshold values were selected that minimize changes in the sample distribution, and composited values were capped to these values prior to estimation (Table 14.17).

Table 14.17: Sample Capping Levels for Flame & Moth

Zone	Element	Maximum Value	Cap Value	Number Capped	Mean	Mean Capped	Loss Metal
Christal	Pb ppm	170,756	150,000	1	12,567	12,373	1.54
	Ag ppm	6,774.75	3000	3	489.94	458.38	6.44
Lightning V1	Pb ppm	247,700	150,000	2	16,791	16,321	2.80
	Zn ppm	299,000	200,000	7	59,321	57,984	2.25
Lightning V2	Ag ppm	3,156.28	3,000	1	502.28	498.80	0.69

14.7.4 Evaluation of Outliers for the Onek Deposit

Before compositing, grade capping analysis was conducted on the domain-coded sample assay data in order to limit the influence of extreme assay values during estimation. The assays from Vein 1 and Vein 1FW and, separately, the assays from Vein 2 were examined using histograms, and cumulative frequency plots. Capping threshold values were selected that minimize changes in the sample distribution, and sample values were capped to these values prior to compositing and estimation (Table 14.18).

Table 14.18 Sample Capping Levels for Onek

Vein	Commodity	Maximum Value	Cap Value	Number Capped	Average	Average Capped	Lost Metal*
Vein 1 and Vein 1FW	**Ag ppm**	3440	3000	2	210	208	0.7%
	Au ppm	10.2	5	4	0.65	0.63	4.8%
	Pb %	48.36	35	2	1.61	1.57	2.5%
	Zn %	55.92	35	56	13.36	12.46	7.3%
Vein 2	**Ag ppm**	4080	3000	4	238	221	7.8%
	Au ppm	3.1	2	1	0.33	0.32	2.3%
	Pb %	46.13	25	4	2.08	1.9	16.3%
	Zn %	40.45	20	4	4.48	4.22	6.1%

*Lost metal is (Average – Averaged Capped)/Average * 100 where Average is the average grade of the assays before capping and Average Capped is the average grade of the assays after capping.

14.7.5 Evaluation of Outliers for the Bermingham Deposit

Grade capping analysis was conducted on the domain-coded sample assay and composited assay data in order to limit the influence of extreme assay values during estimation. The assays from the Bermingham and Bermingham Footwall veins were examined using histograms, and cumulative frequency plots. Capping threshold values were selected that minimize changes in the sample distribution, and composited values were capped to these values prior to estimation (Table 14.19).

Table 14.19 Sample Capping Levels for Bermingham

Vein	Commodity	Maximum Value	Cap Value	Number Capped	Average	Average Capped	Lost Metal*
Bermingham	Au ppm	0.408	0.2	2	0.065	0.060	6.94%
	Ag ppm	4059	1500	4	436	371	14.93%
	Pb %	11.18	10	2	1.78	1.76	1.13%
	Zn %	10.2	10	1	1.74	1.73	0.14%
Bermingham Footwall	Au ppm	0.245	0.2	1	399	315	1.13%
	Ag ppm	2640	1000	6	0.063	0.062	20.9%
	Pb %	13.93	10	1	1.07	1.01	5.75%
	Zn %	13.28	10	1	1.67	1.62	3.07%

*Lost metal is (Average – Averaged Capped)/Average * 100 where Average is the average grade of the assays before capping and Average Capped is the average grade of the assays after capping.

14.8 Statistical Analysis and Variography

14.8.1 Statistical Analysis and Variography for the Bellekeno Mine

The Bellekeno data was analyzed by zone and is presented in the following series of graphics - the SW zone, the 99 zone, and the East zone.

14.8.2 Southwest Zone

Figure 14.18 through Figure 14.25 present the results for the SW zone: histograms, probability plots, normal variography, and lognormal variography.

In general, it is noted that reasonable variograms are obtained in log space for silver, lead, and zinc, with an omnidirectional range of approximately 40 to 50 m in the plane of the vein.

14.8.3 The 99 Zone

Figure 14.26 through Figure 14.30 present the results for the 99 zone: histograms, probability plots, normal variography, and lognormal variography.

Range for the 99 zone is shorter than the SW zone, approximately 20 to 30 m in the plane of the vein.

14.8.4 The East Vein

Figure 14.31 through Figure 14.34 present the results for the East zone: histograms, probability plots, normal variography, and lognormal variography.

Lead and zinc did not display a spatial structure, possibly due to the relatively small data set available for analysis. The silver variogram appears to indicate a 20 to 30 m range in the plane of the vein.

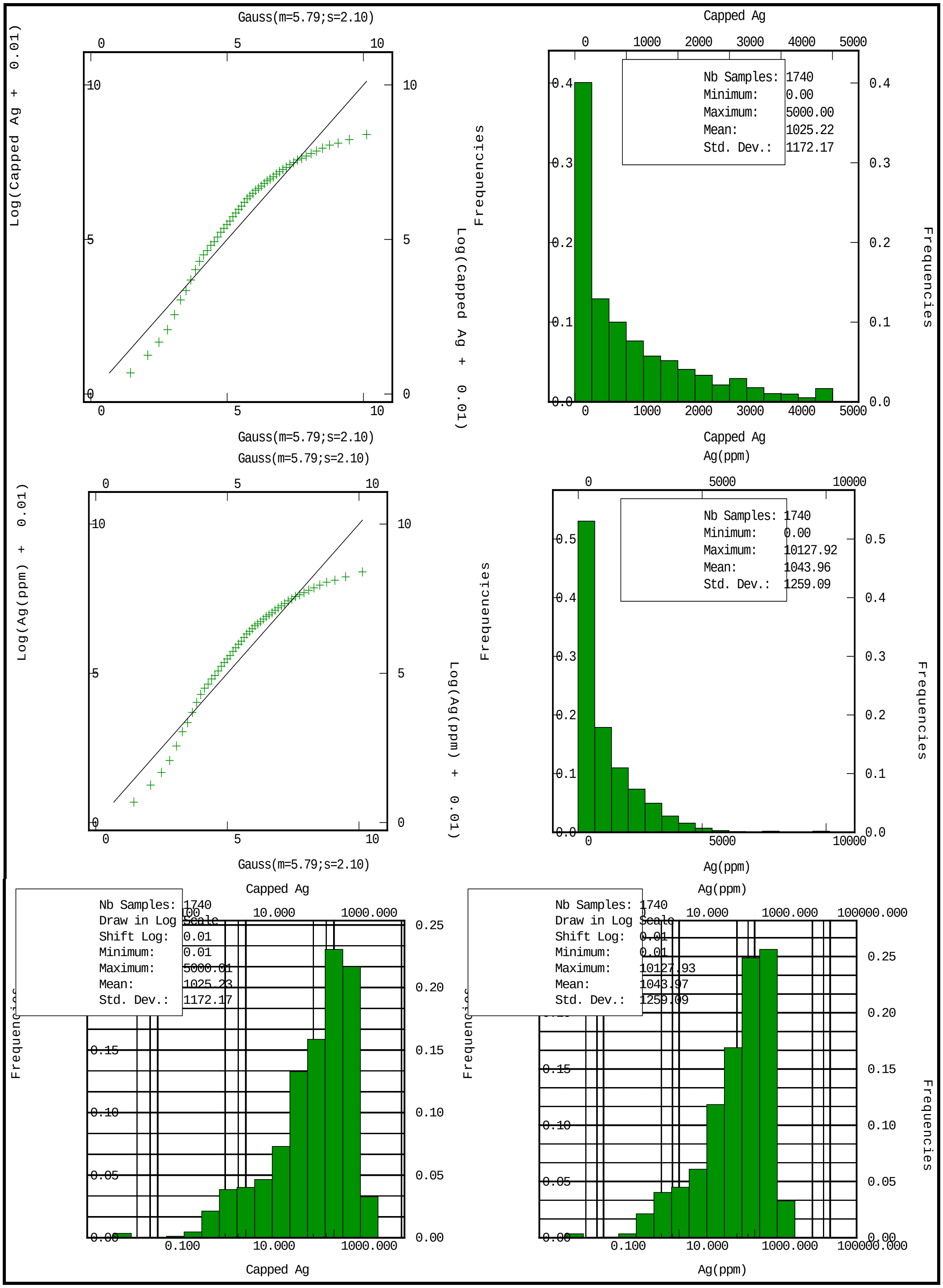


Figure 14.18: Histograms and Probability Plots for Silver, Capped and Uncapped, Southwest Zone (Alexco, 2013)

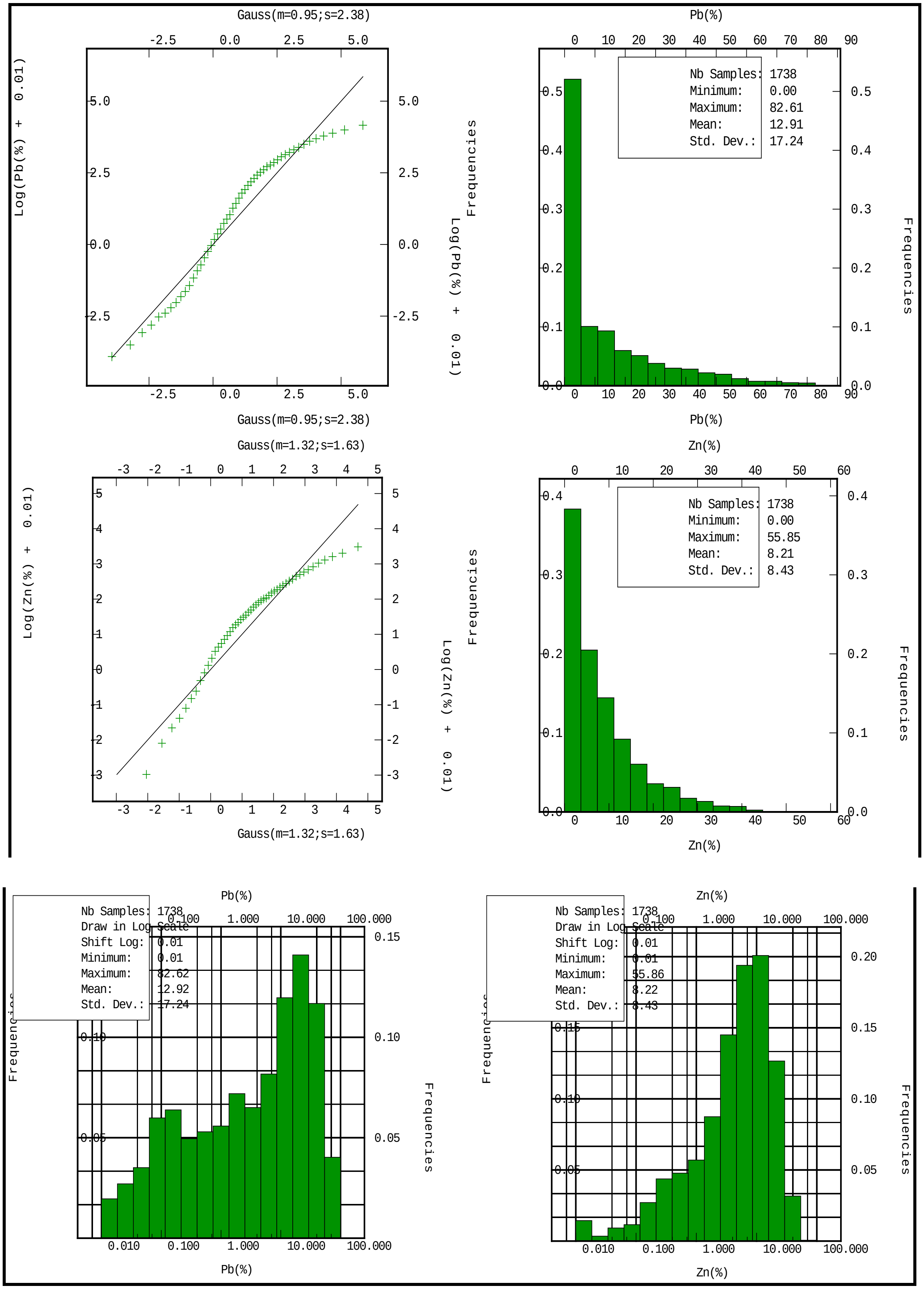


Figure 14.19: Histograms and Probability Plots for Lead and Zinc, Capped and Uncapped, Southwest Zone (Alexco, 2013)

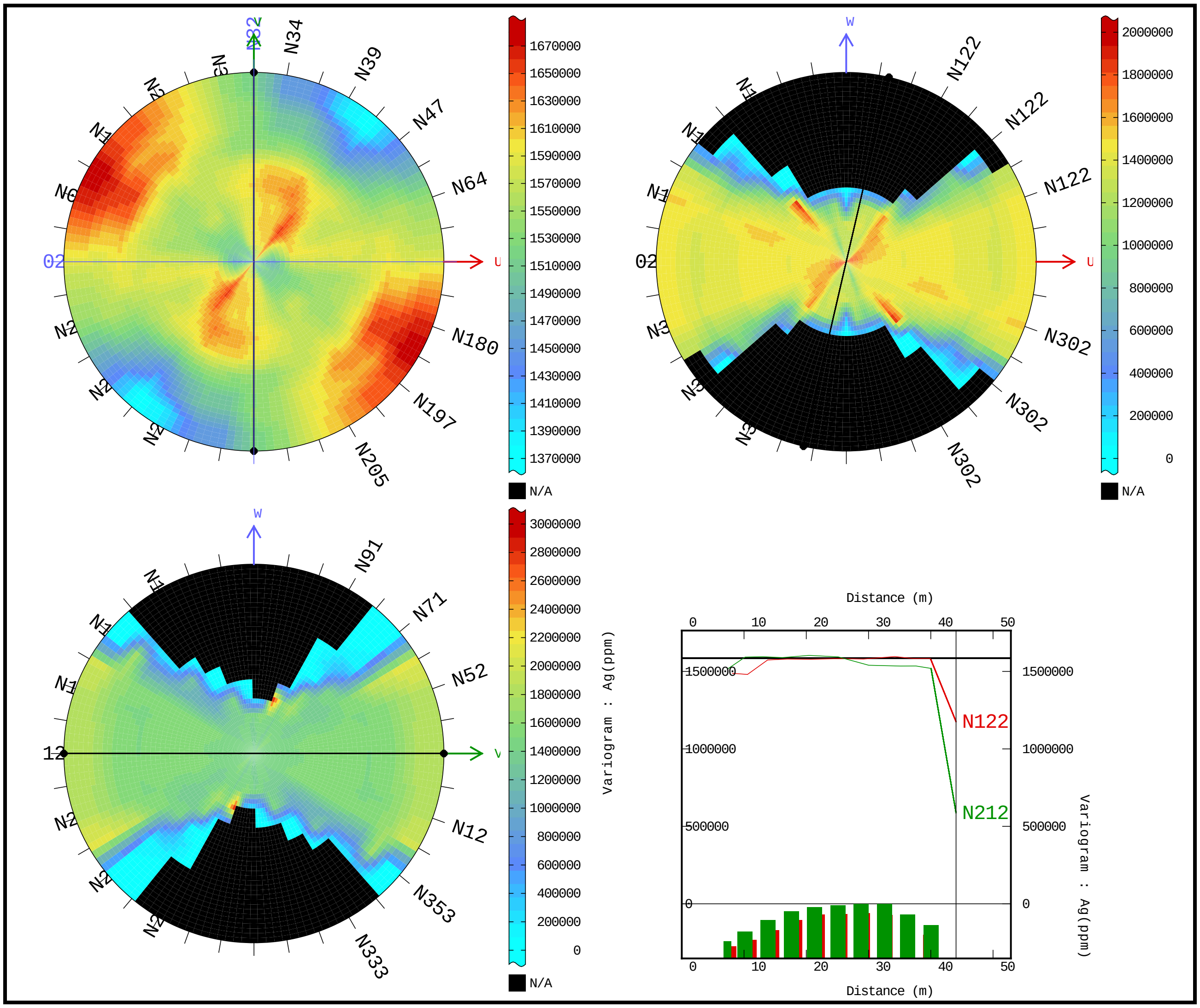


Figure 14.20: Normal Variography of Silver, Southwest Zone (Alexco, 2013)

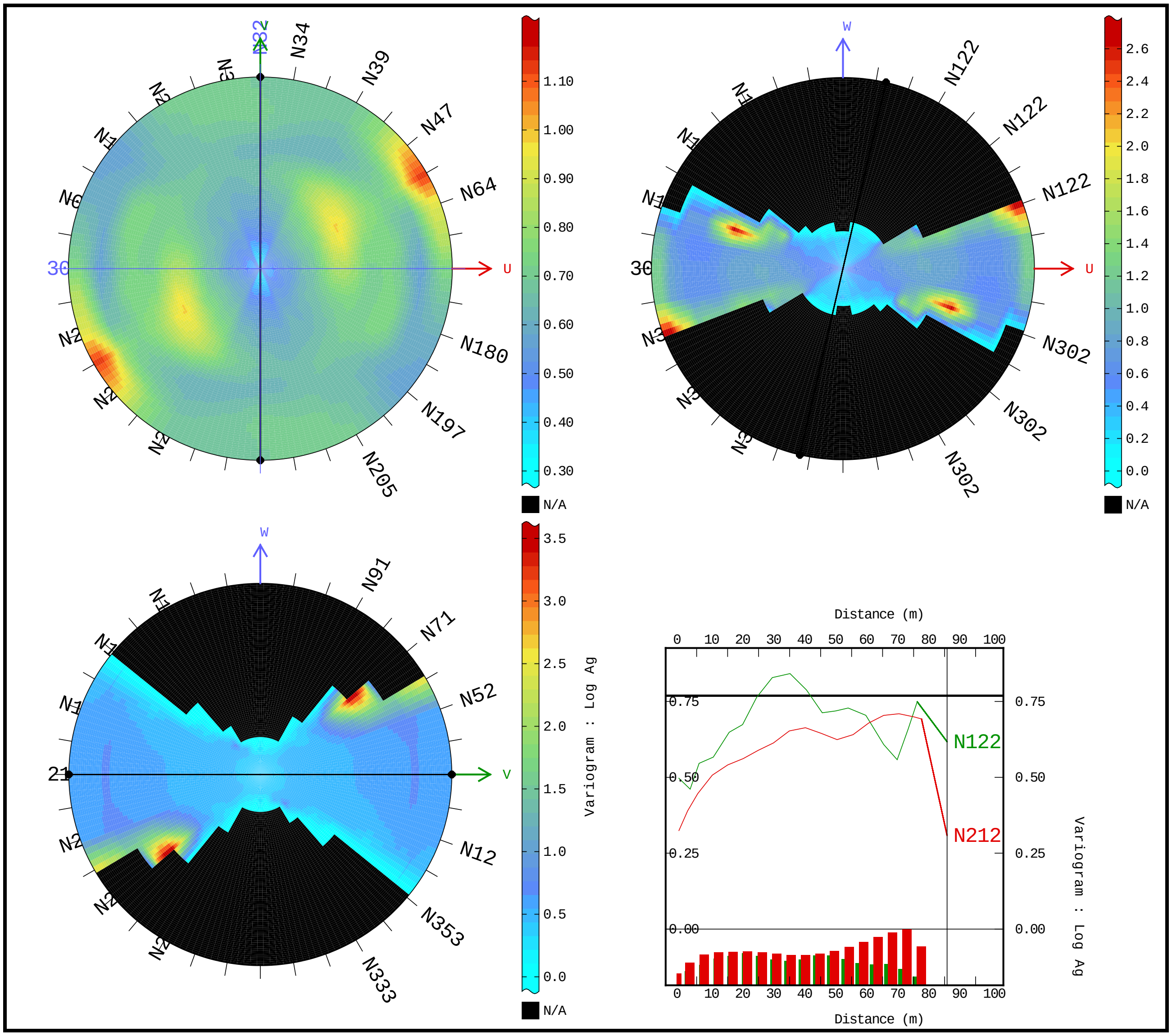


Figure 14.21: Lognormal Variography of Silver, Southwest Zone (Alexco, 2013)

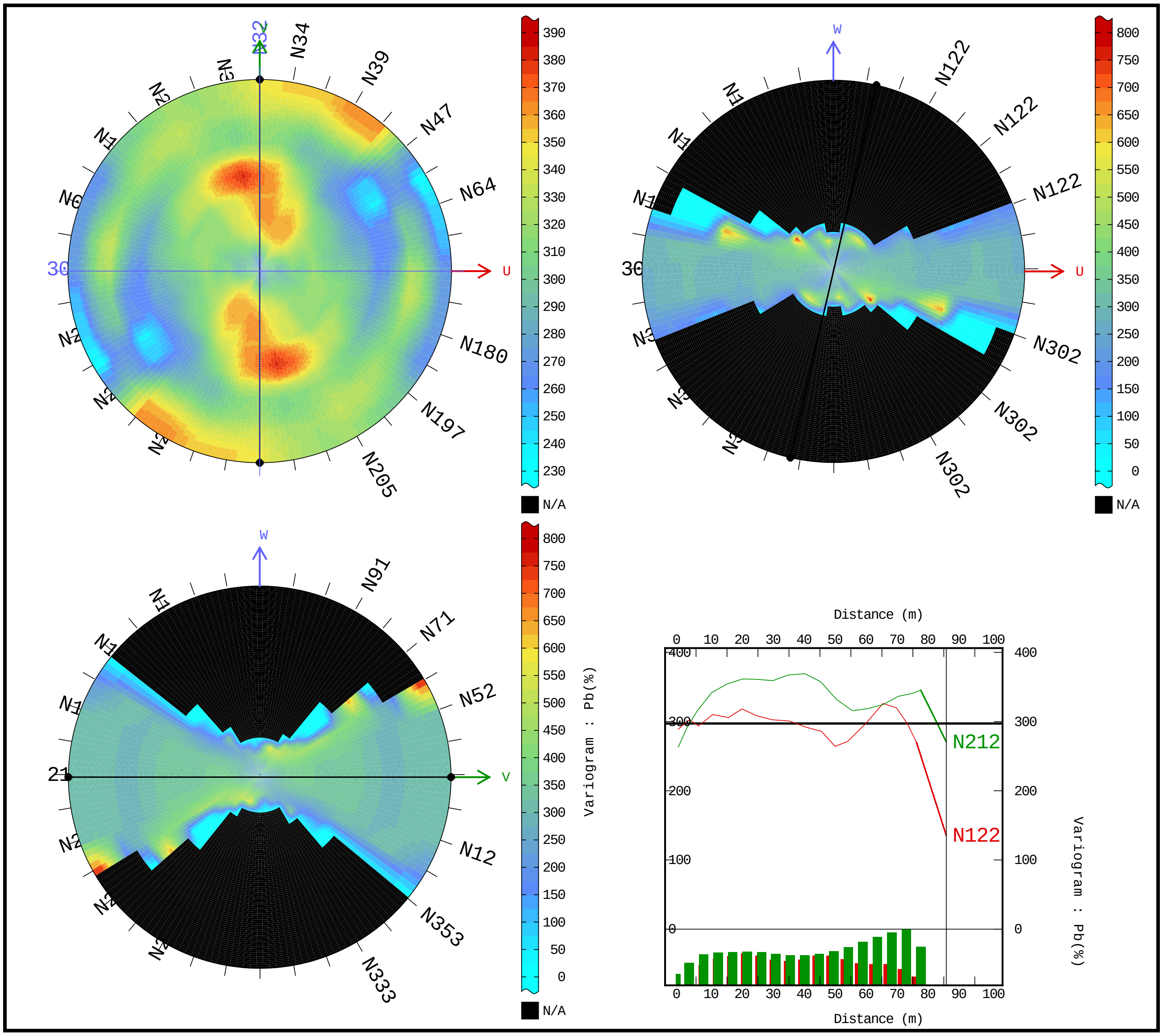


Figure 14.22: Normal Variography of Lead, Southwest Zone (Alexco, 2013)

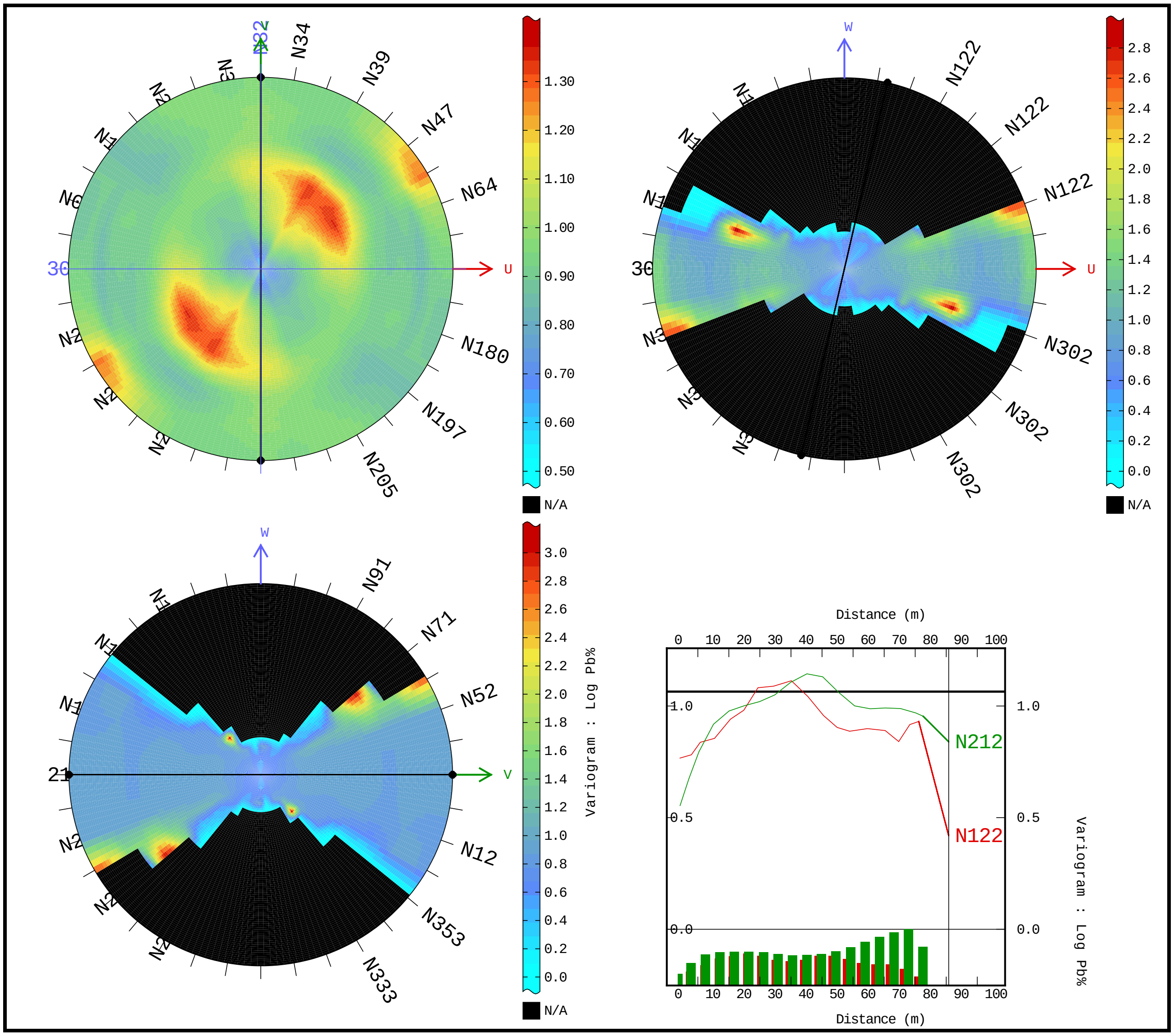


Figure 14.23: Lognormal Variography of Lead, Southwest Zone (Alexco, 2013)

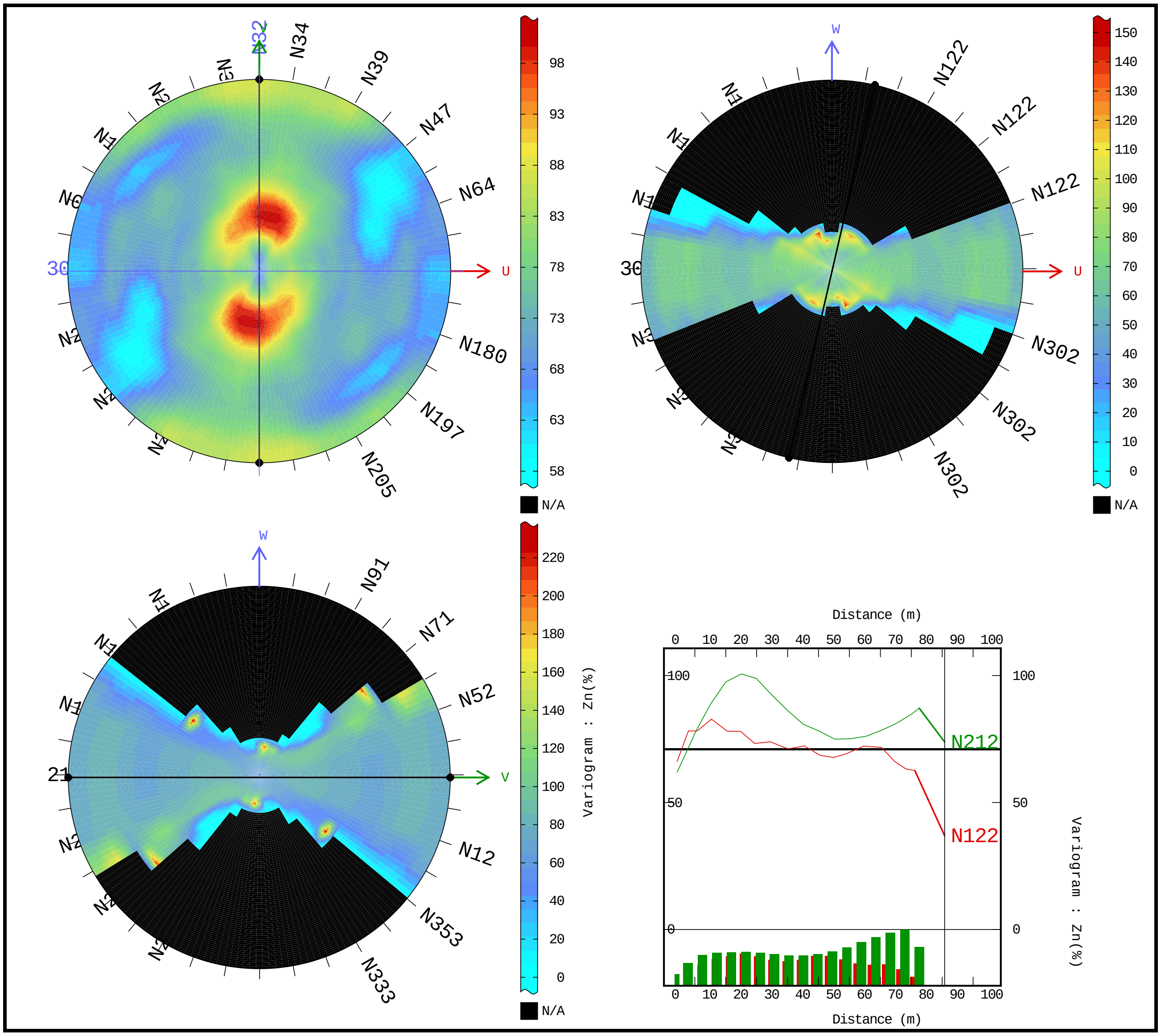


Figure 14.24: Normal Variography of Zinc, Southwest Zone (Alexco, 2013)

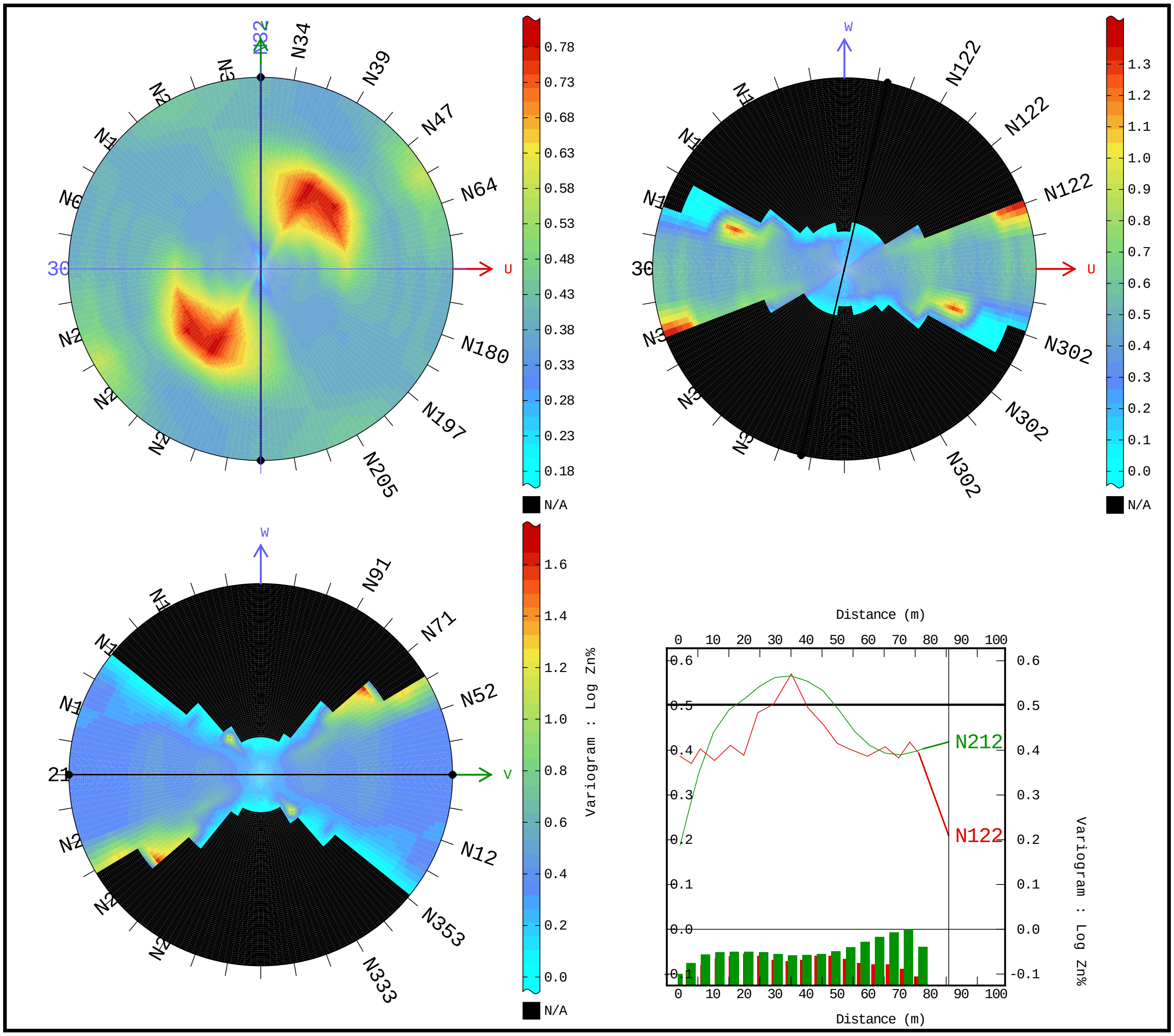


Figure 14.25: Lognormal Variography of Zinc, Southwest Zone (Alexco, 2013)

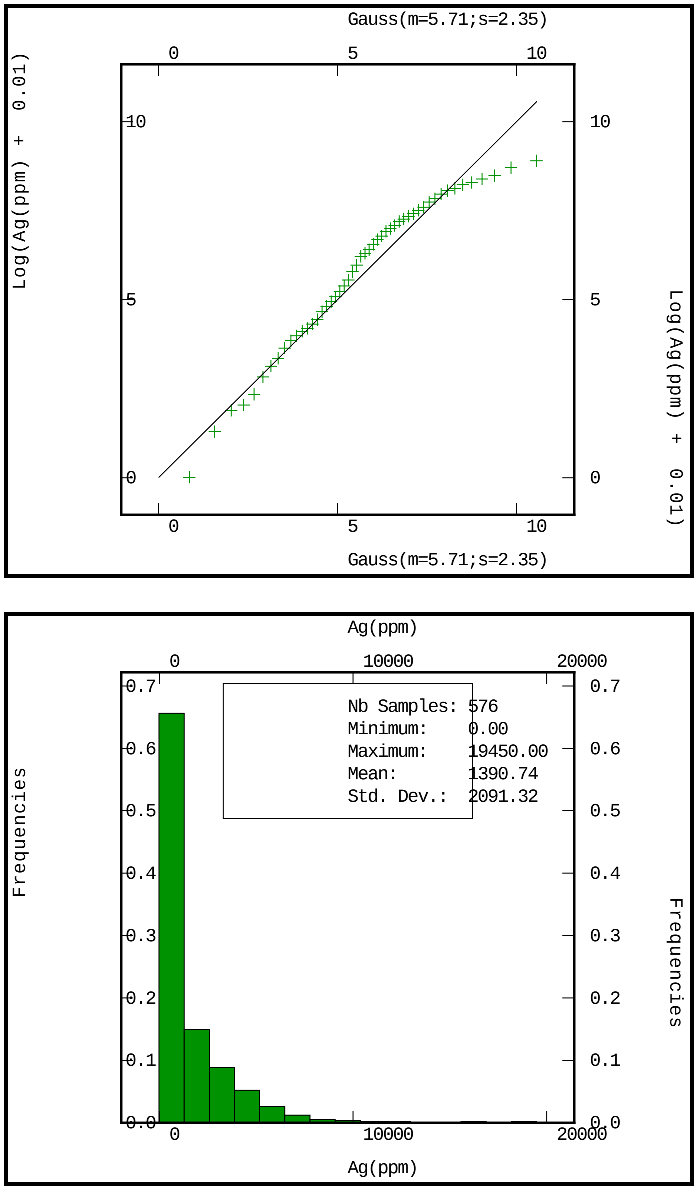
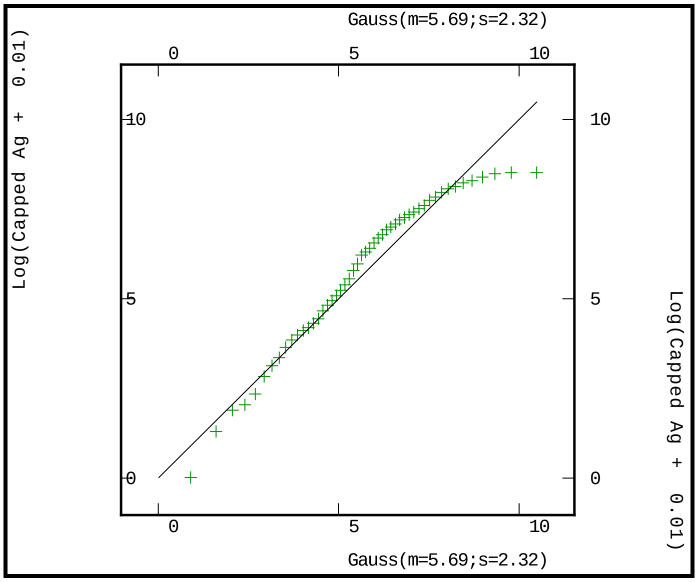


Figure 14.26: Histograms and Probability Plots for Silver, 99 Zone (Alexco, 2013)



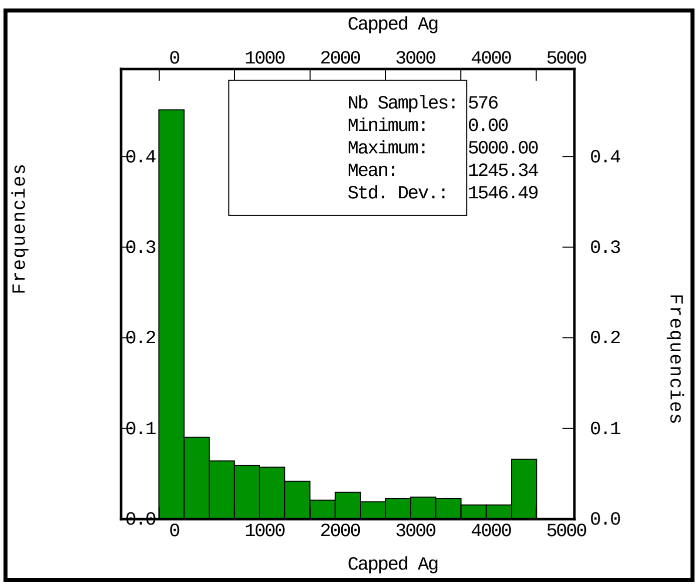


Figure 14.26 continued: Histograms and Probability Plots for Silver, 99 Zone (Alexco, 2013)

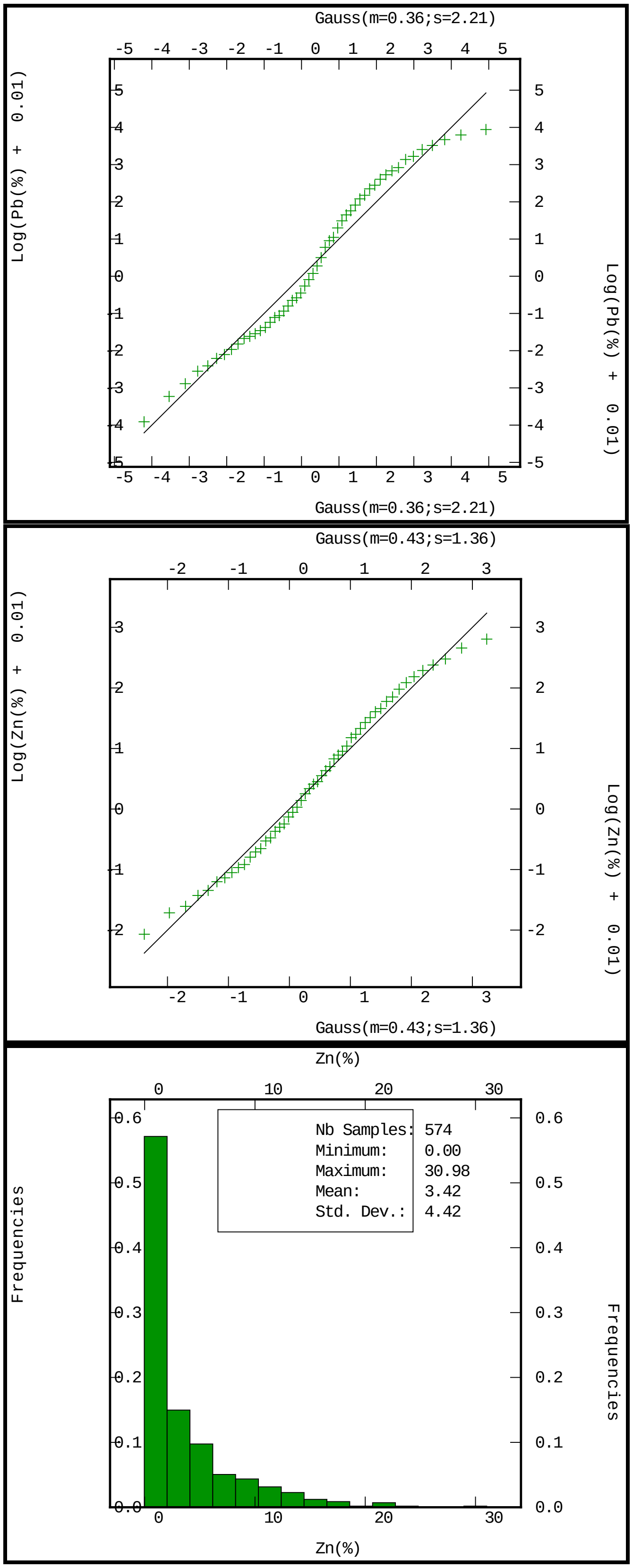


Figure 14.27: Histograms and Probability Plots for Lead and Zinc, 99 Zone (Alexco, 2013)

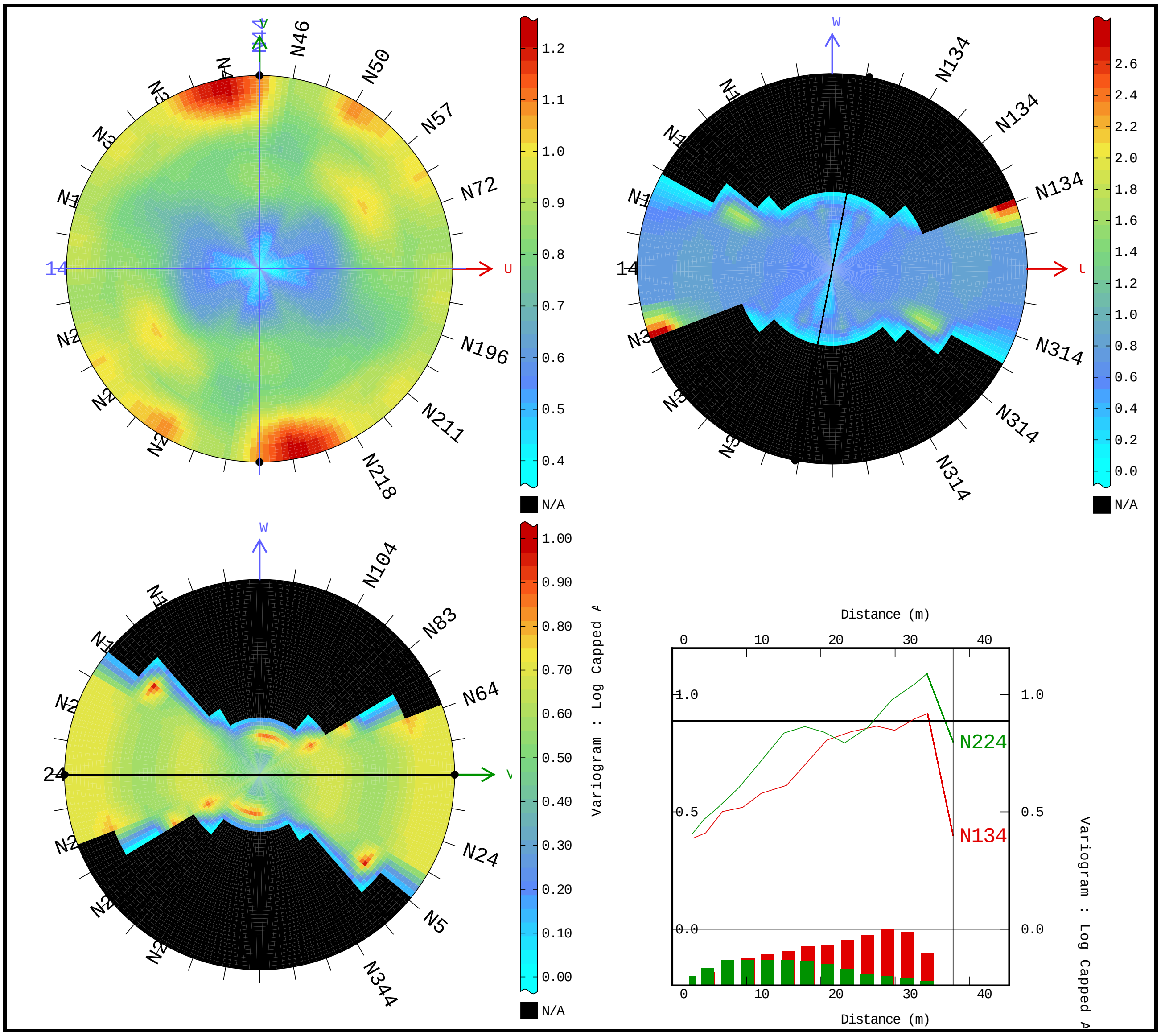


Figure 14.28: Log Space Variograms for Capped Silver, 99 Zone (Alexco, 2013)

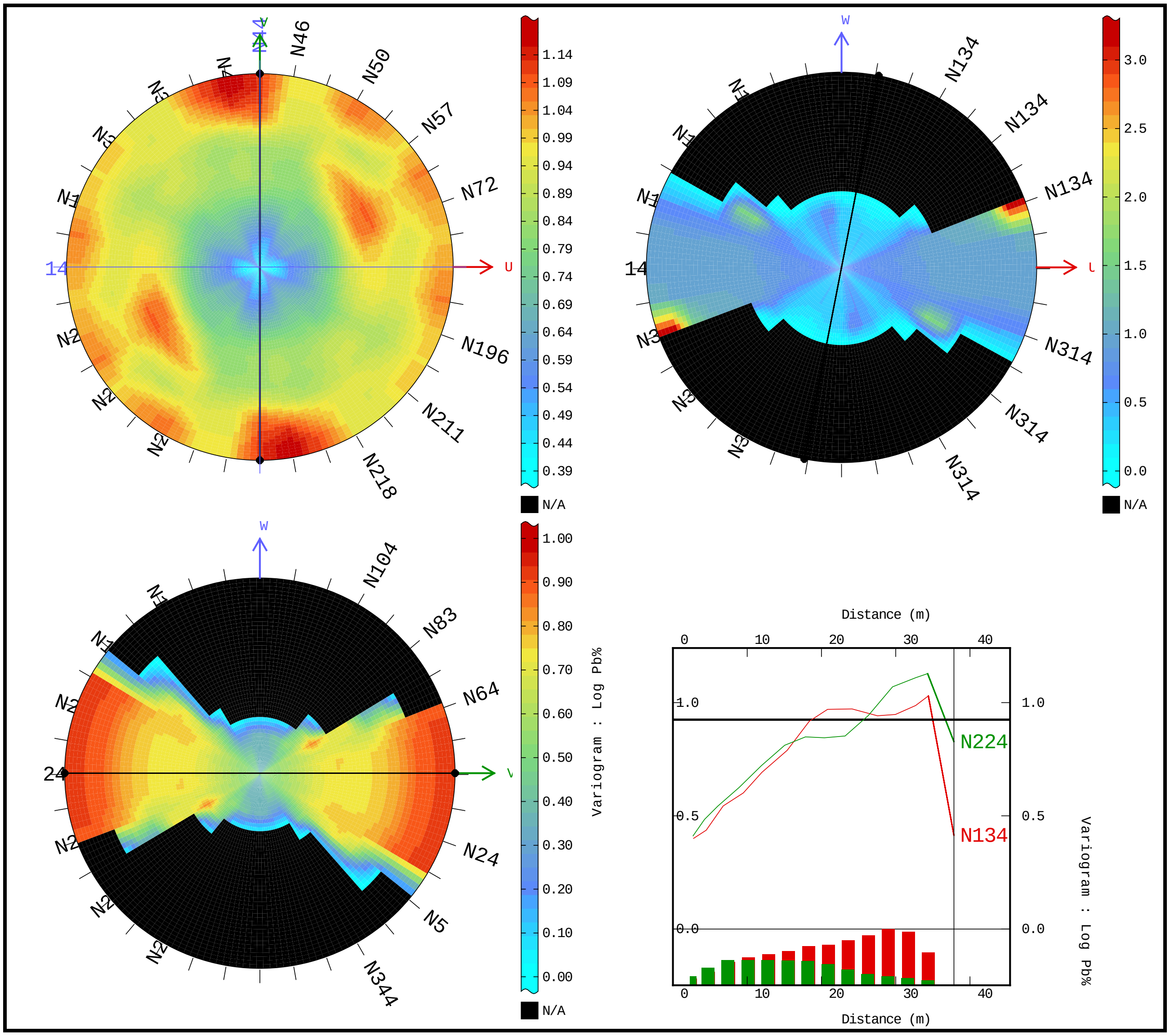


Figure 14.29: Log Space Variograms for Lead, 99 Zone (Alexco, 2013)

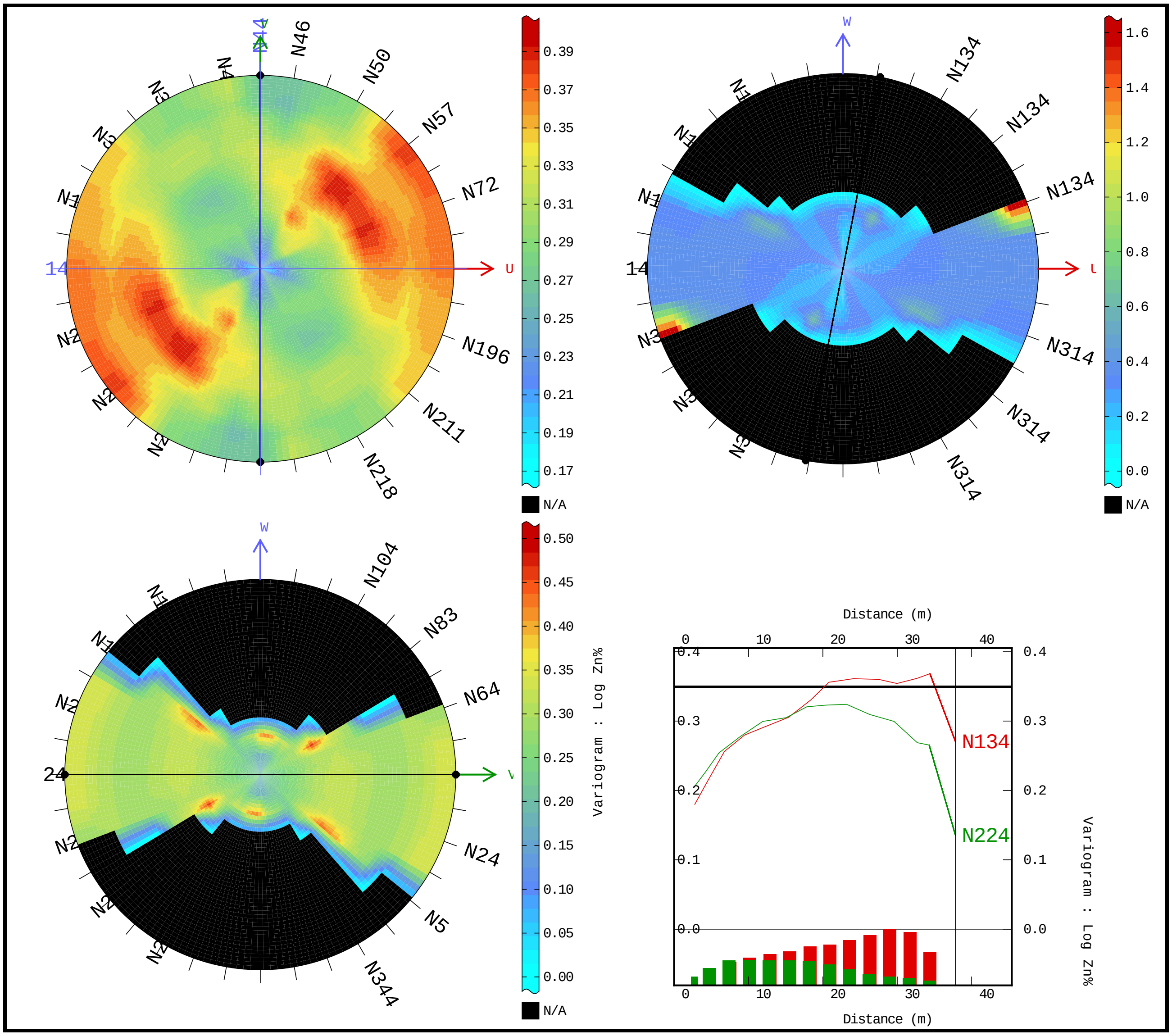
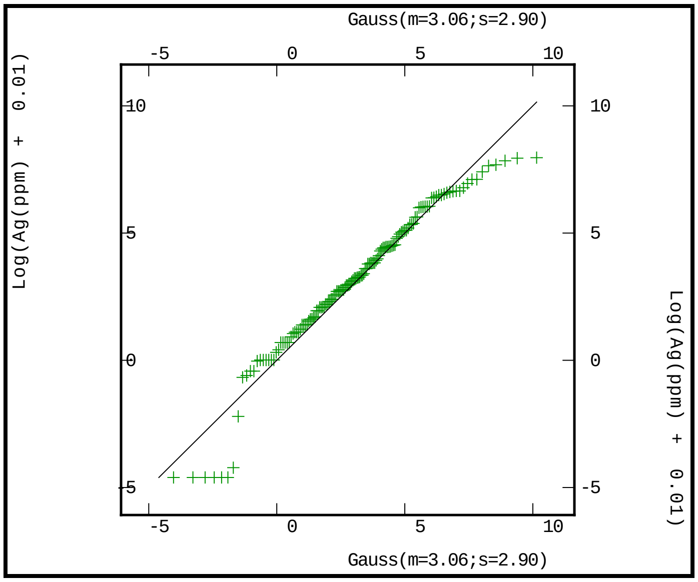


Figure 14.30: Log Space Variograms for Zinc, 99 Zone (Alexco, 2013)



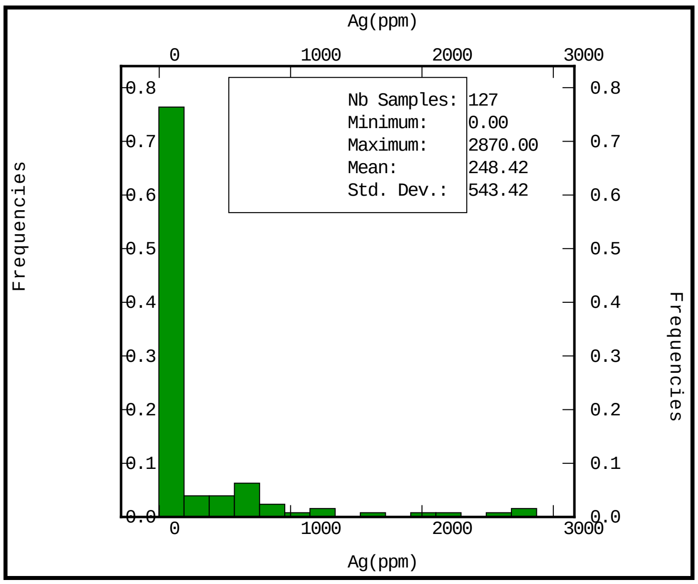


Figure 14.31: Histograms and Probability Plots for Silver, East Zone (Alexco, 2013)

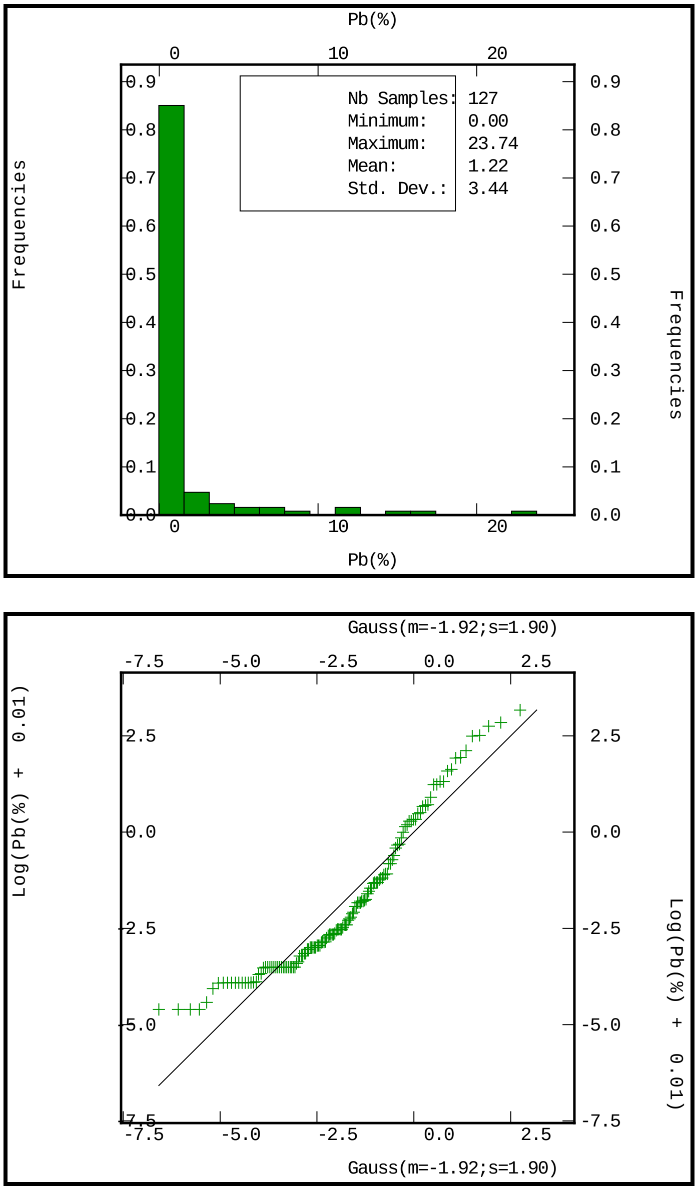


Figure 14.32: Histograms and Probability Plots for Lead, East Zone (Alexco, 2013)

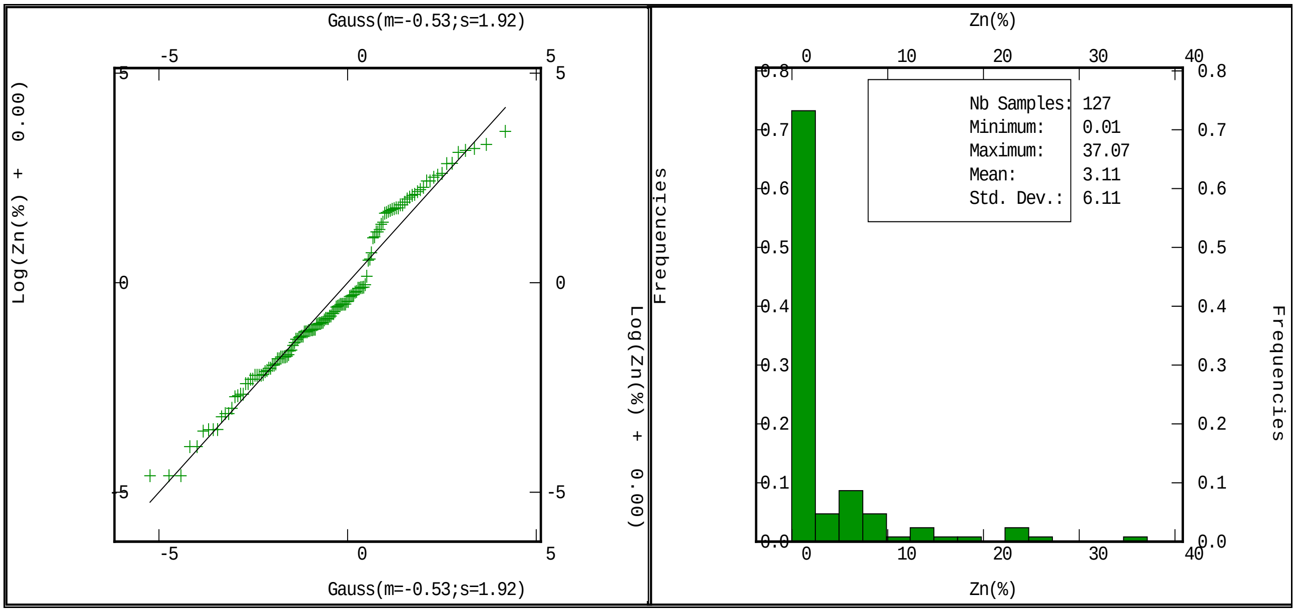


Figure 14.33: Histograms and Probability Plots for Zinc, East Zone (Alexco, 2013)

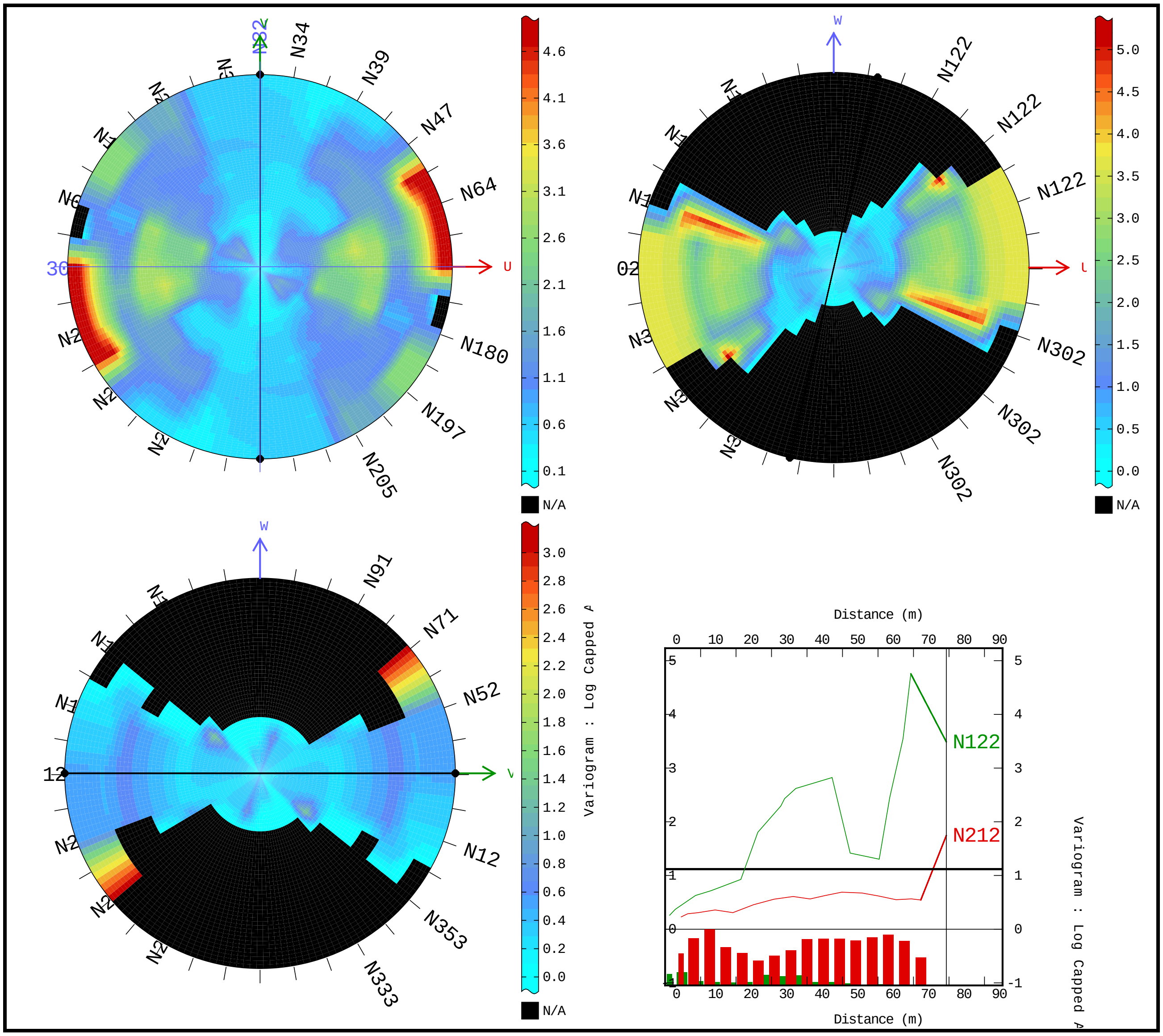


Figure 14.34: Log space Variograms for Silver, East Zone (Alexco, 2013)

14.8.5 Statistical Analysis and Variography for the Lucky Queen Mine

Examination of the distribution of drill hole and chip assay sample populations suggests that drill hole assay data differ significantly from the chip assay data (Figure 14.35). The chip sample data were, therefore, used for continuity analysis, but were not used for mineral resource estimation.

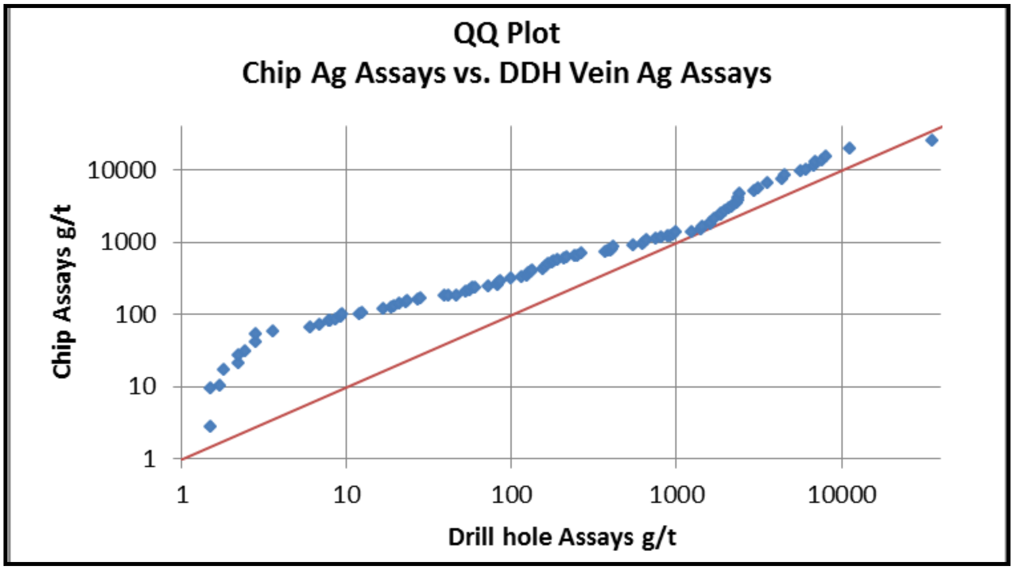


Figure 14.35: Q-Q Plot of Chip and Drill Hole Silver Assay Sample Data (SRK, 2011)

Summary statistics were compiled for the composite data, both for the defined Luck Queen vein and for a secondary splay identified by Alexco (Table 14.20). A total of 66 composites were derived for the Lucky Queen vein, and 15 composites for the secondary splay. An additional five composites averaging 1,591 gpt silver have been identified by Alexco, but were not assigned to the primary Lucky Queen vein or the secondary splay. Correlation analysis between elements indicates a strong correlation between silver and lead, with a correlation coefficient of 0.62.

Table 14.20: Composite Data Summary Statistics for the Lucky Queen Mine

Type	Statistic	Ag (gpt)	Au (gpt)	Pb (ppm)	Zn (ppm)
Total Composites	Number of Samples	81	81	81	81
	Average	814	0.14	17,909	12,080
	Minimum	0.2	0.001	2,327	44
	Maximum	13,998	3.00	303,963	210,100
	Standard Deviation	1,929	0.375	42,651	31.353
	Coefficient of Variation	2.4	2.8	2.4	2.6
Vein Composites	Number of Samples	66	66	66	66
	Average	960	0.161	20,831	13,944
	Minimum	0.6	0.001	32	44
	Maximum	13,998	3.00	303,963	210,010
	Standard Deviation	2,098	0.412	46,265	34,315
	Coefficient of Variation	2.2	2.6	2.2	2.5
Splay Composites	Number of Samples	15	15	15	15
	Average	174	0.022	5,054	3,877
	Minimum	0.2	0.001	23	116
	Maximum	2,125	0.155	60,714	27,195
	Standard Deviation	547	0.040	15,496	7,862
	Coefficient of Variation	3.2	1.8	3.1	2.0

3D continuity analysis was conducted on the composite data and underground chip sample data for the Lucky Queen vein. Down-hole and directional un-transformed and normal-scores transformed and normalized experimental semi-variograms were examined for silver, with the horizontal and across-strike directions aligned with the modelled vein orientation (Table 14.21)

Rotation was defined by the GEMS ZYZ convention within the rotated block model coordinate space. Due to the spatial distribution of the data, only a strike experimental semi-variogram could be satisfactorily modelled, and the range of the resulting normal-scores experimental semi-variogram was used to define sample selection requirements and classification criteria.

Table 14.21: Modelled Semi-Variogram for Silver

Direction	Experimental Semi-Variogram	Range
Nugget	0.2	
Sill 1	0.2	12
Sill 2	0.6	100

14.8.6 Statistical Analysis and Variography for the Flame & Moth Deposit

Summary statistics were compiled for the composite data for the Flame & Moth veins (Table 14.22). A total of 71 composites were derived for the Christal zone, and 114 composites for the Lightning zone.

Due to the limited number of samples in each of the Christal and Lightning zones, experimental semi-variograms could not be generated for silver, lead, zinc, or gold from composite grade data for these veins.

Table 14.22: Composite Data Summary Statistics for the Flame & Moth Deposit

Zone	Statistic	Ag	Ag Capped	Au	Pb	Pb Capped	Zn	Zn Capped
		(gpt)	(gpt)	(gpt)	(ppm)	(ppm)	(ppm)	(ppm)
Christal	Number of Samples	105		105	105	105	105	105
	Average	372.93		0.34	12,567.76	12,370.08	31,803.49	31,803.49
	Minimum	3.4		0	35.8	35.8	73.1	73.1
	Maximum	2,955.00		2.7	170,756.00	150,000.00	179,140.20	179,140.20
	Standard Deviation	523.3		0.5	24,000.40	22,749.60	35,658.00	35,658.00
	Coefficient of Variation	1.4		1.38	1.91	1.84	1.12	1.12
Lightning V1	Number of Samples	234	234	234	234	234	234	234
	Average	489.94	458.38	0.38	16,791.02	16,320.89	59,321.20	57,984.13
	Minimum	1	1	0	13.2	13.2	11	11
	Maximum	6,774.80	3000	3.2	247,700.00	150,000.00	299,000.00	200,000.00
	Standard Deviation	794.9	601.99	0.5	28,159.90	25,021.40	59,269.00	55,091.60
	Coefficient of Variation	1.62	1.31	1.29	1.68	1.53	1	0.95
Lightning V2	Number of Samples	45	45	45	45	45	45	45
	Average	502.28	498.8	0.27	14,997.81	14,997.81	45,801.63	45,801.63
	Minimum	0.9	0.9	0	28	28	425.1	425.1
	Maximum	3,156.30	3000	1.4	60,345.70	60,345.70	170,894.20	170,894.20
	Standard Deviation	589.8	574.41	0.3	14,312.80	14,312.80	41,991.60	41,991.60
	Coefficient of Variation	1.17	1.15	1.02	0.95	0.95	0.92	0.92

14.8.7 Statistical Analysis and Variography for the Onek Deposit

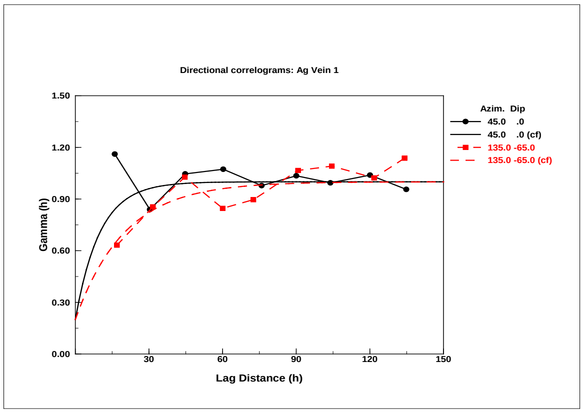
Examination of the distribution of the drill hole and chip assay sample populations suggests that the drill hole assay data differ significantly from the chip assay data. Therefore, the chip sample data were not used for mineral resource estimation.

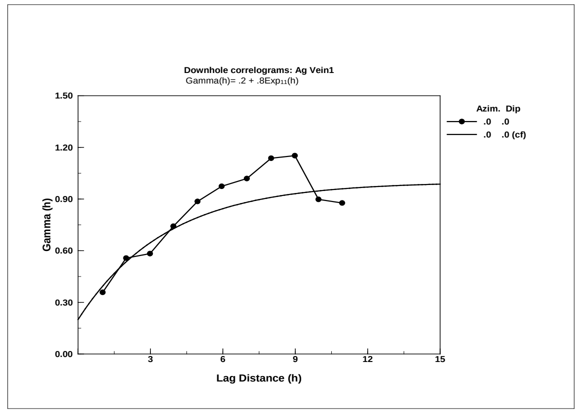
Summary statistics were compiled for the composite data for the Onek veins (Table 14.23). A total of 351 composites were derived for Vein1, 16 composites for Vein 1FW and 147 composites for Vein 2. Any composites lengths that were less than 0.5 m in length were linked to the previous composite to assure equal weighting of all composite and to assure that all composites were between 0.5 and 1.5 m in length. Correlation analysis between commodities indicates a strong correlation between Ag and Pb, with a correlation coefficient of 0.83.

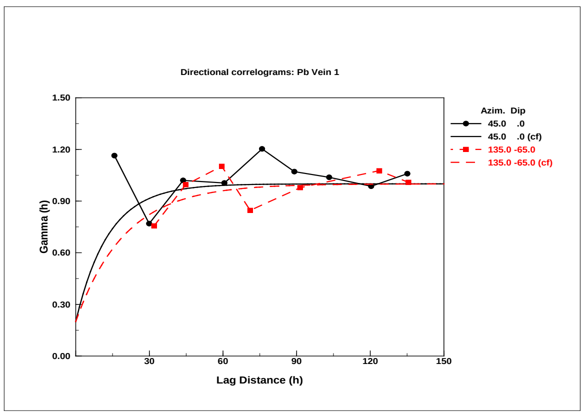
Table 14.23 Composite Data Summary Statistics for Onek

Type	Statistic	Ag g/t	Ag Cap g/t	Au g/t	Au Cap g/t	Pb %	Pb Cap %	Zn %	Zn Cap %
Total Composites	No of Samples	514	514	514	514	514	514	514	514
	Average	181	175	0.51	0.49	1.4	1.26	9.5	8.93
	Minimum	0.64	0.64	0	0	0	0	0	0
	Maximum	3,410	3,000	7.68	4.89	46.13	27.94	50	35
	St Dev.	408	369	0.7	0.58	4.26	3.42	10.94	9.59
	CV	2.25	2.11	1.37	1.18	3.04	2.71	1.15	1.07
Vein 1 Composites	No of Samples	351	351	351	351	351	351	351	351
	Average	166	165	0.6	0.58	1.11	1.08	12.18	11.41
	Minimum	0	0	0	0	0	0	0	0
	Maximum	2,776	2,428	7.68	4.89	26.96	21.35	50	35
	St Dev.	309	299	0.77	0.63	2.92	2.75	11.92	10.36
	CV	1.86	1.81	1.28	1.09	2.63	2.55	0.98	0.91
Vein 1FW Composites	No of Samples	16	16	16	16	16	16	16	16
	Average	135	135	0.3	0.3	2.32	2.32	4.11	3.78
	Minimum	0.64	0	0	0	0	0	0	0
	Maximum	1,400	1,400	1.91	1.91	27.94	27.94	28.66	23.46
	St Dev.	364	364	0.59	0.59	7.15	7.15	7.29	6.14
	CV	2.70	2.70	1.97	1.97	3.08	3.08	1.77	1.62
Vein 2 Composites	No of Samples	147	147	147	147	147	147	147	147
	Average	222	201	0.31	0.3	1.99	1.57	3.7	3.56
	Minimum	0	0	0	0	0	0	0	0
	Maximum	3,410	3,000	1.77	1.65	46.13	25	30.14	24.1
	St Dev.	583	499	0.41	0.39	6.12	4.16	4.51	3.93
	CV	2.63	2.48	1.32	1.30	3.08	2.65	1.22	1.10

Experimental correlograms and correlogram models were generated for silver, lead, zinc and gold from combined composite grade data for Vein 1 and Vein 1FW and from composite grade data for Vein 2. The nugget effect was established from down hole correlograms. Directional and down hole correlograms were examined for silver, lead, zinc and gold. Apart from zinc, modeled directions of spatial continuity were aligned with strike and dip directions of modeled vein orientations. For zinc, the major direction of continuity was modelled as a shallow dipping south-west trending structure. Nugget effect and across-structure continuity was established from down hole correlograms. Rotation was defined by the GEMS ZYZ convention within the rotated block model coordinate space. The continuity ellipsoids for silver, lead, zinc and gold were displayed as search ellipsoids in GEMS to validate the ellipsoid orientations. The correlogram models used for grade estimation within Vein1 and Vein 1FW (Figure 14.36), and Vein 2 (Figure 14.37) are summarized in Table 14.24.


Directional correlograms: Ag Vein 1
Gamma (h)
Lag Distance (h)
Azim. Dip
45.0 .0
45.0 .0 (cf)
135.0 -65.0
135.0 -65.0 (cf)


Downhole correlograms: Ag Vein1
Gamma(h)= .2 + .8Exp$_{11}$(h)
Gamma (h)
Lag Distance (h)
Azim. Dip
.0 .0
.0 .0 (cf)


Directional correlograms: Pb Vein 1
Gamma (h)
Lag Distance (h)
Azim. Dip
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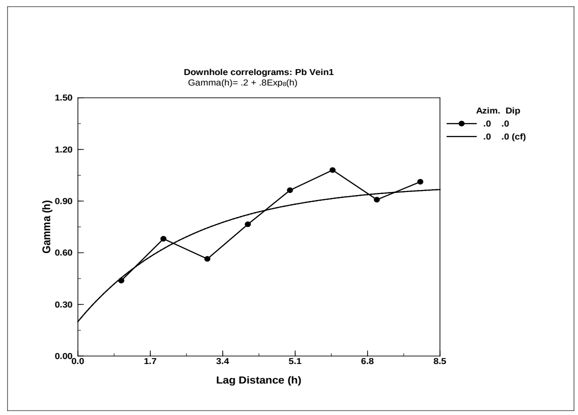
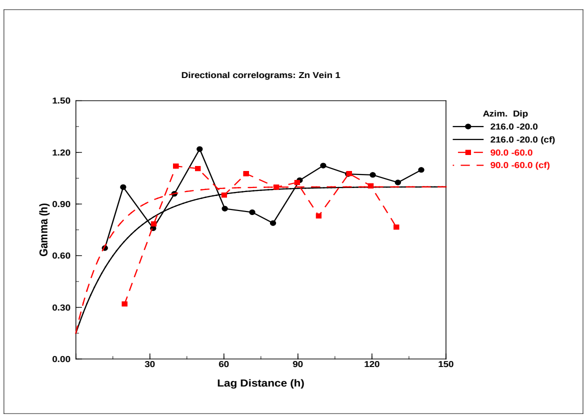
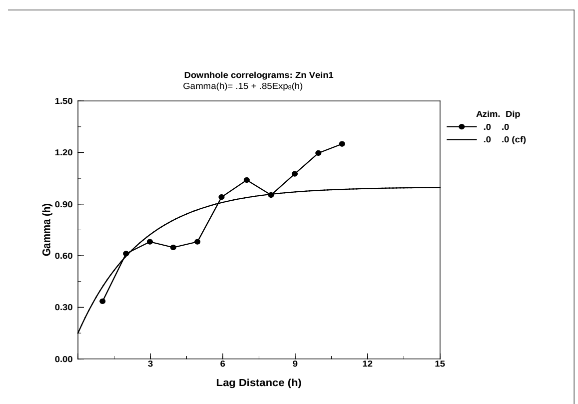
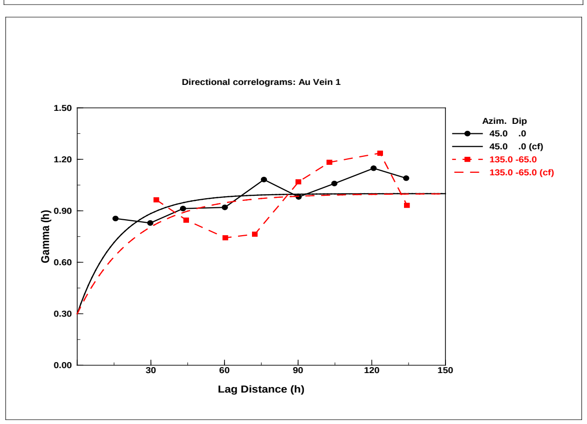
45.0 .0 (cf)
135.0 -65.0
135.0 -65.0 (cf)


Downhole correlograms: Pb Vein1
Gamma(h)= .2 + .8Exp$_{8}$(h)
Gamma (h)
Lag Distance (h)
Azim. Dip
.0 .0
.0 .0 (cf)


Directional correlograms: Zn Vein 1
Gamma (h)
Lag Distance (h)
Azim. Dip
216.0 -20.0
216.0 -20.0 (cf)
90.0 -60.0
90.0 -60.0 (cf)


Downhole correlograms: Zn Vein1
Gamma(h)= .15 + .85Exp$_{8}$(h)
Gamma (h)
Lag Distance (h)
Azim. Dip
.0 .0
.0 .0 (cf)


Directional correlograms: Au Vein 1
Gamma (h)
Lag Distance (h)
Azim. Dip
45.0 .0
45.0 .0 (cf)
135.0 -65.0
135.0 -65.0 (cf)

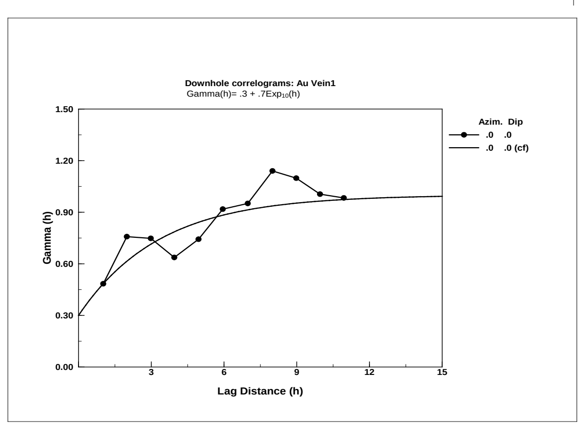

Downhole correlograms: Au Vein1
Gamma(h)= .3 + .7Exp$_{10}$(h)
Gamma (h)
Lag Distance (h)
Azim. Dip
.0 .0
.0 .0 (cf)

Figure 14.36 Modelled Directional and Down hole Correlograms for Vein 1 and Vein 1FW

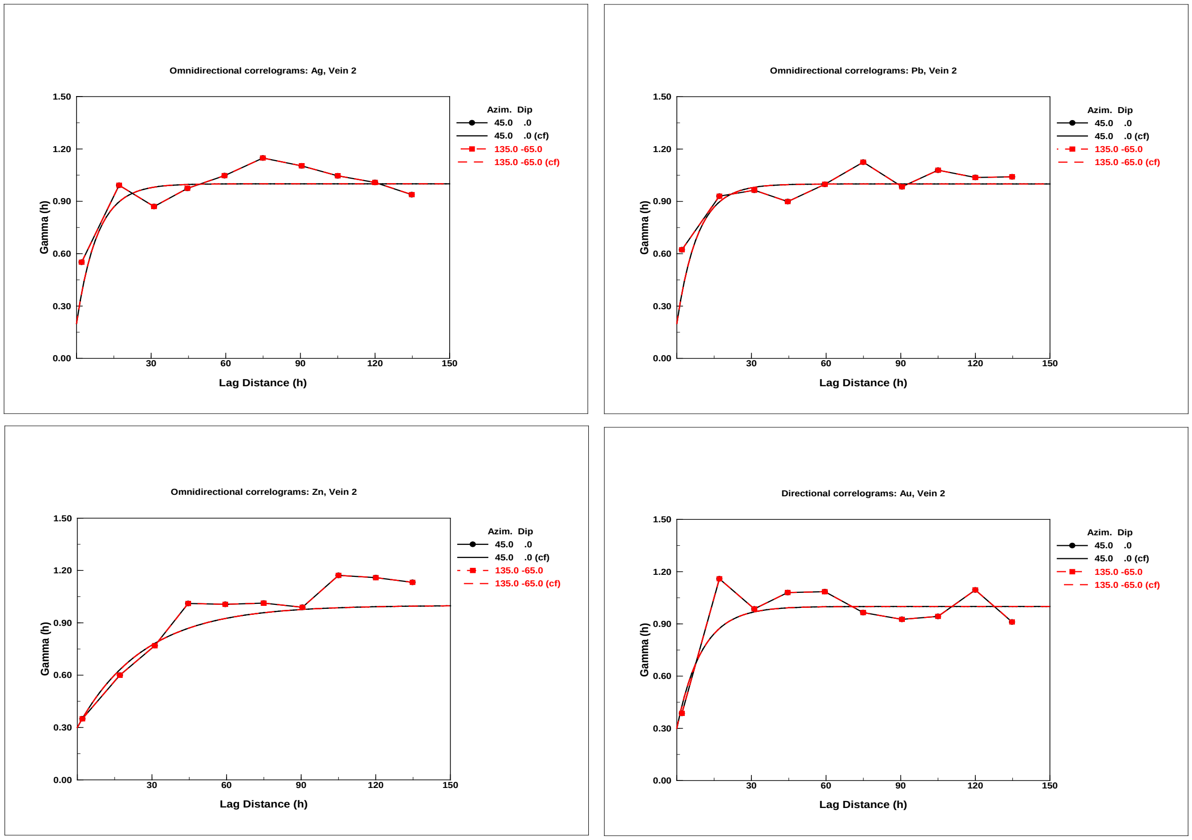


Figure 14.37: Modeled Omnidirectional Correlograms for Vein 2

Table 14.24 Modelled Correlograms for Onek Veins

Metal	Zone	Nugget C_0	Sill C	Gemcom Rotations (RRR rule)			Range a		
				around Z	around Y	around Z	X-Rot	Y-Rot	Z-Rot
Silver	Vein 1 and Vein 1FW	0.20	0.80	-45	65	0	60	30	11
	Vein 2	0.20	0.80	-45	65	0	25	25	10
Lead	Vein 1 and Vein 1FW	0.20	0.80	-45	65	0	60	40	8
	Vein 2	0.20	0.80	-45	65	0	25	25	10
Zinc	Vein 1 and Vein 1FW	0.15	0.85	-45	65	-70	60	40	8
	Vein 2	0.30	0.70	-45	65	0	80	80	7
Gold	Vein 1 and Vein 1F	0.30	0.70	-45	65	0	70	50	10
	Vein 2	0.30	0.70	-45	65	0	30	30	10

14.8.8 Statistical Analysis and Variography for the Bermingham Deposit

Summary statistics were compiled for the composite data for the Bermingham and Bermingham Footwall veins (Table 14.25). A total of 82 composites were derived for the Bermingham Vein and 64 composites for the Bermingham Footwall Vein. Correlation analysis between commodities indicates some correlation between silver and lead, and between silver and gold, with correlation coefficients of 0.75.

Table 14.25 Composite Data Summary Statistics for Bermingham

Type	Statistic	Ag g/t	AgCap g/t	Au g/t	AuCap g/t	Pb %	PbCap %	Zn %	ZnCap %
Total Composites	Number of Samples	146	146	146	146	146	146	146	146
	Average	419	346	0.064	0.061	1.47	1.43	1.71	1.68
	Minimum	3	3	0.005	0.005	0.01	0.01	0.02	0.02
	Maximum	4059	1500	0.408	0.200	13.93	10.00	13.28	10.00
	St Dev.	653	425	0.061	0.050	2.39	2.23	2.00	1.88
	CV	1.56	1.23	0.962	0.821	1.63	1.56	1.17	1.12
Bermingham Vein	Number of Samples	82	82	82	82	82	82	82	82
	Average	436	371	0.065	0.060	1.78	1.76	1.73	1.73
	Minimum	3	3	0.005	0.005	0.02	0.02	0.06	0.06
	Maximum	4059	1500	0.408	0.200	11.18	10.00	10.20	10.00
	St Dev.	721	490	0.068	0.050	2.61	2.54	1.91	1.89
	CV	1.65	1.32	1.0458	0.8302	1.46	1.44	1.10	1.09
Bermingham Footwall Vein	Number of Samples	64	64	64	64	64	64	64	64
	Average	399	315	0.063	0.062	1.07	1.01	1.67	1.62
	Minimum	3	3	0.005	0.005	0.01	0.01	0.02	0.02
	Maximum	2640	1000	0.245	0.200	13.93	10.00	13.28	10.00
	St Dev.	554	321	0.052	0.050	2.02	1.66	2.12	1.86
	CV	1.39	1.02	0.834	0.808	1.89	1.65	1.27	1.15

Due to the limited number of samples in each of the Bermingham and Bermingham Footwall veins, experimental semi-variograms could not be generated for silver, lead, zinc, or gold from composite grade data for these veins, so interpolation of grades were was carried out by inverse distance squared method instead of Ordinary Kriging.

14.9 Block Model and Grade Estimation

14.9.1 Block Model and Grade Estimation for the Bellekeno Mine

A rotated block model was constructed to cover the entire extent of the mineralized veins. The block model includes separate submodels for silver, lead, zinc, and gold grade estimates, as well as bulk density, classification criteria, validation estimates, and a calculated block value. A block percentage model was used to accurately determine volume and tonnage values based on the supplied vein wireframes by Alexco. The geometrical parameters of the block model are summarized in Table 14.26.

Table 14.26: Block Model Location and Setup (ISATIS convention)

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block model origin (NAD 83 Zone 8N)	486,450	7,086,000	750
Block dimensions (metres)	2	2	2
Number of blocks	125	750	275
Rotation (degree)	32° (clockwise)		

Grades were interpolated into blocks using an inverse distance estimator (power of two) and search ellipses were set up to parallel the strike and dip of the veins. For silver, lead, zinc, and gold, a two-pass series of expanding search ellipsoids was used for sample selection and estimation.

Composite data used for the estimation was restricted to samples located in the respective veins. Individual block grades were used to calculate a NSR block model. Estimation criteria for each vein zone are summarized in Table 14.27. Blocks were classified as Indicated mineral resources if at least two drill holes and six composites were found within a 30 by 30 m search ellipse. All other interpolated blocks were classified as Inferred mineral resource.

Table 14.27: Search Ellipse Parameters for the Bellekeno Mine

Commodity	Search Pass	ISATIS Rotations			Range			Number of Composites		Max. Samples per hole
		Principal Azimuth	Principal Dip	Intermed Azimuth	X-Rot	Y-Rot	Z-Rot	Min.	Max.	
SW Vein Ag, Pb, Zn	1	-32	77	0	50	25	20	2	10	2
	2	-32	77	0	100	50	20	2	10	2
99 Vein Ag, Pb, Zn,	1	-44	79	0	30	30	30	2	10	2
	2	-44	79	0	60	60	60	2	10	2
East Vein Ag, Pb, Zn	1 2	-32	78	0	30 60	30 60	30 60	2	10	2

14.9.2 Block Model and Grade Estimation for the Lucky Queen Mine

A rotated block model was constructed to cover the entire extent of the mineralized veins as defined by Alexco. The block model includes separate submodels for silver, lead, zinc, and gold grade estimates, as well as estimated bulk density, classification criteria, validation estimates, and a calculated block value. A block percentage model was used to accurately determine volume and tonnage values based on the supplied Alexco vein wireframes. The geometrical parameters of the block model are summarized in Table 14.28.

Table 14.28: Block Model Location and Setup for the Lucky Queen Mine

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block model origin (NAD 83 Zone 8N)	486,900	7,091,300	1,200
Block dimensions (metres)	10	10	10
Number of blocks	70	100	50
Rotation (degree)	-50° counter-clockwise		

An inverse distance estimator (power of two) was used for the estimation of block grades. A two-pass series of expanding search ellipsoids with varying minimum sample requirements was used for sample selection and estimation, with the primary and secondary axes of the search ellipsoid defined by the silver semi-variogram range. Composite data used during estimation were restricted to samples located in their respective domain. Individual block grades were then used to calculate a block model. For the second pass, estimation results were also iteratively queried to ensure that all potential mineral resources within the defined domains were estimated. Estimation criteria are summarized in Table 14.29.

During the first pass, four to 12 composites from two or more drill holes within a search ellipsoid corresponding to 50% of the semi-variogram range were required for the estimation. All blocks estimated during the first pass were classified as Indicated (Table 14.29).

During the second pass, the search ellipse was expanded to ensure that all blocks within the defined vein and splay models were estimated. Between four to 12 composites from one or more drill holes were used for estimation. All blocks estimated during the second pass were classified as Inferred. All splay resources were also classified as Inferred due to the small number of total samples for this domain.

Table 14.29: Search Ellipse Parameters for the Lucky Queen Mine

Estimator	Search Pass	Search Type	Rotation		Search Ellipse Size			Number of Composites		Max. Samples per hole
			Z	Y	X (m)	Y (m)	Z (m)	Min.	Max.	
ID2	1	Ellipse	0°	50°	50	50	10	4	12	3
ID2	2	Ellipse	0°	50°	300	300	60	4	12	0

14.9.3 Block Model and Grade Estimation for the Flame & Moth Deposit

A rotated block model was constructed to cover the entire extent of the mineralized veins as defined by Alexco. The block model includes separate submodels for silver, lead, zinc, and gold grade estimates, as well as estimated bulk density, classification criteria, validation estimates, and a calculated block value. A block percentage model was used to accurately determine volume and tonnage values based on the supplied Alexco vein wireframes. The geometrical parameters of the block model are summarized in Table 14.30.

Table 14.30: Block Model Location and Setup for the Flame & Moth Deposit

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block Model Origin (NAD 83 Zone 8N)	483550	7086370	920
Block Dimensions (metres)	3	5	5
Number of Blocks	115	165	90
Rotation (degree)	30° clockwise		

Grades were interpolated into blocks using the ID2 method and search ellipses were set up to parallel the strike and dip of the veins. For silver, lead, zinc, and gold, a two-pass series of expanding search ellipsoids was used for sample selection and estimation.

Composite data used for the estimation was restricted to samples located in the respective veins. Individual block grades were used to calculate a block model. Estimation criteria for each vein zone are summarized in Table 14.31. Blocks were classified as Indicated mineral resources if at least two drill holes and six composites were found within a 60 by 60 m search ellipse. All other interpolated blocks were classified as Inferred mineral resource.

Table 14.31: Search Ellipse Parameters for the Flame & Moth Deposit

Commodity	Search Pass	Model Rotations			Range			Number of Composites		Max. Samples per Core Drill Hole
		Principal Azimuth	Principal Dip	Intermed. Azimuth	X-Rot	Y-Rot	Z-Rot	Min.	Max.	
Ag, Pb, Zn, Au	1	40	-35	0	60	60	20	6	12	4
	2	40	-35	0	100	100	40	6	12	4
Density	1	40	-35	0	60	60	20	4	8	3
	2	40	-35	0	100	100	40	4	8	3
	3	40	-35	0	100	100	40	2	8	1

14.9.4 Block Model and Grade Estimation for the Onek Deposit

A rotated block model was constructed to cover the entire extent of the mineralized veins as defined by Alexco. The block model includes separate sub-models for silver, lead, zinc and gold grade estimates, as well as estimated specific gravity, classification criteria, validation estimates and a calculated block dollar value. A block percentage model was used to accurately determine volume and tonnage values based on the supplied Alexco vein wireframes and the percentage contained within the underground workings removed from the vein percentage to account for the mined out volume. The geometrical parameters of the block model are summarized in Table 14.32.

Table 14.32: Onek Block Model Location and Setup

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block Model Origin NAD 83	485350	7087200	1120
Block Dimensions (metres)	3	5	10
Number of Blocks	80	150	80
Rotation (degree)	50° clockwise		

Ordinary Kriging ("OK") of capped composite values was used for the estimation of block grades. Because of the strong correllation between density and contained metal, all grades were weighted against density and a grade times density model was prepared for silver, lead, zinc and gold. Interpolation was carried out in two passes with expanding search ellipsoids with the primary and secondary axes of the search ellipsoid defined by the correlogram ranges. For Vein 1 and Vein 1F a third pass was used for sample selection and estimation of silver. Correlogram and search parameters derived for Vein 1 were applied to Vein 1 FW with varying minimum and maximum number of samples required for estimation.

Composite data used for estimation was restricted to samples located in the respective veins. Individual block grades were used to calculate a dollar equivalent value for each block. Estimation criteria for Vein 1, Vein 1F and Vein 2 are summarized in Table 14.33, Table 14.34, and Table 14.35, respectively. Blocks were classified as Indicated mineral resources if at least two drill holes and five composite were found within a 60 m by 30 m search ellipse. All other interpolated blocks were classified as Inferred mineral resource.

Table 14.33: Search ellipse parameters for Onek Vein 1

Commodity	Estimator	Search Pass	Search Type	Rotation			Search Ellipse Size			Number of Composites		Max. Samples per DDH
				Z	Y	Z	X (m)	Y (m)	Z (m)	Min.	Max.	
Ag	OK	1	Ellipsoidal	5°	65°	90°	60	30	11	5	10	3
	OK	2	Ellipsoidal	5°	65°	90°	90	45	33	5	10	3
	OK	3	Ellipsoidal	5°	65°	90°	30	30	33	1	10	-
Pb	OK	1	Ellipsoidal	5°	65°	0°	60	40	8	4	10	3
	OK	2	Ellipsoidal	5°	65°	0°	90	60	32	4	10	3
Zn	OK	1	Ellipsoidal	5°	65°	0°	60	40	8	4	10	3
	OK	2	Ellipsoidal	5°	65°	0°	90	60	32	4	10	3
Au	OK	1	Ellipsoidal	5°	65°	0°	70	50	10	5	10	3
	OK	2	Ellipsoidal	5°	65°	0°	105	75	30	5	10	3

Table 14.34: Search ellipse parameters for Onek Vein 1F

Commodity	Estimator	Search Pass	Search Type	Rotation			Search Ellipse Size			Number of Composites		Max. Samples per DDH
				Z	Y	Z	X (m)	Y (m)	Z (m)	Min.	Max.	
Ag	OK	1	Ellipsoidal	5°	65°	90°	60	30	11	3	10	2
	OK	2	Ellipsoidal	5°	65°	90°	90	45	33	3	10	2
	OK	3	Ellipsoidal	5°	65°	90°	30	30	33	1	10	-
Pb	OK	1	Ellipsoidal	5°	65°	0°	60	40	8	3	10	2
	OK	2	Ellipsoidal	5°	65°	0°	90	60	32	3	10	2
Zn	OK	1	Ellipsoidal	5°	65°	0°	60	40	8	3	10	2
	OK	2	Ellipsoidal	5°	65°	0°	90	60	32	3	10	2
Au	OK	1	Ellipsoidal	5°	65°	0°	70	50	10	3	10	2
	OK	2	Ellipsoidal	5°	65°	0°	105	75	30	3	10	2

Table 14.35: Search ellipse parameters for Onek Vein 2

Commodity	Estimator	Search Pass	Search Type	Rotation			Search Ellipse Size			Number of Composites		Max. Samples per DDH
				Z	Y	Z	X (m)	Y (m)	Z (m)	Min.	Max.	
Ag	OK	1	Ellipsoidal	5°	65°	0°	25	25	10	4	10	3
	OK	2	Ellipsoidal	5°	65°	0°	75	75	30	4	10	3
Pb	OK	1	Ellipsoidal	5°	65°	0°	25	25	10	4	10	3
	OK	2	Ellipsoidal	5°	65°	0°	75	75	30	4	10	3
Zn	OK	1	Ellipsoidal	5°	65°	0°	80	80	7	4	10	3
	OK	2	Ellipsoidal	5°	65°	0°	120	120	21	4	10	3
Au	OK	1	Ellipsoidal	5°	65°	0°	30	30	10	4	10	3
	OK	2	Ellipsoidal	5°	65°	0°	75	75	30	4	10	3

14.9.5 Block Model and Grade Estimation for the Bermingham Deposit

A rotated block model was constructed to cover the entire extent of the mineralized veins as defined by Alexco. The block model includes separate sub-models for silver, lead, zinc, and gold grade estimates, as well as estimated specific gravity, classification criteria, validation estimates, and a calculated block NSR value. A block percentage model was used to accurately determine volume and tonnage values based on the supplied Alexco vein wireframes. The geometrical parameters of the block model are summarized in Table 14.36.

Table 14.36 Bermingham Block Model Location and Setup Table

Description	Easting (X)	Northing (Y)	Elevation (Z)
Block Model Origin NAD 83	478550	7086570	1340
Block Dimensions (m)	3	5	5
Number of Blocks	65	115	90
Rotation (degree)	25° clockwise		

Grades were interpolated into blocks using the inverse distance squared (ID^2) method and search ellipses were set up to parallel the strike and dip of the veins. For silver, lead, zinc, and gold, a two-pass series of expanding search ellipsoids was used for sample selection and estimation.

Composite data used for estimation was restricted to samples located in the respective veins. Individual block grades were used to calculate a NSR block model. Estimation criteria for both veins are summarized in Table 14.37. Blocks within the Bermingham Vein were classified as Indicated mineral resources if at least two drill holes and four composites were found within a 40 by 40 m search ellipse. Within the Bermingham Footwall Vein, blocks were classified as Indicated mineral resources if at least two drill holes and four composites were found within a 40 by 60 m search ellipse. All other interpolated blocks were classified as Inferred mineral resource.

Table 14.37: Search ellipse parameters for Bermingham

Vein	Commodity	Estimator	Search Pass	Rotation			Search Ellipse Size			Number of Composites		Max. Samples per DDH
				Azm	Dip	Azm	X (m)	Y (m)	Z (m)	Min.	Max.	
Bermingham	Ag, Au, Pb, Zn, Density	ID	1	45	-35	0	40	40	3	4	8	3
		ID	2	45	-35	0	80	80	40	4	8	3
Bermingham Footwall	Ag, Au, Pb, Zn, Density	ID	1	50	-15	0	40	60	6	4	8	3
		ID	2	50	-15	0	80	100	40	4	8	3

14.10 Model Validation and Sensitivity

14.10.1 Model Validation and Sensitivity for the Bellekeno Mine

The block model was validated visually by the inspection of successive section lines in order to confirm that the block model correctly reflects the distribution of high-grade and low-grade samples. The average composite sample grades for all blocks containing composite samples (informed blocks) were compared to the ID^2 estimates using scatter plots. Both Inferred and Indicated blocks were plotted for both zones. The scatter plots for silver, lead, and zinc for blocks in the SW, 99, and East zones are displayed in Figure 14.38, Figure 14.39, and Figure 14.40 shows an acceptable correlation between informed and estimated blocks.

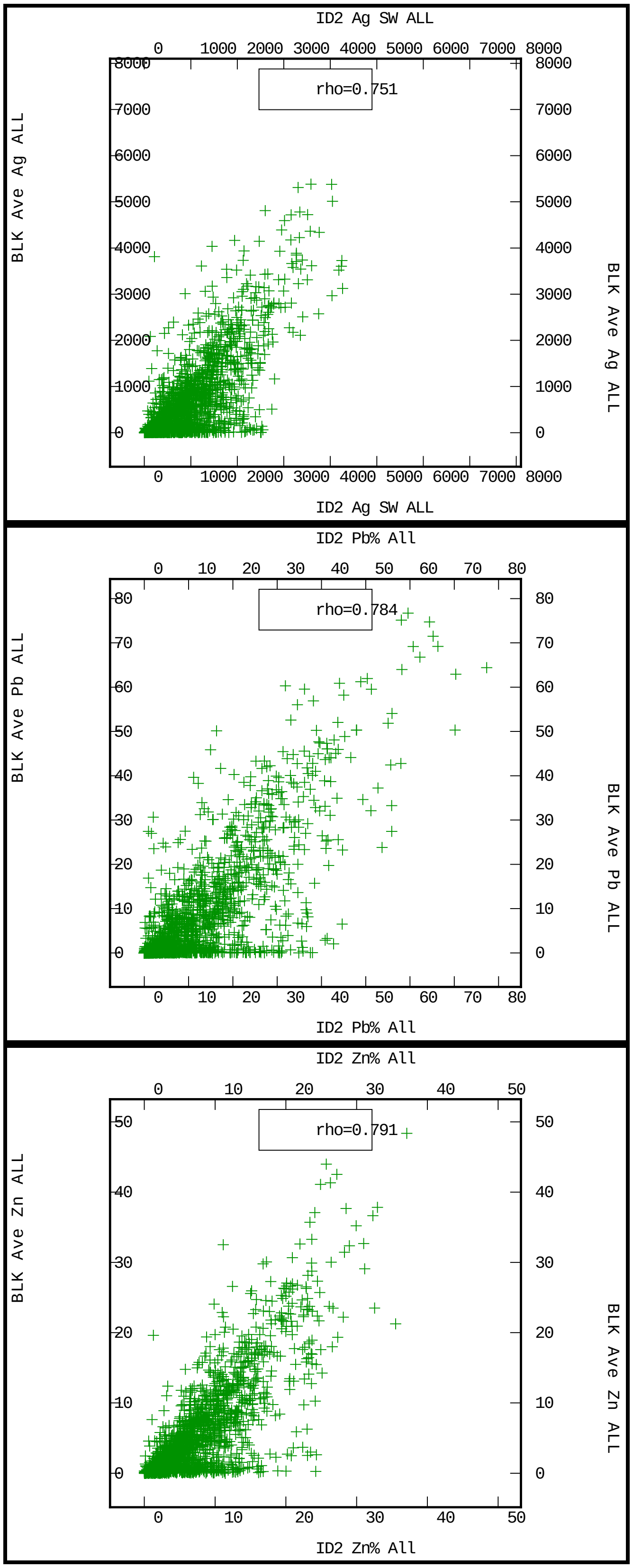


Figure 14.38: Comparison of ID² and Average Sample Grades for Silver, Lead, and Zinc, 48 Vein Southwest Zone (Alexco, 2013)

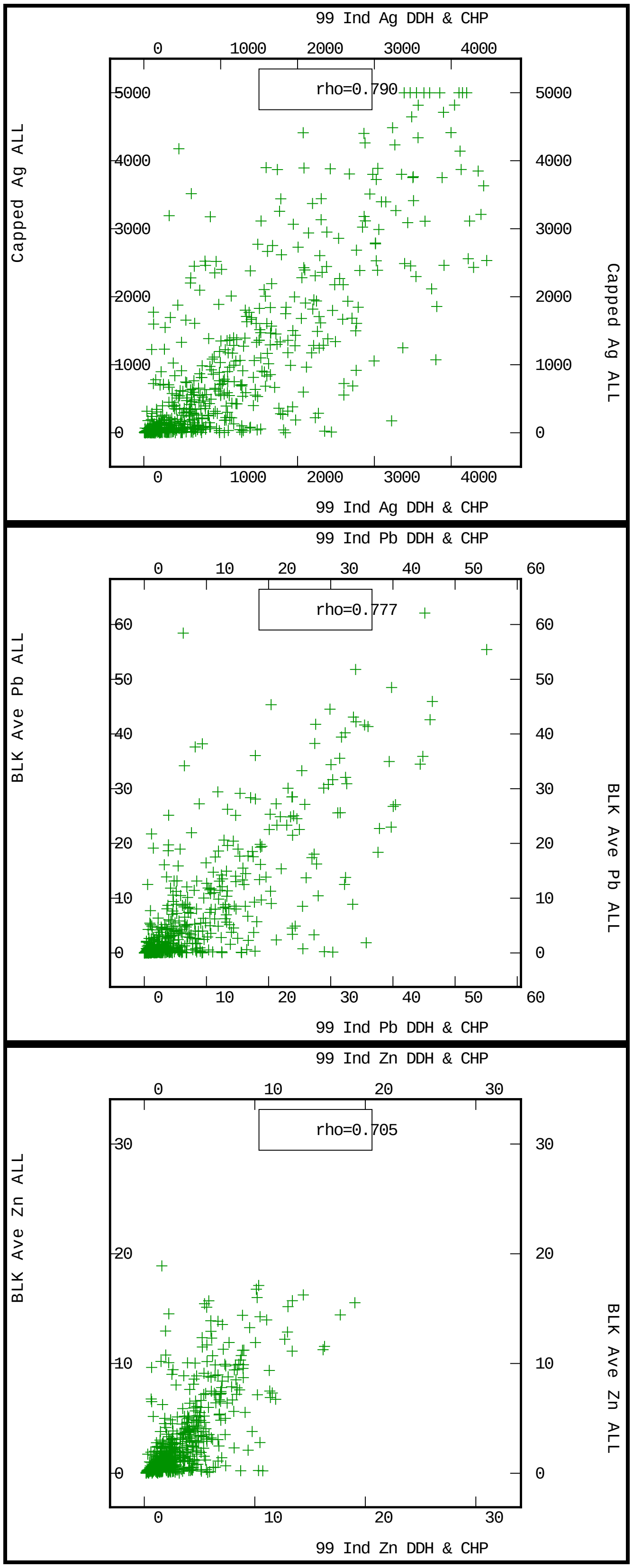


Figure 14.39: Comparison of ID^2 and Average Sample Grades for Silver, Lead, and Zinc, 48 Vein, 99 Zone (Alexco, 2013)

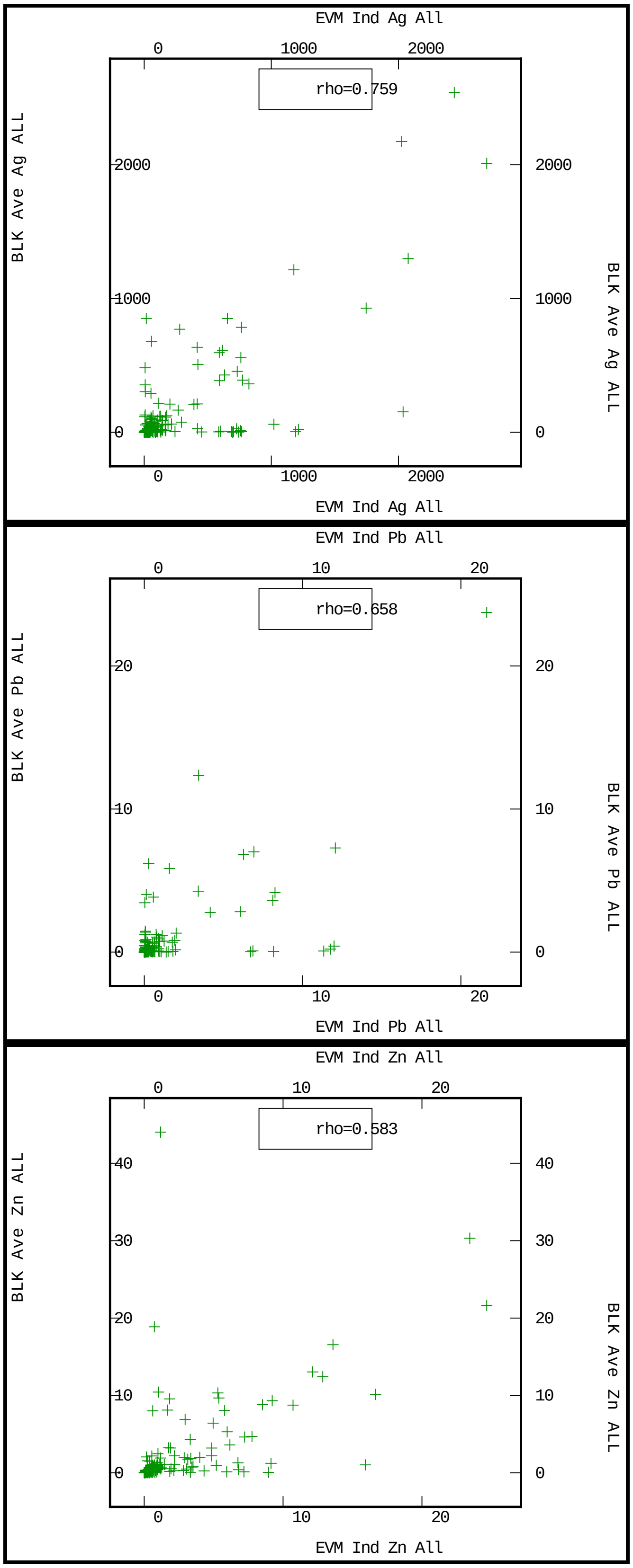


Figure 14.40: Comparison of ID^2 and Average sample grades for Silver, Lead, and Zinc, 48 Vein, East Zone (Alexco, 2013)

Table 14.38 tabulates global quantities and grade estimates at different cut-off grades for the Bellekeno deposit. Figure 14.41 presents the effects of increasing cut-offs on the tonnage and grade of the deposit. The reader is cautioned that these figures should not be misconstrued as a mineral resource. The reported quantities and grades are only presented as a sensitivity of the resource model to the selection of cut-off grades.

Table 14.38: Bellekeno Inferred and Indicated Block Model Quantity and Grade Estimates* at Various Cut-Off Values**

Cut-Off (C$)	Indicated		Inferred	
	Tonnes	Ag (gpt)	Tonnes	Ag (gpt)
$200	356473	670	230903	442
$185	365037	658	242634	428
$180	367934	656	246445	423
$160	379177	640	263052	405
$140	391963	623	279851	387
$120	407438	604	296204	371
$100	426986	581	313408	355

The reader is cautioned that the figures presented in this table should not be misconstrued as a Mineral Resource Statement. The reported quantities and grades are only presented to show the sensitivity of the resource model to the selection of a cut-off grade.

C$ values calculated at 1C$ = 1US$

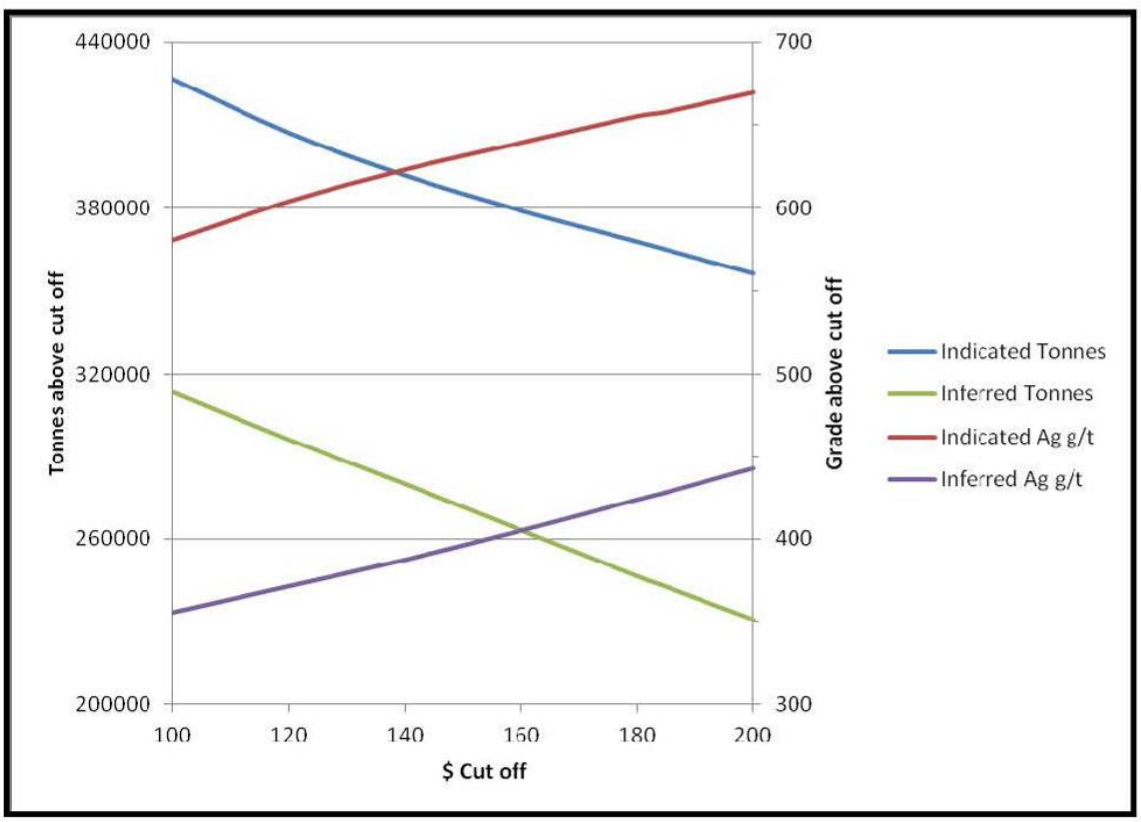


Figure 14.41: Grade Tonnage Curve for Bellekeno (Alexco, 2013)

14.10.2 Model Validation and Sensitivity for the Lucky Queen Mine

The block model was validated visually by the inspection of successive section lines in order to confirm that the block model correctly reflects the distribution of high-grade and low-grade samples.

Trend analysis for the Lucky Queen mineral resource estimate demonstrates a minimal global bias and slight smoothing of the inverse distance estimates as compared to a nearest neighbor (NN) estimates, and correctly reflects grade trends along the strike of the deposit (Figure 14.42). An additional validation check was completed by comparing the undiluted inverse distance estimates to undiluted nearest neighbour estimates generated using the same search criteria and tabulated at a zero cut-off (Table 14.39). The observed difference between two models average block estimates are a function of the sharp grade drop immediately adjacent to the high-grade core of the vein.

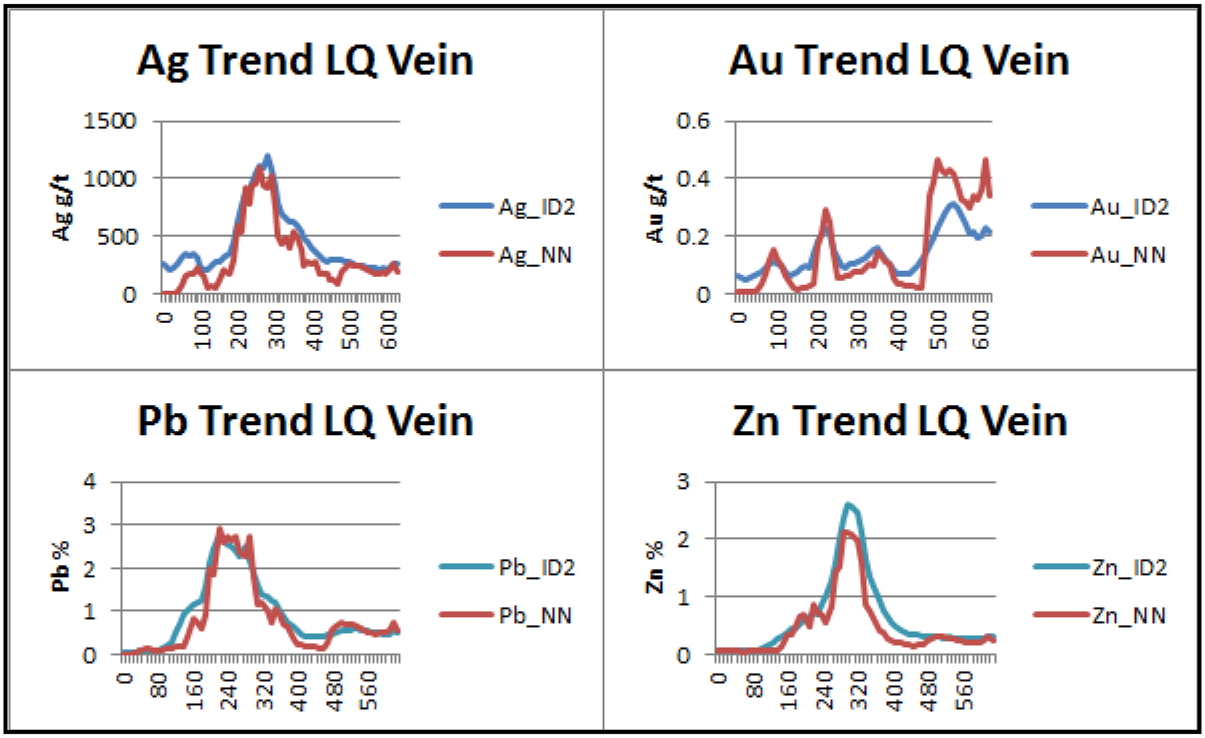


Figure 14.42: Swath Comparison of ID2 and NN Estimation (SRK, 2011)

Table 14.39: Nearest Neighbour Block Model Validation

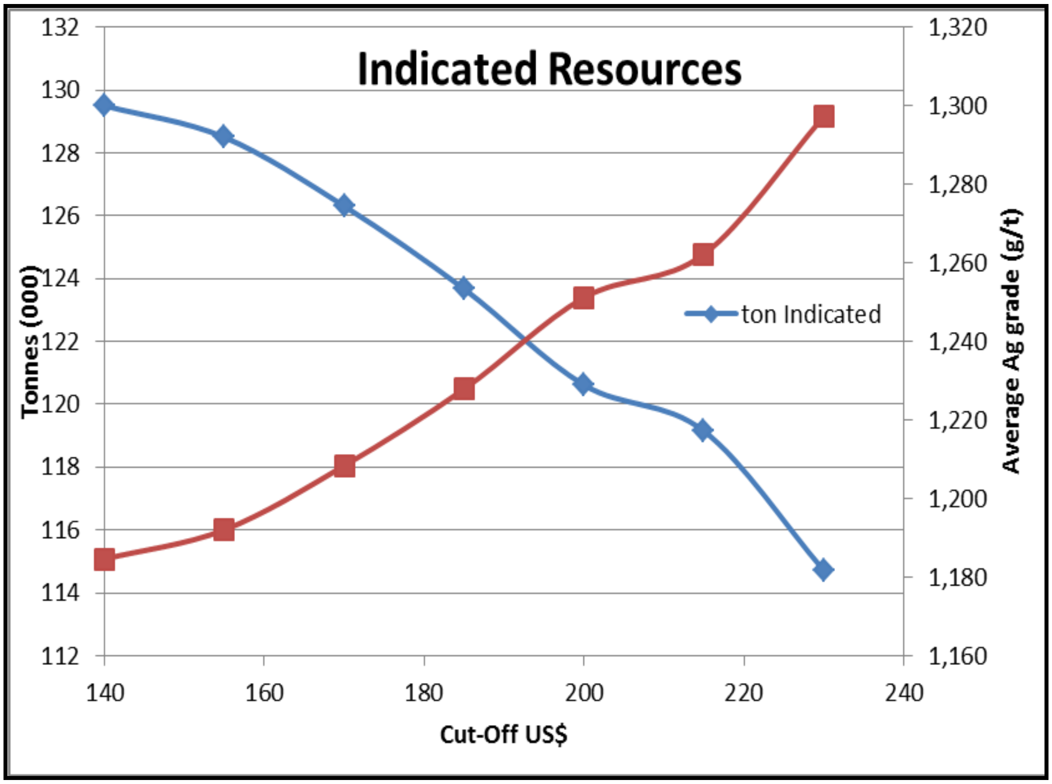
Variable	Inverse Distance Block Average	Nearest Neighbour Block Average
Ag (gpt)	545	452
Au (gpt)	0.14	0.15
Pb (%)	1.22	1.14
Zn (%)	0.82	0.70

The Lucky Queen mineral resources are not sensitive to the selection of a cut-off grade. Table 14.40 shows the global quantities and grade estimates at different cut-off grades for the Lucky Queen vein and Figure 14.43 represents the effects of increasing cut-off grades on the tonnage and grade of the Lucky Queen deposit. The reader is cautioned that these figures should not be misconstrued as a mineral resource. The reported quantities and grades are only presented as a sensitivity of the resource model to the selection of cut-off grades.

Table 14.40: Lucky Queen Mine Indicated and Inferred Block Model Quantity and Grade Estimates* at Various Cut-off Values

Cut-Off (C$)	Indicated Tonnes	Ag (gpt)	Inferred Tonnes	Ag (gpt)
$230	115,000	1,297	121,000	633
$215	119,000	1,262	133,000	607
$200	121,000	1,250	142,000	590
$185	**124,000**	**1,227**	**152,000**	**571**
$170	126,000	1,207	166,000	546
$155	128,000	1,191	186,000	516
$140	130,000	1,183	212,000	482

The reader is cautioned that the figures presented in this table should not be misconstrued as a Mineral Resource Statement. The reported quantities and grades are only presented to show the sensitivity of the resource model to the selection of a cut-off grade.



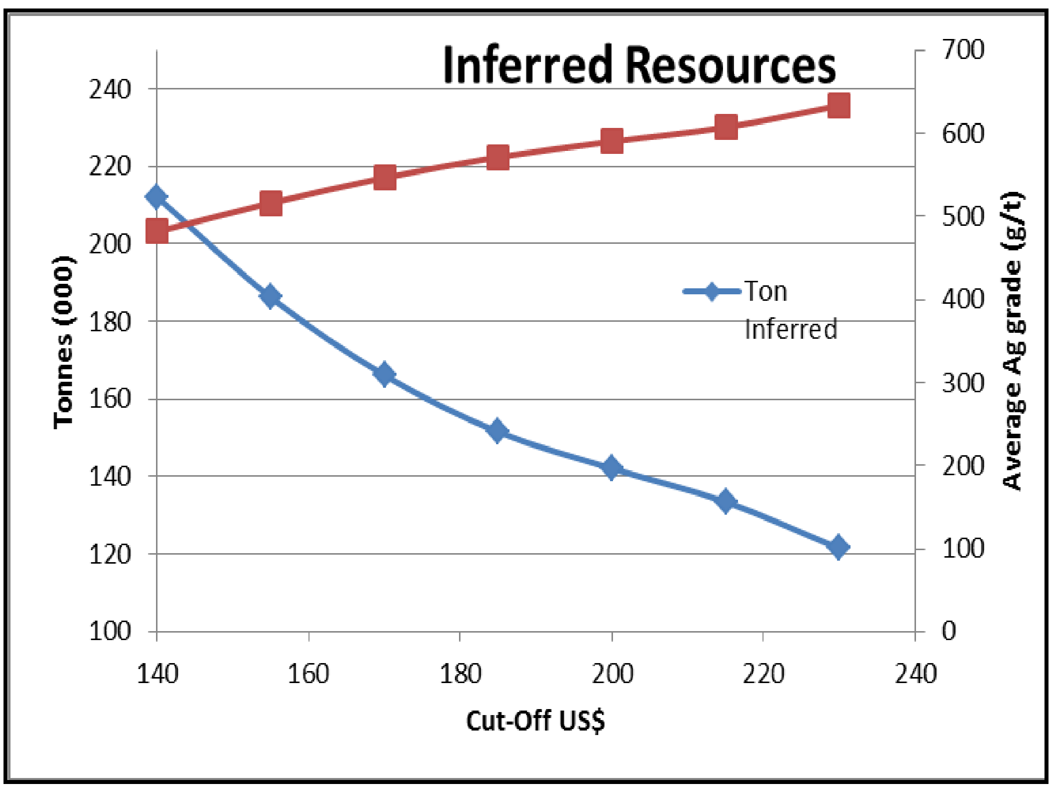


Figure 14.43: Grade Tonnage Curve for Lucky Queen (SRK, 2011)

14.10.3 Model Validation and Sensitivity for the Flame & Moth Deposit

The block model was validated visually by the inspection of successive section lines in order to confirm that the block model correctly reflects the distribution of high-grade and low-grade samples. The average composite sample grades for all blocks containing composite samples (informed blocks) were compared to the ID^2 estimates using scatter plots. Due to the small number of informed blocks, both Inferred and Indicated blocks were plotted for both zones. The scatter plots for silver, lead, zinc, and gold for blocks in the Christal zones are displayed in Figure 14.44 and show an excellent correlation between informed and estimated blocks.

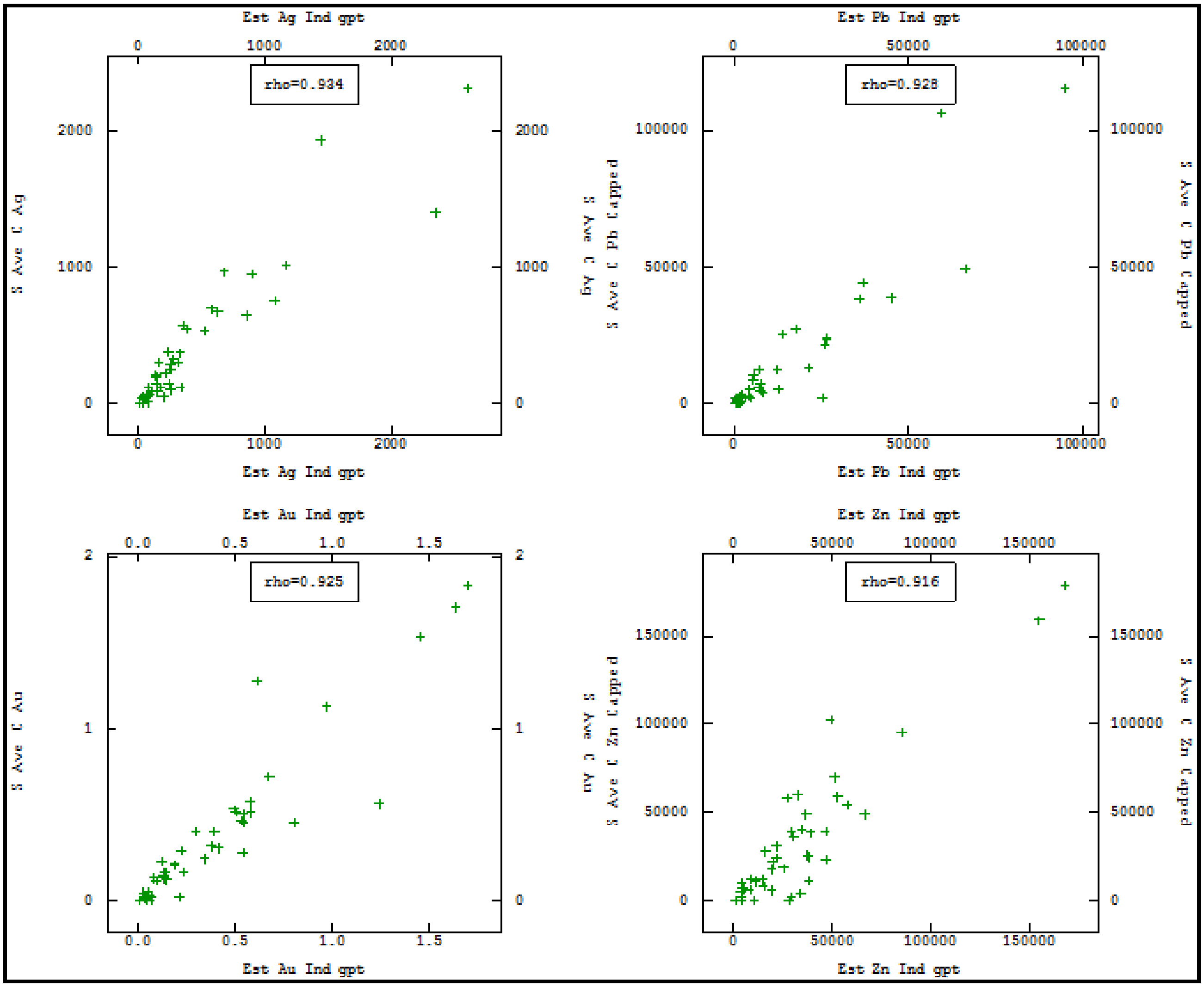


Figure 14.44: Comparison of ID^2 and Average Sample Grades for Christal Zone (Alexco, 2013)

Table 14.41 tabulates global quantities and grade estimates at different cut-off values for the Flame & Moth deposit.

Table 14.41: Flame & Moth Deposit Indicated and Inferred Block Model Quantity and Grade Estimates* at Various Cut-Off Values**

Cut-Off (C$)	Indicated		Inferred	
	Tonnes	Ag (gpt)	Tonnes	Ag (gpt)
$130	1,486,000	488	168,000	250
$185	**1,378,000**	**516**	**107,000**	**313**
$230	1,278,000	543	82,000	356
$260	1,213,000	561	71,000	379
$300	1,124,000	587	57,000	414

The reader is cautioned that the figures presented in this table should not be misconstrued as a Mineral Resource Statement. The reported quantities and grades are only presented to show the sensitivity of the resource model to the selection of a cut-off grade.

C$ values calculated at 1C$ = 1US$

Figure 14.45 presents the effects of increasing the cut-off grade on the tonnage and grade of the deposit. The reader is cautioned that these figures should not be misconstrued as a mineral resource. The reported quantities and grades are only presented as a sensitivity of the resource model to the selection of cut-off grades.

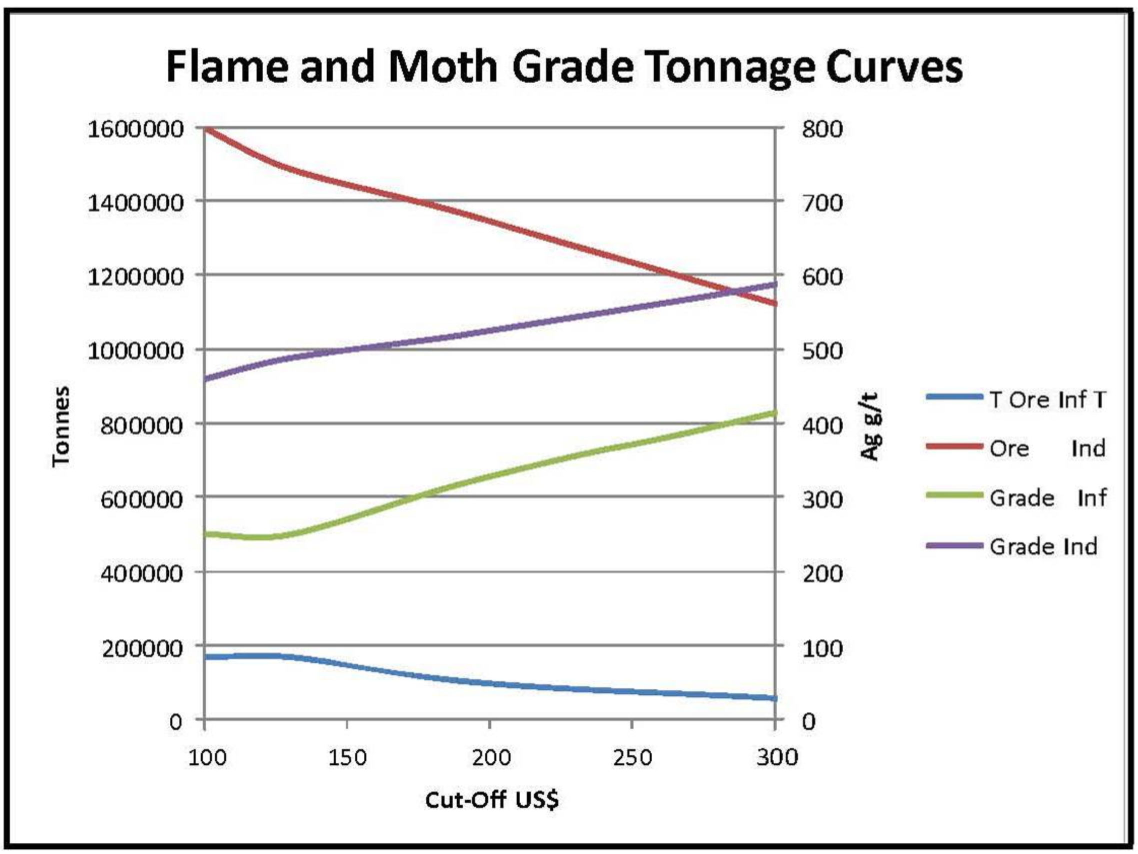


Figure 14.45: Grade Tonnage Curve for the Flame & Moth Deposit (Alexco, 2013)

14.10.4 Model Validation and Sensitivity for the Onek Deposit

The block model was validated visually by the inspection of successive section lines in order to confirm that the block model correctly reflects the distribution of high-grade and low-grade samples. An inverse distance squared estimate (“ID2”) was prepared for the blocks using the same search criteria and compared against the OK estimate. Analysis of OK versus ID2 estimates at various cut-off values for the Onek deposit demonstrate a slight smoothing of the OK estimate compared to the ID2 estimate for the indicated resource (Figure 14-47). For the inferred resource, OK estimate for silver show less smoothing than the ID2 estimate. Average grades of the OK and ID2 estimates for silver, lead, zinc and gold at a $185 NSR cut-off are compared in Table 14-43.

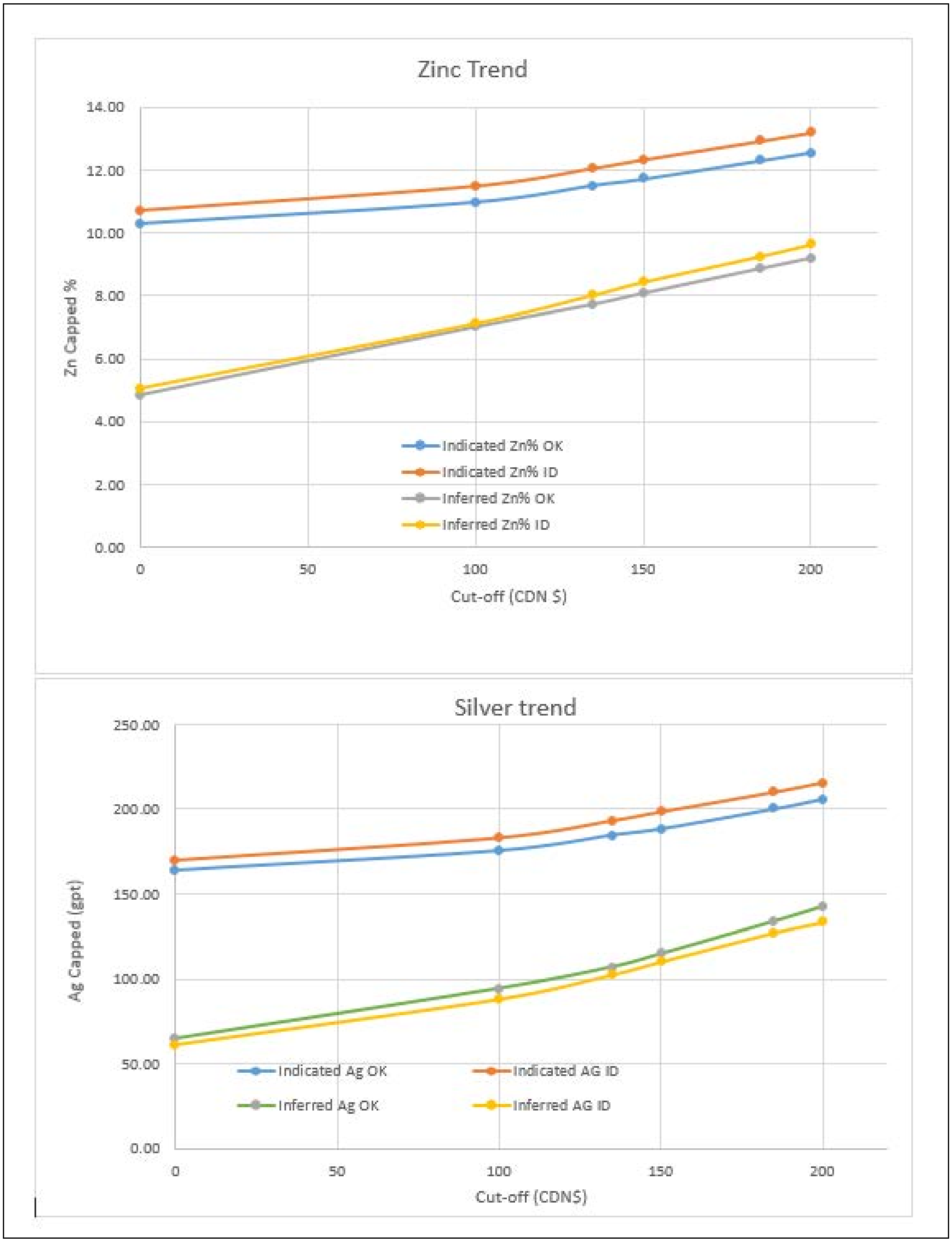


Figure 14.46: Comparison of OK and ID^2 estimation for Onek

Table 14.42 OK and ID2 Estimate at $185 Dollar Value cut-off

	INDICATED		INFERRED	
	OK	ID2	OK	ID2
Ag (g/t)	200	198	134	126
Pb (%)	1.29	1.31	1.24	1.26
Zn (%)	12.30	12.93	8.86	9.26
Au (g/t)	0.62	0.62	0.44	0.44

Table 14-44 tabulates global Indicated and Inferred quantities and grade estimates at different cutoff grades for the Onek deposit. Figure 14-47 represents the effects of increasing cut-offs on the tonnage and silver grade of the deposit and Figure 14-48 demonstrates the same for the zinc grade. The reader is cautioned that these figures should not be misconstrued as a mineral resource. The reported quantities and grades are only presented as a sensitivity of the resource model to the selection of the cutoff grades.

Table 14.43: Onek Global Block Model Quantity and Grade Estimates* at Various Dollar cut-off values*

Class	Dollar** Cut-off	Tons (000)	Ag Cap gpt	Au cap gpt	Pb cap %	Zn Cap %
Indicated	200	628	206	0.62	1.33	12.56
	185	654	200	0.62	1.29	12.30
	150	713	188	0.60	1.22	11.72
	135	733	185	0.59	1.20	11.52
	100	784	176	0.58	1.14	10.98
Inferred	200	211	143	0.45	1.26	9.19
	185	234	134	0.44	1.24	8.86
	150	300	115	0.42	1.13	8.08
	135	334	107	0.40	1.08	7.73
	100	404	94	0.38	0.97	7.02

**The reader is cautioned that the figures presented in this table should not be misconstrued as a mineral statement. The reported quantities and grades are only presented to show the sensitivity of the resource model at various cut-offs.*
***C$=0.90US$*

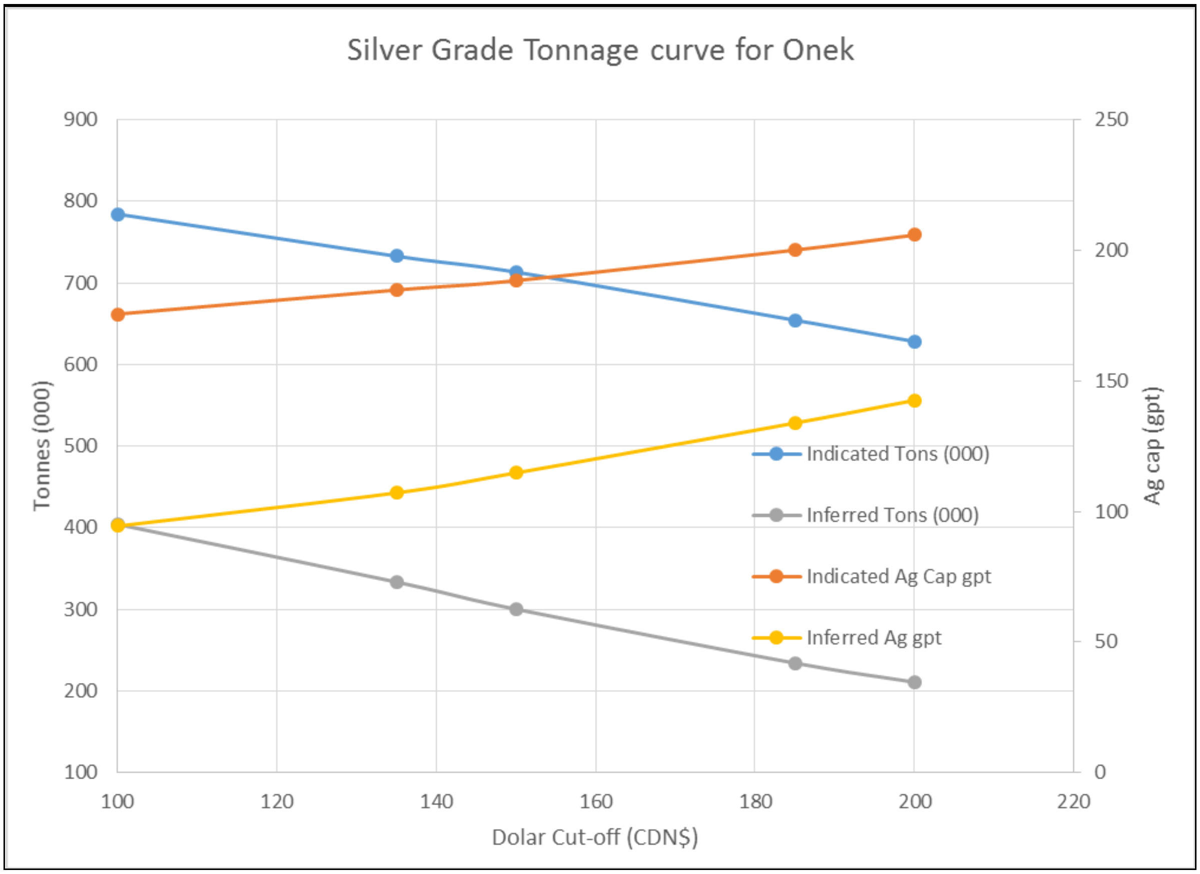


Figure 14.47: Silver Grade tonnage curve for Onek

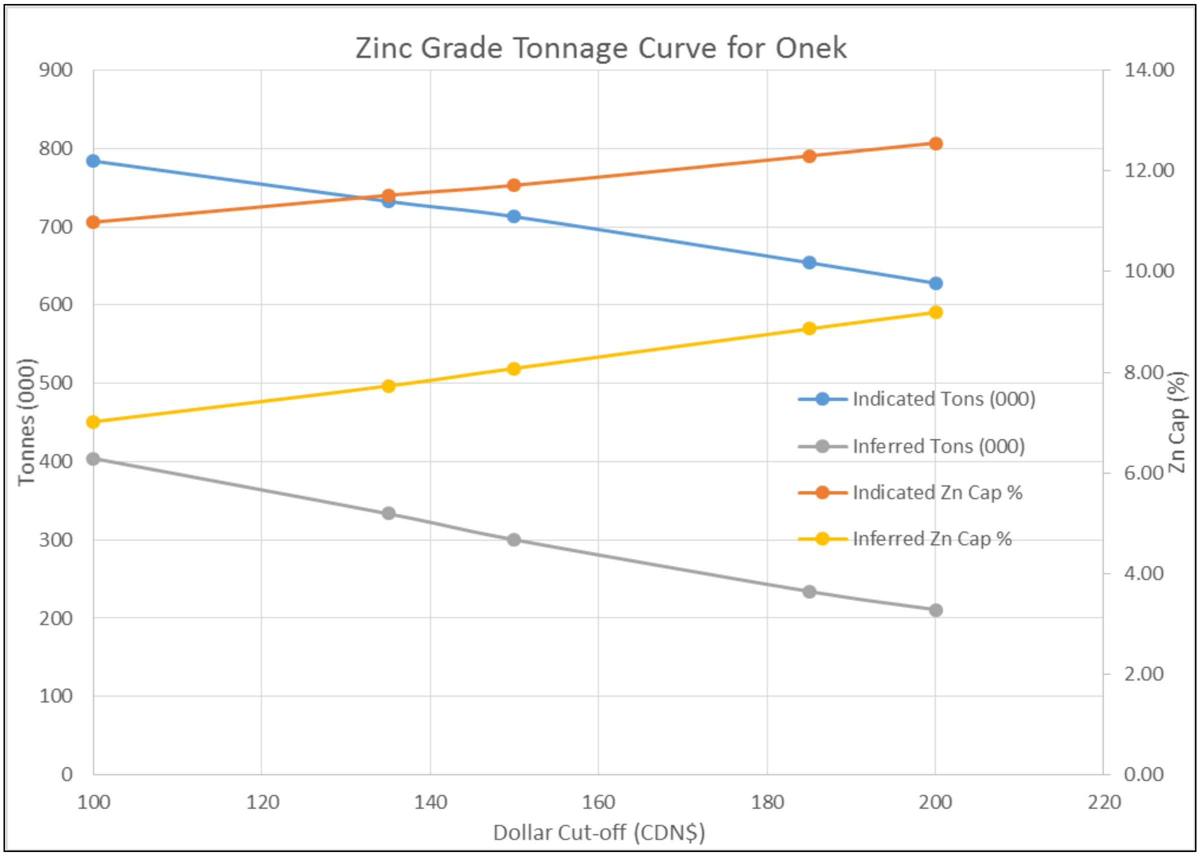


Figure 14.48 Zinc Grade Tonnage Curve for Onek

14.10.5 Model Validation and Sensitivity for the Bermingham Deposit

The block model was validated visually by the inspection of successive section lines in order to confirm that the block model correctly reflects the distribution of high-grade and low-grade samples. Zoning of silver, lead, and zinc grades across the Bermingham and Bermingham Footwall veins is seen in the assay data. The average composite sample grades for all blocks containing composite samples (informed blocks) were compared to the ID2 estimates using scatter plots. Both inferred and indicated blocks were plotted for both zones due to the small number of informed blocks. The scatter plots for silver, lead, zinc, and gold for blocks in both the Bermingham and Bermingham Footwall veins are displayed in Figure 14.49 and show fair correlation between informed and estimated blocks. Average sample grades for the informed blocks are compared against the average grade of the ID2 estimates for silver, lead, zinc, and gold in Table 14.44.

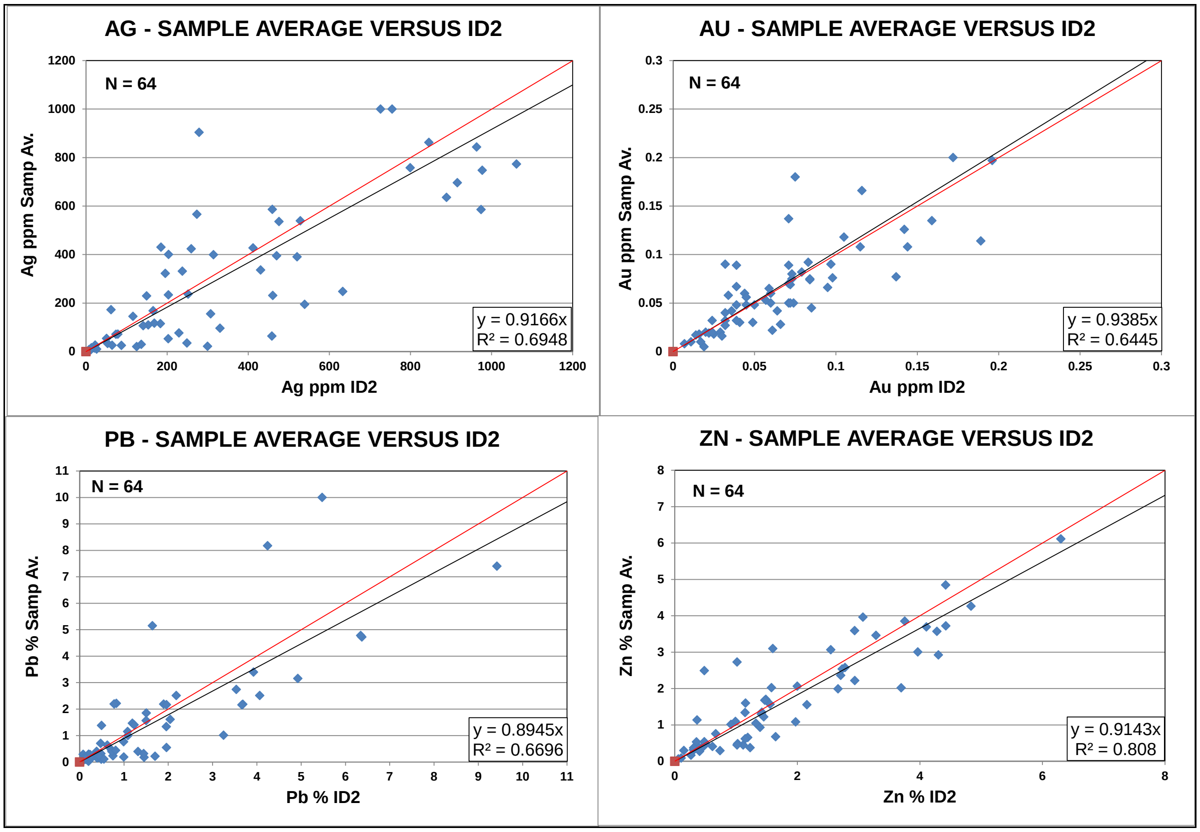


Figure 14.49: Comparison of ID^2 an Average sample grades

Table 14.44: Comparison of ID^2 and Average samples grades for informed blocks.

	Indicated			Inferred		
	No. Blocks	ID2	Sample Average	No. Blocks	ID2	Sample Average
Ag (g/t)	59	362	338	5	235	226
Pb (%)	59	1.68	1.53	5	0.21	0.20
Zn (%)	59	1.76	1.64	5	1.69	1.83
Au (g/t)	59	0.063	0.061	5	0.103	0.102

Table 14.45 tabulates global quantities and grade estimates at different cutoff grades for the Bermingham deposit. Figure 14.50 presents the effects of increasing cut-offs on the tonnage and grade of the deposit. The reader is cautioned that these figures should not be misconstrued as a mineral resource. The reported quantities and grades are only presented as a sensitivity of the resource model to the selection of the cutoff grades.

Table 14.45: Bermingham inferred and indicated block model quantity and grade estimates* at various NSR cut-off values**

NSR Cut-Off C$	Indicated		Inferred	
	Tonnes	Ag (g/t)	Tonnes	Ag (g/t)
C$ 200	246,822	470	94,995	383
C$ 185	**257,079**	**460**	**101,782**	**372**
C$ 150	282,428	434	136,748	321
C$ 125	296,729	421	157,163	298
C$ 100	310,637	407	167,643	287

** The reader is cautioned that the figures presented in this table should not be misconstrued as a mineral resource statement. The reported quantities and grades are only presented to show the sensitivity of the resource model to the selection of cut-off grade.*

*** C$ values calculated at 1C$ = 1US$*

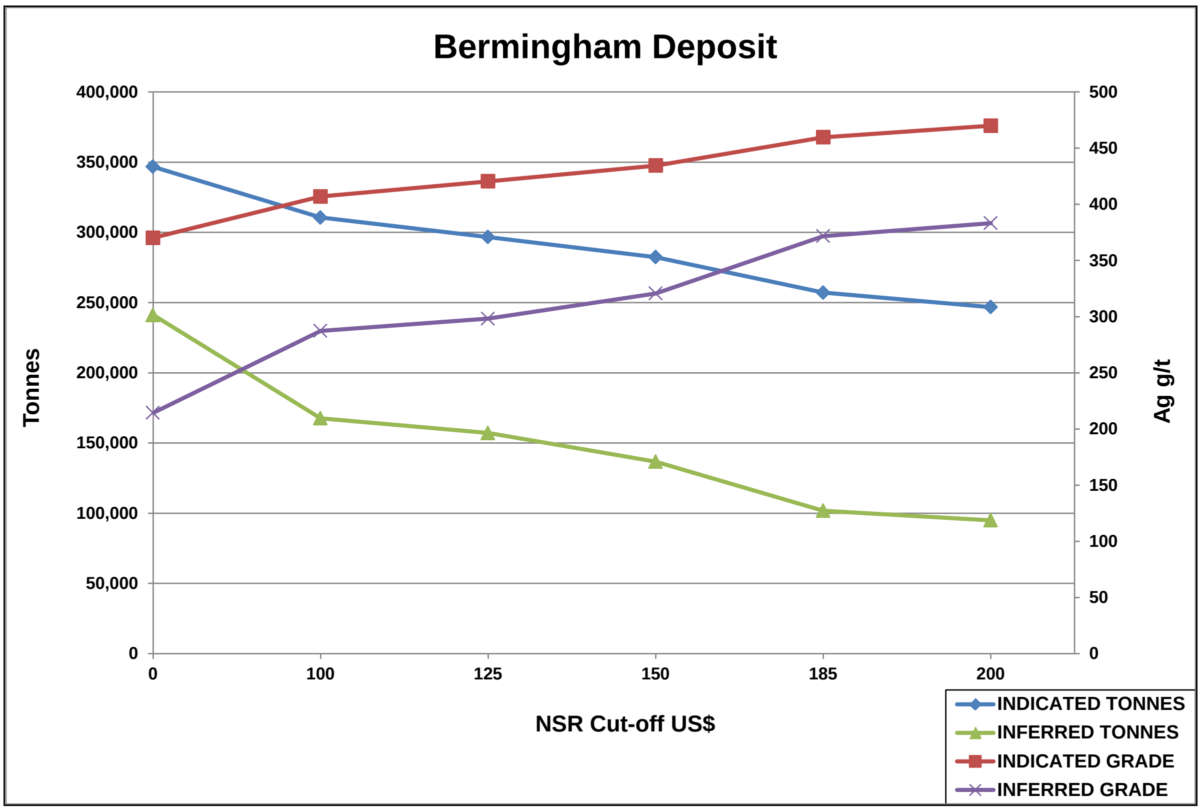


Figure 14.50: Grade tonnage curve for Bermingham

14.11 Mineral Resource Classification

Mineral resource classification is typically a subjective concept. Industry best practices suggest that resource classification should consider both the confidence in the geological continuity of the mineralized structures, the quality and quantity of exploration data supporting the estimates, and the geostatistical confidence in the tonnage and grade estimates. Appropriate classification criteria should aim at integrating these concepts to delineate regular areas at similar resource classification.

SRK is satisfied that the geological modelling honours the current geological information and knowledge. The location of the samples and the assay data are sufficiently reliable to support resource evaluation.

Generally, for mineralization exhibiting good geological continuity investigated at an adequate spacing with reliable sampling information accurately located, SRK considers that blocks estimated during the first estimation run considering full variogram ranges can be classified in the Indicated category within the meaning of the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (CIM, 2014). For those blocks, SRK considers that the level of confidence is sufficient to allow appropriate application of technical and economic parameters to support mine planning and to allow evaluation of the economic viability of the deposit.

Conversely, blocks estimated during the second pass considering search neighbourhoods set at twice the variogram ranges should be appropriately classified in the Inferred category because the confidence in the estimate is insufficient to allow for the meaningful application of technical and economic parameters or to enable an evaluation of economic viability.

All mineral resource estimates presented in this PEA technical report have been classified within the meaning of the CIM *Definition Standards for Mineral Resources and Mineral Reserves* (CIM, 2014) by independent QPs as defined by National Instrument 43-101.

The mineral resources were estimated in conformity with the generally accepted CIM *Estimation of Mineral Resources and Mineral Reserves Best Practices Guidelines* (CIM, 2003). Mineral resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent resource estimates. Mineral resources may also be affected by subsequent assessments of mining, environmental, processing, permitting, taxation, socio-economic, and other factors.

14.11.1 Mineral Resource Classification for the Bellekeno Mine

Block model quantity estimates, grade estimates, and resource classification for the Bellekeno deposit were prepared by David Farrow, PGeo, of GeoStrat Consulting Services Inc., an independent QP.

GeoStrat considers that the quality of the exploration and production data (confidence in the location and reliability of the assaying results) acquired by Alexco is good and is not a factor that would impact resource classification. The confidence in the underlying data sets support classification of Indicated and Inferred mineral resources. However, there is insufficient information to confirm both the geological and grade continuity with the current level of sampling to support a Measured mineral resource classification.

All blocks estimated in the first estimation run using drill sampling data were classified as Indicated mineral resources and all blocks estimated using the subsequent runs were classified as Inferred. Dr. Gilles Arseneau, PGeo, of SRK reviewed the process.

14.11.2 Mineral Resource Classification for the Lucky Queen Mine

Block model quantity estimates, grade estimates, and resource classification for the Lucky Queen deposit were prepared by F. H. Brown, CPG, PrSciNat, under the supervision of Dr. Gilles Arseneau, PGeo; both independent QPs.

SRK considers that the quality of the exploration data (confidence in the location and reliability of assaying results) acquired by Alexco is good and, therefore, is not a factor that would impact resource classification. The confidence in the underlying data sets support classification of Indicated and Inferred mineral resources. However, there is insufficient information to confirm both the geological and grade continuity with the current level of sampling to support a Measured mineral resource classification.

All blocks estimated in the first estimation run were classified as Indicated mineral resources and all blocks estimated using the second estimation run were classified as Inferred.

14.11.3 Mineral Resource Classification for the Flame & Moth Deposit

Block model quantity estimates, grade estimates, and resource classification for the Flame & Moth deposit were prepared by David Farrow, PGeo, of GeoStrat who is an independent QP.

GeoStrat considers that the quality of the exploration data (the confidence in the location and the reliability of the assay results) acquired by Alexco is good and, therefore, is not a factor that would impact resource classification. The confidence in the underlying data sets support classification of Indicated and Inferred mineral resources. However, there is insufficient information to confirm both the geological and grade continuity with the current level of sampling to support a Measured mineral resource classification.

Blocks were classified as Indicated mineral resources if at least two drill holes and six composites were found within a 60 by 60 m search ellipse. All other interpolated blocks were classified as Inferred mineral resource.

14.11.4 Mineral Resource Classification for the Onek

Block model quantity estimates, grade estimates, and resource classification for the Onek project were prepared by Dr. Gilles Arseneau P.Geo., who is an Independent Qualified Person.

SRK considers that the quality of the exploration data (confidence in the location and reliability of assaying results) acquired by Alexco is good and therefore is not a factor that would impact resource classification. The confidence in the underlying datasets support classification of Indicated and Inferred mineral resources within the meaning of the CIM Definition Standards. However, there is insufficient information to confirm both the geological and grade continuity with the current level of sampling to support a Measured mineral resource classification within the meaning of the CIM Definition Standards.

Blocks were classified as Indicated mineral resources if at least two drill holes and five composite were found within a 60 m by 30 m search ellipse. All other interpolated blocks were classified as inferred mineral resource

14.11.5 Mineral Resource Classification for the Bermingham Deposit

Block model quantity estimates, grade estimates, and resource classification for the Bermingham project were prepared by DJ Farrow, Pr.Sci. Nat., under the supervision of Dr. Gilles Arseneau P.Geo., an Independent Qualified Person.

SRK considers that the quality of the exploration data (confidence in the location and reliability of assaying results) acquired by Alexco is good and therefore is not a factor that would impact resource classification. Confidence in the underlying datasets supports the classification of Indicated and Inferred mineral resources within the meaning of the CIM Definition Standards. However, there is insufficient information to confirm both the geological and grade continuity with the current level of sampling to support a Measured mineral resource classification within the meaning of the CIM Definition Standards.

Blocks were classified as Indicated mineral resources if at least two drill holes and four composite were found within a 40 by 40 m search ellipse for the Bermingham Vein and within a 40 by 60 m search radius within the Bermingham Footwall Vein. All other interpolated blocks were classified as inferred mineral resource.

14.12 Mineral Resource Statements

CIM Definition Standards for Mineral Resources and Mineral Reserves (CIM, 2014) defines a mineral resource as:

“[A] concentration or occurrence of solid material of economic interest in or on the Earth’s crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.”

The “reasonable prospects for eventual economic extraction” requirement generally implies that the quantity and grade estimates meet certain economic thresholds and that the mineral resources are reported at an appropriate cut-off grade that takes into account extraction scenarios and processing recoveries.

The mineral resources for the Bellekeno, Lucky Queen and Flame & Moth deposits have been estimated in 2012, 2011 and 2013 respectively. There has been no additional drilling or exploration work done on these deposits since the mineral resources were estimated and the mineral resource estimates are considered still current. The mineral resources were estimated and reported at a 185 C$ dollar equivalent cut-off using metal prices that were appropriate at the time the estimation was prepared. The mineral resources for these three deposits have not been re-estimated as part of this study instead the metal prices have been updated in the economic analysis presented in Economic Analysis Section of this report (Section 22). The block model quantities and grade estimates were assessed to identify the portions of the Bellekeno, Lucky Queen, Flame & Moth deposits having “reasonable prospects for economic extraction” considering underground mining, based on parameters summarized in Table 14.46, Table 14.47 and Table 14.48. The block model quantities and grade estimates were assessed to identify the portions of the Onek and Bermingham deposits having “reasonable prospects for economic extraction” considering underground mining, based on parameters summarized in Table 14.49.

Table 14.46: Assumptions Considered for Preparing the Bellekeno Mineral Resource Statement (Alexco, 2012)

Parameter	Value	Unit
Silver price	$24.00	US$ per ounce
Gold price	$1,400	US$ per ounce
Lead price	$0.90	US$ per pound
Zinc price	$1.00	US$ per pound
Exchange rate	$0.96	US$/C$
NSR cut-off value	$185	US$ per tonne mined
Process recovery silver	96%	percent
Process recovery gold	72%	percent
Process recovery lead	97%	percent
Process recovery zinc	88%	percent

Table 14.47: Assumptions Considered for Preparing the Lucky Queen Mineral Resource Statement (SRK 2011)

Parameter	Value	Unit
Silver price	$18.50	US$ per ounce
Gold price	$1,100	US$ per ounce
Lead price	$0.90	US$ per pound
Zinc price	$0.95	US$ per pound
Exchange rate	$1.00	US$/C$
NSR cut-off value	$185	US$ per tonne mined
Process recovery silver	96%	percent
Process recovery gold	72%	percent
Process recovery lead	97%	percent
Process recovery zinc	88%	percent

Table 14.48: Assumptions Considered for Preparing the Flame & Moth Mineral Resource Statement (Alexco 2013)

Parameter	Value	Unit
Silver price	$24.00	US$ per ounce
Gold price	$1,400	US$ per ounce
Lead price	$0.85	US$ per pound
Zinc price	$0.95	US$ per pound
Exchange rate	$1.00	US$/C$
NSR cut-off value	$185	US$ per tonne mined
Process recovery silver	96%	percent
Process recovery gold	72%	percent
Process recovery lead	97%	percent
Process recovery zinc	88%	percent

Table 14.49: Assumptions Considered for Preparing the Onek and Bermingham Mineral Resource Statement (SRK, 2014)

Parameter	Value	Unit
Silver price	$20.00	US$ per ounce
Gold price	$1,250	US$ per ounce
Lead price	$0.90	US$ per pound
Zinc price	$0.95	US$ per pound
Exchange rate	$0.90	US$/C$
NSR cut-off value	$185	C$ per tonne mined
Process recovery silver	96%	percent
Process recovery gold	72%	percent
Process recovery lead	97%	percent
Process recovery zinc	88%	percent

14.12.1 Mineral Resource Statement for the Bellekeno Mine

The Bellekeno silver mine was in operation to the end of August 2013 and as such has demonstrated its amenability to underground extraction.

Commodity prices were provided to GeoStrat by Alexco as representative of its long-term strategic forecast. Metallurgical recoveries were from a previous PEA for the Bellekeno project at the Keno Hill Silver District (Wardrop, 2009). Refer to Table 14.50. These metal prices and metallurgical recoveries were used to estimate values (C$ per tonne [/t]) for blocks in the resource block model. Mineral resources for the Bellekeno deposit are tabulated in Table 14.51 and have been reported relative to a cut-off value of C$185.00/t.

Table 14.50: Metal Prices and Metallurgical Recoveries

Commodity	Price	Recovery
Silver	US$ 22.50/oz	96%
Lead	US$0.85/lb	97%
Zinc	US$0.95/lb	88%

Table 14.51: Mineral Resource Statement*, Bellekeno Deposit, GeoStrat Consulting Services Inc. September 30, 2012

Vein	Class	Tonnes	Ag (gpt)	Pb (%)	Zn (%)	Ag Oz
SW	Indicated	195,000	602	6.7%	5.7%	3,773,000
	Inferred	136,000	427	4.5%	3.5%	1,871,000
99	Indicated	95,000	760	4.0%	3.5%	2,320,000
	Inferred	20,000	715	4.1%	2.9%	455,000
East	Indicated	75,000	675	3.3%	6.9%	1,635,000
	Inferred	87,000	364	3.4%	8.1%	1,013,000
Total	Indicated	365,000	658	5.3%	5.3%	7,728,000
	Inferred	243,000	428	4.1%	5.1%	3,338,000

Reported at a cut-off value of C$185.00/t considering metal prices of US$22.50/oz for Ag, US$ 0.85/lb for Pb, and US$ 0.95/lb for Zn; and recovery of 96% for Ag, 97% for Pb, and 88% for Zn. All numbers have been rounded to reflect the relative accuracy of the estimates. Mineral resources are not mineral reserves and have not demonstrated economic viability. Confidence in the estimate of Inferred mineral resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure.

The Bellekeno mineral resource estimate has an effective date of May 31, 2012, based on a mine survey documenting mining progress up to that date.

SRK notes that since the date of the Bellekeno deposit mineral resource statement, Alexco reports actual tonnes processed from the Bellekeno mine of 124,000 tonnes at average grades of 701 gpt silver, 8.3% lead, and 4.3% zinc (from June 1, 2012 to the temporary shutdown on September 1, 2013).

14.12.2 Mineral Resource Statement for the Lucky Queen Mine

SRK considers that the mineralization evaluated in the Lucky Queen deposit is amenable to underground extraction. Approximately 20% of the Lucky Queen vein as modelled by Alexco has a horizontal width of less than 1.20 m. In order to determine the quantities of material offering reasonable prospects for economic extraction from an underground mining operation, grades for blocks with a horizontal width of less than 1.20 m were adjusted (diluted) to a minimum thickness of 1.20 m assuming zero grade internal dilution.

Commodity prices were provided to SRK by Alexco as representative of its long-term strategic forecast. Metallurgical recoveries were from a previous PEA for the Bellekeno project at the Keno Hill Silver District (Wardrop, 2009). Refer to Table 14.52.

Table 14.52: Metal Prices and Metallurgical Recoveries

Commodity	Price	Recovery
Silver	US$ 18.50/oz	96%
Lead	US$0.90/lb	97%
Zinc	US$0.95/lb	88%
Gold	US$1,100.00/oz	72%

These metal prices and metallurgical recoveries were used to estimate values (C$/t) for blocks in the resource block model.

Mineral resources for the Lucky Queen deposit are shown in Table 14.53 and have been reported relative to a cut-off value of C$185.00/t.

Table 14.53: Mineral Resource Statement*, Lucky Queen Deposit, SRK Consulting (Canada) Inc., July 27, 2011

Vein	Class	Tonnes	Ag (gpt)	Pb (%)	Zn (%)	Au (gpt)
Main Lucky Queen	Indicated	124,000	1,227	2.57	1.72	0.17
Vein	Inferred	133,000	564	1.33	0.89	0.18
Splay	Inferred	17,000	626	1.68	1.21	0.05
Total	**Indicated**	**124,000**	**1,227**	**2.57**	**1.72**	**0.17**
	Inferred	**150,000**	**571**	**1.37**	**0.92**	**0.16**

Reported at a cut-off value of C$185.00/t considering metal prices of US$18.50/oz for Ag, US$ 0.90/lb for Pb, US$ 0.95/lb for Zn, and US$ 1,100/oz for Au; and recovery of 96% for Ag, 97% for Pb, 887% for Zn and 72% for Au. All numbers have been rounded to reflect the relative accuracy of the estimates. Mineral resources are not mineral reserves and have not demonstrated economic viability. Confidence in the estimate of Inferred mineral resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure.

14.12.3 Mineral Resource Statement for the Flame & Moth Deposit

Commodity prices were provided to GeoStrat by Alexco as representative of a consensus long-term strategic forecast. Metallurgical recoveries were from a previous PEA for the Bellekeno project at the Keno Hill Silver District (Wardrop, 2009). Refer to Table 14.54.

Table 14.54: Metal Prices and Metallurgical Recoveries

Commodity	Price	Recovery
Silver	US$ 24.00/oz	96%
Lead	US$0.85/lb	97%
Zinc	US$0.95/lb	88%
Gold	US$1,400.00/oz	72%

These metal prices and metallurgical recoveries were used to estimate values (C$/t) for blocks in the resource block model.

Mineral resources for the Flame & Moth deposit are shown in Table 14.55 and have been reported relative to a cut-off value of C$185.00/t.

Table 14.55: Mineral Resource Statement*, Flame & Moth Deposit, GeoStrat Consulting Services Inc., January 30, 2013

Zone	Class	Tonnes	Ag (gpt)	Pb (%)	Zn (%)	Au (gpt)
Christal	Indicated	450,000	545	1.74%	3.64%	0.48
	Inferred	57,000	320	1.08%	2.38%	0.28
Lightning	Indicated	829,000	496	1.73%	7.02%	0.40
	Inferred	50,000	302	0.61%	6.27%	0.26
Lightning V2	Indicated	99,000	548	1.61%	3.97%	0.27
	Inferred	1,000	614	1.73%	4.54%	0.12
Total	**Indicated**	**1,378,000**	**516**	**1.72%**	**5.70%**	**0.42**
	Inferred	**107,000**	**313**	**0.86%**	**4.21%**	**0.27**

Reported at a cut-off value of C$185.00/t US$24.00/oz for Ag, US$ 0.85/lb for Pb, US$ 0.95/lb for Zn, and US$ 1,400/oz for Au; and recovery of 96% for Ag, 97% for Pb, 88% for Zn and 72% for Au. All numbers have been rounded to reflect the relative accuracy of the estimates. Mineral resources are not mineral reserves and have not demonstrated economic viability. Confidence in the estimate of Inferred mineral resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure.

14.12.4 Mineral Resource Statement for the Onek Deposit

SRK considers that the mineralization evaluated in the Onek deposit is amenable for underground extraction.

Commodity prices were provided to SRK by Alexco as representative of their long term strategic forecast. Economic parameters are summarized in Table 14.56.

Table 14.56 Metal Prices and Metallurgical Recoveries

Commodity	Price	Recovery
Ag	US$ 20.00/oz.	96%
Pb	US$0.90/lb.	97%
Zn	US$0.95/lb.	88%
Au	US$1,250.00/oz.	72%

Mineral resources for the Onek deposit defined relative to a dollar equivalent cut-off of $185/tonne, using metallurgical recoveries as proposed in the recent Preliminary Economic Assessment for the Bellekeno project at Keno Hill (Wardrop, 2009), are listed in Table 14.57 below.

Table 14.57: Mineral resource statement*, Onek deposit, SRK Consulting (Canada) Inc., November 15, 2014

Zone	Class	Tonnes	Ag	Pb	Zn	Au
			g/t	%	%	g/t
Vein 1	Indicated	580,000	182	1.08	13.07	0.63
	Inferred	198,000	128	1.03	9.51	0.47
Vein 1 FW	Indicated	8,000	347	5.42	4.18	0.60
	Inferred	5,000	156	4.89	4.97	0.46
Vein 2	Indicated	66,000	339	2.73	6.55	0.48
	Inferred	32,000	157	2.04	5.33	0.28
Total	**Indicated**	**654,000**	**200**	**1.29**	**12.30**	**0.62**
	Inferred	**234,000**	**134**	**1.24**	**8.86**	**0.44**

** Reported at a dollar cut-off grade of C$185.00/t* using metal prices (USD) and recoveries of Ag US$20.00/oz, recovery 96%; Pb US$ 0.90/lb, recovery 97%; Zn US$ 0.95/lb, recovery 88%; Au US$ 1,250/oz, recovery 72%. *All numbers have been rounded to reflect the relative accuracy of the estimates. Mineral resources are not mineral reserves and do not have demonstrated economic viability. Confidence in the estimate of Inferred mineral resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure.*

14.12.5 Mineral Resource Statement for the Bermingham Deposit

SRK considers that the mineralization evaluated in the Bermingham deposit is amenable for underground extraction.

Commodity prices were provided to SRK by Alexco as representative of their long term strategic forecast. Economic parameters are summarized in Table 14.58.

Table 14.58: Metal Prices and Metallurgical Recoveries

Commodity	Price	Recovery
Ag	US$ 20.00/oz.	96%
Pb	US$0.90/lb.	97%
Zn	US$0.95/lb.	88%
Au	US$1,250.00/oz.	72%

Mineral resources for the Bermingham deposit defined relative to a dollar equivalent cut-off of $185/t, using metallurgical recoveries as proposed in the Preliminary Economic Assessment for the Bellekeno project at Keno Hill (Wardrop, 2009) are listed in Table 14.59 below.

Table 14.59: Mineral Resource Statement*, Bermingham Deposit, SRK Consulting (Canada) Inc. November 15, 2014

Zone	Class	Tonnes	Ag	Pb	Zn	Au
			g/t	%	%	g/t
Bermingham Vein	Indicated	114,000	501	2.50	2.15	0.07
	Inferred	27,000	423	2.04	1.27	0.09
Bermingham Footwall Vein	Indicated	143,000	428	1.60	2.07	0.06
	Inferred	75,000	353	0.79	2.04	0.09
Total	**Indicated**	**257,000**	**460**	**2.00**	**2.10**	**0.06**
	Inferred	**102,000**	**372**	**1.12**	**1.83**	**0.09**

** Reported at a NSR cut-off grade of C$185.00/t* using metal prices (USD) and recoveries of Ag US$20.00/oz, recovery 96%; Pb US$ 0.90/lb, recovery 97%; Zn US$ 0.95/lb, recovery 88%; Au US$ 1,250/oz, recovery 72%.
All numbers have been rounded to reflect the relative accuracy of the estimates. Mineral resources are not mineral reserves and do not have demonstrated economic viability. Confidence in the estimate of Inferred mineral resources is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure.

14.13 Previous Mineral Resource Estimates

14.13.1 Bellekeno Previous Resource Estimates

In its initial exploration efforts on the Keno Hill Silver District, Alexco targeted the historical resources documented at the Bellekeno deposit by validating and confirming the existence of the polymetallic silver mineralization. SRK, in conjunction with Alexco, produced an initial Mineral Resource Statement for the Bellekeno deposit on November 10, 2007, which was subsequently updated on January 28, 2008. During 2008, Alexco constructed a new 633-metre decline designed to access the historical Bellekeno workings. This allowed for tight-spaced underground core drilling and updated geologic mapping within all three Bellekeno resource zones (Southwest, 99, and East) during 2009, which was incorporated into a Mineral Resource Statement dated November 9, 2009 (Wardrop, 2009) and is summarized in Table 14.60.

Table 14.60: Consolidated Mineral Resource Statement* for the Bellekeno Deposit, Wardrop Engineering November 9, 2009

Category	Zone	Tonnes	Ag	Pb	Zn	Au
			(gpt)	(%)	(%)	(gpt)
Indicated	Southwest†	215,800	997	12.6	7.2	0.662
Indicated	99†	91,700	995	7.5	4.2	0.293
Indicated	East‡	93,500	672	3.9	6.9	0.330
Total Indicated		**401,000**	**921**	**9.4**	**6.5**	**0.500**
Inferred	East‡	111,100	320	3.1	17.9	0.340
Total Inferred		**111,100**	**320**	**3.1**	**17.9**	**0.340**

Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates.

Reported at a cut-off of C$185/t using metal prices of US$15.25/oz Ag, US$0.675/lb Pb, and US$0.80/lb Zn. Ag and Zn composites not capped. Pb composites capped at 450,000 ppm.

ıe following metallurgical recoveries were applied: lead 96.9%, zinc 88.4%, gold 71.6% and silver 93.8%.

Reported at a cut-off of C$185/t using metal prices of US$14.50/oz Ag, US$0.60/lb Pb, and US$0.90/lb Zn. Ag and Zn composites not capped. Pb composites capped at 450,000 ppm.

ıe following metallurgical recoveries were applied: lead 96.9%, zinc 88.4%, gold 71.6% and silver 93.8%.

14.13.2 Flame & Moth Previous Resource Estimates

A previous Mineral Resource Statement was produced by SRK in 2012. The results were detailed in the previous technical report (SRK, 2012) and are summarized in Table 14.61.

Table 14.61: Mineral Resource Statement for the Flame & Moth Deposit, SRK Consulting (Canada) Inc., June 27, 2012

Class	Tonnes	Ag (gpt)	Au (gpt)	Pb (%)	Zn (%)
Indicated	759,000	453	0.39	1.73	6.97
Inferred	387,000	312	0.26	1.18	4.06

14.14 Recommendations for Conversion of Mineral Resources into Mineral Reserves

No mineral reserve estimates will be disclosed in this technical report.

15 Mineral Reserve Estimates

No mineral reserve estimates will be disclosed in this technical report.

16 Mining Methods

16.1 Overview

The Keno Hill Silver District has long been recognized as a polymetallic silver-lead-zinc vein mining district with characteristics possibly similar to other well-known mining districts in the world. Examples of this type of mineralization include the Kokanee Range (Slocan), British Columbia; Coeur d'Alene, Idaho; and Fresnillo, Mexico.

The Keno Hill Silver District is historically known for locally challenging ground conditions encountered in the area that limit the applicable mining methods to fully supported methods with limited spans, such as cut and fill or very small scale longhole, as has been practiced at the Bellekeno mine by Alexco. Shrinkage stoping and square set stoping methods have also been used historically but are not considered viable from safety and human resources perspectives.

16.2 Previous Mining (pre-2006)

The Keno Hill - Galena Hill - Sourdough Hill area has a production history dating to 1913 following the initial discovery of silver in about 1901 at Galena Creek near the present day Silver King mine. Since then, more than 65 deposits and prospects have been identified within the area. Twenty-one of these deposits have had documented silver production in excess of 3,110 kilograms (100,000 ounces) (United Keno Hill Mines Ltd., 1996).

Historically, miners followed veins with small, timbered, tracked drifts. The square set mining method was employed between levels and visually followed the vein one set at a time. Thick sections of vein at times permitted the stopes to be multi-sets wide.

Historic reserves were never substantial and long range production planning was, as a result, restricted by exploration programs and their results. Exploration itself relied heavily on blind drifting and raising on vein structures because of the perceived ineffectiveness of underground core drilling and the difficulty in obtaining good core recovery from vein material and areas of broken ground.

Timber support was used extensively throughout all workings, particularly on vein, where substantial support was required to hold up the incompetent material. There were only a few recorded open longwall stopes where wood stulls provided sufficient support. Shrinkage stoping was used on occasion but no records of performance or stope competence exist.

The maintenance and upkeep of the extensive timber support in the underground workings which was necessary to permit uninterrupted development and production mining, was a major burden on resources and contributed to the cause of the closure in January 1989.

Initial attempts at introducing trackless mining methods in the lower levels of the Bellekeno mine had mixed success due in part to over mucking in bad, wet ground and a failure to achieve the early placement of adequate ground control.

16.2.1 Bellekeno Mine

Historically, underground mining at Bellekeno was completed by drifting on vein, shrinkage stoping, and square set stoping using tracked equipment. All development was supported with square set timbers and timber pole lagging. Few areas were impassable using this method and where instability on the vein was an issue, the heading was abandoned and a bypass was commenced in more competent footwall rocks.

The Bellekeno mine level naming convention is based on the historic imperial level names with 100 level being nominally 100 feet underground. Levels are a nominal 100 feet apart and the larger the number, the deeper the level. The historic mine included levels from 100 to 800 with the deepest current workings at the 960 level.

The most recent mining in the 1980s was completed using an overhand cut and fill method utilizing rubber tired equipment. Support for drifting on the vein (for exploration purposes) was completed using friction anchors and weld-wire mesh, with varying degrees of success in the variable vein conditions. The use of shotcrete was implemented in the final stages before mine closure to successfully mine through the poor ground conditions encountered on vein on the 800 level.

Prior to December 31, 1988, Bellekeno produced 36,545 tonnes of vein material (UKHM, 1996) with average grades of:

- 1,462 gpt silver;
- 9.86% lead;
- 2.26% zinc.

The mine and Keno Hill Silver District were placed into care and maintenance in 1989 and remained on care and maintenance apart from some exploration work conducted in the mid-1990’s until Alexco acquired the holdings of UKHM in 2006.

16.2.2 Lucky Queen

The Lucky Queen deposit was mined from 1927 to 1932 when mineral inventory was exhausted, producing vein material from two mineralized shoots. Access was originally through an inclined shaft to the 300 level and underground mining was completed by drifting on vein and shrinkage stoping using tracked equipment. All development was supported with square set timbers and timber pole lagging.

The Lucky Queen vein and strike extensions were explored intermittently by surface overburden drilling, trenching, and soil sampling throughout the 1950s, 1960s, 1970s and early 1980s. An exploration drift at the 500 level elevation was collared near the Black Cap prospect by UKHM in 1985-1987. A total of approximately 1,800 m was developed. The drift was designed to come in underneath the historical Lucky Queen workings and included a plan to raise up into the No 2 inclined shaft.

Poor ground conditions around the shaft, combined with difficulty in locating the vein and an urgent need for miners elsewhere in the Keno Hill Silver District caused the adit to be abandoned in 1987.

Prior to December 31, 1988, Lucky Queen produced 112,065 tonnes of vein material (UKHM, 1996) with average grades of:

- 3,041 gpt silver;
- 6.95% lead;
- 2.69% zinc.

16.3 Geotechnical Evaluation

Preliminary geotechnical evaluations have been completed for the Bellekeno mine (including mining the SW and 99 zones) and for the Lucky Queen and Flame & Moth deposits. The evaluations considered the mineralized veins, hangingwall and footwall zones adjacent to planned mining, and general areas for proposed infrastructure development. Based on these assessments, recommendations for mining methods, stope design, and support requirements have been provided.

Information available for the evaluations included drill hole databases, core photographs, Gemcom models, and information collected by SRK during various site visits. All geotechnical descriptions have been interpreted from drill hole intersections of the mining horizons and, where available, underground observations. The Bellekeno evaluation is considered to be an update to geotechnical studies completed by SRK in 2009 (SRK, 2009) in support of the mine operation. The evaluations for Lucky Queen and Flame & Moth are based on data provided by Alexco.

16.3.1 Geotechnical Description – All Areas

The deposits are all hosted within district-scale metasedimentary rock units of the Keno Hill Basal Quartzite Member. While the quartzite is considered to be of fair to good rock mass quality, larger schist packages are often the locus of minor or moderate fault movement often producing gouge and poor rock mass conditions. Graphitic schist in the immediate vein hangingwall/footwall zone is considered to be of very poor to poor rock mass quality and tends to be more problematic especially where water is present. Areas of historic over-break are observed in excavations through schist units.

On vein conditions are considered to be fairly similar across the various deposits. Underground exposures and drill hole core intercepts of the vein exhibit extremely high variability both along strike and dip (on a scale of less than 5 m). The mineralized and gangue components of the vein pinch and swell across the vein width, and the veining is generally considered to be of poor to very poor rock mass quality. Extensive support is utilized to control the ground while developing along the vein. However, excavation exposures tend to be better than those expected from drill hole core review.

16.3.2 Structural Description

Structure – Bellekeno (Southwest, 99, and East Zones)

The structure in the Bellekeno area has been documented previously by Otto (2009) who identified approximately 100 m of hangingwall movement along the vein system. The large displacement combined with large schistose bands has produced adverse ground conditions in two identified locations. Zones of disturbed ground have been modelled through the proposed SW and 99 mining areas in addition to several schist packages. Poor ground conditions should be anticipated in these areas. Refer to Figure 16.1.

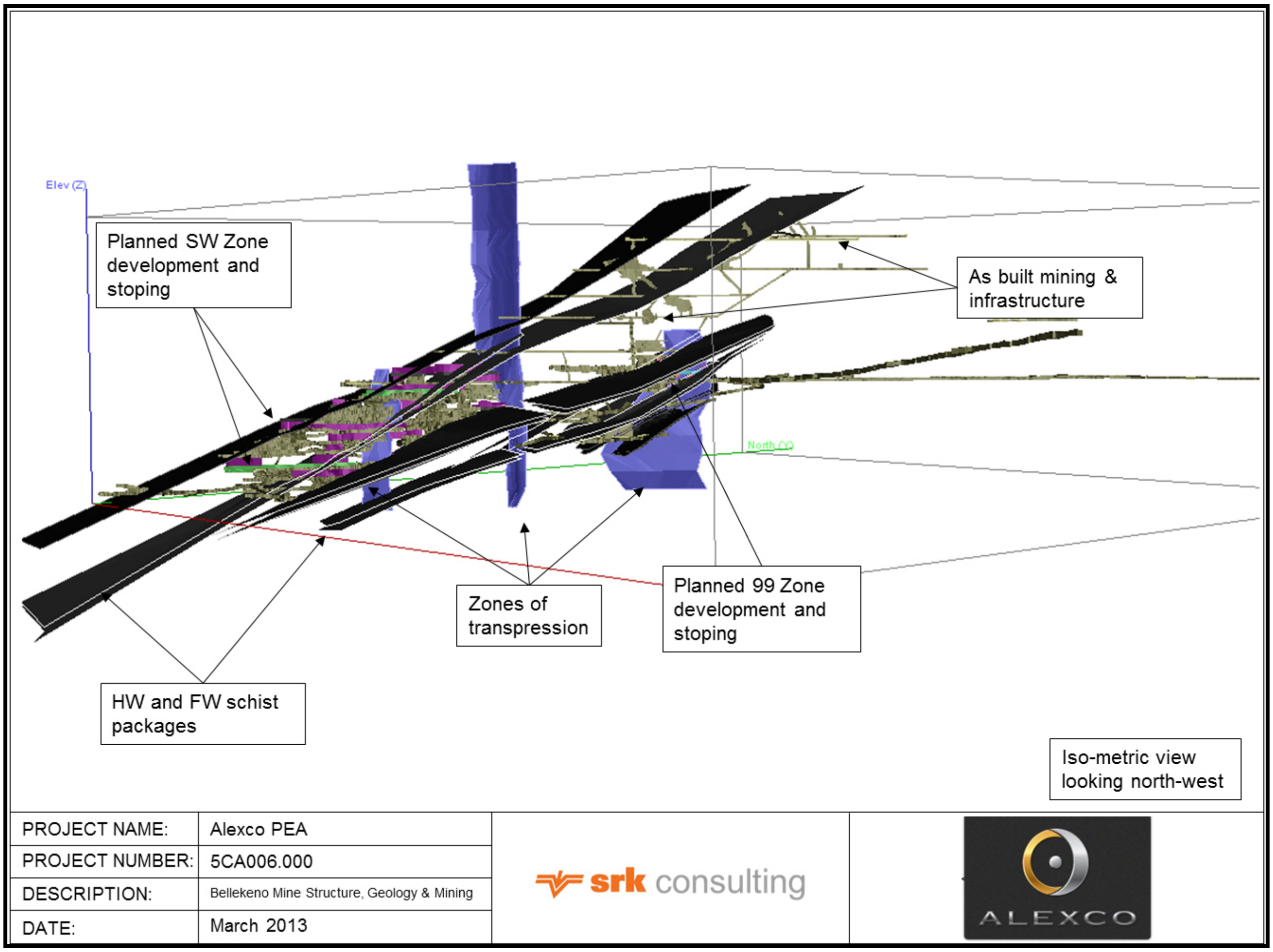


Figure 16.1: Interpreted Structure and Geology for Bellekeno SW, 99, and East Zones (SRK, 2013)

Structure – Lucky Queen

At Lucky Queen, the overall orientation of the faulting rakes very shallowly to the southwest with the thickest fault intercepts coinciding with a schist unit (Figure 16.2). The hangingwall fault intercepts are well constrained along strike by fractured rock intervals sitting further into the hangingwall, while outside faulted zones competent wall rock is generally found right up to the vein structure above and below the faulted section. The fractured/broken rock intercepts are typically quartzite that look shattered, have brittle fracturing, or have partings along siderite or quartz veining associated with mineralization.

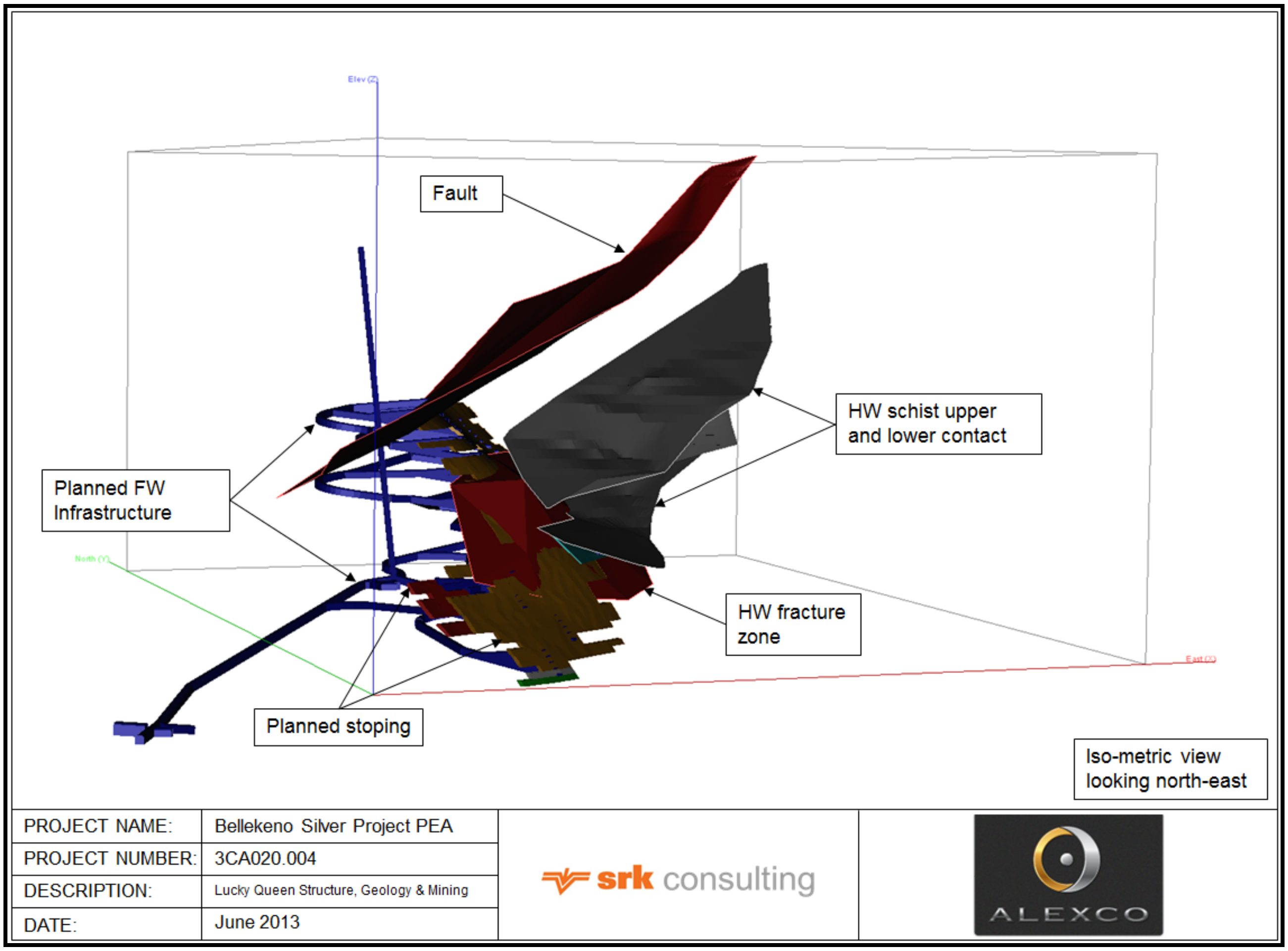


Figure 16.2: Interpreted Structure and Geology for Lucky Queen (SRK, 2013)

Structure – Flame & Moth

The Flame vein is divided into the Lightning and Christal mining areas, separated by the Mill fault. The fault offsets the Christal area in a southeast direction by approximately 120 m (Figure 16.3 and Figure 16.4) and is primarily composed of very poor quality rock, with gouge and breccia materials. The fault thickness varies along strike, but near the proposed development locations the fault is approximately 2 to 4 m wide. Rock in the immediate hangingwall and footwall to the fault is considered to be of poor quality and exhibits conditions similar to those within the fault.

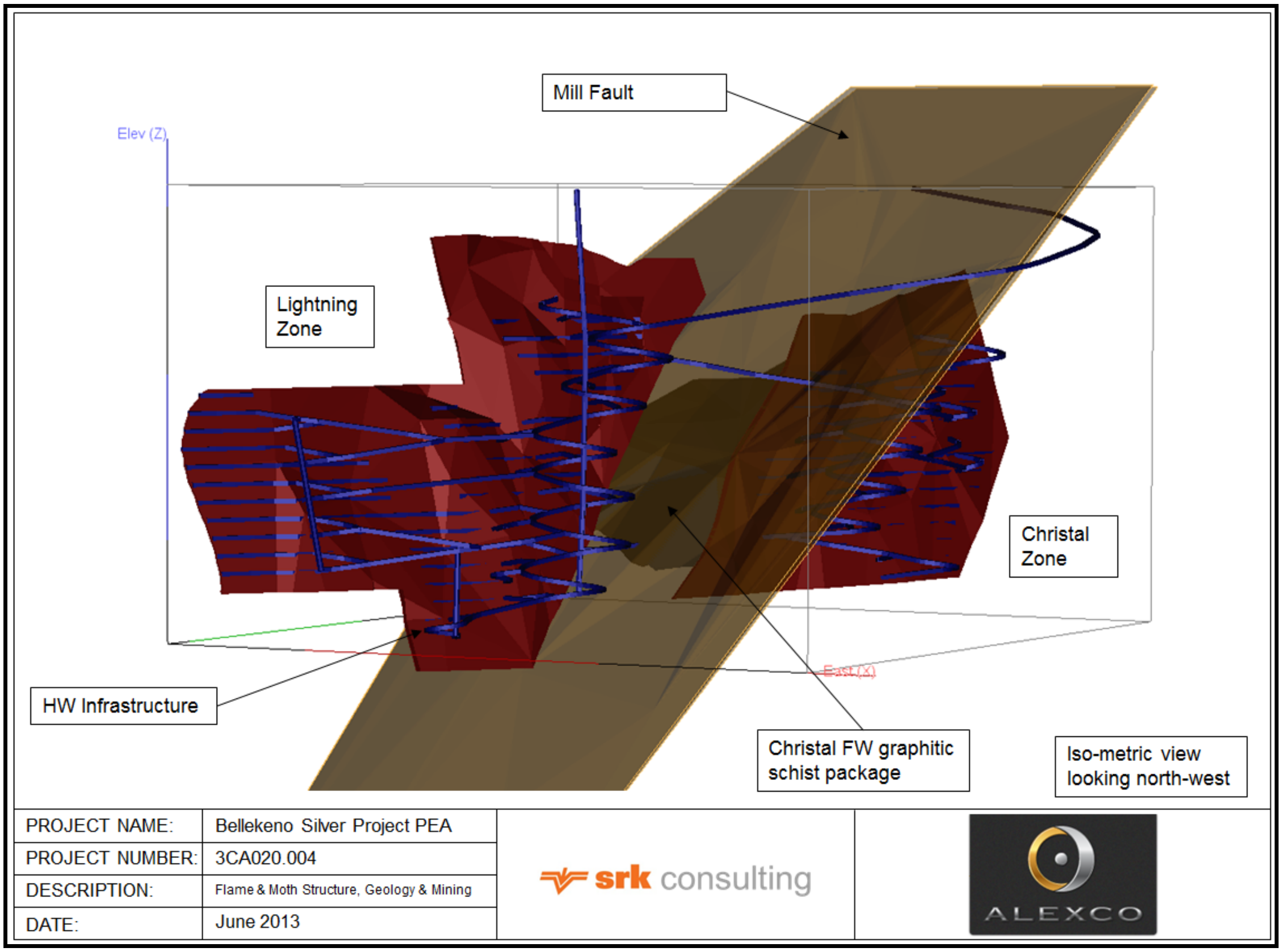


Figure 16.3: Interpreted Structure and Geology for Flame & Moth (SRK, 2013)

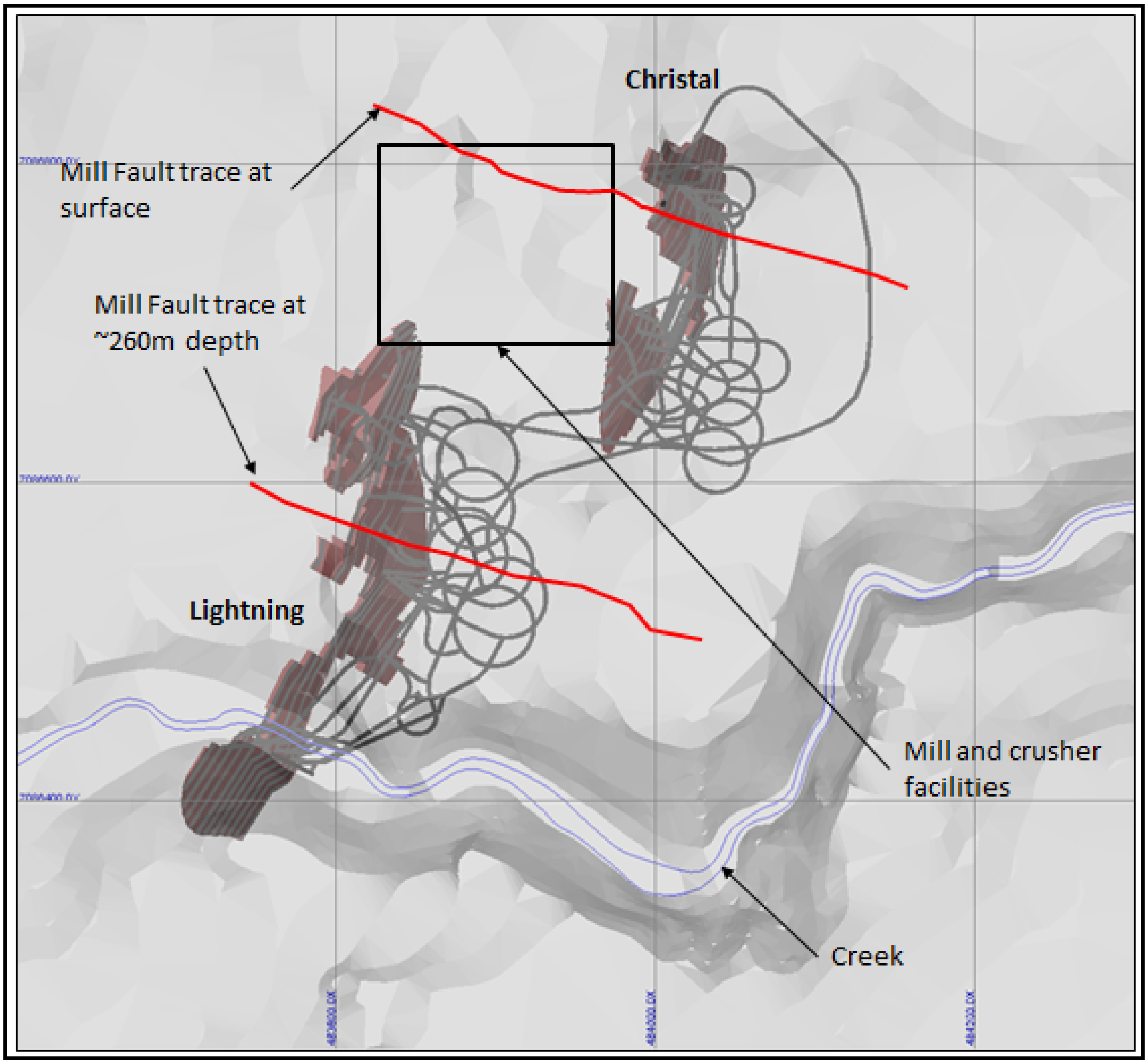
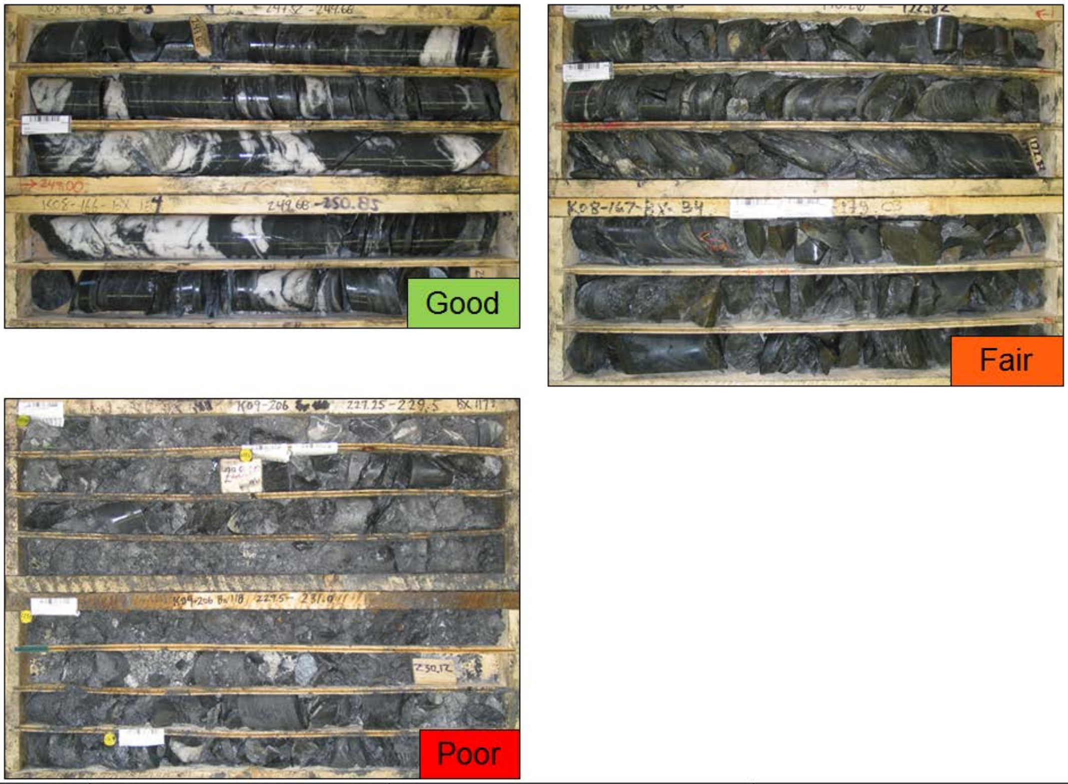


Figure 16.4: Plan View of the Flame & Moth Deposit with Key Features Highlighted (SRK, 2013)

16.3.3 Geotechnical Assessment

The geotechnical assessment utilized drill hole core photo reviews, re-logging of core photos, and detailed reviews of mining intersections to assist in understanding the distribution of likely ground conditions. Simplistic geotechnical domains were developed that reflect the quality of the rock mass relative to the mining methods proposed. Representative ground classes were developed that broadly correlate with the Poor, Fair, and Good domains. Figure 16.5 shows example rock mass conditions at the mining areas.



PROJECT NAME:	Bellekeno Silver Project PEA
PROJECT NUMBER:	3CA020.004
DESCRIPTION:	Representative Rock Mass Conditions
DATE:	June 2013

srk consulting

ALEXCO

Figure 16.5: Representative Rock Mass Conditions Used for Core Re-Logging and Development of Geotechnical Domains (SRK, 2013)

The results of the geotechnical domain review for each mining area are presented in Figure 16.6 through Figure 16.9. The rock mass was separated into hangingwall, mineralized zone, and footwall zones, and then domained in terms of poor, fair, or good rock mass conditions. Planned mining areas without drill hole coverage were assigned fair conditions. Bellekeno is separated into the three separate mining areas: SW zone, 99 zone, and the East zone. The East zone however, is not included in the PEA mine plan.

Main infrastructure is more favourably located in the footwall for the Lucky Queen and Bellekeno deposits. At Flame & Moth, ground conditions within the footwall are less favourable based on well-developed weak schist packages, requiring the location of the infrastructure within the hangingwall of the veins.

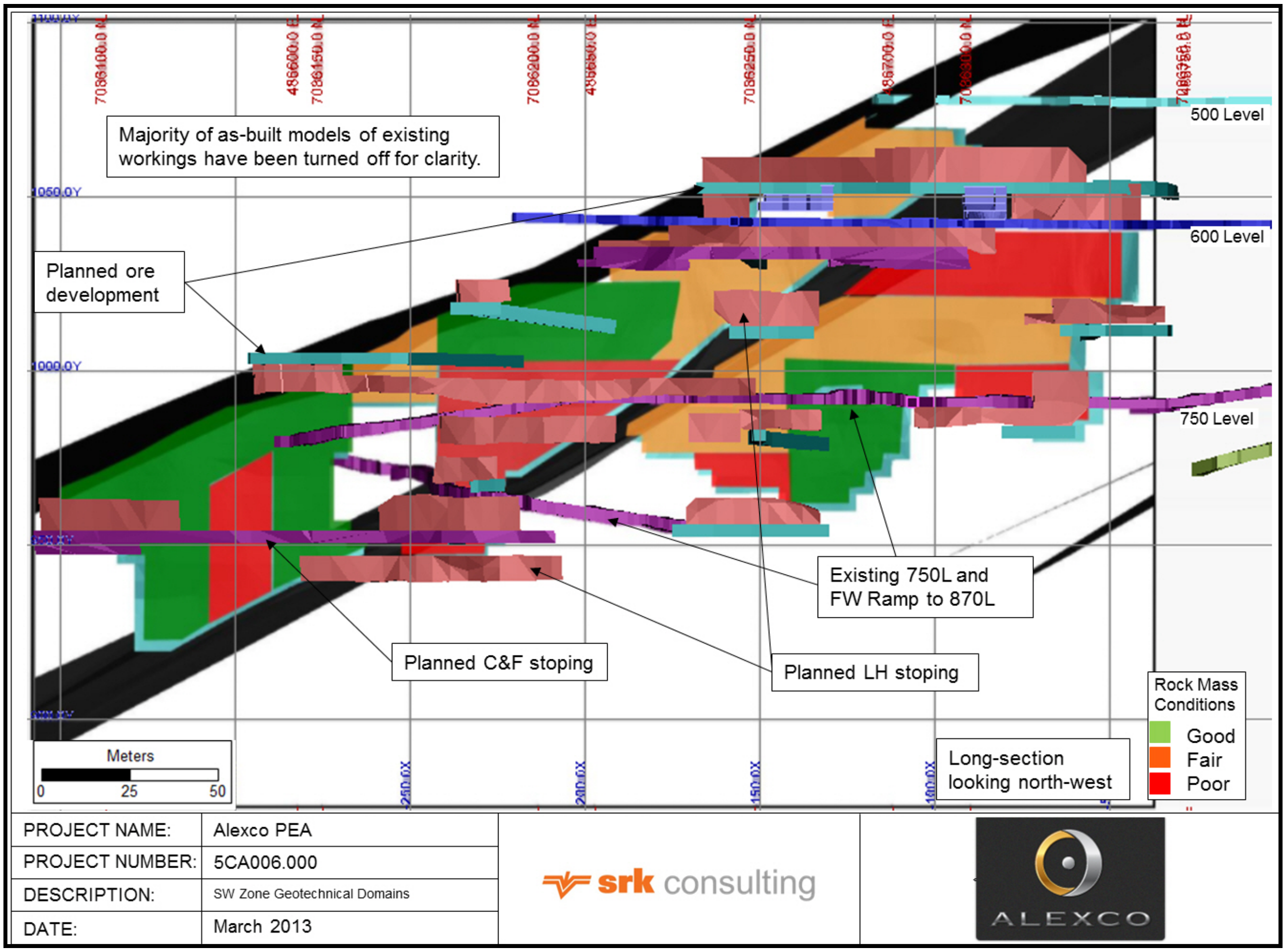


Figure 16.6: Previously Established Bellekeno SW Zone HW Geotechnical Domains Shown Behind Planned Mining Zones - purple (SRK, 2013)

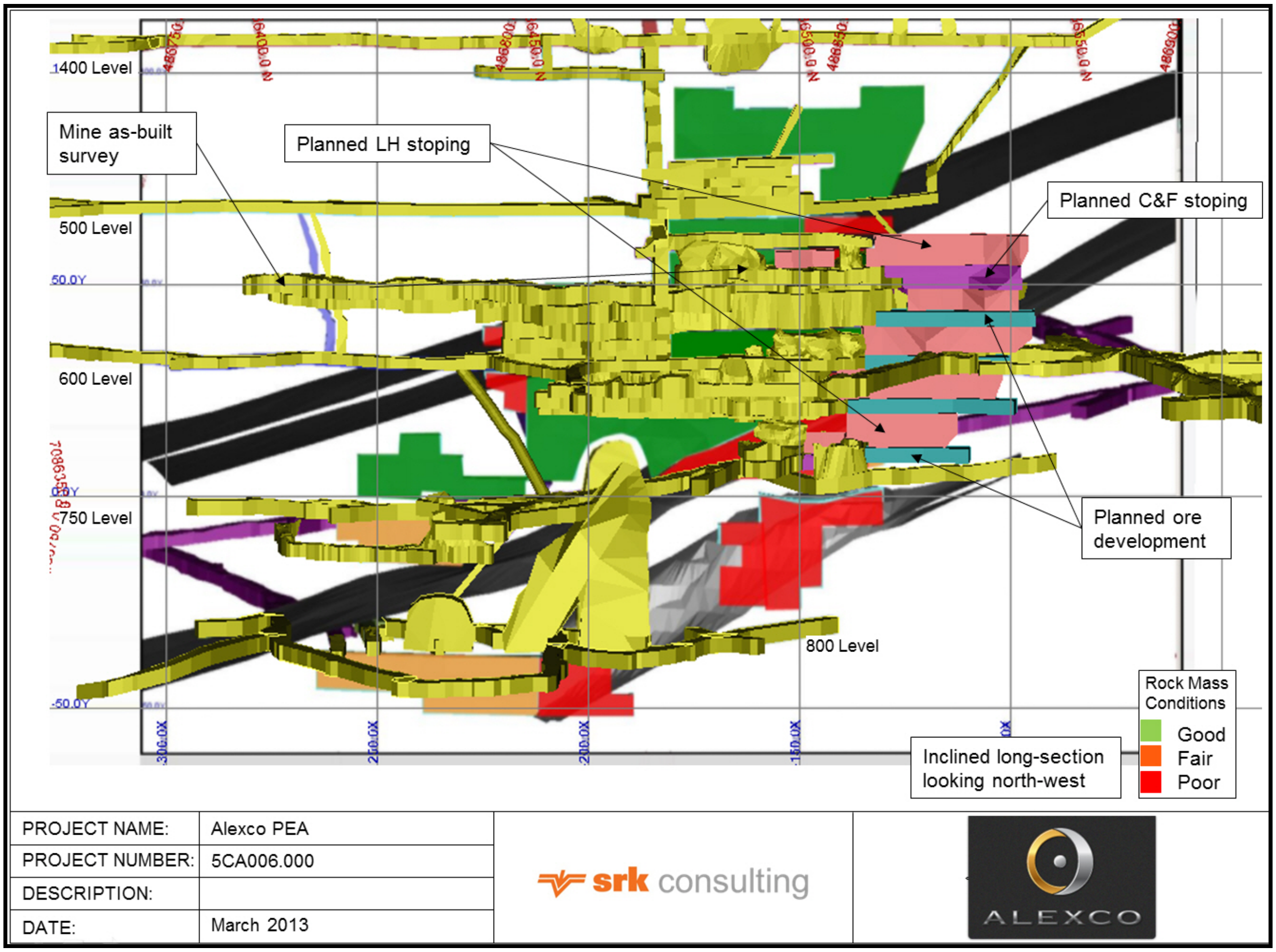


Figure 16.7: Previously Established Bellekeno 99 Zone Geotechnical Domains Shown Behind Planned Mining Zones - pink (SRK, 2013)

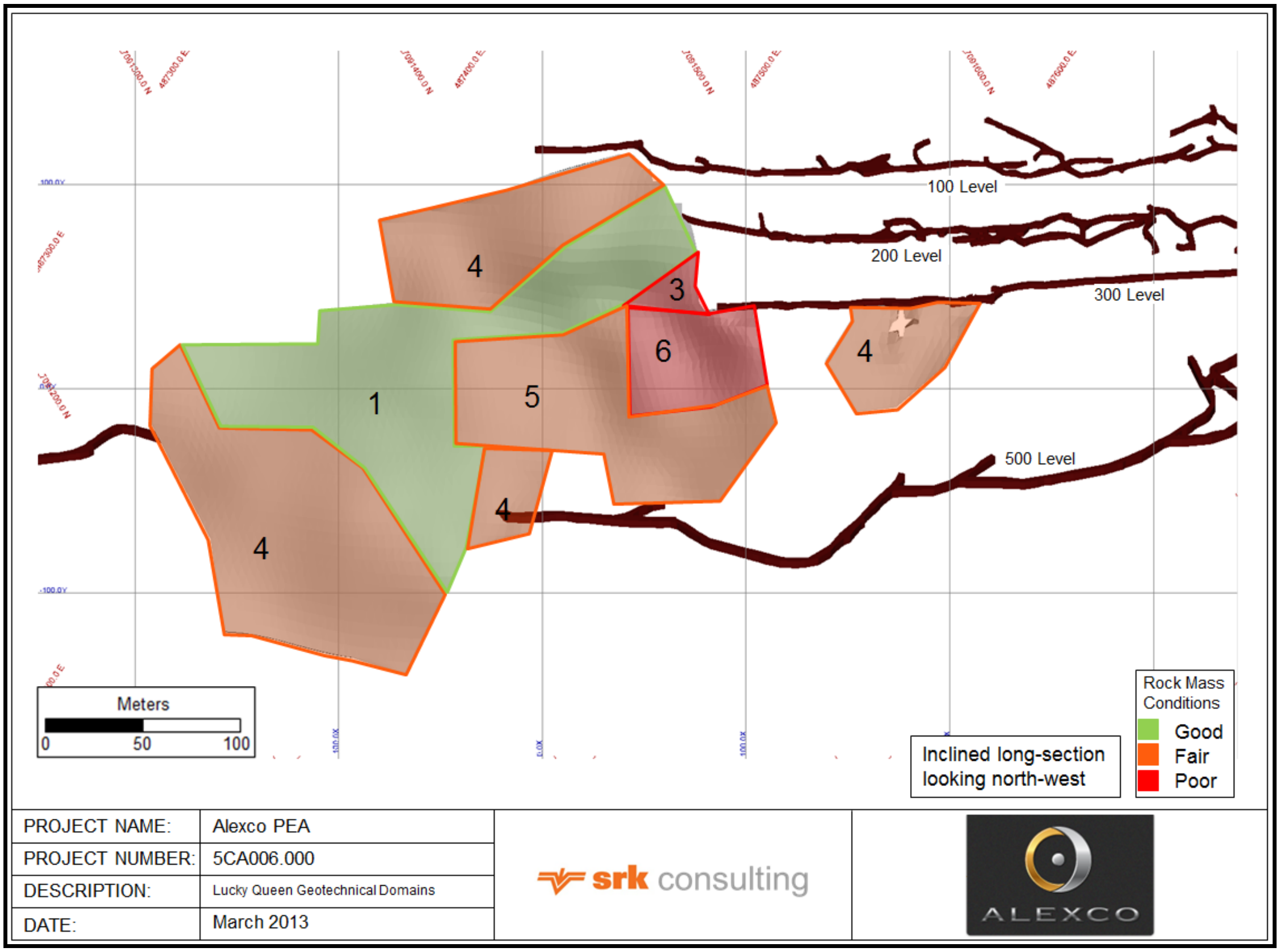


Figure 16.8: Geotechnical Domains Determined for Lucky Queen (SRK, 2013)

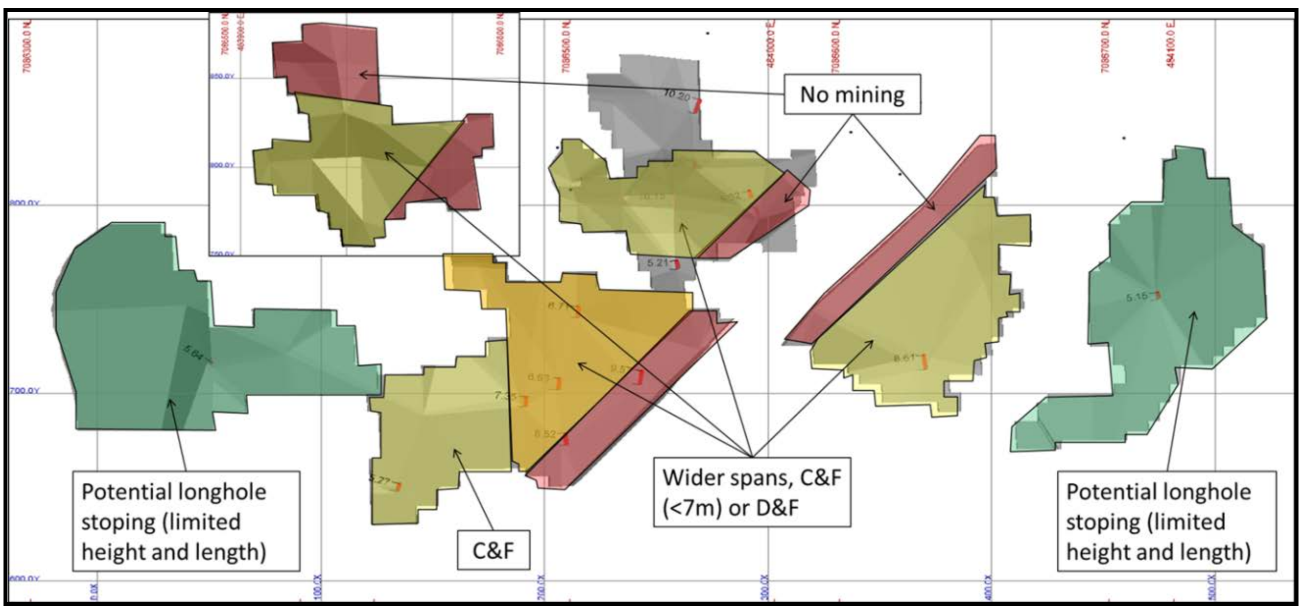


Figure 16.9: Mining Method Domains for the Flame & Moth Lightning (left) and Christal Zones (SRK, 2013)

16.3.4 Mining Method Discussion

Due to the generally poor rock mass conditions observed in drill holes, and the need to minimize the risk of losing control of the ground (fall of ground, or potential caving), the dominant recommended mining method is cut and fill (or drift and fill in wider areas). Therefore, longhole stoping has only been recommended in the areas interpreted to have intact hangingwall and footwall intersections based on the drill hole core assessment.

Previous rock mass assessments for the Bellekeno mine also identified poor ground conditions considered suitable only for cut and fill mining. Alexco's experience in mining at Bellekeno has proven that some areas are amenable to longhole stoping with limited dimensions and early backfilling. The ground support and tactical mining approach have been adjusted by Alexco to suit the higher risk longhole mining method in this geotechnical environment.

Based on Alexco's experience in the Bellekeno mine, the most common source of dilution is side wall vein material entering the stope. In most instances where dilution is introduced, the vein is not stable over the short strike lengths currently being opened (~10 m). This limits the ability to open longhole stopes over wide spans due to the risk of a slope-stability-type side wall failure from the exposed vein. As such, drift and fill has been recommended where wide spans prevent the vein being mined in a single pass.

Bellekeno

Some of the proposed longhole stoping areas at Bellekeno were found to intersect areas previously identified as having poor rock mass conditions and were recommended to be mined with cut and fill. Increased levels of support and tactical mining approaches can be used, however, if ground conditions are adverse based on development of the drilling and mucking levels, it is recommended that a cut and fill approach be adopted to safely mine these areas.

Mining near the historic cave-in areas in the 99 zone is not currently planned within the current PEA LoM plan for the Bellekeno mine. Should the potentially economic material in and around these cave-in areas be contemplated in the future, tactical methods to handle the potentially adverse conditions should be planned prior to accessing these areas. These should include probe drilling to confirm cave extents, and backfilling to create a stable environment for development headings planned for these areas.

As the level of extraction increases within the SW zone, it is likely that some stress induced failures will be encountered. Optimization of extraction sequencing and excavation performance assessments will need to be regularly undertaken. Monitoring program costs and schedule impacts should be considered in the latter stages of extraction.

Lucky Queen

Due to the shallow dipping orebody geometry at Lucky Queen, all mining has been planned using a cut and fill method.

Flame & Moth

The mining methods considered suitable for the Flame & Moth deposit are cut and fill (drift and fill in wider vein areas) and limited dimension longhole stoping with backfill. The Mill fault and overburden materials are both considered to transmit water.

16.3.5 Hydrogeological Conditions

The Bellekeno and Lucky Queen proposed mining zones are located above the valley floor, which tends to limit the occurrence and impact of adverse hydrogeological conditions. In contrast, the Flame & Moth deposit is situated below the valley floor and there is a possibility of significant water inflow to the planned underground workings. Hydrogeologic studies and mine histories indicate that groundwater within the Keno Hill Silver District originates from infiltration of meteoric water, and migrates within unconsolidated glacial deposits and through fractures in metamorphic rocks. Groundwater inflows to historical and operating mines tend to be structurally controlled, with increased flows from veins and faults that have been intersected by drill holes and underground workings. Mine histories also indicate that enhanced groundwater inflows can occur when cross-faults are intersected by mine workings.

At the Flame & Moth site, three structures have been identified that could provide enhanced inflows to the proposed underground mine: Lightning zone (Flame vein), Christal zone (Flame vein), and the Mill fault that separates the two zones. During August and September of 2013, Alexco drilled three vertical test boreholes using the air-rotary method to investigate the water bearing characteristics of these zones and the overlying rock:

- KAR-1: Total depth of 183.5 m; penetration through Christal zone;
- KAR-2: Total depth of 232.3 m; penetration through the Lightning zone;
- KAR-16: Total depth 195.7 m; penetration through the Mill fault.

All three boreholes penetrated the target structures at depths similar to those of the planned mine workings. The boreholes were completed as monitoring wells and will be sampled in the future to assess bedrock water quality.

During air rotary drilling, water discharge rates were closely monitored as each borehole was advanced. The boreholes made progressively higher flow rates as they were drilled deeper. The maximum airlift flow rates ranged from about 2.5 to 5.0 litres per second (L/s) (40 to 80 gpm). Experience suggests that if a proper dewatering well is installed, its yield might be about two times the air-lift flow rate observed during drilling. Therefore, a dewatering well may discharge 5 to 10 L/s (80 to 160 gpm), in the absence of hydraulic interference from other wells.

In contrast to other areas of the Keno Hill Silver District, these drilling/flow observations provided evidence that groundwater flow in the Flame & Moth area is not strongly controlled by structures. There were no situations where a borehole was making very little water and then the flow increased dramatically upon intersecting a known vein or fault. Rather, the airlift flow rates tended to increase systematically as the boreholes were deepened suggesting that the rock mass is somewhat uniform with regard to hydraulic properties.

During the drilling of KAR-16 a prominent drawdown response was observed in KAR-2, which is located 86 meters away. This response occurred rapidly (tens of minutes) and was analyzable using radial flow solutions; again suggesting that groundwater flow is not structurally controlled. The rock mass in bulk appeared to behave more as an equivalent porous medium that is relatively homogeneous and can be depressurized over large distances by pumping from wells or underground adits. Analysis of the data gave the following bedrock properties:

- Transmissivity: T = 3.2 to 3.6 m^2/day
- Storativity: S = 3.3 x 10^{-5}
- Permeable thickness: 30.5 m
- Hydraulic conductivity: 6.8 x 10^{-5} to 1.2 x 10^{-4} cm/sec
- Specific storage: 1.1 x 10^{-6} 1/m.

Because the drilling/test conditions were uncontrolled, these values should be considered preliminary and subject to revision. Alexco completed a formal multi-day pumping test during November 2013 to better assess the bedrock properties, hydrologic effects of Lightning Creek, and potential groundwater impacts in the Keno City area. This test involved continuous pumping of KAR-1 for 72 hours while monitoring water levels in accessible bedrock monitoring wells in the Flame & Moth area, Mill area, and Keno City area.

Only wells in the immediate vicinity of the pump test showed significant water fluctuations during the test – KAR-1 (pumping well), KAR-2, KAR-16 and KV-103 (Mill well). The water level rise seen in KAR-2 and KAR-16 is interpreted to have resulted from the infiltration of the discharge water, and it is concluded that there was no definitive hydraulic response in these wells. The water level in KV-103 declined shortly after the pump test began, but continued to decline after pumping was discontinued. It is uncertain if this was a response to the pump test or due to external factors, including the fact that KV-103 is sometimes pumped to supply water to the mill. These observations led to the conclusion that there were no analyzable responses in any of observation wells during and after the KAR-1 pumping test.

Analysis of the response seen in KAR-1 during the pump test gives the following bedrock properties:

- Transmissivity: T = 6.44 m^2/day
- Hydraulic conductivity: 7.06 x 10^{-5} cm/sec

A residual drawdown of about 1.2m was seen at KAR-1 thirteen days after the end of pumping, suggesting that the groundwater system is not subject to a major recharge source such as Lightning Creek. The lack of pumping related drawdown at KAR-2 and KAR-16 suggest that the groundwater system is compartmentalized by a geologic structure that operates with lower permeability than the adjacent country rock, such as the Mill Fault that lies between KAR-1 and KAR-2/16

Given the information collected to date, calculations show that the inflow rate is zero for depths down to the static water level of 25m below ground, after which the estimated dewatering rate increases in non-linear manner to a computed inflow rate of 35 L/s (555 gpm) at the maximum mine depth of about 270 m below ground surface. This result is considered a conservative overestimate appropriate for mine planning and permitting.

Current information suggests that the mine can be dewatered using underground pumping with subsequent treatment of all water prior to discharge. The hydrogeological context and potential water ingress from faulting, overburden materials, and surface water features represent a potential risk to the Flame & Moth mine plan. A system of geotechnical/hydrological barrier pillars along the Mill fault and below the overburden areas has been included in the Flame & Moth mine design. The PEA production plan assumes that a 50% recovery of these pillars (Figure 16.28) will be possible near the end of the mine life.

The PEA mine plan allows time for drainage prior to mining once the veins are intersected by underground development. Following dewatering, rock mass and mining conditions will need to be reassessed and a conservative mining approach adopted. There is a risk of higher ground support costs and reduced advance rates due to water inflow issues.

16.3.6 Mine Design Recommendations

Mine design recommendations have been developed using information gained from Alexco's operations experience at Bellekeno mine, in addition to the reviews completed for each mining area. The general design recommendations are summarized as follows:

- Man entry spans have been reviewed based on the critical span curve of Ouchi et al. (2004):
  - Waste development headings: 5.0 m span;
  - Excavation spans can be increased for the main ramps, intersections, and permanent infrastructure areas of the mine, but must be supported accordingly;
  - Spans for production headings on vein: RMR>35 is 4.0 m. RMR<25 is 3.0 m.
- Non man-entry stope design was completed using the modified Matthews stability curve (after Stewart and Forsyth, 1995) and the failure iso-probability curves developed by Mawdesley and Trueman (2003) based on intact rock strengths and joint orientations collected at the Bellekeno mine:
  - Stope spans of 3 to 7 m;
  - Vertical heights and lengths of 8 to 15 m;
  - The vertical end and back surfaces plot near the extremities in both graphs. In these areas limited case studies are available to support the failure divisions and some level of uncertainty will need to be accepted;
  - The location of each surface on the stability graph is considered to be consistent with Alexco's experience of longhole stoping at the Bellekeno mine.
- At Flame & Moth a 20 m stand-off from the Mill fault has been recommended until studies are completed to confirm the hydrogeological conditions within the fault and vein areas, and a 30 m vertical crown pillar is to be maintained at the northern end of Lightning area (beneath unconsolidated overburden) (Figure 16.9).

These general design recommendations should be updated to reflect localized conditions at the Lucky Queen deposit.

16.3.7 Dilution

A volumetric reconciliation of the longhole stoping completed to date at Alexco's Bellekeno mine was undertaken to understand the impacts of dilution. On average, a volume difference of 25% was recorded. However, due to the variable nature of the mineralized vein contacts and splays, the dilution most often results in additional grade being recovered from the stope. At this stage, it is still prudent to assume that where the full vein width is planned to be blasted, a 20% unplanned dilution is likely and this could be unmineralized.

16.3.8 Ground Support Recommendations

Waste development and production support requirements have been based on the ground classes, empirical design (Palstrom & Broch, 2006; Laubscher, 1990), and have been adjusted with Alexco's experience in the Bellekeno mine (Table 16.1, Table 16.2, and Table 16.3) to provide the recommended ground support for development and production headings, and large span support in the production areas.

The levels of ground support specified in these tables are based on the experience gained by Alexco in the Bellekeno mine. These support recommendations are, therefore, considered preliminary for the Lucky Queen and Flame & Moth deposits, and re-evaluation will be required during ongoing evaluation programs.

Shotcrete has been recommended as an option in all production areas to account for the need to tie the rock mass together in friable sugar-cube like areas.

Table 16.1: Ground Support Requirements for Waste Development Headings in All Deposits (Based on Bellekeno mine experience)

Area	Ground Class	Support Class	Support Requirements
Waste Development Headings	DG-1	DS-1	1.8 m friction anchors on 1.2 x 1.2 m core drill hole spacing across back and shoulders #6 welded wire mesh and/or straps across back and shoulders Additional spot bolting down ribs as required
		DS-1A	1.8 m friction anchors on 1.2 x 1.2 m core drill hole spacing across back and shoulders 2.4 m resin grouted rebar on 1.2 x 2.4 m spacing across back #6 welded wire mesh and/or straps across back and shoulders Additional spot bolting down ribs as required
	DG-2	DS-3	2.4 m coated Swellex on 1.2 x 1.2 m core drill hole spacing down to 1.4 m above floor #6 welded wire mesh down to 1.2 m above sill Additional spot bolting as required Mesh straps as required
	DG-3	DS-4	25 mm flash-coat shotcrete in back and ribs 2.4 m coated Swellex on 1.0 x 1.0 m core drill hole spacing down to 1.2 m above floor #6 welded wire mesh down to 1.2 m above sill Mesh straps as required 50-75 mm additional shotcrete in back and ribs If required: spiling at 30 cm centres with 4.5 m grouted bar spiles

Table 16.2: Ground Support for Large Production Spans 4.0 to 7.0 Metres

Area	Span	Support Requirements
Production Headings	4.0-5.5m	3.5" steel reinforced shotcrete across back and 2.5" on walls to floor level Bolt through fibrecrete with 10' Swellex anchors in back and 8' in walls on a 1.3 x 1.3 m pattern down to floor level Maximum advance is 2.0 m
	5.5-7.0m	4.5" steel reinforced shotcrete across back and 3.0" on walls to floor level Bolt through fibrecrete with 12' Swellex anchors in back and 10' in walls on a 1.3 x 1.3 m pattern down to floor level Maximum advance is 2.0 m

Table 16.3: Ground Support Requirements for Production Headings with Maximum Span 4.0 Metres (Based on Bellekeno mine experience)

<table>
<tr><th>Area</th><th>Ground Class</th><th>Support Class</th><th>Support Requirements</th></tr>
<tr><td rowspan="6">Production Headings (incl. crosscuts)</td><td rowspan="2">PG-1</td><td>PS-1</td><td>1.8 m friction anchors across back on 1.2 x 1.2 m spacing; rib bolting as required
If required: #6 welded wire mesh across back and shoulders
If required: 25 mm flash-coat shotcrete in back; rib coverage as required</td></tr>
<tr><td>PS-1A</td><td>Install 8' Swellex in back & hangingwall on a 1.0 x 1.0 m pattern
1.8 m friction anchors across back on 1.2 x 1.2 m spacing
Install #6 weldmesh on back and shoulders
#0 screen straps and 1.8 m friction anchors every 2.0 m on ribs
6' split sets and straps 1.0 x 1.0 m on footwall
Shotcrete as required
Install 1 split set pull test collar each round</td></tr>
<tr><td rowspan="2">PG-2</td><td>Modified PS-3</td><td>Install 8" Swellex in back on 1.0 x 1.0 m pattern
Install #6 weldmesh on back & shoulders
8' Swellex and straps 1.0x1.0 m on footwall and hangingwall
Shotcrete as required
Spile as required
Maximum drift width 4.0 m
Install 1 split set pull test collar each round</td></tr>
<tr><td>Modified PS-3A</td><td>Install 10' Swellex in back & hangingwall on 1.0 x 1.0 m pattern
Install #6 weldmesh on back & hangingwall
6' split sets and straps 1.0 x 1.0 m on footwall
Shotcrete as required
Maximum drift width 3.5 m
Install 1 split set pull test collar each round</td></tr>
<tr><td>PG-3</td><td>PS-4</td><td>25 mm flash-coat shotcrete on back and ribs
3.0 m Swellex on a 1.0 x 1.0 m spacing in back and shoulders; 2.4 m Swellex in ribs
#6 welded wire mesh down to 0.8 m above the sill
50-75 mm shotcrete on back and ribs
If required: spilling on 30 cm centres and/or mesh straps</td></tr>
<tr><td colspan="2">Benching Ground Support</td><td>Prior to start of benching
Install 10' Swellex in hangingwall to sill on 1.0 x 1.0 m pattern
#6 weldmesh hangingwall to sill
8' split sets and straps 1.0 x 1.0 m on footwall to sill
Maximum bench width 3.5 m
Shotcrete hangingwall sill as benching progresses</td></tr>
</table>

Backfill

Various combinations of cemented rock fill (CRF) using mine waste and tailings (dry filtered) have been selected for stope backfilling, with the cement content adjusted between 2 and 7% based on the requirement for fill strength. The following backfill mix guidelines are considered reasonable for planning purposes:

CRF (with mine development waste):

- If needed for a sill: 6 – 7% cement;
- If needed for a standing backfill wall in a longhole stope: 6 – 7% cement;
- If consolidated fill is not required: 0% cement (cut-and-fill).

When dry filtered tailings are used:

- If needed for a sill: 6 – 7% cement;
- If needed for a standing backfill wall in a longhole stope: 2 – 3% cement;
- If needed for a working floor: 2 – 3% cement;
- If consolidated fill is not required: 0% cement.

Sill Mats

Where sill mats are required, a cemented backfill with 8% cement will be used to provide a stable back to mine up to from beneath. Extraction of the vein material from the final lift requires that the pillar is self-supporting and maintains integrity while the heading is active. The quality and the placement of the fill are both important factors in this application. In areas where additional caution is required during the final lift extraction, the lift will be mined using up-holes and remote mucking.

16.4 Planned Mining Methods

16.4.1 Mining Method Selection

Much of the historical mining in the Keno Hill Silver District has been done using square set stoping, shrinkage stoping or conventional cut and fill stoping methods using handheld drills, slushers, and track haulage.

In a previous PEA (Wardrop, 2009), an assessment was made of the viability of mechanized overhand cut and fill, mechanized underhand cut and fill, shrinkage stoping and small scale longhole stoping.

This current study has the benefit of almost three years of recent mining experience at the Bellekeno mine to provide valuable insight into what does and does not work in this challenging environment.

The main factors driving the mining method selection process were:

- Proven mining methods currently in use at the Bellekeno mine;
- Ground conditions in the vein and along the vein contacts range from good to very poor;
- Ground conditions can vary substantially over short distances (5 m);
- Vein geometries vary greatly between deposits:
  - Average dip ranges from 45° at Lucky Queen to almost vertical in sections of the SW and 99 zones at Bellekeno;
  - Average true width ranges from less than 1 m to several metres;
  - Strike directions are fairly uniform on the deposit scale with the exception of Lucky Queen where the vein has a steady change in strike that forms an arc in plan view.
- Metal content and distribution varies significantly between deposits and also varies over the stope mining scale;

- Vein continuity is good, but with variable mining grades;
- The footwall is often characterized by competent quartzite but can be weak in some areas;
- The hangingwall varies from competent quartzite to weak layers of quartz breccia with clay filled shear bands, graphitic schists, or serecite schists;
- Geological contacts at the hangingwall and footwall can often be visually identified but can be faulted or fractured contacts with gouge and breccias;
- Mineralization contacts are less clearly defined and are based on a combination of structure, vein mineralogy, and metal grades;
- Vein systems can be locally water bearing and required time to drain when they are first crosscut by development;
- Vein depths are shallow with a low-stress regime, high-stress issues are not a factor in mine planning, but lack of clamping forces contributes to the poor ground conditions.

In summary, the various deposits require the use of mining methods that can adequately support the vein and that are flexible and selective while minimizing the direct mining costs.

During 2010 and 2011, the mining method used at the Bellekeno mine was exclusively mechanized overhand cut and fill using rock fill. Several sill mats were also installed at critical locations. In 2012, some test mining was initiated at the Bellekeno mine using a very small scale longhole mining method with a fair amount of success.

Therefore, the mine design strategy was to design as many areas as practical using small scale longhole mining methods while planning mechanized overhand cut and fill for areas where ground conditions were poor, or where the combination of vein dip and true width was not compatible with longhole stoping methods.

Underhand cut and fill methods have been reviewed in the past, but are considered unsuitable in this environment due to the risks associated with potentially weak layers at the hangingwall and footwall contacts. Failure to properly buttress the backfill above into sound footwall and hangingwall rocks can lead to catastrophic failures.

Shrinkage mining has also been reviewed in the past, but is considered unsuitable due to the safety issues and the lack of available skilled manpower in Canada.

16.4.2 Overhand Mechanized Cut and Fill Mining at Bellekeno

When Alexco resumed mining at the Bellekeno mine in 2010, the majority of the vein material was mined by overhand mechanized cut and fill (MCF) methods (Figure 16.10). Each lift of MCF was typically accessed from the footwall ramp system by a 3.5 m wide by 3.5 m high attack ramp. Depending on the grade and length of the attack ramp, 3 to 4 additional cuts of MCF were economically accessed. To do this, a section of back in the crosscut or attack ramp was slashed down and then rebolted. The broken waste rock from the take down back (TDB) slashes was left in place and graded to access the next cut.

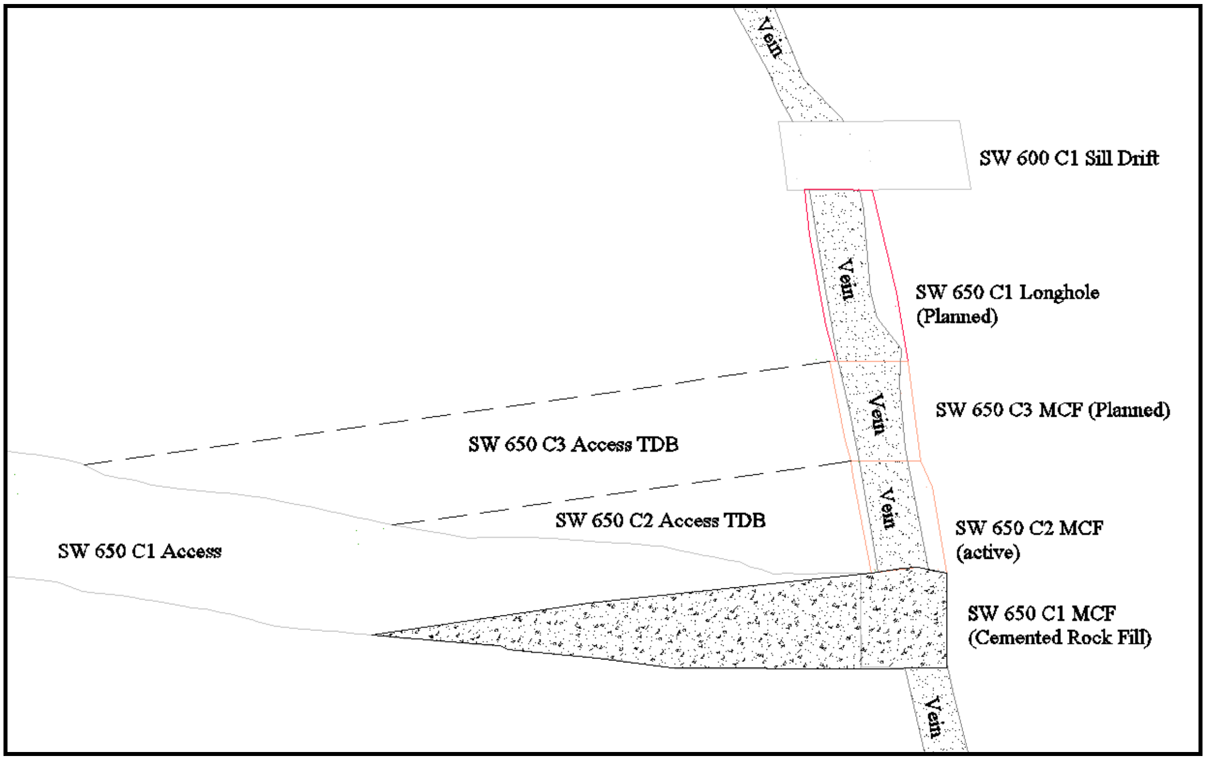


Figure 16.10: Schematic Cross-Section - Typical MCF Stope (SRK, 2013)

Each MCF stope was typically between 25 and 80 m in strike length, and was nominally 3.5 m high and a minimum of 2.5 m in width. Primary stopes were designated C1 and were developed the same as any development heading as the floor is solid rock. Secondary stopes (C2, C3, etc.) were developed by breasting along the strike length of the previous cut after the previous cut had been filled with rock fill or cemented rock fill. A load-haul-dump (LHD) equipped with a rammer jammer (Figure 16.11) was used to ensure the backfill was well consolidated and pushed up tight to the back.

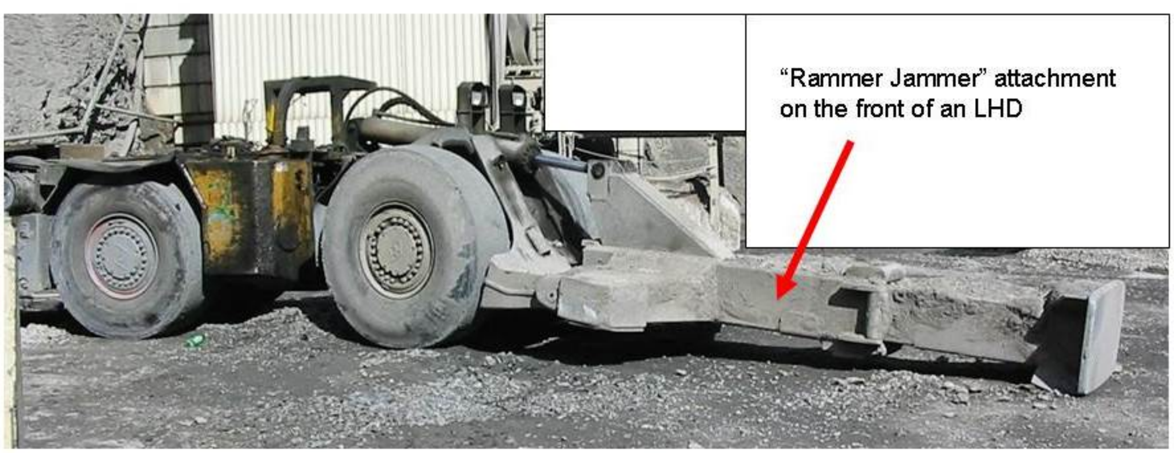


Figure 16.11: Example of a Rammer Jammer (SRK, File Photo)

A sill mat was installed if the mining plan called for the sill pillar below to be extracted.

The PEA LoM plan for the Bellekeno mine does not require any additional sill mats to be installed beyond those that already exist.

16.4.3 Longhole Mining at Bellekeno

Alexco began trials of a small scale longitudinal retreat longhole mining method in 2012 and has been reasonably successful in applying this method to both the SW and 99 zones at Bellekeno (Figure 16.12). The intent is to mine a large portion of the mineral resources remaining in the SW and 99 zones using this method.

The overcut and undercuts were developed on nominal 10.5 m intervals from the footwall ramp system at the height of 3.5 m with typical widths of 2.5 to 4 m. The mining sequence began by drilling and blasting a drop raise at one end or both ends of the zone, depending on the access point. The strike length of the individual stopes was limited to 10 m, which limited the tonnage per stope to between 500 to 1,000 tonnes excluding development.

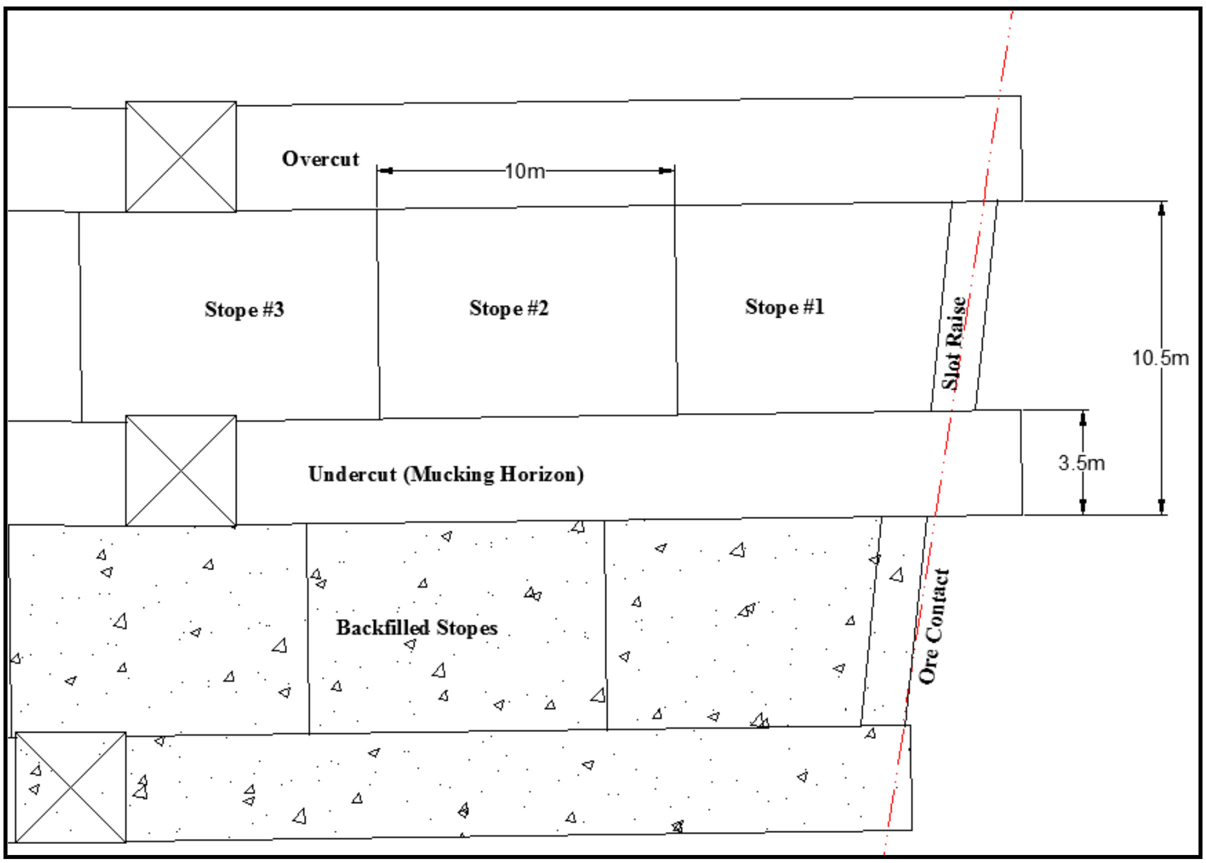


Figure 16.12: Schematic Long Section - Small Scale Longitudinal Retreat Longhole Stopes (SRK, 2013)

Once the zone was prepared for production, the first stope was blasted and mucked over a period of a week or less, with backfilling occurring during the next week. Speed of mining and filling is an important aspect of successfully mining in these types of ground conditions.

In the past, much of the backfill used has been cemented rock fill with some use of cemented dry filtered tailings. The plan going forward is to increase the use of dry filtered tailings in the backfill mix for the longhole stopes.

In order to keep a slot open for the next stope, a plastic culvert with a cap was chained to the wall and dropped into the stope to be filled (Figure 16.13). Backfilling then proceeded normally, with the culvert being strong enough that it did not collapse.

Figure 16.13: Culvert Installed in Longhole Stope (SRK, 2013)

Longhole drilling was being done using a Boart BCI2 Drill Carrier equipped with a Secan S36 rockdrill. The general practice was to drill 2.5-inch diameter up drill holes from the undercut, held back from breakthrough by 0.3 m or so. These drill holes were immediately cased with 2-inch ID plastic pipe to prevent the drill holes from collapsing or plugging.

Drill holes were double primed using 277-gram Pentax boosters and loaded with ammonium nitrate/fuel oil (ANFO) immediately prior to blasting. Several rows were also typically pre-loaded to minimize the loading crew's exposure to the open stope brow. Pre-loaded holes were collar primed and blasted with the next blast.

All remote mucking was done using a JS-220 LHD (2.2 yard) equipped with a remote package, while manual mucking was done with either a JS-220 LHD or a JS-350 LHD (3.5 yard).

16.4.4 Overhand Mechanized Cut and Fill Mining at Lucky Queen

With the dip of the Lucky Queen mineralization averaging 45° through the mining area, an overhand MCF method has been selected as being the most suitable approach (Figure 16.14). Each lift of MCF will typically be accessed from the footwall ramp system by a 3.5 m wide by 3.5 m high attack ramp. Depending on the grade and length of the attack ramp, four to six additional cuts of MCF can be economically accessed. To do this, a section of back in the crosscut or attack ramp will be slashed down and then rebolted. The broken waste rock from the TDB slashes will be left in place and graded to access the next cut.

Each planned MCF stope is typically between 25 m and 80 m in strike length with a maximum of 50 m on either side of the access point to be mined from that access point. This maximum is recommended in order to limit the time that any particular cut remains open and thereby reduce the risk of geotechnical instability. Therefore, the operating practice will be to concentrate on cycling the active stopes as fast as practical.

MCF stopes will nominally be 2.5 m high and a minimum of 3.0 m wide. The height of the cut has been reduced as compared to the current practice at Bellekeno mine in order to reduce the external dilution with 2.5 m being close to the practical minimum height required to operate a 1.1 to 1.5 m^3 class LHD.

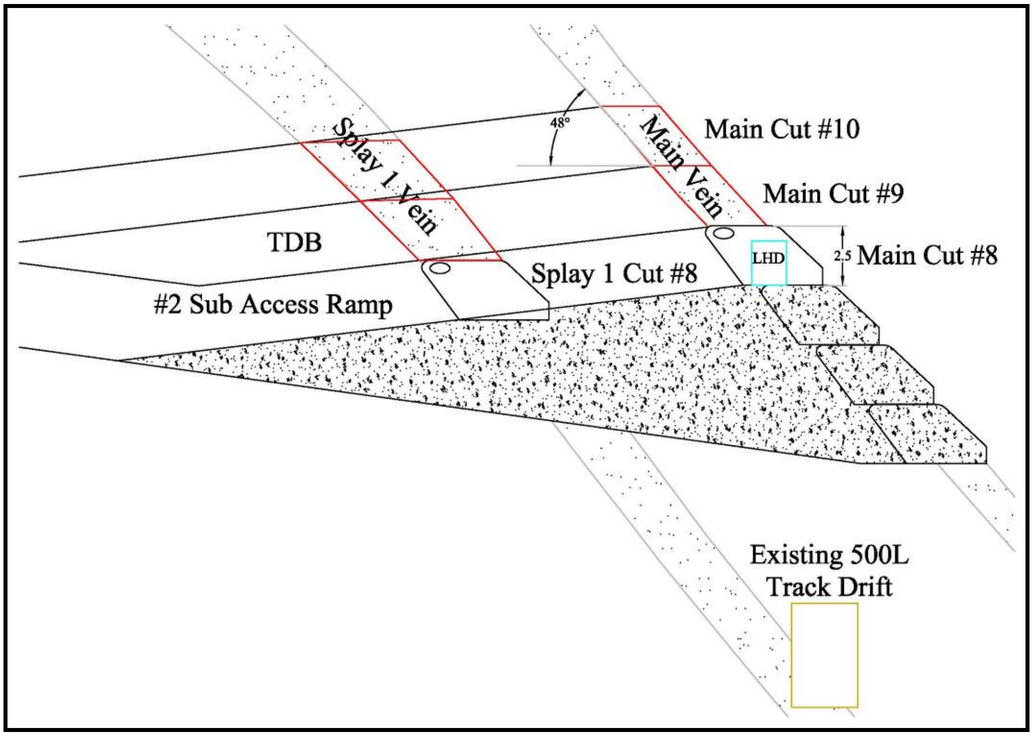


Figure 16.14: Schematic Section - Typical Cut and Fill Stopes, Lucky Queen (SRK, 2013)

Due to the shallow dip, additional external dilution will be realized due to practical limits on how shallow the hangingwall and footwall profiles can be maintained, issues with drilling the footwall with a jackleg and issues with adequate clearances for the LHDs. See Figure 16.15 for an illustration of the impact of different dips on external dilution values. The overall external dilution value for Lucky Queen is estimated at 30% using the W/(W+O) formula or 42% using the W/O formula.

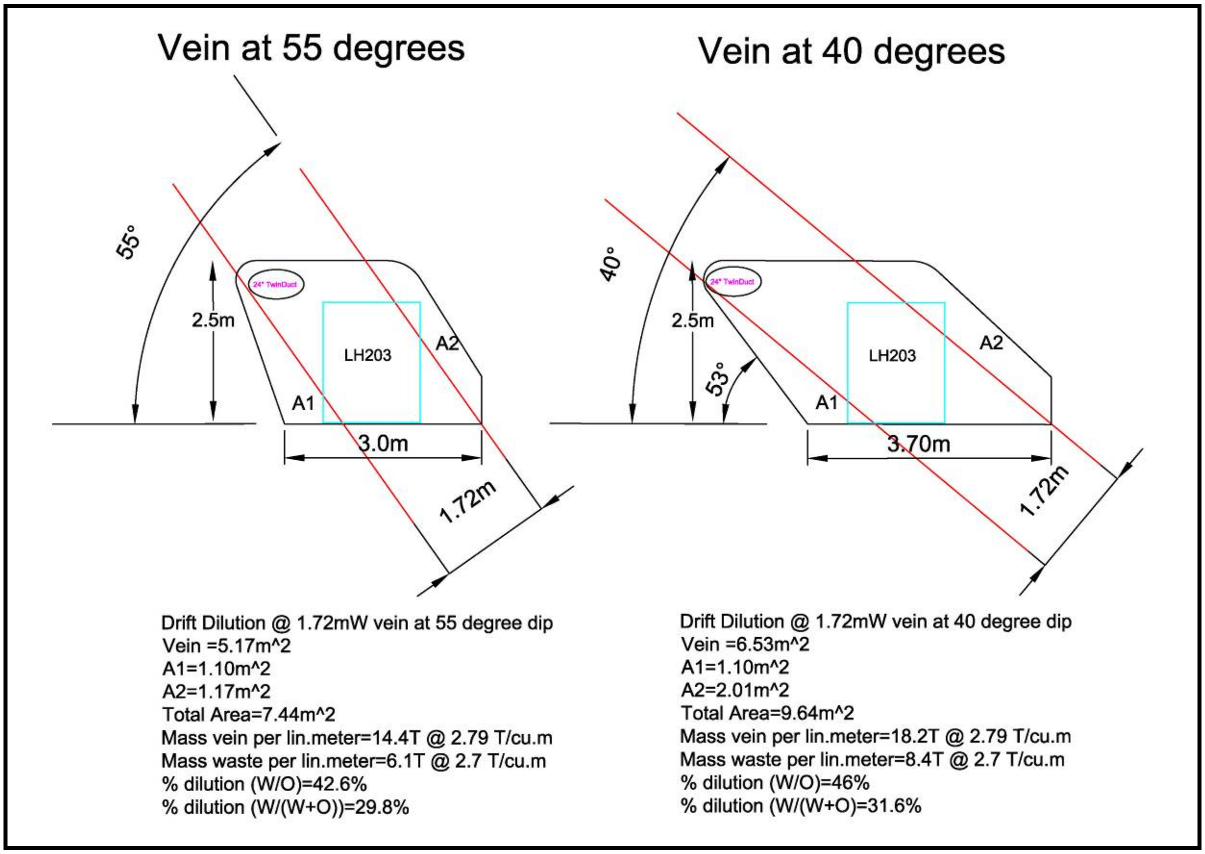


Figure 16.15: Schematic Section - Examples of Impact of Dip on Drift Profiles (SRK, 2013)

Primary stope sill cuts will be developed the same as any development heading as the floor will be solid rock. Subsequent cuts above the sill cut will be developed by breasting along the strike length of the previous cut after the previous cut has been filled with a good quality cemented rock fill to support the hangingwall. A rammer jammer is to be used to ensure the backfill is well consolidated and as tight to the back as is feasible.

An issue that will be encountered due to the shallow dip will be the requirement to drill and blast a few additional lifter drill holes on the footwall side to ensure that the LHDs can properly muck the broken rock. This is due to the fact that the breasted cuts will be offset from the cuts below and, therefore, the footwall side must be brought down to the mucking level, which is the top of cemented rock fill. The other option is to accept the loss of vein material, but this is not an acceptable alternative given the high grade nature of the Lucky Queen mineralization.

16.4.5 Planned Mining Methods for Flame & Moth

Planned mining methods for Flame & Moth include longhole, overhand MCF, and drift and fill. The application of longhole and MCF methods at Flame & Moth will be the same as the Bellekeno mine application.

The longhole method for Flame & Moth is based on a sublevel spacing of 10.5 m vertically, measured sill to sill, with a stope strike length of 10 m. Stopes will be small, averaging only 800 to

1200 tonnes per stope after development tonnes are removed. Small diameter down-hole drilling will be used. Stope development will only be on vein with stopes being mined in a retreat sequence along strike. Backfill will be handled by truck and LHD and it will consist of a mix of development waste rock and dry filtered tailings back hauled underground by truck. Refer to Figure 16.12 and Figure 16.13.

Overhand cut and fill mining planned for Flame & Moth will be on 3.5 m high cuts with central crosscut access. Stope lengths will vary in the range of 30 to 80 m. Three cuts will be accessed from each primary access crosscut by back slashing. Where the vein is wider than 7 m, drift and fill will be employed in two passes. Backfill will be handled by truck and LHD and it will consist of a mix of development waste rock and dry filtered tailings. A rammer jammer attachment will be used to tight fill to the back. Refer to Figure 16.10 and Figure 16.11.

16.4.6 Sill Pillar Recovery Methods

Where future recovery of sill pillars is scheduled, a cemented backfill along with a carefully prepared sill mat will be used to provide a stable back to mine up to from beneath. Extraction of the vein by MCF methods requires that the pillar is self-supporting and maintains integrity while the heading is active. The quality and the placement of the backfill and sill mat are important factors in this application. An increased cement content of 8% will be required to provide the required backfill strength.

Figure 16.16 shows a sill mat construction plan for the SW zone of Bellekeno.

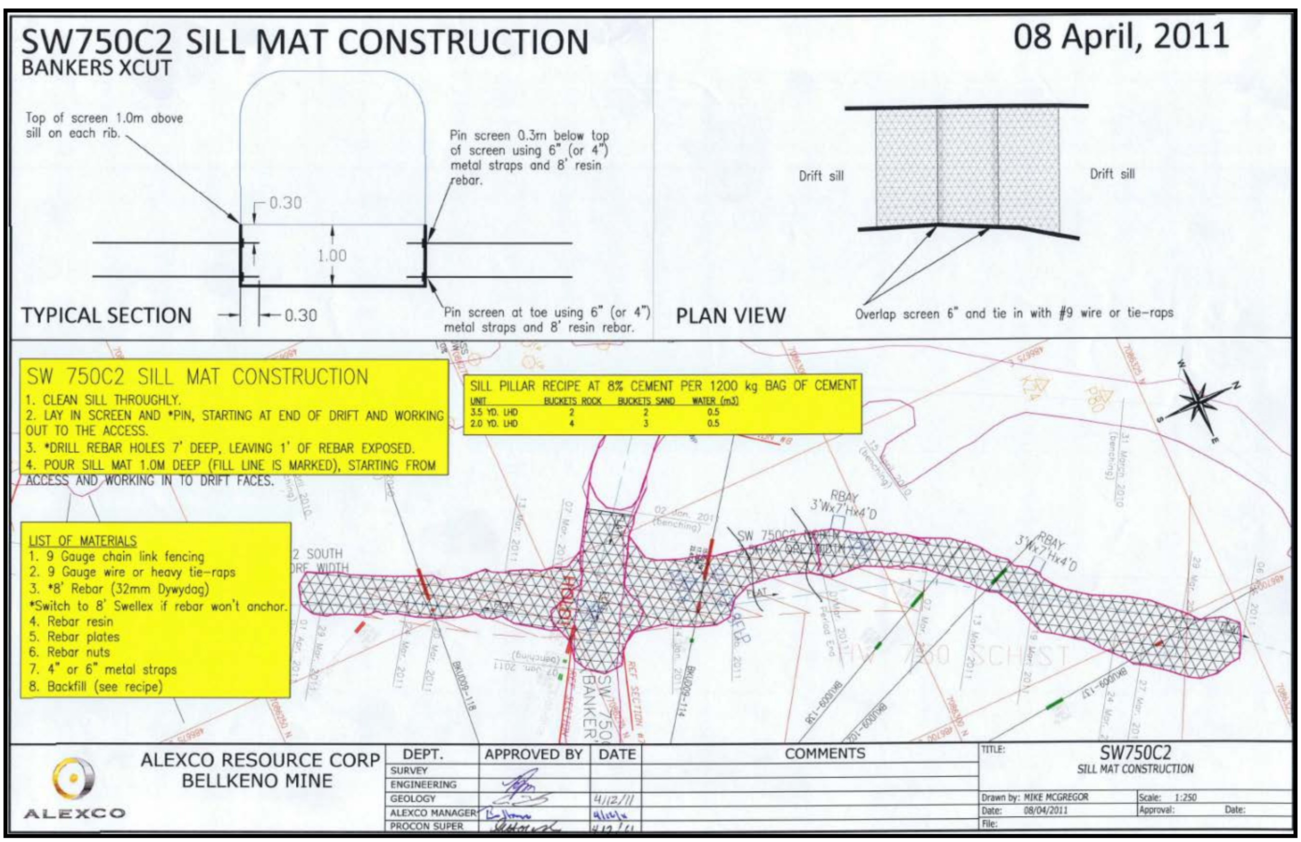


Figure 16.16: Sill Mat Installation Plan (Alexco, 2013)

In areas where additional caution is required during final extraction, the sill pillar will be mined using 7.5 m longhole uppers and remote mucking. Up drill holes will be held back from the sill mat, dipped forwards and arched to minimized blasting damage to the sill mat. When recovering these sill pillars, speed of mining is critical to success.

Also critical is careful preparation of the excavation where the sill mat and cemented fill are to be placed, including blasting beyond the vein contacts to provide a clean, rough surface for the fill to key in. The floor should be cleaned prior to placement to prevent material falling from the back following mining. An appropriate lead time should be provided to allow set-up and curing of the cemented fill. Standard quality control procedures (e.g., unconfined compressive strength and slump tests) should be completed during batching and following placement of cemented tailing fill materials.

16.5 Estimate of Potentially Mineable Tonnes – Methodology

16.5.1 Introduction

This section provides a description of the methodology used by SRK in estimating the potentially mineable tonnes and production rates for the following deposits that are part of the KHSD project and comprise the plant feed schedule for this PEA:

- Bellekeno (SW zone, 99 zone);
- Lucky Queen;
- Flame & Moth.

In each case, SRK applied typical mine planning methods to the resource block models. Metals of economic interest include silver, lead, zinc, and gold for all properties except Bellekeno where the block model did not have an estimate for the gold grade. SRK included Measured, Indicated, and Inferred mineral resources in the underground production plans. SRK estimates that Inferred mineral resources form the basis of approximately 6% of the “potentially mineable tonnes” included in the plant feed schedule of this PEA.

SRK’s 2013 estimate of the potentially mineable tonnes included the impact of the Silver Purchase Agreement which called for 25% of the payable silver ounces produced to be sold to Silver Wheaton Corporation (SLW) at a price of US$3.90 per ounce.

Alexco and SLW have subsequently re-negotiated the Silver Purchase Agreement such that 25% of the payable silver ounces produced would be sold to SLW at sliding scale price instead of the US$3.90 fixed price. This amendment to the Silver Purchase Agreement has not yet been finalized as the amendment is contingent on Alexco making a US$20 million payment to SLW prior to resuming production. This updated PEA assumes that the payment will be made and the amendment in force prior to production.

The estimate of potentially mineable tonnes included in this updated PEA were developed by re-examining the 2013 estimate of potentially mineable tonnes using an updated NSR equation (NSRSW2) that accounts for the impact of the amended Silver Purchase Agreement with SLW and uses updated metal prices and exchange rates.

Careful comparison of the value of each individual mining shape and deposit against both the 2013 NSR formula and the updated NSR formula revealed that the lower metal price assumptions were largely offset by the more favourable terms of the amended Silver Purchase Agreement. Based on this comparison, some small adjustments were made to the estimate of potentially mineable tonnes that were included in the Life of Mine Plan for this updated PEA. These changes were based on available data from detailed mine planning work conducted in 2012 and 2013, no additional detailed mine planning work was conducted for this updated PEA. The small differences in NSR values would not produce significant changes in the Life of Mine Plan.

In addition to methodology, the following report sections provide certain planning results that are common to the three planned mines. Section 16.6.2 through 16.6.8 refer to the detailed mine planning work done in 2012 and 2013 which generated the mining shapes carried forward into this updated PEA.

16.5.2 Initial Estimate of Site Operating Cost for Bellekeno and Lucky Queen

An estimated site operating cost is required as an input to the mine planning economic cut-off criteria (an NSR value in this case). The initial site operating cost referred to here is for the purpose of creating mining shapes, and does not necessarily match the final operating costs shown in the economic model.

As mine planning work on Bellekeno and Lucky Queen was undertaken independently, and at a different time than the work on Flame & Moth, the methods used to estimate the initial site operating costs are presented separately.

At the start of the project, Alexco provided SRK with the approved 2012 budget files, which were based on a 325 tpd operating plan using mainly MCF mining methods. The majority of the mine plan was based on production at Bellekeno, but did include small contributions from Lucky Queen and Onek. These budget costs were based on contractor mining and are summarized in Table 16.4.

The 2012 budget projections were compared to the year to date actual costs available at the time. The actual costs reported were not used as they were noted to be highly variable, and included capital costs and other costs not directly related to site operations that would have to be removed. SRK determined that the 2012 budget projections were a reasonable basis for developing the cut-off criteria.

Later, SRK did conduct an analysis of the actual site operating costs when Alexco requested that SRK add the Flame & Moth deposit to the PEA LoM plan, and the results are shown in Table 16.5. A comparison of the two approaches shows that the actual site operating costs for 2012 Q4 were \$296/t versus the annual budget estimate of \$307/t.

Table 16.4: 2012 Budget Breakdown (325 tpd Contractor Mining)

Area	Cost/tonne
Mining	$214.74
Milling	$66.66
G&A	$25.63
Total Site	**$307.03**

Two assumptions regarding the future site operations required the costs in Table 16.4 to be factored before being used in mine planning for Bellekeno and Lucky Queen. These are:

- The mill would operate at a 400 tpd throughput (nominal capacity);
- Alexco would operate the underground mines with its own equipment by buying out some of the contractor's fleet as part of a mining contract ending February 2013, and by purchasing additional mobile equipment as required by the mine plans.

Both assumptions will tend to reduce the total site unit operating cost.

SRK applied factoring to the 2012 budget operating costs to account for an increase in plant throughput from 325 tpd to 400 tpd. To accomplish this, SRK reviewed Alexco's 2012 budget details and estimated the fixed cost/variable cost split for the mine. Since a previous operating cost estimate existed for a milling rate of 400 tpd from the 2009 PEA, this cost was selected and escalated by 3% per year to factor the milling cost. The general and administrative (G&A) cost was factored assuming 100% fixed costs.

These adjustments resulted in an estimated site operating cost of $268/t representing a plant throughput of 400 tpd. Since the 2012 budget was based mainly on MCF mining methods, SRK used a rounded figure of $265/t as the diluted cut-off for designing MCF stopes at Bellekeno and Lucky Queen. Under the assumption that longhole mining would be more efficient, SRK used a diluted cut-off of $185/t as a guide in designing mineable shapes for the small scale longhole stopes at Bellekeno.

16.5.3 Initial Estimate of Site Operating Cost for Flame & Moth

Alexco provided SRK with detailed breakdown of the actual site costs for Q4 2012. During that quarter, the Bellekeno mine produced 22,385 t averaging 243 tpd, while the mill facility's throughput totalled 26,777 t averaging 291 tpd. The mining costs during the quarter reflected contractor mining.

Alexco provided SRK with the split of the total costs into operating costs and capital costs for the quarter. Alexco prepares a separate general and administration site cost, (G&A) and then allocates it to operating departments on a percentage basis. SRK reorganized the G&A costs in order to report a separate Bellekeno G&A cost, and also mine and mill costs without G&A allocations. It is noted that Alexco allocated additional G&A costs to the other Keno Hill Silver District mines being developed at that time (Lucky Queen and Onek).

The reported Bellekeno-related site operating cost is summarized in Table 16.5.

Two assumptions regarding the future operations at the KHSD project required the costs in Table 16.5 to be factored before being used in the Flame & Moth mine planning. These are:

- The mill facility would be supplied with 400 tpd plant feed (nominal capacity);
- Alexco would operate the underground mine(s) with its own employees and equipment, eliminating the need for a mining contractor.

Both assumptions will tend to reduce the total site unit operating cost.

Table 16.5: Actual Bellekeno Site Operating Cost - Q4 2012

Area	Total Opex	Cost/tonne
Bellekeno Mine	$4,829,460	$180
Mill Facility	$2,282,883	$85
G&A	$815,518	$30
Total Site	**$7,927,861**	**$296**

Alexco provided SRK with an estimate of the expected mine operating cost reduction that would apply to an owner operated underground mine. SRK reviewed this information and found the savings were clearly presented in the areas of contractor equipment rental and contractors mark ups for overhead costs and profit.

SRK applied factoring to the site unit operating cost to account for an increase in plant throughput from 291 tpd to 400 tpd. To accomplish this, SRK reviewed Alexco’s cost details for Q4 2012 and estimated the fixed cost/variable cost split for the mine, the processing plant and for G&A costs. The estimated splits are:

- 51% variable costs in the mine including development, stoping, backfilling, and haulage;
- 26% variable costs in the mill including crushing, conveying, grinding, flotation, dewatering, and electrical power;
- G&A variable costs were estimated at 20%.

These adjustments resulted in the estimated quarterly site operating cost shown in Table 16.6 representing an owner operated mine with plant throughput of 400 tpd. The G&A cost shown includes the total G&A cost allocated to Keno Hill Silver District mines.

Table 16.6: Estimated Site Operating Costs - 400 tpd Owner Operated

Area	Total Opex	Cost/tonne
Bellekeno Mine	$4,719,341	$131.09
Mill	$2,501,993	$69.50
G&A	$1,223,277	$33.98
Total Site	**$8,444,611**	**$234.57**

SRK used a diluted cut-off value of $230/t as a guide in designing mineable shapes for the Flame & Moth deposit.

16.5.4 Study Metal Prices and Exchange Rates used in 2012 and 2013 Mine Planning

SRK estimated potentially mineable tonnes for Bellekeno and Lucky Queen in 2012 based on:

- Metal prices of US$22.50/oz silver, US$0.85/lb lead, US$0.95/lb zinc, and US$1300/oz gold;
- An exchange rate of US$0.95/C$1.00.

SRK estimated potentially mineable tonnes for Flame & Moth in 2013 based on:

- Metal prices of US$24.00/oz silver, US$0.90/lb lead, US$1.00/lb zinc, and US$1400/oz gold;
- An exchange rate of US$0.96/C$1.00.

SRK notes that these initial metal price and exchange assumptions were for the purpose of mine planning and they generate mine planning NSR values. Report Section 22 Economic Analysis presents a different (final) set of metal prices used in the KHSD project economic assessment, and they generate different NSR values.

16.5.5 Net Smelter Return Estimate

It was deemed appropriate to utilize NSR estimates as a measure of resource block value since the targeted mineralization includes four economic metals (silver, lead, zinc, and gold) that report to two concentrates (a silver/lead concentrate and a zinc concentrate).

For Bellekeno and Lucky Queen SRK prepared a simplified NSR model based on Alexco's 2012 budget revenue model, incorporating the current metallurgical balance used by Alexco that was based upon the historical performance of the mill with the Bellekeno feed.

Using the NSR model, SRK derived NSR factors for each payable metal that could be entered into the resource block models for each deposit in a formula allowing an NSR value to be calculated for each block. The following example formula yields NSR on a $/t basis.

$$NSR = (0.388xAg) + (13.92xPb) + (6.531xZn) + (7.523xAu)$$

For Flame & Moth, SRK used a similar approach and prepared a simplified NSR model based on Alexco's 2013 budget revenue model.

Using the NSR model, SRK derived NSR factors for each payable metal that could be entered into the Flame & Moth resource block models for each commodity in a formula allowing an NSR value to be calculated for each block. The following example formula yields NSR on a $/t basis.

$$NSR = (0.482xAg) + (8.298xPb) + (4.365xZn) + (20.93xAu)$$

Both of the NSR formulas incorporate the Silver Purchase Agreement, under which 25% of the silver production is sold at a reduced price of US$3.90 per ounce, which has the effect of reducing Alexco's average realized silver price.

SRK entered formulas of this type into the resource block models and then applied the economic cutoff values previously described to outline areas of economically mineable tonnes referred to as mining shapes. The impact of mining dilution was accounted for by assuming that the in situ block model grades and estimated NSRs would be reduced by the estimated external dilution amounts when included in the plant feed. The NSR values resulting from the 2012 and 2013 mine planning work which include the impact of the original Silver Purchase Agreement are referred to by the acronym "NSRSW".

The NSR was later updated to reflect the changes to the Silver Purchase Agreement, as outlined in Amendment No. 7 to the Silver Purchase agreement dated June 16, 2014, and its impact on Alexco's realized silver price. The agreement amended the "Fixed Price" to the following definition.

a) If the Spot Silver Price is less than or equal to US$19.45, the amount equal to the greater of: (A) (US$18.00 + (Spot Silver Price – US$19.45) x 0.91); and (B) the Minimum Silver Price; or

b) If the Spot Silver Price is greater than US$19.45, the amount equal to the greater of: (A) (US$18.00 - (Spot Silver Price – US$19.45) x 0.91); and (B) the Minimum Silver Price.

The updated effective silver price was based on the estimated long term silver price of US$18.50 per ounce in the August 2014 Consensus Market Forecast published by Consensus Economics Inc. Based on the long term silver price and accounting for the modified Silver Purchase Agreement, Alexco's realized average silver price would be US$18.16 per ounce. The following list shows the updated metal prices used to re-evaluate the previously generated mining shapes.

- Long Term Silver (75%): US$18.50/Oz
- Silver Wheaton Silver (25%): US$17.14/Oz
- Effective Realized Silver: US$ 18.16/Oz
- Gold: US$ 1,210/Oz
- Lead: US$ 0.98/lb
- Zinc: US$ 1.00/lb

The previously generated mining shapes were individually re-evaluated using the updated metal prices and a new NSR script. Any mining shapes with an NSR value per tonne below the economic cutoff were removed from the mine plan and the design updated accordingly. The NSR values resulting from the new NSR script are referred to by the acronym "NSRSW2" to indicate that these values are based on the amended Silver Price Agreement and updated commodity prices.

16.5.6 External Dilution Estimates

External dilution was applied to the in situ tonnes and grades contained in each mining shape. The dilution percentage is defined as tonnes of dilution material (W) divided by tonnes of vein material (O), dilution % = W/O x 100.

For the recently active Bellekeno mine, development on vein was modelled to fully diluted sizes, therefore, no additional external dilution was added. MCF stopes had 25% external dilution added as per the mine's standard operating practice. For the longhole stopes, a dilution study was carried out by SRK on the limited number of longhole stopes that had been completed and surveyed at Bellekeno. The results of this reconciliation indicated that the average external dilution for stopes in the SW zone was 12% while stopes in the less stable 99 zone experienced an average of 25% external dilution. Overall external dilution, accounting for dilution inherent in the vein development, was estimated at 19%.

For Lucky Queen, the situation is much more complex with variable true thickness, dip, and strike. In order to estimate the external dilution, each lift of cut and fill was assigned to one of 14 bins where each bin had similar true thickness and dip. For each bin, a drift section was drawn similar to the examples shown in Figure 16.16 and the external dilution was estimated. This external dilution was then applied to each lift of cut and fill in the mine plan. This resulted in a range of external dilution from 32 to 66% with an overall average of 44%.

External dilution percent for Flame & Moth was estimated based on true vein width. Average true vein width was determined by viewing veins in cross-section or by dividing wireframe volume by wireframe area (area as measured in vertical long section view with correction factor for vein dip). An external dilution percentage was estimated by assuming that 0.85 m of wall rock would be unavoidably mined with the vein. Thus thinner veins have higher dilution assigned. Average external dilution was estimated at 15%. Flame & Moth exhibits the greatest vein true thickness of the three deposits included in the production plan.

SRK notes that the bulk density difference between wall rock at 2.7 to 2.8 and in situ vein material at 2.84 to 3.59 tends to reduce the external dilution percent when reported as a tonnage ratio.

For all deposits, dilution material metal grades as found in wall rock immediately adjacent to the veins were investigated by SRK. The rough average metal grades determined were relatively low and are not significant at this level of study. This is an aspect that should be considered further in higher level mining studies.

16.5.7 Minimum Mining Width

Minimum mining widths for all properties were 1.8 m for longhole and 2.4 m for cut and fill methods. The longhole minimum mining width was based on how tight the drilling could be and still expect the stope to break reliably. The cut and fill stope minimum mining width is based on the equipment available with 2.4 m being the minimum practical drift width that can be mucked with the current equipment fleet.

The NSR value per tonne was considered in applying these criteria to vein width less than the minimum mining width.

16.5.8 Application of Cut-Off NSR and Creation of Mining Shapes

Practical mining shapes based on mining methods were created from the wire framed, generally steeply dipping vein structures of the four deposits using the diluted cut-off values ($/t) previously described as a guide. The veins were mainly viewed in vertical long section for this work.

The exception to this is Lucky Queen, where the vein has a much flatter dip, and the mining method is cut and fill. Stope shapes for this deposit were created in plan view on a lift by lift basis.

The mining shapes were interrogated using commercially available mine planning software such as Gemcom and Datamine to report the in situ tonnes, metal grades, and NSR values associated with each shape. Internal dilution amounts were reported, and where deemed as high, the shapes were investigated to determine if optimization would be possible.

Mining shapes were created in sufficient quantity for each deposit to provide the level of detail needed for production scheduling. Appropriate starting sill elevations were considered and where geotechnical pillars were required, they were created as separate mining shapes.

16.5.9 Estimated Potentially Mineable Tonnes

Final estimates of external dilution were determined as previously described in Section 0 to calculate the diluted tonnes and grades. Mining recovery was applied at 95% for most shapes. For certain geotechnical and sill pillars, a mining recovery of 50 to 75% was applied.

Estimated potentially mineable tonnes were tabulated for each deposit and arranged to support production scheduling.

Table 16.7 shows the estimate of potentially mineable tonnes for the three deposits contributing to the updated PEA plant feed.

Changes relative to the 2013 PEA are small. A 7,600 tonne low grade block was removed from the Flame and Moth mine plan and 5,900 tonnes of low grade material were removed from the Lucky Queen mine plan. Due to schedule changes, 19,500 tonnes of material previously excluded from the Lucky Queen mine plan was brought into the mine plan resulting in a net gain of 6,000 tonnes.

Table 16.7: Estimate of Potentially Mineable Tonnes for PEA Plant Feed

Mine	Diluted (kt)	Ag (gpt)	Au (gpt)	Pb (%)	Zn (%)	NSRSW2 ($/tonne)
Bellekeno	85.7	660		6.74	4.15	$381
Lucky Queen	142.2	1,059	0.12	2.40	1.42	$530
Flame & Moth	585.0	693	0.52	2.19	5.35	$368
Total PEA Plant Feed (kt)	**812.9**	**754**	**0.40**	**2.71**	**4.53**	**$397**

In two of the three deposits there are some potentially mineable tonnes that were excluded from the PEA production plan for various reasons. Excluded tonnage is shown in Table 16.8. Potentially mineable tonnes shown in Table 16.8 are supported by scoping level mine plans.

Table 16.8: Potentially Mineable Tonnes Excluded from PEA Production Plan

Mine	Diluted	Ag	Au	Pb	Zn	NSRSW2
	(kt)	(gpt)	(gpt)	(%)	(%)	($/tonne)
Bellekeno	111	545		3.50	3.20	$282
Lucky Queen						
Flame & Moth	32.1	419	0.31	1.25	6.77	$217
Excluded from PEA Plan (kt)	**143.1**	**517**	**0.07**	**3.00**	**4.00**	**$268**

SRK Comment

SRK worked with Alexco on an overall strategy to guide the development of the PEA production plan. This involved considering various combinations of the three deposits listed above, as well as the Onek mine, that would achieve a sustainable plant feed rate of 400 tpd as early as possible while balancing the capital development requirements.

A key part of the selected strategy was to give priority to Flame & Moth, to bring it into production without delay. Other mines were fit into the schedule to supplement the Flame & Moth production while respecting a maximum plant feed rate in the range of 400 to 420 tpd. Most of the tonnage shown in Table 16.8 as being excluded resulted from the “fitting together” of the overall production schedule.

SRK notes that the PEA is based on the specific strategy selected, however there are other possible scenarios for defining an overall production schedule that may warrant further study, particularly if changing metal prices or exploration results alter the mine planning context.

16.5.10 Planned Production Rates

SRK estimated maximum production rates to be respected during production scheduling. They were estimated based on mining method, vein thickness, mining shape geometry, and the layout of the vein access crosscut.

Full stope cycle models (including backfilling) were prepared for longhole and cut and fill mining, intended to show the maximum production rate for one independent face (one cut and fill face or one retreating longitudinal longhole mining sequence).

Monthly stope production records for the Bellekeno mine were reviewed representing actual tonnes mined by longhole and cut and fill methods. Stope cycle theoretical estimates were benchmarked against the actual production records.

16.6 Bellekeno Mine Plan

16.6.1 Introduction

Operations at the Bellekeno mine were temporarily suspended at the end of August 2013. Alexco provided SRK with a survey of all underground development and production areas as of August 31, 2013. Earlier in 2013, SRK had prepared a LoM plan for the Bellekeno mine that was based on the mineral resources for the Bellekeno deposit (Table 14.51) and a start date of January 1, 2013. The development and production schedule was prepared as a Gantt chart using Enhanced Production Scheduler (EPS) mine planning software.

The Bellekeno LoM plan presented in the current PEA was prepared by depleting the original LoM plan using the Bellekeno survey to represent the status of the mine at August 31, 2013. With a temporary suspension of operations inserted into the schedule, this then defined the start-up status of the development headings and production stoping for the planned re-start of operations. It is planned that some waste development will begin in late May 2015 with production stoping beginning in late July 2015.

The Bellekeno mine plan was based on maintaining a nominal production rate of 280 tpd as long as possible.

The relevant characteristics of the deposit from a mining method selection perspective are:

- The deposit consists of three zones, the SW zone where the majority of mining has occurred to date, the central 99 zone with its more challenging ground conditions, and the undeveloped East zone;
- Both the East and 99 zones have a main vein and a subparallel splay vein with some economic material;
- It is a vein type deposit dipping at between 64° and 80°;
- Veins vary in true width from less than 1 m to almost 6 m;
- The selected mineable portions of the veins are mainly in the range of 2 to 4 m wide;
- It is a high grade, high value deposit requiring good mining recovery;
- The deposit is hosted in steep terrain with all of the deposit above the valley floor;
- The mining levels in the SW zone range from 980 to 570 level, a 127 m vertical extent;
- The mining levels in the 99 zone range from 665 to 545 level, a 53 m vertical extent;
- Vein continuity is reasonably good with contacts that can be visually identified;
- Wall rock strength is good with the vein material being fair to weak. Vein material strength is much improved when dewatered;
- Grade continuity in the areas above cut-off is generally good although the strike length of these areas is usually limited to less than 100 m.

Planned mining methods include longhole and MCF. Until mid-2012, most of the mining was by MCF methods. Testing of longitudinal retreat longhole mining methods began in early-2012 with 15 small scale longhole stopes being mined by late 2012.

16.6.2 Potentially Mineable Tonnes

The PEA mine plan for Bellekeno mine (starting July 2015) is based on potentially mineable tonnes totalling 85,700 with average grades of 660 gpt silver, 6.74% lead, and 4.15% zinc. The Bellekeno block model did not include an estimate of gold grades.

Mining shapes were created by applying a $185/t and $265/t diluted cut-off value to the resource mining blocks for areas identified as amenable to longhole mining methods and MCF methods, respectively. The resource mining blocks were given values based on a diluted NSR calculation that included the original Silver Purchase Agreement referred to as NSRSW. Table 16.9 shows a summary of the potentially mineable tonnes (diluted plant feed) included in the updated PEA mine plan which is based on the amended Silver Purchase Agreement (NSRSW2).

As discussed above in report Section 16.6.9, Table 16.9 does not include all of the potentially mineable tonnes identified for the Bellekeno mine. The table also shows estimated external dilution percentages averaging 19% and planned mining recoveries averaging 89%. Internal dilution within the mining shapes averaged 18%.

Table 16.9: Bellekeno Potential Mineable Tonnes for PEA

Mining Area	External Dilution (%)	Mining Recovery (%)[1]	Plant Feed Mineable (kt)	Ag (gpt)	Au (gpt)	Pb (%)	Zn (%)	NSRSW2 $/tonne
SW Vein	17%	87%	70.4	640		7.84	4.68	$ 384
99 Vein	27%	94%	15.3	748		1.71	1.71	$ 366
Total	**19%**	**89%**	**85.7**	**660**		**6.74**	**4.15**	**$ 381**

*Mining Recovery includes 100% on development ore plus 95% on Stope ore broken less pillar losses

The distribution of mining methods by tonnes mined is 16% development on longhole sill drifts, 67% longhole stoping, and 17% MCF.

Figure 16.17 and Figure 16.19 show undiluted resource block NSRSW2 values in long section view for the South West and 99 zones at Bellekeno mine.

Figure 16.18 and Figure 16.20 show the planned development and stoping included in the updated PEA life of mine plan for the South West and 99 Zones respectively.

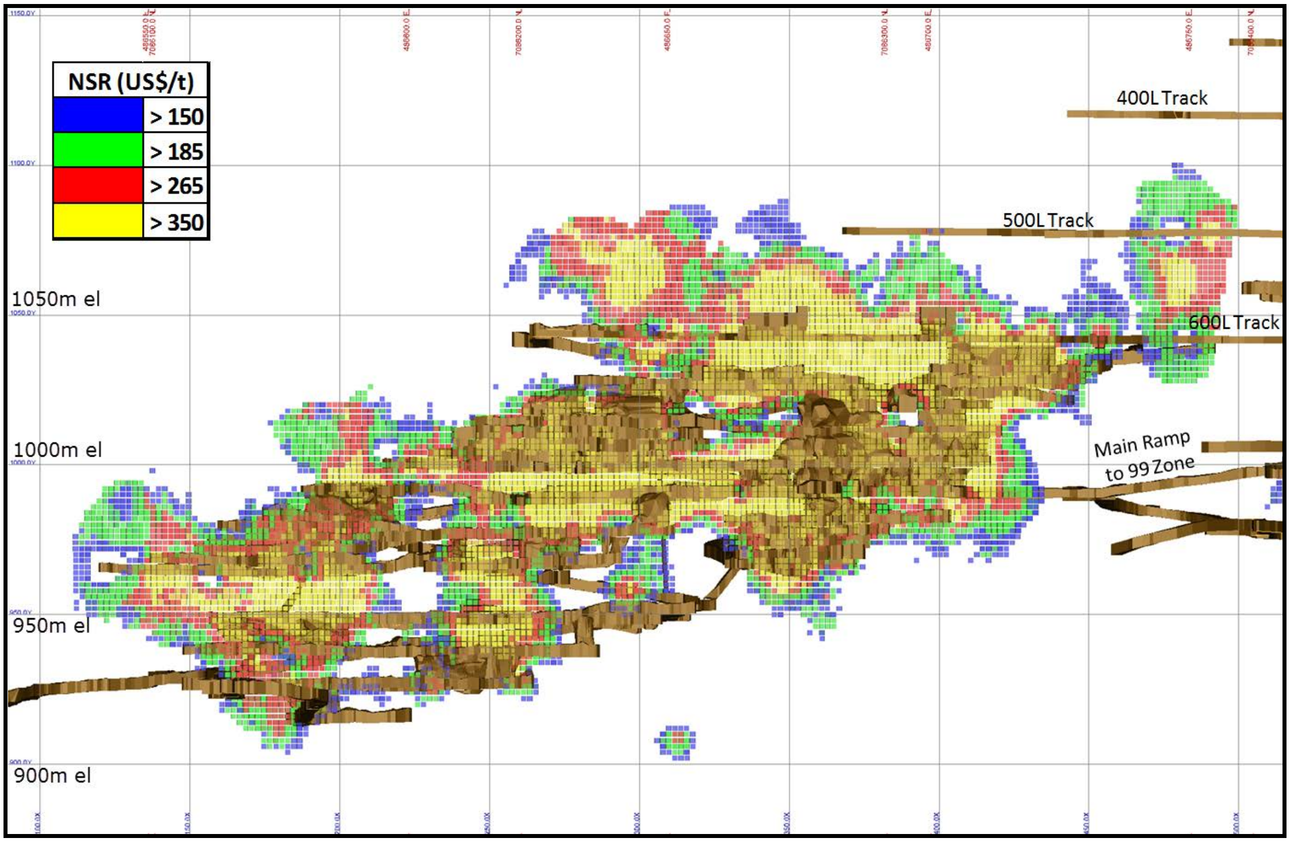


Figure 16.17: Longsection Looking Northwest - Bellekeno SW Zone - NSRSW2 Undiluted Block Values (SRK, 2014)

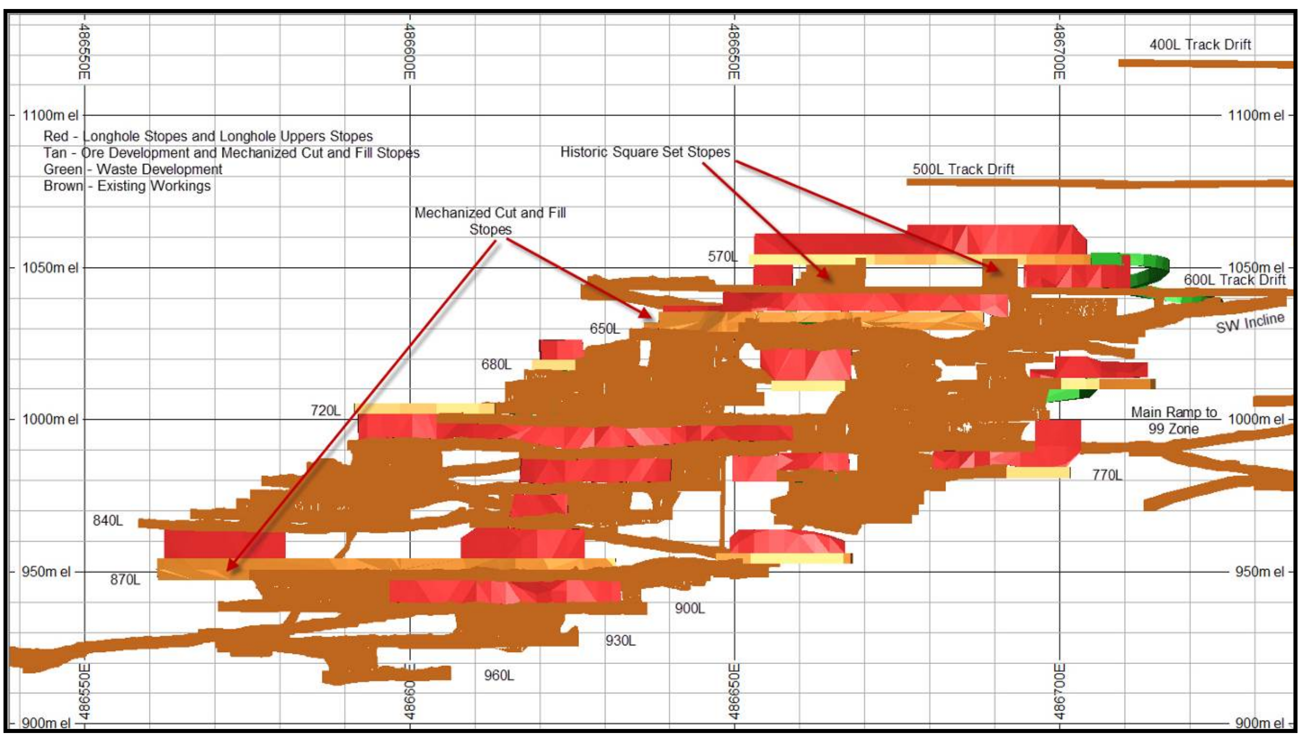


Figure 16.18: Longsection Looking Northwest - Bellekeno SW Zone Mining Shapes (SRK, 2013)

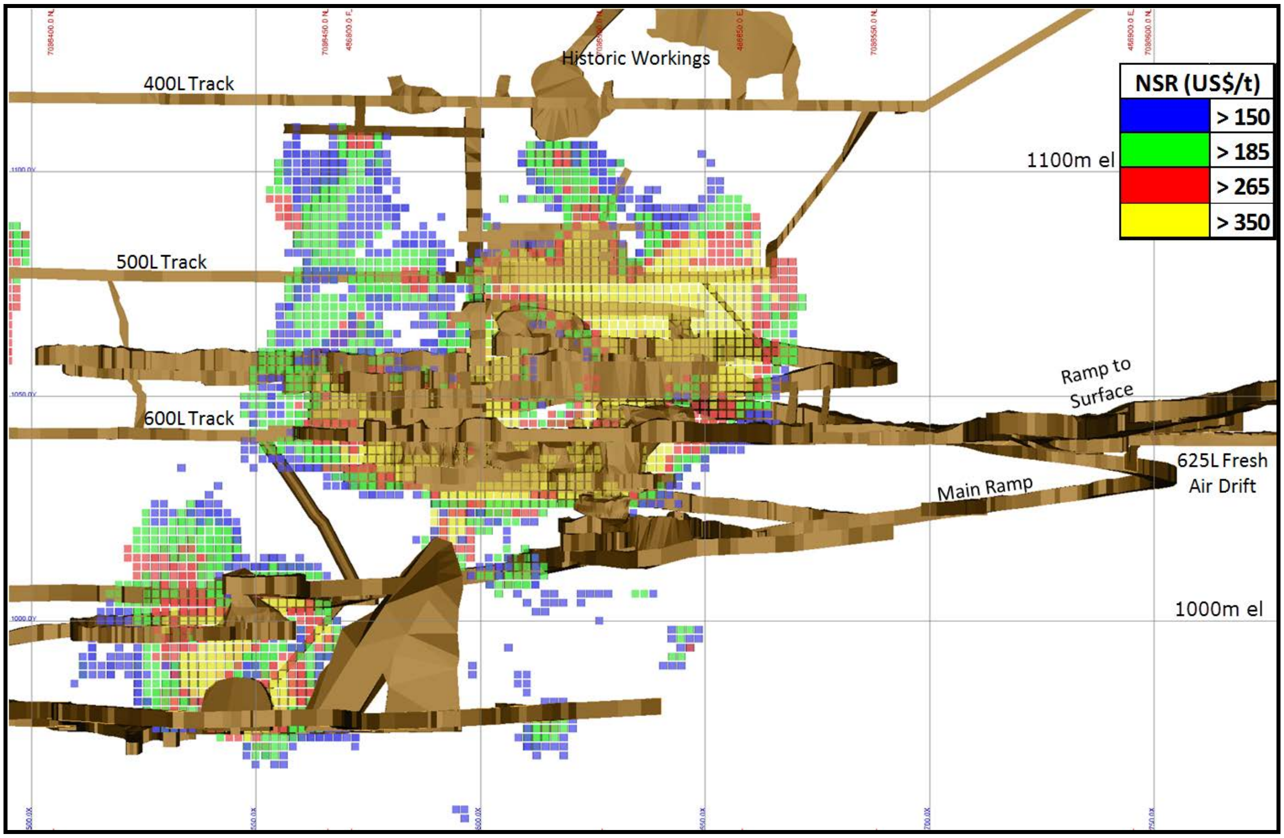


Figure 16.19: Longsection Looking Northwest - Bellekeno 99 Zone - NSRSW2 Undiluted Block Values (SRK, 2014)

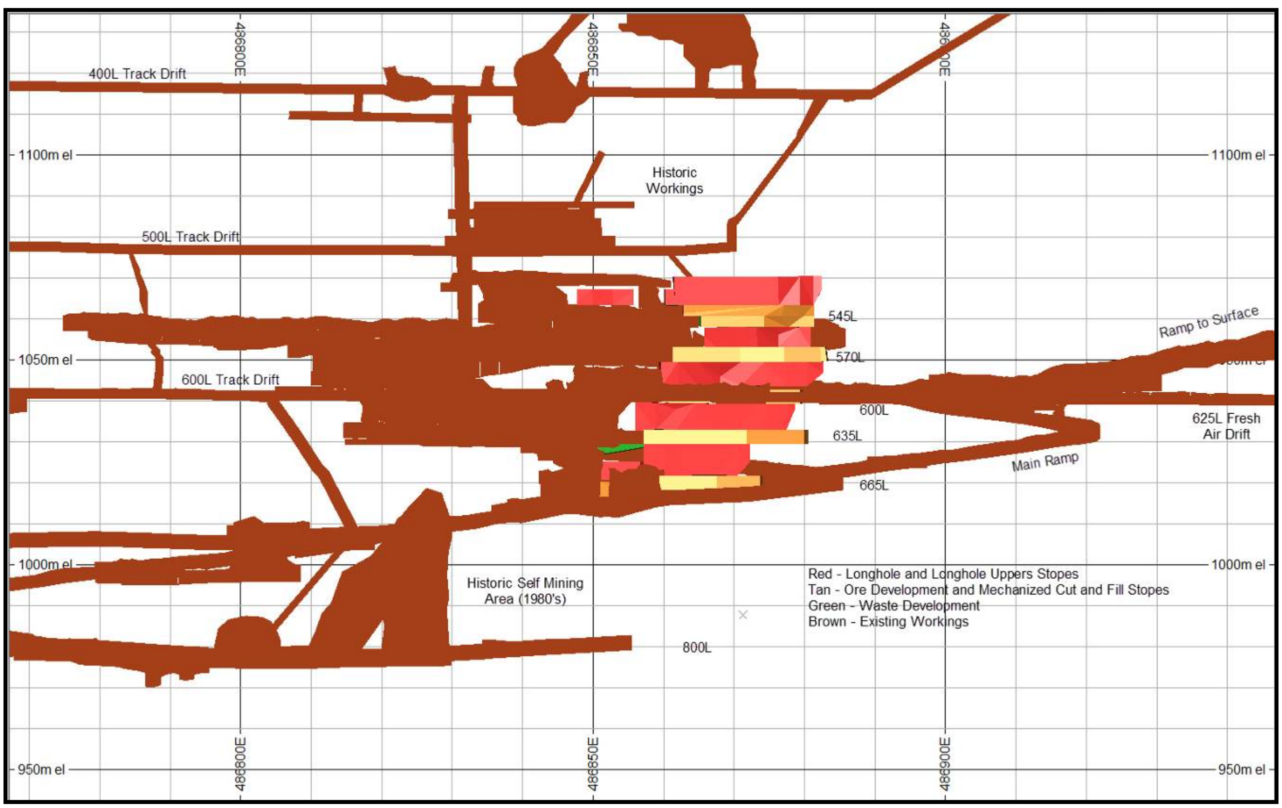


Figure 16.20: Longsection Looking Northwest - Bellekeno 99 Zone Mining Shapes (SRK, 2013)

16.6.3 3D Mine Model

Figure 16.21 and Figure 16.22 show the 3D mine models created to access the mining shapes for the SW and 99 zones, respectively. The view is from the hangingwall side of the deposit, looking north.

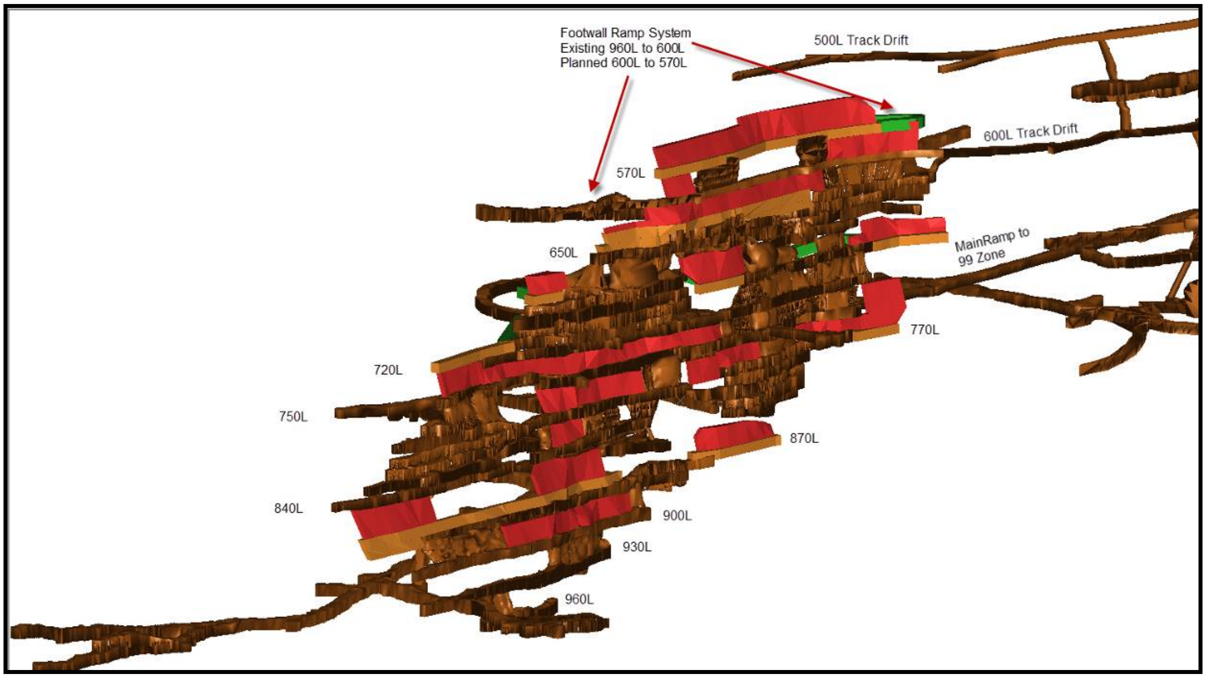


Figure 16.21: Isometric View - Bellekeno Southwest Zone Mine Model (SRK, 2013)

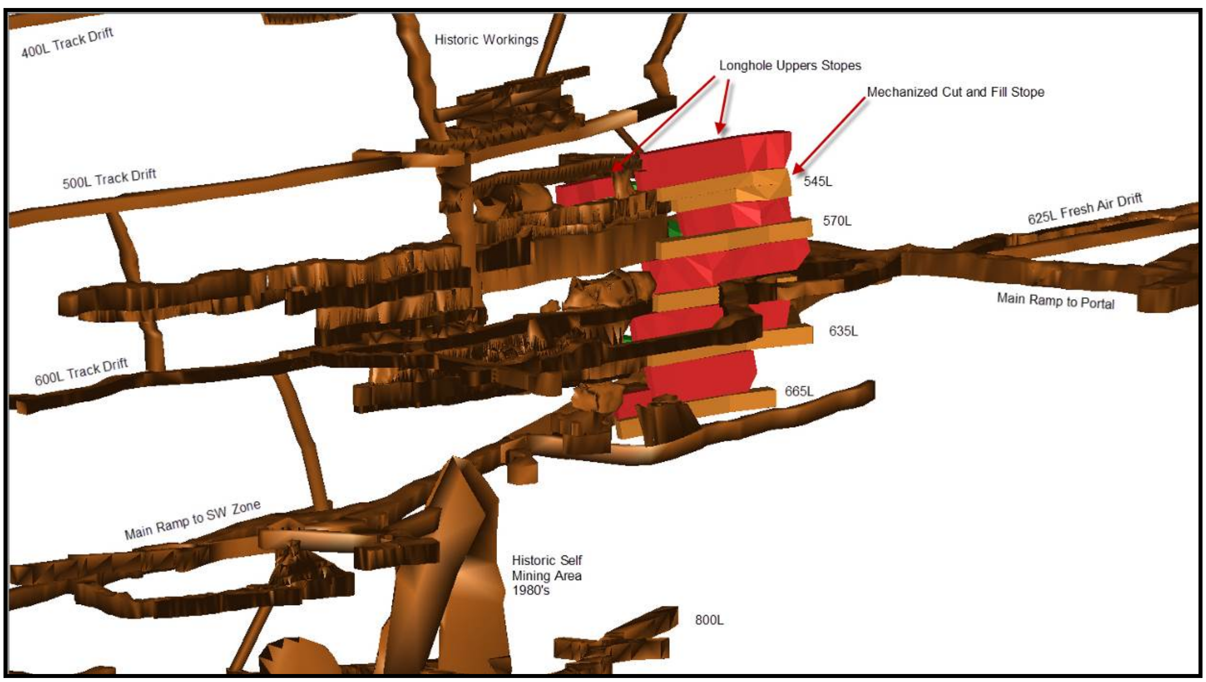


Figure 16.22: Isometric View - Bellekeno 99 Zone Mine Model (SRK, 2013)

The mine models show the 3D solid models of the planned ramps, crosscuts and raises for two of the three zones within the Bellekeno mine. The full mine models included geology wireframes of three veins and two splay veins, block model attributes, existing workings, surface topography, geotechnical domains, and the core drill hole database.

Primary access to the Bellekeno mine is via the existing main portal and ramp system. New internal ramps or extensions of existing ramps will be sized at 3.7 m x 4.0 m and driven within the range of +/-15% gradient, consistent with established mine practices.

The main ventilation system is well established and no additional ventilation raises or emergency manways are required to support the PEA mine plan.

The mine model includes major development but does not include the many additional cut outs that will be required such as remuck bays, local sumps, parking areas, gear storage areas, etc. To account for this extra development, the modelled waste development amounts have been factored up by 5% for ramps plus 10% for primary vein access crosscuts. The lower mark-up for ramps is to account for the existing development, some of which will be re-purposed to support the future development.

Based on the mine model and factored development amounts, SRK prepared LoM development summaries to show total lateral and vertical development.

Table 16.10 is a summary of the required lateral development. Considered as a stand-alone project, the Bellekeno mine plan achieves a ratio of 73 tonnes per lateral development metre.

Table 16.10: Bellekeno LoM Lateral Development Summary

Lateral Development	Length (m)
Capitalized Waste Development	
South West Zone Ramp & Levels	587
99 Zone Ramp & Levels	152
Total Capitalized Waste Development	**738**
Expensed Waste Development	
South West Accesses	5
99 Zone Accesses	0
Subtotal Expensed Waste Development	**5**
Expensed Mineralized Development	
South West vein (m)	296
99 Zone vein (m)	128
Subtotal Expensed Mineralized Development	**424**
Total Expensed Development	**429**
Total Lateral Development	**1,167**

No additional raising is required to execute the PEA mine plan except for slot raises for longhole mining.

LoM development waste rock broken for lateral and vertical development is estimated at 34 kt.

16.6.4 Development and Production Schedules

SRK prepared a development and production Gantt type schedule using EPS software. The schedule tracks and reports development metres and vein production material tonnes by quarter. The main purpose of the EPS Gantt was to schedule in detail the pre-production ramp up period tasks to determine the time required to reach the full planned production rate and to identify critical path items.

The production schedule is based on the assumption that the small scale longhole stopes will continue to perform similar to the test stoping programs. However, there is always the risk that a particular stope will fail prematurely or that certain areas may have to be mined by MCF methods due to unexpected adverse ground conditions.

SRK scheduled the waste development for the Bellekeno mine on an as needed basis and at no more than 3 m per day line advance and usually much less. Historical data from the mine suggests that any given ramp or level face typically advances at an average of 1.1 m per day. The intention was to schedule rates that can be achieved by well-organized owner's development crews.

The production schedule includes some time allowances for vein water drainage after the vein has been intersected by access crosscuts. One month or more has been allowed for drainage before mining in the vein begins. Another constraint is that production stoping is not scheduled to begin until a second route out of the mine has been established to that location. The preparation time required to begin longhole stoping has been allowed for by delaying the start of blasting 30 days from the time that both the top sill and bottom sill development is completed.

Stope production rate capacity must be understood to create a realistic production schedule that has sufficient flexibility and can be reliably achieved. SRK used maximum stope production rates of:

- 1600 to 2100 tonnes/month for the longhole method;
- 1000 to 2100 tonnes/month for the cut and fill method.

These rates are long term averages that include the entire stope cycle including production and backfilling phases. In the case of longhole stoping, the rate includes both the on vein development material and the stope production material. This approach was used to simplify the production schedule.

Table 16.11 shows the Bellekeno lateral development schedule.

Table 16.12 shows the Bellekeno production schedule. For a high level of production surety, SRK considers the rate of 300 tpd to be the maximum for production planning though the mine has produced up to 540 tpd for one month in 2012. The production shown in Table 16.12 is the contribution of the Bellekeno mine to the total planned plant feed.

Table 16.11: Bellekeno Lateral Development Schedule

Mine/Zone	2015			2016			Total (m)
	Q2	Q3	Q4	Q1	Q2	Q3	
Bellekeno Mine							
Bellekeno SW Zone Ramps and Levels	54	288	183	63			**587**
Bellekeno 99 Zone Ramps and Levels	28	54	9	12	50		**152**
Lateral Waste Development (Capitalized)	**81**	**341**	**192**	**75**	**50**		**738**
Bellekeno SW Zone			5				**5**
Bellekeno 99 Zone							**-**
Lateral Waste Development (Expensed)	**-**	**-**	**5**	**-**	**-**		**5**
Subtotal Lateral Waste Development	**81**	**341**	**197**	**75**	**50**		**743**
Bellekeno SW Zone Longhole Sill Drifts		68	133	84	7	4	**296**
Bellekeno 99 Zone Longhole Sill Drifts		104	24				**128**
Lateral Vein Development (Expensed)	**-**	**172**	**157**	**84**	**7**	**4**	**424**
Subtotal Lateral Vein Development	-	172	157	84	7	4	**424**
Total Lateral Vein and Waste (m)	**81**	**513**	**354**	**159**	**57**	**4**	**1,167**

Table 16.12: Bellekeno Updated PEA Production Schedule

Milestones	2015					2016	
	Q2	Q3	Q4	Q1	Q2	Q3	Total
BK SW Upper Ramp							
BK SW Cross Cuts and Attack Ramps							
BK 99 Zone Cross Cuts and Attack Ramps							
Zone/Activity			**Tonnes per quarter**				
Bellekeno SW Zone Vein Dev.		2,480	5,127	3,248	246	134	11,236
Bellekeno 99 Zone Vein Dev.		3,659	1,159				4,818
Subtotal Lateral Vein Development		**6,139**	**6,286**	**3,248**	**246**		**16,054**
Bellekeno SW Zone LH		14,141	8,633	9,647	12,950	1,761	47,131
Bellekeno 99 Zone LH		274	2,207	5,490	6	766	8,743
Subtotal Longhole Stoping		**14,415**	**10,840**	**15,137**	**12,956**	**2,527**	**55,874**
Bellekeno SW Zone MCF		1,105	2,180	6,589	2,143		12,016
Bellekeno 99 Zone MCF		312		733	711		1,756
Subtotal MCF Stoping		**1,417**	**2,180**	**7,322**	**2,854**		**13,772**
Total Mineralized Vein (t)		**21,971**	**19,306**	**25,707**	**16,056**	**2,661**	**85,700**
TPD		**244**	**215**	**286**	**178**	**83**	
Ag		575	581	710	796	621	660
Au		0.00	0.00	0.00	0.00	0.00	0.0
Pb		5.84	5.09	7.42	8.92	6.47	6.74
Zn		4.70	3.93	4.30	3.31	4.82	4.15
NSRSW2 ($/t)		**$329**	**$323**	**$416**	**$470**	**$361**	**$381**

The PEA mine plan calls for 42 kt of vein material to be mined in Q1-Q2 of 2016. Some 10 kt of this material will be stockpiled near the mill and used to supplement mill feed through 2018 as Lucky Queen and Flame & Moth ramp up production as shown in Table 16.23.

16.6.5 Mine Services

Mineralized Vein and Waste Handling

Vein material and waste were previously handled underground by 15-tonne capacity haulage trucks. Trucks were loaded at remuck bays on the ramp systems or at the level entrances and hauled directly to the portal vein material and waste storage bays. Surface haulage trucks with 28-tonne capacity entered the portal far enough to be loaded by a 14-tonne capacity LHD so that these materials could be hauled to the mill or to the existing surface waste rock storage facility.

Backfill materials consisting of development waste rock and dry filtered tailings were back hauled to underground storage locations as close as possible to stopes being backfilled.

Backfilling

Backfill materials consisting of development waste rock and dry filtered tailings will be placed into empty stopes by LHD. Several of the LHDs are equipped with ejector buckets for working in tight spaces. The mix of these materials is flexible and will be varied to minimize the surface environmental impact. For cut and fill stopes, the backfill will be pushed up tight to the back using an LHD equipped with a rammer jammer. For longhole stopes, dry filtered tailings will be mixed with bagged cement and water in a remuck and placed by LHD into the stope as slurry. SRK estimates the LoM backfill requirement to be 46 kt of cemented tailings and rock fill. The ratio of materials used could vary significantly.

Cemented backfill at approximately 3% cement by weight is planned for longhole stopes, though poor quality control could result in significant variation. The cement, rock, and water will be mixed by LHD bucket in a small sump-like cut out near the empty stope. Cement will be transported underground in bulk bags.

Ventilation

Previous measured air flow entering the Bellekeno mine through the 625 level fresh air drift was 31 to 36 cubic metres per second (cms), equivalent to 66,500 to 76,000 cubic feet per minute (cfm). Heated fresh air will be delivered centrally to the mine as needed through the 625 level fresh air drift that connects to the ramp system. The fresh air will be distributed through the main ramp system to the work areas and then exhausted out through the main portal.

Mine Dewatering

Main dirty water and clean water sumps exist at the bottom of the ramp from the main portal near where the 625 level fresh air drift intersects the main ramp. All water collected in the active mining areas will be pumped in stages from sump to sump to this dirty water sump. After decanting the clarified water into the clean water sump, the water will be pumped out the 625 level portal to a surface pond.

No addition infrastructure should be required to complete the planned mining.

Maintenance Facilities

Most of the mobile equipment maintenance is performed in a surface shop located near the main portal. The underground mine extent is relatively small and it is not difficult to bring underground equipment to the surface shop.

In addition to the mobile equipment, the mine maintenance department will be responsible for the stationary equipment consisting of air compressors, main ventilation fans and propane air heaters, underground electrical distribution system, and main dewatering pumps.

16.7 Lucky Queen Mine Plan

16.7.1 Introduction

The deposit is located approximately 10 km from Alexco's mill facility with an established haul road. In 2012, Alexco's mining contractor worked on reconditioning an old 1980s track drift in order to get to the underground starting point for a planned new ramp. The mine plan is based on this starting point where new ramp development will begin.

The relevant characteristics of the deposit from a mining method selection perspective are:

- The deposit consists of three veins, the majority of the planned mining is on the Main vein, with some planned mining on Splay 1 and Splay 3;
- Both of the splay veins are subparallel to the main vein and will share access drifts with the Main vein;
- It is a vein type deposit dipping at between 29° and 62°;
- Veins vary in true width from less than 1 m to 3.7 m through the planned mining area;
- The selected mineable portions of the veins are mainly in the range of 2 to 3 m wide;
- It is a high grade, high value deposit requiring good mining recovery;
- It is a deposit hosted in steep terrain with all of the deposit above the valley floor;
- The mine plan covers a vertical height of approximately 115 m with no mining currently planned below the 500 level;
- Vein continuity is good with contacts that can be visually identified;
- The vein tends to pinch out at each end;
- Wall rock strength is good with the vein material being of fair to weak. Vein material strength is much improved when dewatered;
- Grade continuity in the areas above cut-off is generally good although the strike length of these areas is usually limited to less than 100 m.

The planned mining method is MCF with cemented backfill consisting of development waste rock.

16.7.2 Potentially Mineable Tonnes

The PEA is based on Lucky Queen delivering 142,200 tonnes to the mill at average grades of 1,059 gpt silver, 2.40% lead, 1.42% zinc, and 0.12 gpt gold.

Mining shapes were created by applying a $265/t diluted cut-off value to the resource mining blocks for areas identified as amenable to MCF methods. The resource mining blocks were given values based on a diluted NSR calculation that included the Silver Purchase Agreement referred to as NSRSW. Table 16.13 shows a summary of the potentially mineable tonnes (diluted plant feed) based on the updated PEA LoM plan which is based on the amended Silver Purchase Agreement (NSRSW2).

Table 16.13: Lucky Queen Potentially Mineable Tonnes

Mining Area	External	Mining	Plant Feed					
	Dilution	Recovery	Mineable	Ag	Au	Pb	Zn	NSRSW2
	(%)	(%)	tonnes	(gpt)	(gpt)	(%)	(%)	($/tonne)
Main Vein	44%	95%	130.5	1,058	0.13	2.43	1.44	$530
Splay 1	48%	95%	3.7	590	0.04	1.58	1.10	$281
Splay 3	43%	95%	8.0	1,299	0.08	2.42	1.18	$649
Total	**44%**	**95%**	**142.2**	**1,059**	**0.12**	**2.40**	**1.42**	**$530**

The table also shows estimated external dilution percentages averaging 44% and planned mining recoveries averaging 95%.

Internal dilution within the mining shapes averaged 4.9%.

The distribution of mining methods is 100% MCF.

Figure 16.23 shows undiluted resource block NSRSW2 values in long section view.

Figure 16.24 shows the planned mechanized cut and fill stoping included in the updated PEA life of mine plan for Lucky Queen.

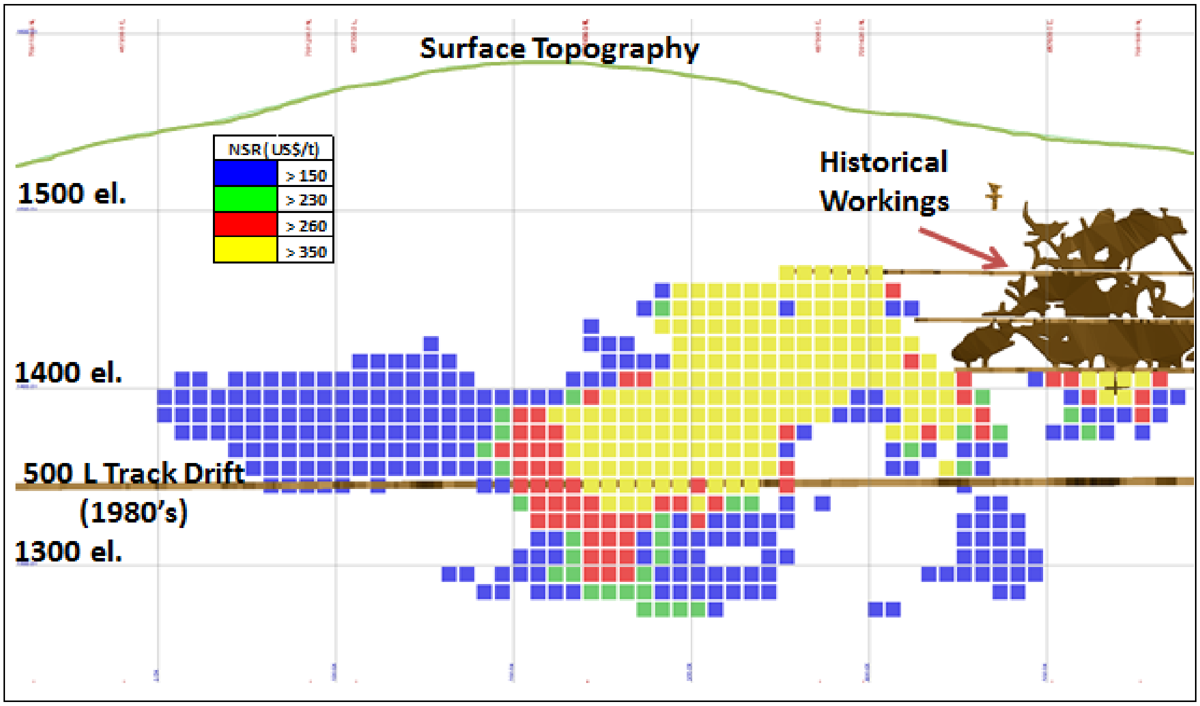


Figure 16.23: Longsection Looking Northwest – Lucky Queen NSRSW2 Undiluted Block Values (SRK, 2014)

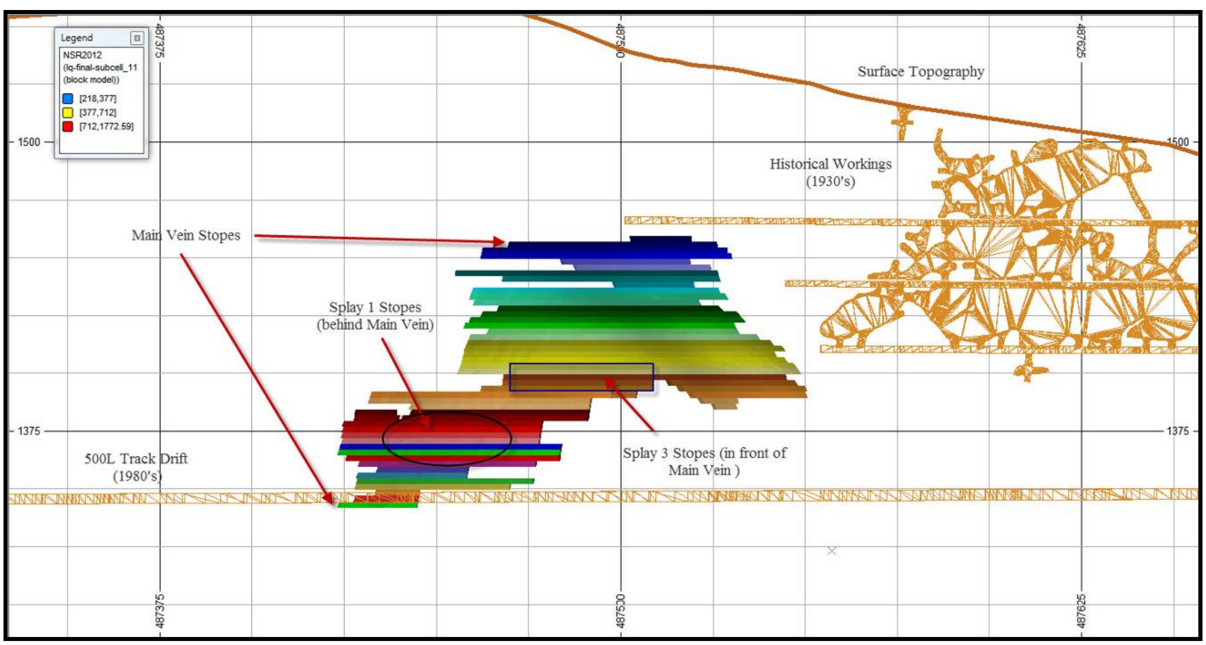


Figure 16.24: Longsection Looking Northwest - Lucky Queen Mining Shapes (SRK, 2014)

16.7.3 3D Mine Model

Figure 16.25 shows the 3D mine model created to access the mining shapes. The view is from the hangingwall side of the deposit, looking north.

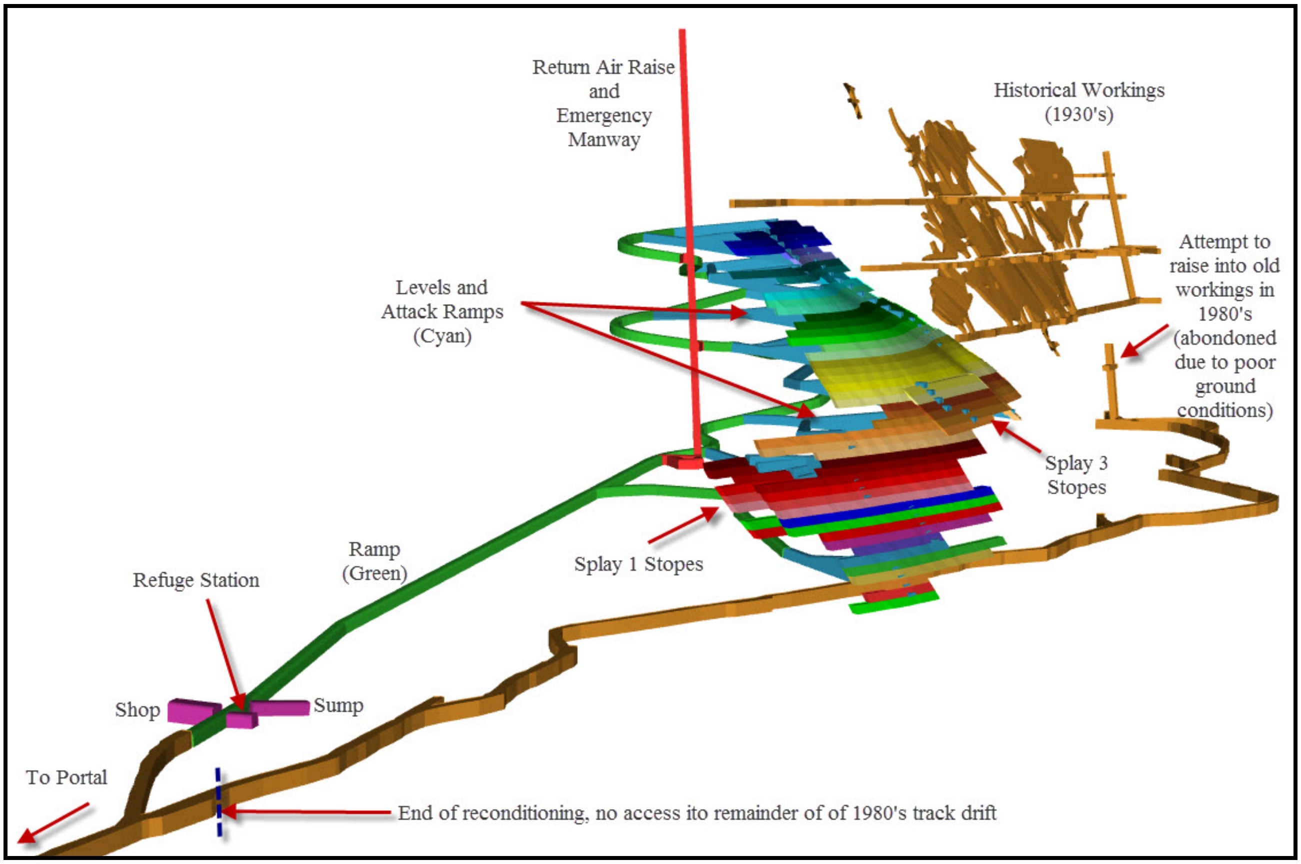


Figure 16.25: Isometric View - Lucky Queen Mine Model (SRK, 2014)

The mine model view shows the 3D solid models of the planned ramps, crosscuts and raises. The full mine model included geology wireframes of one vein and three splay veins, two fault models, block model attributes, existing workings, surface topography, geotechnical domains, and the core drill hole database.

At the time SRK became involved in mine planning in mid-2012, Alexco was in the process of reconditioning the 500 level track drift. The portal location was already well established with plenty of room and good road access to the portal site. Later, at Alexco's request, SRK reviewed an alternate portal location farther up the mountain side proposed by Alexco, and reached the conclusion that the existing portal location was preferable. This was mainly due to the fact that the historic Lucky Queen mine is located on the back side of the mountain where existing surface exploration roads are in very poor condition, and there are no utilities nearby.

Primary access to the mine is through the 1-kilometre-long 500 level track drift, which is too narrow for most underground haulage trucks. Alexco removed the existing track during the reconditioning process and purchased a Young's 470 TZ underground haul truck rated at 6.4-tonne capacity. One of the major limiting factors to the mine's productivity will be the limited ability to effectively haul vein material and waste out of the mine and later backhaul in waste rock for cemented rock fill. One truck is capable of hauling 100 tpd of vein material to the portal, while a second, additional truck will be required to haul the development waste rock to the portal or to the stope to make cemented rock fill. A third truck will be required as a spare.

From the underground starting point of the main ramp development, ramp size increases to 3.5 m x 3.5 m and it will be driven at a maximum +15% gradient. A shop facility, refuge station, and main sump are planned for the area at the bottom of the ramp.

Figure 16.26: Young's 470 TZ Haul Truck (6.4-tonne capacity) (Volvo AE30 in background) (SRK, 2013)

All underground development is planned on the footwall side of the veins to ensure the ramp is in stable ground and to optimize use of the attack crosscuts into the vein. Due to the flatter dip of the Lucky Queen deposit (averaging 45°) more lifts can be accessed economically from each attack crosscut. The primary crosscuts are planned at a -15% gradient with dimensions of 3.5 m x 3.5 m.

A main return air raise to surface is planned next to the main ramp. Fresh air will be delivered through the 500 level drift from the portal to the bottom of the ramp, then up the ramp to the active workings. After the auxiliary ventilation systems have flushed the active workings, the exhaust air will continue up the ramp to the next ventilation crosscut to be exhausted to surface. The return air raise will be equipped with a manway to provide a second exit from the mine. The raise collar on surface is planned in an area where bedrock is near surface. Road access exists to the area but needs to be upgraded if anything other than a 4 x 4 pickup truck is to visit the site.

The capital budget plan includes building a shelter on surface as it would take considerable time for surface vehicles to reach the raise collar area in the event of an evacuation of the underground workings.

The mine model includes major development but does not include the many additional cut outs that will be required such as remuck bays, local sumps, parking areas, gear storage areas, etc. To account for this extra development, the modelled waste development amounts have been factored up by 10% for ramps plus the equivalent of 15 m per planned attack crosscut for take down backs (TDBs) for vein access.

Based on the mine model and factored development amounts, SRK prepared LoM development summaries to show total lateral and vertical development.

Table 16.14 is a summary of the required lateral development. Considered as a stand-alone project, the Lucky Queen mine plan achieves a ratio of 43 tonnes per lateral development metre.

Table 16.14: Lucky Queen LoM Lateral Development Summary

Lateral Development	Length (m)
Lucky Queen Main Ramp	1090
500L Infrastructure	12
Ventilation Infrastructure	40
Levels and Attack Ramps	1241
Subtotal Capitalized (m)	**2,383**
Stope Access:	
Total Waste (m)	990
Total Vein (m)	0
Subtotal Expensed (m)	**990**
Total Lateral (m)	**3,373**

LoM development waste rock broken for lateral and vertical development is estimated at 112 kt.

Table 16.15 is a summary of the required raising. The main fresh air raise requires a manway for the purpose of establishing an escape route from the mine.

LoM development waste rock broken for lateral and vertical development is estimated at 112 kt.

Table 16.15: Lucky Queen LoM Raising Summary

Ventilation/Escape Raise	Length (m)	Type	Size (m)
Main Fresh Air Raise	216	Alimak	2.5 x 2.5
Total Raising (m)	**216**		

16.7.4 Development and Production Schedules

SRK prepared a development and production Gantt type schedule using EPS software. The schedule tracks and reports development metres and vein production material tonnes by quarter. The main purpose of the EPS Gantt was to schedule in detail the pre-production ramp up period tasks to determine the time required to reach the full planned production rate and to identify critical path items.

Development work on the Lucky Queen main ramp was temporarily suspended in March 2013. At that time, the main ramp (green in Figure 16.25) face location was 20 m past the sump shown. Development for the refuge station and sump is complete, but the cut out for the small shop has not been made. This defines the Lucky Queen development start-up status for the Q2 2016 planned re-start.

The Lucky Queen ramp system was scheduled at a 2.3 m per day line advance with an additional 1 m per day line advance in secondary faces as available. The ramp advance rate is partially limited by the haulage situation as one Young's 470 TZ truck takes most of two shifts to haul a ramp round to the surface waste dump.

The EPS development and production schedule is based on Alexco restarting ramp development in Q2 2016 after the project was shut down in March 2013.

SRK scheduled the waste development for the Lucky Queen mine on a reduced, as needed basis once two mining fronts were established on vein.

The production schedule includes taking a bulk sample on #3 sublevel to support a production decision. This will allow for additional geotechnical and metallurgical testwork to be performed to ensure that this high grade deposit is mined in a manner that maximizes the recovered value. Two mining fronts are required to sustain the planned production rate of 100 tpd. One month or more has been allowed for vein drainage before mining in the vein begins.

Stope production rate capacity must be understood to create a realistic production schedule that has sufficient flexibility and can be reliably achieved. SRK used maximum stope production rates of 50 tpd per mining front. Each mining front has a minimum of two faces active with the splay veins adding an additional face at certain points in the schedule. To maintain a production rate of 100 tpd, the two mining fronts will need to cycle three rounds per day at an average of 38 tonnes per round.

Table 16.16 shows the Lucky Queen lateral development schedule.

Table 16.17 shows the Lucky Queen production schedule. For a high level of production surety, SRK considers the rate of 100 tpd to be the maximum for production planning although 120 tpd may be possible when splay vein faces are available. The production shown in Table 16.17 is the contribution of the Lucky Queen mine to the total planned plant feed.

Table 16.16: Lucky Queen Lateral Development Schedule

Mine/Zone Waste Broken (kt)	2015	2016	2017	2018	2019	2020	2021	Total (kt)
Bellekeno SW	24.3	2.9						**27.2**
Bellekeno 99	4.1	2.8						**7.0**
Lucky Queen		19.8	18.5	24.7	36.7	10.7	1.9	**112.2**
Flame & Moth	100.4	60.0	60.3	25.8	27.2	18.1		**291.9**
Total Waste Broken (kt)	**128.9**	**85.6**	**78.8**	**50.4**	**63.9**	**28.8**	**1.9**	**438.3**
Mine Backfill Required								**Total (t)**
Bellekeno Backfill (Rock Fill)	7.4	0.6						**8.0**
Bellekeno Backfill (Cemented Tailings)	20.1	17.4						**37.5**
Lucky Queen Backfill (Cemented Rock Fill)		0.9	17.9	25.7	28.2	24.0	4.9	**101.6**
Lucky Queen Backfill (TDB's left as Rock Fill)			4.3	5.2	5.9	5.2	1.0	**21.6**
Flame & Moth Backfill	2.6	65.8	74.6	67.2	68.1	61.0	10.0	**349.3**
Total Backfill (dry tonnes)	**30.1**	**84.6**	**96.8**	**98.1**	**102.2**	**90.2**	**15.9**	**517.9**
Backfill Composition (kt)								**Total (t)**
Uncemented Waste Rock Backfill	7.4	0.6	4.3	5.2	5.9	5.2	1.0	**29.6**
Dry Tailings in Cemented Backfill	18.0	37.8	26.1	23.5	23.8	21.3	3.5	**154.1**
Waste Rock in Cemented Backfill	4.7	46.2	66.4	69.4	72.4	63.6	11.4	**334.2**

Table 16.17: Lucky Queen Production Schedule

	2016			2017				2018				2019				2020				2021	
Milestones	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Total**
LQ Ramp Reaches #3 Sub																					
LQ Ramp Reaches #5 Sub to start 2nd mining front																					
Ventilation and Emergency Manway in place																					
Bulk Sample and establishment of 1st Mining Front																					
Establishment of 2nd Mining Front																					
Establishment of 3rd Mining Front																					
Commercial Production Reached																					
Zone/Activity			**Tonnes per quarter**																		
MCF from #1 Sub (S)														1831	1753	931	0				**4,515**
MCF from #2 Sub (S)																2241	4550	4561			**11,352**
MCF from #3 Sub (S)			1,256	3,552	3,592	3,631	2,823														**14,854**
MCF from #4 Sub (S)							774	4,500	4,550	4,314											**14,139**
MCF from #5 Sub (N)					2,616	3,193															**5,809**
MCF from #6 Sub (N)						506	4,350	4,500	2,389												**11,745**
MCF from #6 Sub (S)										286	4,350	4,500	4,550	2,297							**15,983**
MCF from #7 Sub (N)									2,161	4,600	2,855										**9,616**
MCF from #8 Sub (S)														2,303	4,350	2,986					**9,638**
MCF from #9 Sub (S)																1,564	4,550	4,371			**10,485**
MCF from #10 Sub (N)											1,495	4,500	4,435								**10,429**
MCF from #11 Sub (N)													115	4,600	1,518						**6,233**
MCF from #11 Sub (S)																		252	4,785	1,389	**6,426**
MCF from #12 Sub (S)																				5,484	**5,484**
MCF from #13 Sub (N)															2,682	2,785					**5,467**
Total Mineralized Vein (t)	**-**	**-**	**1,256**	**3,552**	**6,208**	**7,331**	**7,947**	**9,000**	**9,100**	**9,200**	**8,700**	**9,000**	**9,100**	**11,031**	**10,303**	**10,507**	**9,100**	**9,184**	**4,785**	**6,873**	**142,176**
TPD	**-**	**-**	**37**	**39**	**69**	**81**	**88**	**100**	**101**	**102**	**97**	**100**	**101**	**123**	**114**	**117**	**101**				**110**
Ag			674	674	704	753	1080	1163	1223	1302	1427	1278	1272	1025	1066	1035	1004	990	752	701	**1059**
Au			0.11	0.11	0.15	0.15	0.13	0.13	0.13	0.13	0.12	0.12	0.12	0.10	0.11	0.11	0.12	0.12	0.08	0.08	**0.12**
Pb			1.41	1.41	1.79	1.93	2.38	2.41	2.48	2.59	2.96	2.79	2.78	2.43	2.54	2.44	2.37	2.34	2.13	2.17	**2.40**
Zn			1.86	1.86	1.32	1.25	1.54	1.80	1.86	1.90	1.47	1.36	1.36	1.24	1.18	1.28	1.46	1.45	0.84	0.72	**1.42**
NSRSW2 ($/t)			$327	$327	$347	$372	$541	$586	$616	$655	$719	$645	$642	$511	$532	$517	$502	$495	$372	$345	**$530**

16.7.5 Mine Services

Mineralized Vein and Waste Handling

Vein material and waste will be handled underground by 6.5-tonne capacity haulage trucks, these being the largest trucks that will fit in the existing 500 level, which was originally driven as a track drift. Trucks will be loaded at remuck bays on the ramp systems or at the level entrances and haul directly to the portal vein material and waste pads outside the portal. The 28-tonne surface haul trucks will be loaded by front end loader so that the vein material and waste can be hauled to the mill facility or to the proposed potentially acid or metal leaching (P-AML) storage cell.

Backfilling

Backfill materials consisting of development waste rock and dry filtered tailings will be back hauled to underground storage locations as close as possible to stopes being backfilled. Approximately 3% cement by weight will be added to the backfill materials before placement into empty cut and fill stopes by an LHD equipped with an ejector bucket.

The cement, rock, tailings, and water will be mixed by LHD bucket in a small sump-like cut out near the empty stope. Cement will be transported underground in bulk bags. The backfill will be placed, then pushed up tight to the back using an LHD equipped with a rammer jammer. SRK estimates the LoM stope backfill requirement to be 92 kt.

Ventilation

The measured air flow entering the Lucky Queen mine during the development stage via the 500 level portal was 9.8 cms, equivalent to 20,800 cfm. This was delivered by a 45 kW auxiliary ventilation fan through a 760 mm twin duct, with a number of booster fans required to overcome the losses caused by more than 1 km of ducting to the face.

Once the return air raise is broken through to surface, the boosters and twin duct will be removed, the portal fans will be installed in their permanent location with mine air heaters, and fans will be installed in a bulkhead at the return air raise to create a push-pull ventilation system capable of 30 cms or 65,000 cfm. The expected requirement at full production, given the planned equipment, is 22 cms or 47,000 cfm.

Once the changeover is complete, fresh air will be delivered to the mine through the 500 level drift that connects to the ramp system. The fresh air will be distributed through the main ramp system to the work areas and then exhausted out through the return air raise to surface.

Mine Dewatering

A main dirty water sump has been excavated at the bottom of the ramp at the 500 level elevation. All water collected in the active mining areas will be pumped in stages from sump to sump to this dirty water sump. The dirty water will then be pumped out the 500 level portal to a surface settling pond to be recycled.

No addition infrastructure should be required to complete the planned mining.

Maintenance Facilities

Most of the mobile equipment maintenance will be performed in a small underground shop that is planned near the bottom of the ramp at the 500 level. The mine area is relatively small and it is not difficult to bring underground equipment to this shop. Major work will be done at the larger surface shop located at Elsa.

In addition to the mobile equipment, the mine maintenance department will be responsible for the stationary equipment consisting of air compressors, main ventilation fans, propane air heaters, the underground electrical distribution system, and the main dewatering pumps.

16.8 Flame & Moth Mine Plan

16.8.1 Introduction

The Flame & Moth deposit is located in close proximity to Alexco's mill facility. It has been defined by surface exploration drilling. The relevant characteristics of the deposit from a mining method selection perspective are:

- The deposit is offset by approximately 95 m of apparent right lateral movement along the west-northwest trending post-mineral Mill fault. The Mill fault dips approximately 66° to the southwest with the mineralization in the hangingwall section referred to as the Lightning zone and that in the footwall section referred to as the Christal zone;
- Most of the deposit area is covered by overburden that ranges in depth from 0 to 50 m;
- It is a vein-type deposit dipping at roughly 64°, comprised of two main veins – Lightning and Christal – plus a much smaller splay vein called Lightning vein 2;
- Vein widths vary from less than 1 to 10 m. The selected mineable portions of the veins are mainly in the range of 4 to 7 m wide;
- It is a high grade, high value deposit requiring good mining recovery;
- It is a shallow deposit with mining depths ranging from the crown pillar 30 m below bedrock surface to a maximum depth of 270 m;
- Vein continuity is expected to be reasonably good with contacts that can be visually identified;
- Wall rock strength is good with the vein material being of fair to weak. Vein material strength is expected to be much improved when dewatered;
- Grade continuity in the areas above cut-off is generally good;
- A high volume of ground water inflow is possible but cannot be accurately estimated due to limited field data and analysis.

Planned mining methods include longhole, cut and fill, and drift and fill. Drift and fill in two passes is planned for areas where the vein is thicker than 7 m, the span being too great for single pass cut and fill.

16.8.2 Potentially Mineable Tonnes

Mining shapes were originally created by applying the $230/t diluted cut-off value to the resource mining blocks. The resource mining blocks were given values based a diluted NSR calculation that included the original Silver Purchase Agreement referred to as NSRSW. Table 16.18 shows a summary of the potentially mineable tonnes (diluted plant feed) based on the Updated PEA LoM plan which is based on the amended Silver Purchase Agreement (NSRSW2).

The table also shows estimated external dilution percentages averaging 14.5% and planned mining recoveries averaging 86%. Internal dilution within the mining shapes averaged 20%.

The pillars listed include a 30 m crown pillar (K) and 20 m wide pillars (H, I, J) planned to bracket the Mill fault with the intention of minimizing potential ground water inflows.

The mine plan assumes that pillar mining near the end of the mine life will extract 50% of the pillar tonnes (66 kt with average metal grades of 604 gpt silver, 2.40% lead, 6.38% zinc, and 0.51 gpt gold).

Table 16.18: Flame & Moth Potentially Mineable Tonnes

Mining Shape	Dilution (%)	Mining Recov. (%)	Plant Feed					NSRSW2 ($/tonne)
			Mineable (kt)	Ag (gpt)	Au (gpt)	Pb (%)	Zn (%)	
D	14%	95%	14.6	797	0.53	3.79	8.44	$452
E2	12%	95%	63.8	700	0.52	2.55	4.87	$372
E1	12%	95%	40.4	758	0.48	2.81	5.26	$406
C3	12%	95%	64.4	769	0.49	2.87	7.22	$422
C2	12%	95%	110.3	647	0.61	1.98	7.30	$350
M2	28%	95%	29.5	751	0.32	1.42	5.21	$386
M1	28%	95%	5.2	1077	0.41	1.46	6.18	$558
F3	16%	95%	15.0	516	0.29	3.11	6.52	$283
F2	16%	95%	17.4	516	0.29	3.11	6.52	$283
F1	16%	95%	46.9	507	0.54	1.11	3.88	$254
G3	16%	95%	32.4	806	0.63	1.64	1.37	$411
G2	16%	95%	41.7	994	0.75	1.84	1.54	$511
G1	16%	95%	37.8	589	0.38	1.60	2.76	$293
Subtotal	**14.7%**	**95%**	**519**	**704**	**0.52**	**2.17**	**5.21**	**$373**
Pillar H	16%	50%	22.6	748	0.57	3.66	6.58	$417
Pillar I	12%	50%	29.0	548	0.44	1.59	5.53	$284
Pillar J	12%	50%	1.3	746	0.49	1.68	4.62	$387
Pillar K	14%	50%	12.7	461	0.57	2.07	8.13	$257
Subtotal	**13.7%**	**50%**	**66**	**604**	**0.51**	**2.40**	**6.38**	**$327**
Total	**14.5%**	**90%**	**585**	**693**	**0.52**	**2.19**	**5.35**	**$368**

The distribution of mining methods by tonnes mined is 58% cut and fill, 23% drift and fill, and 19% longhole.

The distribution of mining methods by tonnes mined is 58% cut and fill, 23% drift and fill, and 19% longhole.

Figure 16.27 shows undiluted resource block NSRSW2 values in long section view.

Figure 16.28 shows the mining shapes created. Shapes have names represented by letters that correspond to the mining shape names in Table 16.18. The complete geotechnical pillars are shown in blue colour even though Table 16.18 includes only 50% of their tonnes.

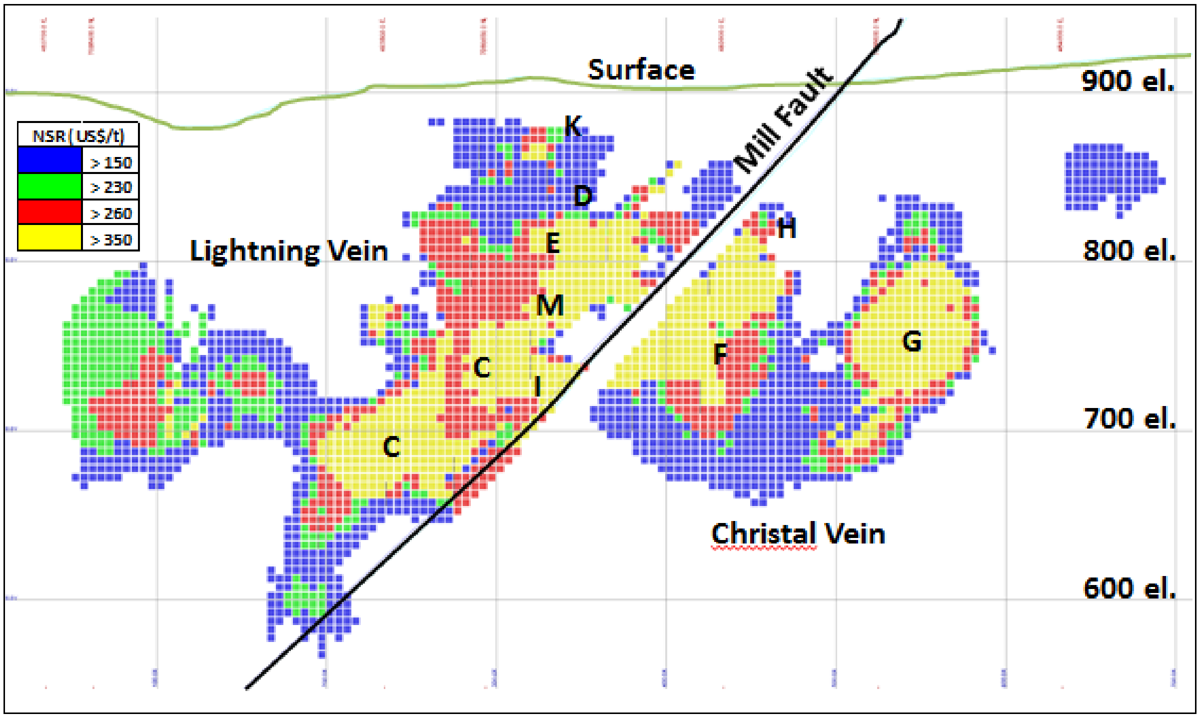


Figure 16.27: Flame and Moth Longsection – Block NSRSW2 Undiluted Block Values, Looking Northwest (SRK, 2014)

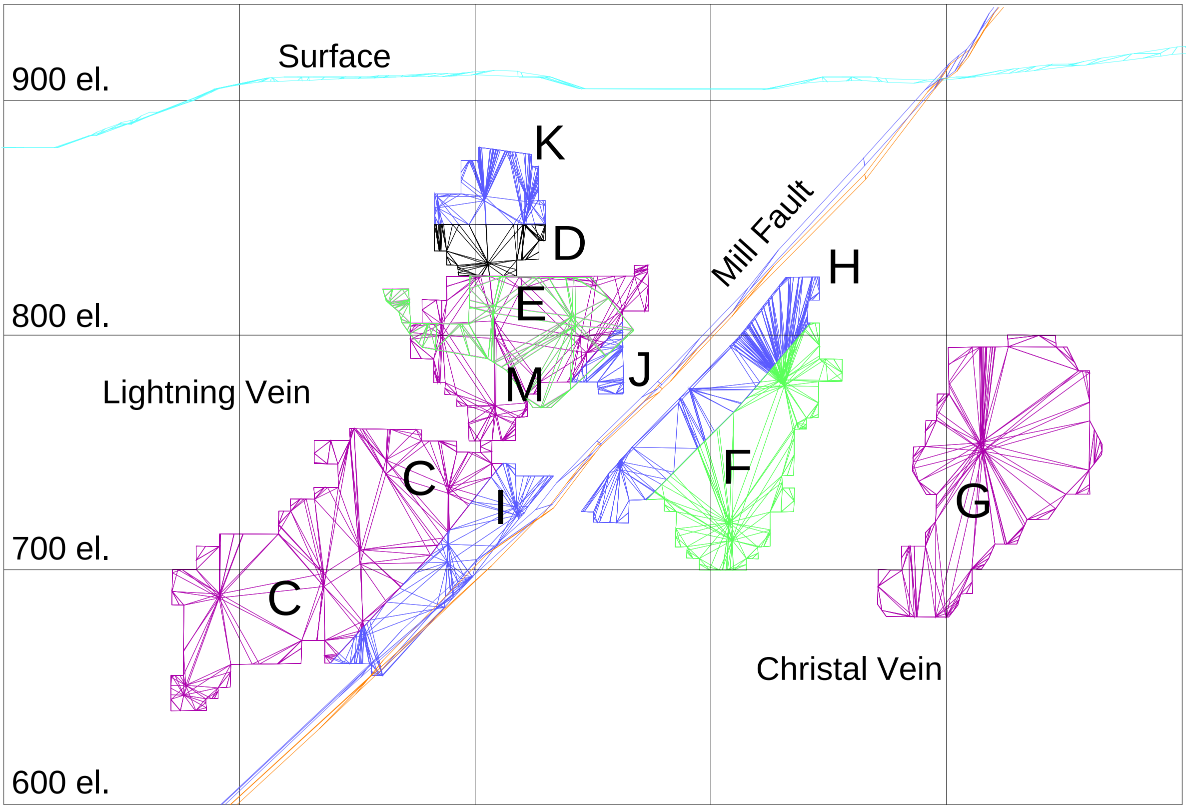


Figure 16.28: Flame & Moth Long Section - Mining Shapes, Looking Northwest (SRK, 2013)

16.8.3 Flame & Moth Mine Model

Figure 16.29 shows the 3D mine model created to access the mining shapes. The view is from the hangingwall side of the deposit, looking northwest.

The mine model view shows only the centre lines of the planned ramps, crosscuts, and raises. The full mine model included geology wireframes, topographic surface, bedrock surface, two major faults (Mill fault and Garbage fault), core drill holes and the mineralized veins of Flame & Moth. The bedrock surface is based mainly on drill hole information and it is observed to have some deep paleochannels where the overburden layer is 25 m thick and greater. There are large areas where the bedrock surface elevation is uncertain due to a lack of surface drill holes.

After considering a number of alternatives, the portal location was planned approximately 50 m southeast of the mill building in an area where bedrock is at or near surface, and where a portal face can be established into a hill side. In other locations considered for the portal, the overburden layer was modelled at up to 15 m thick.

Primary access to the mine will be by ramp sized at 3.7 m x 3.7 m and driven at a -15% gradient.

All underground development is planned on the hangingwall side of the veins where ground conditions are expected to be better. Excavations will avoid the graphitic schist located on the footwall side of the Christal vein. Spiral ramps at -15% gradients are planned for Lightning and

Christal sized at 3.7 m x 3.7 m to accommodate 15-tonne capacity trucks. Underground development is planned to pass through the Mill fault in three places.

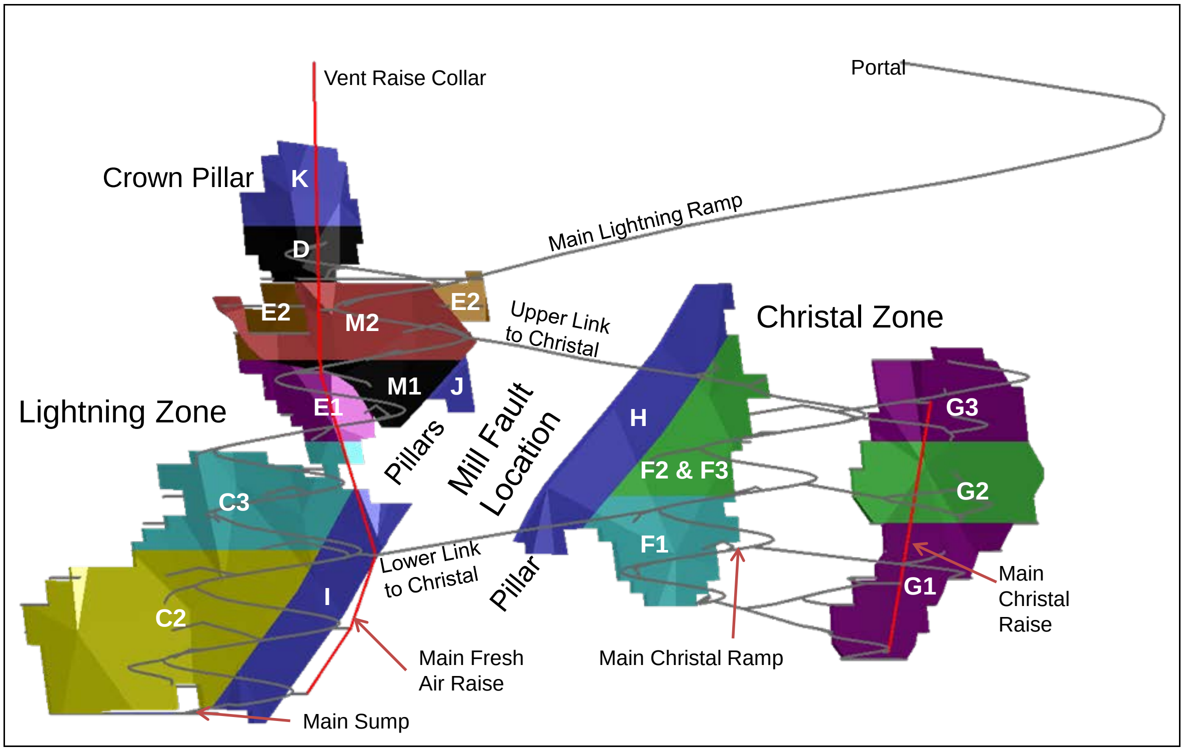


Figure 16.29: Flame & Moth 3D Underground Mine Model, Isometric View Looking Northwest (SRK, 2014)

A main ventilation raise from surface is planned next to Lightning spiral ramp. It will deliver fresh air and will be equipped with a manway to provide a second exit from the mine. The raise collar on surface is planned in an area where bedrock is exposed.

The mine model includes development centre lines but does not include the many additional cut outs that will be required such as remuck bays, local sumps, parking areas, gear storage areas, etc. To account for this extra development, the modelled development amounts have been factored up by 15% for ramps and 20% to 25% for primary vein access crosscuts.

Based on the mine model and factored development amounts, SRK prepared LoM development summaries to show total lateral and vertical development.

Table 16.19 is a summary of the required lateral development. Considered as a stand-alone project, the Flame & Moth mine plan achieves a ratio of 79 tonnes per lateral development metre.

Table 16.19: Flame & Moth LoM Lateral Development Summary

Lateral Development	Length (m)
Main Lightning ramp	1,963
Upper link to Christal	145
Lower link to Christal	147
Christal ramp	651
Stope Access	493
Subtotal Capitalized (m)	**3,399**
Stope Access:	
Total waste (m)	3,300
Total vein (m)	697
Subtotal Expensed (m)	**3,997**
Total Lateral (m)	**7,396**

LoM development was rock broken for lateral and vertical development is estimated at 292 kt.

Table 16.20 is a summary of the required raising. Each of the raises listed requires a manway for the purpose of establishing an escape route from the mine. The table does not include any slot raising for longhole mining.

LoM development waste rock broken for lateral and vertical development is estimated at 292 kt.

Table 16.20: Flame & Moth LoM Raising Summary

Ventilation/Escape Raise	Length (m)	Type	Size (m)
Main Fresh Air Raise	197	bored	3.0 dia.
Main Fresh Air Raise	72	open	2.4 x 2.4
Christal Raise	100	drop raise	2.4 x 2.4
Total Raising Metres	**369**		

16.8.4 Development and Production Schedules

SRK prepared a development and production Gantt type schedule using EPS software. The schedule tracks and reports development metres and vein production material tonnes by quarter. The main purpose of the EPS Gantt was to schedule in detail the pre-production ramp up period tasks to determine the time required to reach the full planned production rate and to identify critical path items.

The production schedule is based on the assumption that 50% of the geotechnical pillars will be mined at the end of the mine life. The pillar mining tonnes have simply been added at the end of the production schedule to extend the mine life.

SRK scheduled the main ramp from surface and all of the Lightning ramp system at advance rates of 3 to 4 m per day line advance (432 m at 3 m/d, 1366 m at 4 m/d). The Christal spiral ramp system was scheduled at 2 to 3 m per day line advance. The intention was to schedule rates that can be achieved by well-organized owner's development crews.

The EPS development and production schedule is based on starting site preparation for portal construction in the third quarter of 2014. This is based on the actual work completed.

The production schedule includes some time allowances for vein water drainage after the vein has been intersected by access crosscuts. An average of 1.8 months (minimum 1 month) has been allowed for drainage before mining in the vein begins. Another constraint is that production stoping is not scheduled to begin until a second route out of the mine has been established to that location.

Stope production rate capacity must be understood to create a realistic production schedule that has sufficient flexibility and can be reliably achieved. SRK used maximum stope production rates of:

- Average 1,770 (1,480 to 2,290) tonnes/month for the longhole method;
- Average 1,370 (200 to 2,350) tonnes/month for the cut and fill method.

These rates are long term averages that include the entire stope cycle including production and backfilling phases.

Table 16.21 shows the Flame & Moth lateral development schedule.

Table 16.22 shows the Flame & Moth production schedule. SRK considers the rate of 370 tpd to be the maximum rate for production planning. The production shown in Table 16.22 is the contribution of the Flame & Moth mine to the total planned plant feed.

Table 16.21: Flame & Moth Development Schedule

	2015				2016				2017				2018				2019				2020			Total
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Metres
Main Lightning Ramp	311	380	435	377	424	36																		**1,963**
Christal Ramp			194	251	206	8			110	150	25													**944**
Lightning Stope Access Waste		15	112	107	117	138	122	116	120	108	109	103	107	108	72	47	48	49	45	27	28	28	26	**1,752**
Christal Stope Access Waste				80	62	31	44	42	43	122	238	291	35	25	100	114	118	119	120	114	119	119	105	**2,041**
Christal Stope Access on Vein					13	20	20	19	20	20	20	19	85	98	34	40	42	42	43	40	42	42	36	**697**
Total Metres (Vein + Waste)	**311**	**395**	**740**	**815**	**823**	**234**	**187**	**177**	**292**	**400**	**392**	**413**	**227**	**231**	**206**	**201**	**208**	**210**	**209**	**181**	**190**	**190**	**167**	**7,397**

Table 16.22: Flame & Moth Production Schedule

		2015				2016				2017				2018				2019				2020				2021	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Total
							Main ramp																				
							Christal ramp																				
							Main vent raise																				
							→ Production period																				
Shape	**Tonnes per quarter**																										
E2					3,054	5,979	5,979	6,045	5,716	5,913	5,979	6,045	5,716	5,913	5,979	1,561	-	-	-	-	-	-	-	-			63,880
E1					-	879	4,185	4,231	4,001	4,139	4,185	4,231	4,001	4,139	4,185	2,181											40,360
M2					1,374	2,691	2,691	2,720	2,572	2,661	2,691	2,720	2,572	2,661	2,691	1,457	-	-	-	-	-	-	-	-			29,500
M1						-	407	604	572	591	598	604	572	591	598	82	-	-	-	-	-	-	-	-			5,220
C3						973	4,634	4,685	4,430	4,583	4,634	4,685	4,430	4,583	4,634	4,685	4,430	4,583	4,634	3,819	-	-	-	-			64,420
C2						-	2,407	6,513	6,159	6,372	6,442	6,513	6,159	6,372	6,442	6,513	6,159	6,372	6,442	6,513	6,159	6,442	6,442	5,916			110,340
F2						-	230	2,116	2,001	2,070	2,093	2,116	2,001	2,070	305						-	-	-	-			15,000
F3						-	-	-	-	-	-	-	-	-	-	500	2,072	2,144	2,167	2,191	2,072	2,167	2,167	1,889			17,370
F1						-	-	-	-	-	-	-	-	-	-	-	5,716	5,913	5,979	6,045	5,716	5,979	5,979	5,562			46,890
G3						2,746	4,185	4,231	4,001	4,139	4,185	4,231	4,001	709			-	-	-	-	-	-	-	-			32,430
G2						-	-	-	-	-	-	-	-	-	3,209	4,473	4,230	4,376	4,424	4,473	4,230	4,424	4,424	3,405			41,670
G1						-	-	-	-	-	-	-	-	-	-	2,612	4,287	4,435	4,484	4,534	4,287	4,484	4,484	4,173			37,780
D						2,680	2,990	3,022	2,858	2,957	113																14,620
K	pillar												31	1,364	-	3,751	1,365	-	-	-	-	-	-	2,143	2,026	2,006	12,687
J	pillar												-	-	-	-	-	1,286	-	-	-	-	-	-	-	-	1,286
H	pillar												-	-	-	-	-	-	-	24	2,110	35	1,556	-	9,205	9,633	22,564
I	pillar												-	-	-	-	-	-	-	-	4,644	4,359	4,669	5,249	4,964	5,119	29,005
Total Vein Material (t)					4,428	15,948	27,708	34,168	32,311	33,425	30,920	31,146	29,484	28,402	28,043	27,815	28,260	29,108	28,131	27,599	29,219	27,892	29,723	28,337	16,195	16,758	**585,022**
TPD					**49**	**177**	**308**	**380**	**359**	**371**	**344**	**346**	**328**	**316**	**312**	**309**	**314**	**323**	**313**	**307**	**325**	**310**	**330**	**315**	**180**	**186**	
Ag	gpt				715	750	751	727	727	727	721	721	720	698	752	709	662	676	673	670	644	637	642	612	651	653	**693**
Au	gpt				0.46	0.50	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.50	0.53	0.55	0.54	0.53	0.54	0.54	0.53	0.53	0.53	0.52	0.52	0.52	**0.52**
Pb	%				2.20	2.44	2.47	2.44	2.44	2.44	2.31	2.31	2.31	2.38	2.30	2.17	1.95	1.93	1.95	1.92	1.87	1.74	1.84	1.75	2.83	2.84	**2.19**
Zn	%				4.97	5.09	5.45	5.74	5.74	5.74	5.49	5.48	5.48	6.10	5.57	5.62	5.03	4.86	4.87	4.80	4.74	4.59	4.70	4.95	6.45	6.44	**5.35**
NSRSW2 ($/t)					$376	$399	$402	$390	$390	$390	$384	$384	$384	$374	$401	$377	$348	$354	$353	$351	$336	$331	$335	$319	$356	$357	**$368**

16.8.5 Mine Services

Mineralized Vein and Waste Handling

Vein material and waste will be handled by 15-tonne capacity haulage trucks underground and on surface. Trucks will be loaded at remuck bays on the ramp systems and will haul directly to the surface vein material pad at the mill or to the planned surface waste rock dump location, both surface locations being within 400 m of the portal.

LoM development waste rock broken underground is estimated at 285 kt. Approximately 227 kt of this waste rock is needed for Flame & Moth backfill, along with 122 kt of dry filtered tailings. The conceptual plan for the remaining waste rock amount of 70 kt is to use it for surface construction. Alexco plans to use the majority of the excess waste rock to construct a toe berm for the expansion of the DSTF. Detailed plans for the surface handling Flame & Moth waste rock depend on the geochemical characterization of the rock, which has not been done yet.

Flame & Moth backfill consisting of development waste rock and dry filtered tailings will be back hauled underground as close as possible to stopes being backfilled. DUX Machinery Corp. produces a teledump 15-tonne truck (model TD-15) with a two piece telescoping box that can dump with only a 2.7 m back height. This would allow backfill to be trucked very close to the stopes being filled.

SRK estimates that a fleet of three 15-tonne trucks will be required.

Backfilling

Backfill materials consisting of development waste rock and dry filtered tailings will be placed into empty stopes by a LHD or 15-tonne truck. The mix of these materials is flexible and will be varied to minimize the surface environmental impact. For cut and fill and drift and fill stopes, the backfill will be pushed up tight to the back using an LHD equipped with a rammer jammer. SRK estimates the LOM backfill requirement to be 349 kt.

Cemented backfill at approximately 5% cement by weight will be used in drift and fill stopes and longhole stopes. The cement, rock and water will be mixed by LHD bucket in a small sump-like cut out near the empty stope. Cement will be transported underground in bulk bags.

Ventilation

The planned ventilation flow for Flame & Moth is 78 cms, equivalent to 165,000 cfm based on the equipment fleet and similar projects. Heated fresh air will be delivered centrally to the mine through a 3-metre diameter bored raise equipped with a manway. Two fans operating in parallel will be set up on the fresh air raise. Bedrock is exposed on surface at the planned raise collar location.

Exhaust air will be through the main Lightning ramp system that extends from the mine bottom to surface.

From the fresh air raise, fresh air will be distributed by lateral development (through the lower link) to the Christal zone. Fresh air will be distributed upwards through Christal zone by a ventilation raise. Exhaust will be removed from the upper extremity of Christal zone through the upper link that connects it to the main Lightning ramp.

Mine Dewatering

The Flame & Moth deposit extends below the valley floor and for that reason there is potential for significant inflows of water.

Alexco conducted preliminary hydrogeology investigations during the 2013 field season. Based on the findings, an independent hydrologist commissioned by Alexco provided an opinion on the potential mine water inflow of 150 to 350 gallons per minute (gpm). SRK assumed an inflow rate of 300 gpm as the basis of a scoping level capital cost estimate.

SRK conceptually planned a main dirty water sump at the 660 m elevation near the fresh air raise and main ramp. Metso dirty water centrifugal pumps are planned in two parallel banks of three pumps each in series. Two steel cased 125-millimetre diameter drill holes are planned to deliver dirty water from the main sump to surface.

Area sumps are planned as follows: one sump at the lowest area of Lightning and one at the lowest area of Christal. These sumps will be equipped with 45 kW dirty water submersible pumps to pump to the main sump at the 660 m elevation.

Maintenance Facilities

Most of the mobile equipment maintenance will be performed in a planned surface shop, to be constructed near the Flame & Moth portal. The mine area is relatively small and it will not be difficult to bring underground equipment to the surface shop. An additional small maintenance shop will be set up underground to handle small repairs and routine servicing.

At the time Flame & Moth production is planned to ramp up, mining activity at Bellekeno will be coming to an end. Used shop tools and equipment will become available for use at Flame & Moth.

The maintenance department will have a fuel/lube truck, a mechanic’s service truck, a tractor, and access to a scissor lift and a boom truck.

In addition to the mobile equipment, the mine maintenance department will be responsible for the stationary equipment consisting of air compressors, main ventilation fans, propane air heaters, underground electrical distribution system, and main dewatering pumps.

16.9 Consolidated Mining Schedules, Equipment and Manpower

16.9.1 Plant Feed Schedule

Table 16.23 shows the planned combined plant feed schedule for Alexco’s mill facility that totals 812.9 kt from July 27, 2015 through to the end of Q1 2021.

The average NSRSW2 value of the plant feed is $398/t based on an NSR formula incorporating the amended Silver Purchase Agreement. Metal prices of US$18.50/oz silver, US$0.98/lb lead, US$1.00/lb zinc, and US$1210/oz gold were used in the NSR calculation. An exchange rate of US$0.89/C$1.00 was also used.

Table 16.23: KHSD Project Combined Plant Feed Schedule

Mine	2014	2015	2016	2017	2018	2019	2020	2021	Total
Bellekeno Tonnes	**-**	**41,278**	**44,424**						**85,702**
Ag gpt		578	736						660
Au gpt		0.00	0.00						0
% Pb		5.49	7.91						6.74
% Zn		4.34	3.97						4.15
Lucky Queen Tonnes	**-**	**-**	**1,256**	**25,038**	**36,000**	**39434**	**33576**	**6873**	**142,176**
Ag gpt			674	833	1278	1150	974	701	1,059
Au gpt			0.11	0.14	0.13	0.11	0.11	0.08	0.12
%Pb			1.41	1.96	2.60	2.62	2.35	2.17	2.40
%Zn			1.86	1.44	1.76	1.28	1.31	0.72	1.42
Flame & Moth Tonnes	**-**	**4,428**	**110,134**	**124,975**	**112,520**	**114,058**	**102,148**	**16,758**	**585,022**
Ag gpt		715	737	722	705	665	634	653	693
Au gpt		0.46	0.51	0.51	0.53	0.53	0.53	0.52	0.52
%Pb		2.20	2.45	2.34	2.20	1.92	1.94	2.84	2.19
%Zn		4.97	5.57	5.55	5.58	4.82	5.02	6.44	5.35
Total Vein Material (t)	**-**	**45,707**	**155,814**	**150,012**	**148,520**	**153,492**	**135,724**	**23,632**	**812,901**
TPD	-	297	433	417	413	426	377	263	
Ag gpt		591	736	741	844	790	718	667	754
Au gpt		0.04	0.36	0.45	0.43	0.43	0.42	0.40	0.40
%Pb		5.17	3.99	2.28	2.30	2.10	2.04	2.64	2.71
%Zn		4.40	5.09	4.86	4.66	3.91	4.10	4.78	4.53
NSRSW2 ($/t)	**$0**	**$331**	**$404**	**$390**	**$440**	**$407**	**$371**	**$354**	**$398**

Total Lateral Waste Development Schedule

Table 16.24 shows the total lateral waste development scheduled for the three mines included in the production schedule.

Table 16.24: KHSD Project Total Lateral Waste Development

Mine/Zone	2015	2016	2017	2018	2019	2020	2021	Total (m)
Bellekeno SW	529	63						**592**
Bellekeno 99	90	62	-					**152**
Lucky Queen		522	570	750	1,079	384	68	**744**
Flame & Moth	2,261	1,348	1,418	607	641	426		**6,701**
Total Lateral Waste (m)	**2,880**	**1,995**	**1,988**	**1,357**	**1,720**	**810**	**68**	**10,818**

The peak advance rate planned occurs in Q3 2015 with 1,082 m scheduled. Assuming a productivity of 0.8 metres per man-shift (11-hour shift basis) this will require approximately 30 development miners.

16.9.2 Waste Rock and Backfill Schedules

Table 16.25 shows LoM schedules for development waste rock broken and backfilling requirements. Backfill will be a mix of dry filtered tailings and development waste rock, with cement added when needed. On average, the backfill will be comprised of 31% dry tailings and 69% rock.

Table 16.25: Waste Rock and Backfill Schedules

Mine/Zone Waste Broken (kt)	2015	2016	2017	2018	2019	2020	2021	Total (kt)
Bellekeno SW	24.3	2.9						**27.2**
Bellekeno 99	4.1	2.8						**7.0**
Lucky Queen		19.8	18.5	24.7	36.7	10.7	1.9	**112.2**
Flame & Moth	100.4	60.0	60.3	25.8	27.2	18.1		**291.9**
Total Waste Broken (kt)	**128.9**	**85.6**	**78.8**	**50.4**	**63.9**	**28.8**	**1.9**	**438.3**
Mine Backfill Required								**Total (kt)**
Bellekeno Backfill (Rock Fill)	7.4	0.6						**8.0**
Bellekeno Backfill (Cemented Tailings)	20.1	17.4						**37.5**
Lucky Queen Backfill (Cemented Rock Fill)		0.9	17.9	25.7	28.2	24.0	4.9	**101.6**
Lucky Queen Backfill (TDB's left as Rock Fill)			4.3	5.2	5.9	5.2	1.0	**21.6**
Flame & Moth Backfill	2.6	65.8	74.6	67.2	68.1	61.0	10.0	**349.3**
Total Backfill (dry tonnes)	**30.1**	**84.6**	**96.8**	**98.1**	**102.2**	**90.2**	**15.9**	**517.9**
Backfill Composition (kt)								**Total (kt)**
Waste Rock Backfill	7.4	0.6	4.3	5.2	5.9	5.2	1.0	**29.6**
Dry Tailings in Cemented Backfill	18.0	37.8	26.1	23.5	23.8	21.3	3.5	**154.1**
Waste Rock in Cemented Backfill	4.7	46.2	66.4	69.4	72.4	63.6	11.4	**334.2**

16.9.3 Equipment and Manpower

An underground mining contractor was engaged at the site up until the temporary shutdown began at the end of August 2013. Operations are planned to resume at site as follows. Development activity resumed in the third quarter of 2014 while production stoping and processing are planned to start in late July, 2015. Alexco plans to undertake this work with its own equipment and employees to reduce operating costs.

Mining Equipment

SRK received a detailed list of the mining equipment owned by Alexco at the end of August 2013. SRK prepared a quarterly schedule of additional equipment and replacement (sustaining) equipment needed to support the PEA mining plans for Bellekeno, Lucky Queen, and Flame & Moth. SRK assumed that most of the new equipment required for Flame & Moth would be acquired by Alexco on a lease to own basis.

Table 16.26 and Table 16.27 show the planned consolidated mining equipment fleet requirements estimated for the fouth quarter of 2015 and 2017. The equipment listed is expected to be shared among the mines as production requirements change over time. This strategy is necessary to accommodate the changing production profile over time. For example, by the end of 2015, Bellekeno will be producing and Flame & Moth will be under development. By the end of 2017, both Lucky Queen and Flame & Moth will be producing but Bellekeno will be idled.

Common equipment includes equipment allocated to the mines to haul vein material and waste, maintain the haul roads, and maintain the waste dumps, and move men and materials around the Keno Hill Silver District. It does not account for the equipment owned by the mill, site services or any of the other non-operating departments.

Table 16.26: Consolidated Equipment List (2015)

Common Equipment	Number
Surface Loader	3
Ambulance	1
Surface Haul Truck 20 ton	4
Surface Haul Truck 30 ton	2
Service Truck	1
Grader	1
Crane Truck	1
Light Vehicles	4
Cat D-3C Dozer	1
Cat D-8K Dozer	1
Bus	3
Van	2

Bellekeno Equipment	Number
1-boom Jumbo	1
Bolter - Mechanized	1
LH drill – 63 mm	2
LHD – 2-tonne	1
LHD - 3.5-tonne	2
LHD - 6.7-tonne	2
LHD - 8yd	1
Bolting Platform	1
Rammer Jammer	2
UG Truck – 15-tonne	2
Scissor Lift	1
Anfo Loader - pot style	1
Shotcrete Machine	2
UG Forklift	1
Tractor	2
Utility Vehicle	2
Pickup Truck	2

Flame & Moth Equipment	Number
1-boom Jumbo	1
2-boom jumbo	3
Bolter - Mechanized	1
LHD - 3.5-tonne	1
LHD - 6.7-tonne	4
UG Truck – 15-tonne	3
Scissor Lift	3
Boom Truck	1
U/G Grader	1
Fuel/Service Truck	1
Utility Vehicle	1
Personnel Carrier	1
Shotcrete Machine	1
UG Forklift	1
Pickup Truck	2
Total Units (all Mines)	**75**

Table 16.27: Consolidated Equipment List (2017)

Common Equipment	Number	Flame & Moth Equipment	Number
Surface Loader	3	1-boom Jumbo	2
Ambulance	1	2-boom jumbo	3
Surface Haul Truck 20-ton	4	Bolter - Mechanized	1
Surface Haul Truck 30-ton	2	LH drill – 63 mm	1
Service Truck	1	LHD - 3.5-tonne	2
Grader	1	LHD - 6.7-tonne	5
Crane Truck	1	UG Truck – 15-tonne	3
Light Vehicles	4	Scissor Lift	4
Cat D-3C Dozer	1	Boom Truck	1
Cat D-8K Dozer	1	U/G Grader	1
Bus	3	Fuel/Service Truck	2
Van	2	Tractor	3
Lucky Queen Equipment	**Number**	U/G Forklift	2
1-boom Jumbo	1	Utility Vehicle	2
Bolting Platform	1	Personnel Carrier	1
LHD – 2-tonne	1	Shotcrete Machine	1
LHD - 3.5-tonne	2	Pickup Truck	2
UG Truck - 6.5-tonne	3	**Total Units (all Mines)**	**78**
Anfo Loader - pot style	1		
UG Forklift	1		
Shotcrete Machine	1		
Rammer Jammer	2		
Utility Vehicle	2		
Pickup Truck	3		

Manpower

Alexco plans to undertake planned future operations with its own employees, without the involvement of a general mining contractor. Some specialty tasks such as diamond drilling, alimak raising, and raise boring will likely be contracted out.

Table 16.28 shows the estimated fourth quarter 2015 site wide manpower levels. SRK notes that not all of the manpower listed under “Other Departments” are required to support the mining plan but are engaged in other district level work. The company manpower levels shown for “Other Departments” reflect the 2013 budgeted manpower levels for company personnel.

Table 16.28: Estimated 2015 Site Manpower

Common Mine Operations	
Function	**Number**
Mine Supervision	10
Safety & Training	4
Technical Services	12
Maintenance Supervision	6
Maintenance	18
Surface Trucking	8
Sub-total Mining	**58**
Bellekeno Production	
Function	**Number**
Lateral Development	12
MCF Stoping	6
LH Stoping	12
Vein & Waste Trucking	8
Backfill	6
Mine Services	6
Contractors	5
Sub-total Mining	**55**
Flame & Moth Pre-Production	
Function	**Number**
Lateral Development	17
Stoping	11
Vein & Waste Trucking	10
Backfill	5
Mine Services	7
Contractors	4
Sub-total Mining	**54**
Sub-total Mining (Owner)	**158**
Sub-total Mining (Contract)	**9**
Total Mining	**167**
Other Departments	
Function	**Number**
Management	5
Administration	4
Safety Department	3
Site Services	22
Environmental	1
Mill	41
Total Other Depts	**76**
Grand Total	**234**

During 2015, some contractors in the underground mine will be required to undertake definition drilling (diamond drilling), raiseboring and longhole production drilling.

Table 16.29 shows the estimated site wide manpower requirements for the fourth quarter of 2018. By this time the Bellekeno mine will have been exhausted and the Flame & Moth mine will have taken over the bulk of the production and will be producing at 320 tpd. Lucky Queen will also be in full production during this period and producing 100 tpd.

Table 16.29: Estimated 2018 Site Manpower

Common Mine Operations	
Function	**Number**
Mine Supervision	10
Safety & Training	4
Technical Services	12
Maintenance Supervision	6
Maintenance	21
Surface Trucking	2
Sub-total Mining	**55**
Flame & Moth Production	
Function	**Number**
Lateral Development	6
Stoping	17
Vein & Waste Trucking	10
Backfill	7
Mine Services	8
Sub-total Mining	**48**
Lucky Queen Production	
Function	**Number**
Lateral Development	12
Stoping	32
Vein & Waste Trucking	8
Backfill & Mine Services	4
Sub-total Mining	**56**
Total Mining (Owner)	**159**
Other Departments	
Function	**Number**
Management	5
Administration	4
Safety Department	3
Site Services	22
Environmental	1
Mill	41
Total Other Depts	**76**
Grand Total	**235**

17 Recovery Methods

The mill facility started operating in late 2010 and commercial production was declared in January 2011. The 2012 production data were analyzed to assess plant performance while processing similar feed to that expected in the PEA production forecast. Daily production data and monthly production statistics were provided to SRK for review and, in agreement with Alexco, the 2012 monthly summaries (as received) were determined to be the basis for the assessment.

17.1 Process Flowsheet

The mill facility consists of a two-stage closed circuit crushing line (jaw crusher followed by cone crusher), feeding the fine material stockpile. The single-stage grinding circuit has a ball mill (1.8 x 3.6 m, 180 kW) in closed circuit with a 300 µm vibrating screen to produce a mill feed P80 size of 174 µm. The screen undersize feeds the lead rougher/scavenger flotation circuit to recover lead and silver minerals to a rougher concentrate and scavenger concentrate.

Rougher and scavenger silver-lead flotation concentrates feed a three-stage lead cleaner flotation circuit generating a final silver-lead concentrate. The lead scavenger tailings feed the zinc rougher scavenger flotation circuit to recover the zinc minerals generating the final, low pyrite tailings, which are stored in a dry stacking facility.

The zinc rougher flotation concentrate feeds a three-stage cleaner flotation circuit, which produces the final zinc concentrate and a high pyrite tailing. The silver-lead concentrate and the zinc concentrate are thickened and filtered prior to transport off site. The high pyrite tailings are thickened and used for underground backfill. Regrinding of either lead or zinc rougher concentrates is currently not included in the mill facility flowsheet.

Figure 17.1 is a schematic process flow diagram for the mill facility with the main circuit elements.

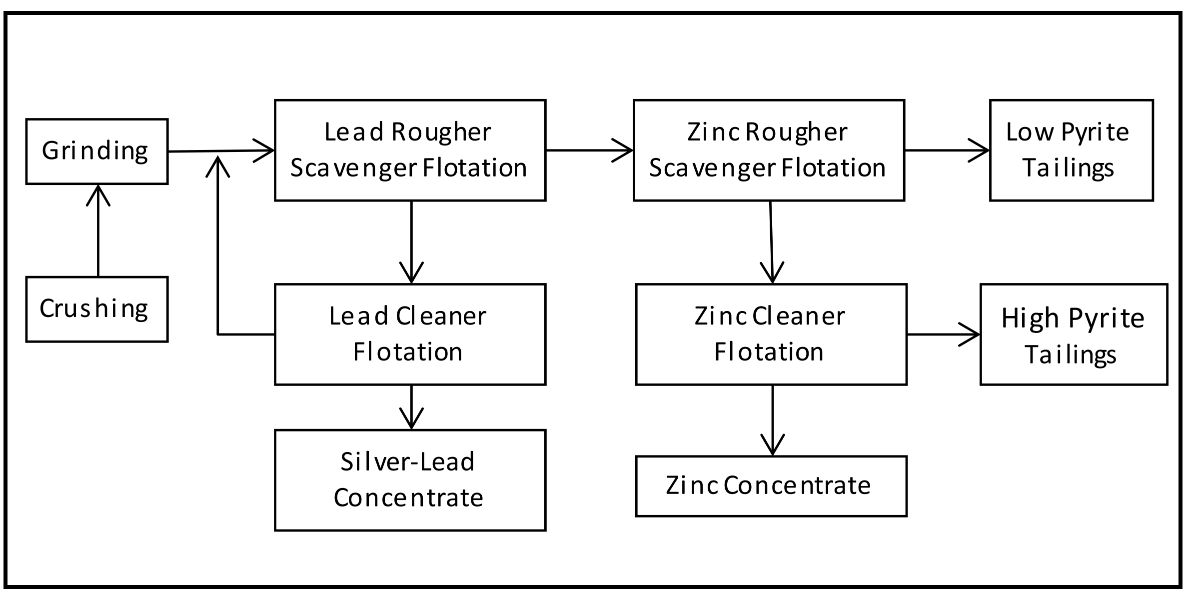


Figure 17.1: Mill Facility Simplified Process Flow Diagram (SRK, 2013)

Reagents used in the plant include flocculent, copper sulphate, frother (MIBC), collectors (SIBX, 3418A), sodium sulphite, zinc sulphate, and carbon dioxide. All of these reagents are standard operating practice for lead/zinc feed flotation circuits. A review of the mill facility production data for 2012 indicated the typical reagent consumptions were similar to other operations treating comparable grades and mineralogy.

17.2 Design Criteria

The mill facility was designed to process 408 tpd at an overall plant availability of 92%. The target grind size was at P80 size of 174 µm and the project included the option of a regrind mill before the lead cleaner circuit. The key design criteria are shown in Table 17.1. Despite the design criteria, the plant was built without the lead regrind mill.

Table 17.1: Mill facility Design Criteria

	Pb (%)	Zn (%)	Ag (gpt)	Au (gpt)
Head Grades	9.5	5.6	871	0.4
Lead Concentrate Grades	70	2.3	6185	1.5
Zinc Concentrate Grades	0.5	54	1.1	300
Concentrate Recovery, %	97	88	72	94
General				
Mill Throughput (tpd)				408
Availability (%)				92
Primary Grind P80 Size (µm)				174
Lead Regrind Grind P80 Size (µm)				45

17.3 2012 Mill Performance

In 2012, the mill facility processed 94,800 t of Bellekeno vein material generating 13,000 t of lead-silver concentrate and 5,700 t of zinc concentrate. The year average monthly throughput was 260 tpd at 89% availability. The maximum monthly throughput for the year was 305 tpd, with peak production in September and October.

Head grades averaged 760 gpt silver, 9.6% lead and 4.8% zinc. The head grades ranged from 620 gpt to 1075 gpt silver; 8% to 16% lead; and 4% to 9% zinc. The head grades recorded in the mill facility for the year of 2012 are in agreement with the project design criteria shown in Table 17.1.

The 2012 mill facility lead recoveries ranged from 84% to 98% with a concentrate lead grade of 55% to 68%. The silver recoveries to silver-lead concentrate ranged from 83% to 97% with silver grades from 4,231 gpt to 5,270 gpt. Zinc grade in the silver-lead concentrate ranged from 4% to 9% with recovery as high as 26%.

The zinc recovery to zinc concentrate ranged from 46% to 64% with a final zinc grade of 40% to 49% zinc. The silver recoveries to zinc concentrate ranged from 2% to 6% and the maximum lead recovery to zinc concentrate was 6% with a maximum grade of 7% lead.

The zinc grade of zinc concentrate produced in 2012 was considerably lower than the design specification shown in Table 17.1. It is common for smelter agreements to reduce % payable zinc for concentrate grades below 50%. The testwork results to date suggest the regrinding of rougher concentrates prior to cleaning to final concentrate will assist in improving the zinc grade of the final concentrate.

17.4 Plant Modifications

With the current equipment, the mill facility has not demonstrated the ability to achieve the target throughput of 400 tpd. In order to address this limitation, Alexco retained Starkey & Associates (S&A) of Oakville, Ontario, to perform a grinding circuit throughput analysis. In February 2013, S&A conducted a one hour benchmark survey on the grinding circuit and collected samples for grindability testing (Starkey & Associates, 2013).

Based on the results of the comminution analysis, S&A recommended the installation of a second ball mill in series after the existing mill. According to the S&A report, the addition of a secondary 1.8 x 3 m ball mill with 130 kW of installed power would allow the mill facility to process 430 tpd (at 89% availability) of material with similar hardness to the feed currently being processed. Alexco has already purchased the second ball mill and it will be installed during Q2 2015.

S&A reports the current mill grind P80 size at 137 µm; however, simulations to forecast mill performance with the additional mill are presented in their report with a grind P80 size of 180 µm. The coarser grind size, as presented by S&A, is expected to degrade flotation selectivity and lower concentrate grades when compared to the mill performance at the time of the grinding survey.

All recent testwork conducted to date has been performed at a grind P80 size below 115 µm, which represents better mineral liberation than that achieved by the mill facility (e.g., zinc recovery to lead concentrate in 2012 ranged from 12% to 26%). In order to improve zinc recovery, a regrind mill for the rougher/scavenger concentrates should be considered to allow more zinc to reach the zinc circuit. A regrind mill for the lead circuit would also improve concentrate grades.

Overall, Flame & Moth has shown relatively poor performance in zinc flotation on the samples tested to date. The effect of regrind on the zinc metallurgy was tested in the Flame & Moth metallurgical program and showed improvements in both zinc recovery and concentrate grade. More than 70% of the PEA production tonnage is expected from the Flame & Moth deposit, and Flame & Moth will be the main source of mill feed for the LoM plan. The addition of a zinc regrind mill may be necessary when Flame & Moth reaches production in 2016. Preliminary testwork showed an additional 8% zinc recovery was achieved with regrinding ahead of zinc cleaner flotation.

17.5 Expected Blended Feed Performance

No metallurgical testwork has been performed to date on blended samples from the different deposits. In addition, the tested sample grades for Lucky Queen and Flame & Moth were not representative of the PEA blended grades. In order to bridge this gap, metal recoveries were estimated by combining the 2012 mill facility performance and data from the most recent testwork on the individual deposits.

Lead, silver, and zinc recovery data to the two concentrates were plotted against head grade. The resulting relationships were used to estimate the concentrate recoveries for the blends expected in the PEA production plan. In addition, based on the concentrate mass recovery, the grade of minor elements was also estimated on an annual basis for the PEA production plan.

These relationships are preliminary in nature and it is SRK's opinion that they need to be verified with metallurgical testwork on actual blended samples. As they are preliminary, they should not be considered accurate to better than ±5% absolute in lead and zinc recovery.

17.5.1 Recovery and Concentrate Grade Estimation

A curve relating recovery to final concentrate versus head grade was determined for lead, silver, and zinc. These curves were used to estimate the performance of blended feeds for each year of the production plan. Concentrate grade was calculated based on recovered metal and concentrate mass, which in turn, was estimated from the lead or zinc recoveries.

Figure 17.2 shows lead recovery and lead concentrate grade for testwork on all three deposits. In addition, the range of the mill facility 2012 reported results is shown as a grey shaded box. The red icons represent the annual estimates for the production plan assumed in this PEA.

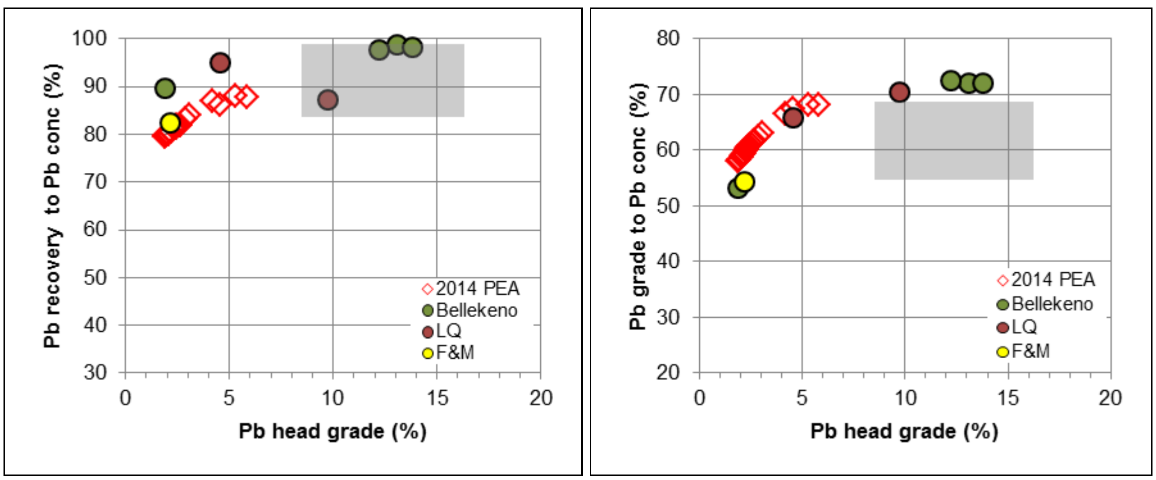
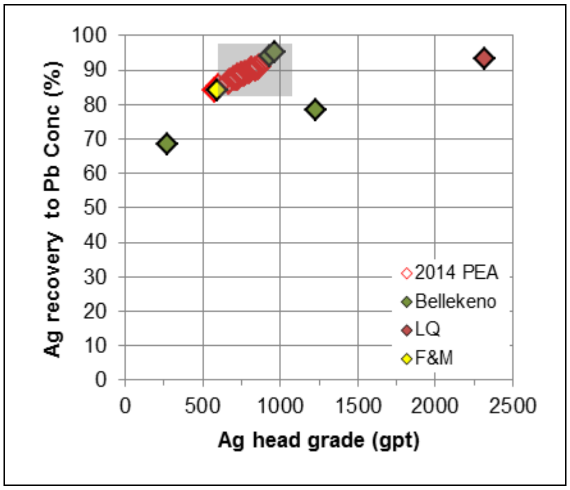


Figure 17.2: LoM Blended – Lead Recovery and Concentrate Grade vs. Head Grade (SRK, 2014). Grey shaded box is the range of 2012 mill facility production data.

It can be seen that the PEA estimates agree with the mill facility production results as well as the difference between the PEA planned head grades and those of material processed in 2012. While the mill facility achieved lead recoveries of 82% to over 95%, the lower head grade for the PEA production plan will produce expected recoveries between 79% and 88%.

Figure 17.3 shows silver grade and recovery to lead concentrate for testwork on all three deposits. The grey shaded box represents the range of results for 2012. As the mass of the lead concentrate is estimated from lead recovery, the lower lead head grades for the PEA production plan result in a lower expected mass for the concentrate. Similar silver recoveries as the mill facility production data, combined with a lower mass of lead concentrate, result in the higher estimates of silver grade in the lead concentrate shown in the right graph of Figure 17.3.



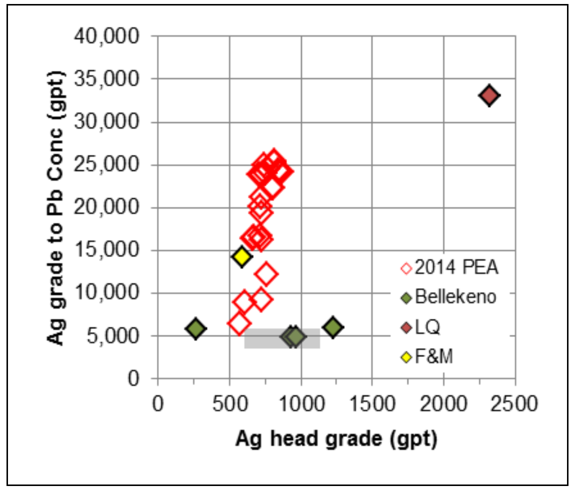


Figure 17.3: LoM Blended – Silver Recovery and Concentrate Grade vs. Head Grade (SRK, 2014) Grey shaded box is the range of 2012 mill facility production data.

A similar plot for zinc recovery is shown in Figure 17.4. For zinc, the 2012 mill head grades were quite similar to those expected in the PEA plan and the estimated recoveries are also similar, at between 50% and 60%.

The estimated zinc grade of zinc concentrate (Figure 17.4 right side) is comparable to the mill facility results as zinc head grade and zinc concentrate mass are similar. All tests on Lucky Queen and Flame & Moth samples were performed at finer grind size than currently achievable by the mill facility's grinding circuit. The actual grindability of these deposits cannot be evaluated as hardness testwork has not been completed to date.

The yellow icons in Figure 17.4 show the test results for the single Flame & Moth sample tested to date. Based on these results, performance of the current mill facility flowsheet could range from 25% to 60% zinc recovery when processing exclusively Flame & Moth material. The higher recovery is associated with a low zinc grade of concentrate.

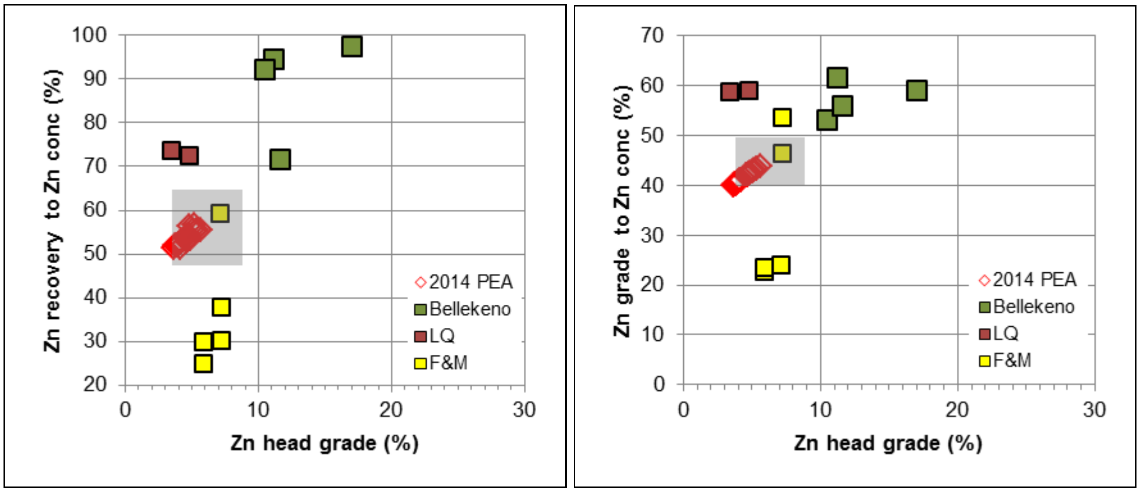


Figure 17.4: LoM Blended – Zinc Recovery and Concentrate Grade vs. Head Grade (SRK, 2014)

Grey shaded box is the range of 2012 mill facility production data.

17.5.2 Life-of-Mine Summary

Table 17.2 presents a summary of the overall LoM estimates. At a head grade of 3% lead, 5% zinc, and 754 gpt silver, the estimated LoM recoveries are 83% lead, 54% zinc, and 94% silver (to both concentrates). The LoM average lead concentrate grades are 62% lead, 8% zinc, and 18,364 gpt silver with 42% zinc and 643 gpt silver in the zinc concentrate.

Table 17.2: Overall Life-of-Mine Estimates

	Pb	Zn	Ag
	(%)	(%)	(gpt)
Head Grades	3	5	754
Lead Concentrate Grades	62	8	18,537
Zinc Concentrate Grades	0.4	42	654
Concentrate Recovery, %	**83**	**54**	**94**

* Silver recovery to both concentrates

Figure 17.5 shows the LoM mine production plan with a breakdown of the mill feed blend by deposit. The graph shows Lucky Queen starting to ramp up production in late2016 and producing into 2021. Lucky Queen is timed to enter production just after Bellekeno operations cease. All tonnes shown for Bellekeno after Q2 2016 are from a planned stockpile which shall be used to keep the mill full while Flame and Moth ramps up towards commercial production. Flame & Moth will start production in late 2015 and reach commercial production in Q2 2016 after which time it will be the major component of the mill feed throughout the mine life.

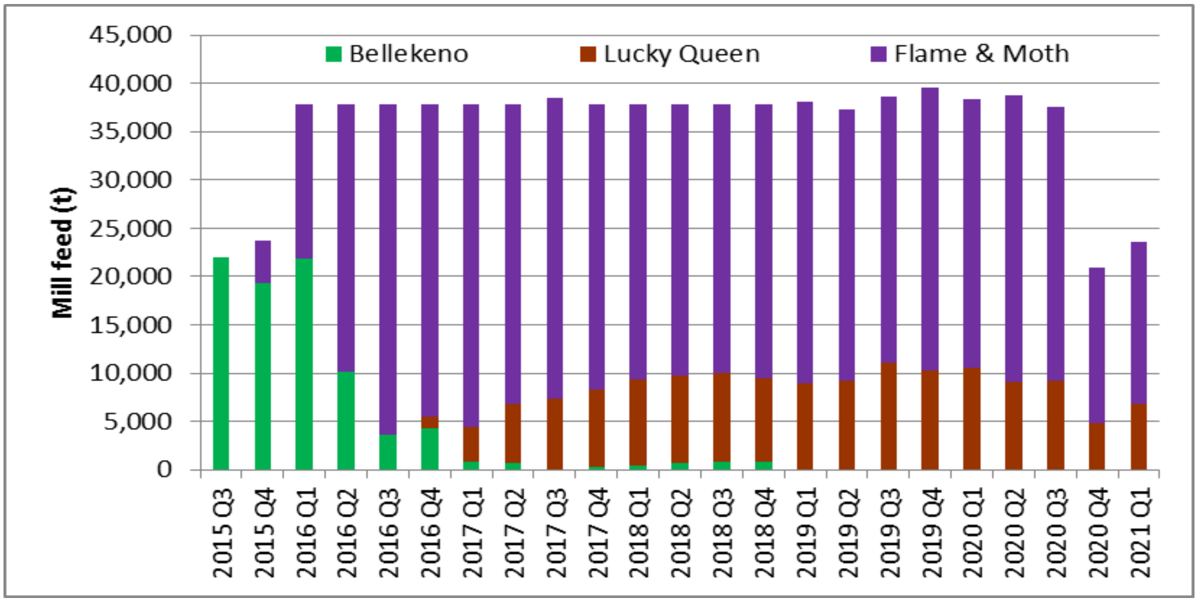


Figure 17.5: Life-of-Mine Tonnes by Source (SRK, 2014)

Figure 17.6 shows the PEA LoM head grade estimates with the lead grade increasing when Bellekeno mineralization is processed. Silver grade improves while Lucky Queen is in production.

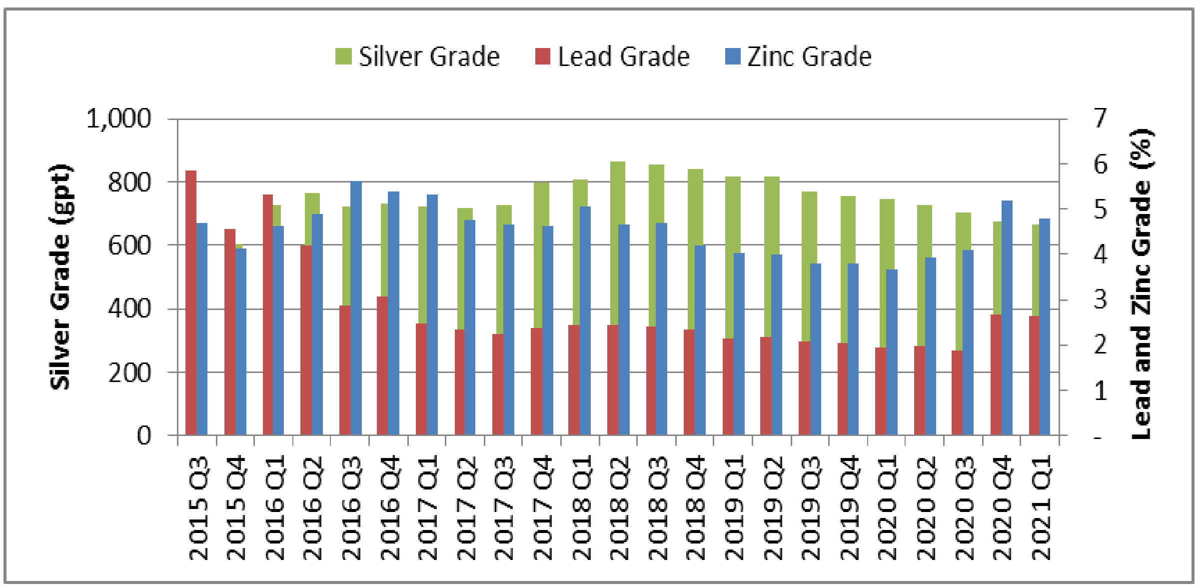


Figure 17.6: Life-of-Mine Head Grade Estimates (SRK, 2014)

Figure 17.7 summarizes the recovery estimates for the LoM. Silver recovery is to both lead and zinc concentrates.

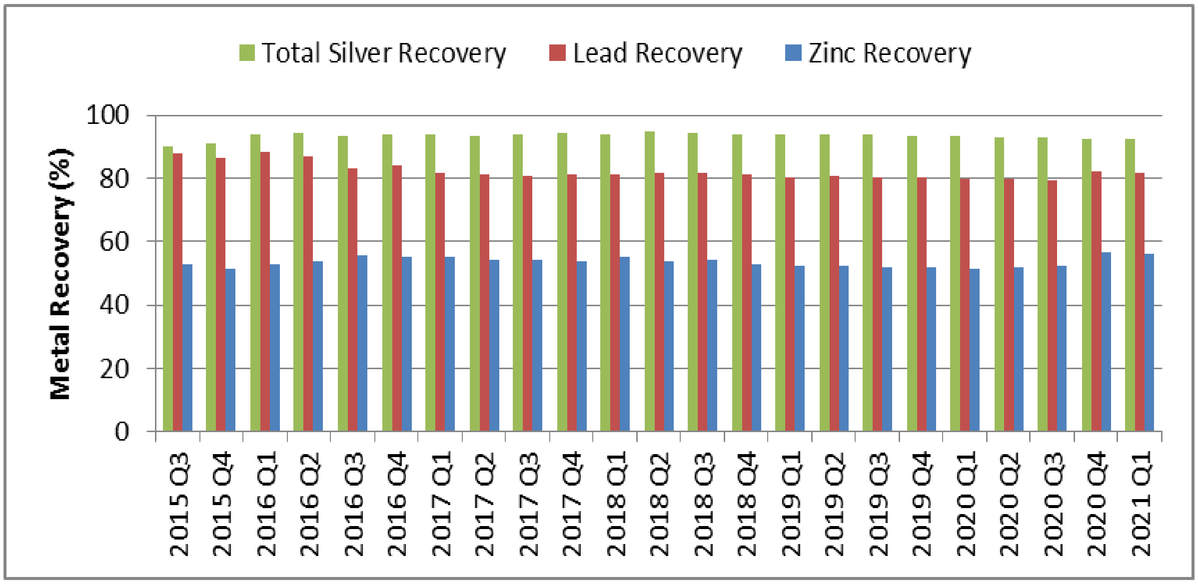


Figure 17.7: Life-of-Mine Recovery Estimates (SRK, 2014)

It is SRK's opinion that the accuracy of all relationships used to estimate future mill facility concentrate grades and recoveries needs to be verified with additional data. This includes testwork on a range of blends from all three deposits that reflect the latest production plan.

No blended samples have been tested to date to verify the assumptions implicit in the simple recovery versus the head grade relationships presented.

The estimates for lead recovery to lead concentrate and zinc recovery to zinc concentrate should be considered accurate to ±5% absolute (perhaps even broader) considering the lack of information available to date. As inputs to a technical economic model, a range of likely recoveries and grades should be used to test their influence on the overall project economics.

18 Project Infrastructure

18.1.1 Elsa Administrative, Maintenance, and Warehousing Facilities

The administrative offices and first aid facilities are based in Elsa, Yukon in a large facility that also accommodates the exploration group offices and core processing area.

Maintenance and warehouse facilities are located at Elsa. The warehouse building in Elsa is a two-story building with warehousing on both levels and a fully serviced maintenance shop on the northern end of the bottom floor. This building is used as a centralized warehouse/surface equipment facility for the Keno Hill Silver District operations and requires no further upgrades.

18.1.2 Flat Creek Camp Facilities

The currently licensed Flat Creek camp facilities include a trailer camp, kitchen facility, and drillers dry assembled at the old Flat Creek town site (part of Elsa). The camp has a total capacity of 90 permanent beds. During peak construction season, temporary bunks are brought in to allow for another 20 personnel in double bunk rooms. These bunks are not occupied during the winter. There are four refurbished houses located nearby with a total of 28 rooms, and an additional 20 rooms available in a bunkhouse. A fourth bunkhouse located adjacent to the houses is primarily used for seasonal surface exploration programs. The entire capacity of the camp facilities is 140 rooms. The facilities will require expansion to accommodate the estimated 230 operations employees in addition to the ongoing surface exploration employees and contractors.

Alexco is licensed to withdraw water from Flat Creek and an existing groundwater well for domestic use. A water treatment facility located within the Flat Creek camp and compliant with Yukon Environmental Health standards consists of 5,000 litres (L) of storage, a water softener, UV treatment, and chlorination. Monthly samples are submitted for analyses for toxic metals, bacteria, and hydrocarbons.

Alexco has two sewer permits at Elsa: one for the Flat Creek camp and one for the houses. Waste water is treated in septic tanks and released via drain fields.

A Commercial Dump Permit # 81-012 is currently held from YG Environment in accordance with the *Environment Act* Solid Waste Regulations as well as the *Public Health and Safety Act*. This permit was renewed effective January 1, 2012 and will continue to be used in support of mine operations. In compliance with this permit, upgrades to the location of solid waste disposal included upgrades to the electric bear fence and the addition of a cattle guard to prevent animals from entering the facility.

18.1.3 Mill Facility

The current facilities at the mill facility include mill offices and dry, an assay lab, and the mill and dry stack tailings facility (DSTF) complex, as seen in Figure 18.1. The mine geology and engineering office buildings from Bellekeno were moved to the mill area to serve as a central office and dry facility for all mining operations.

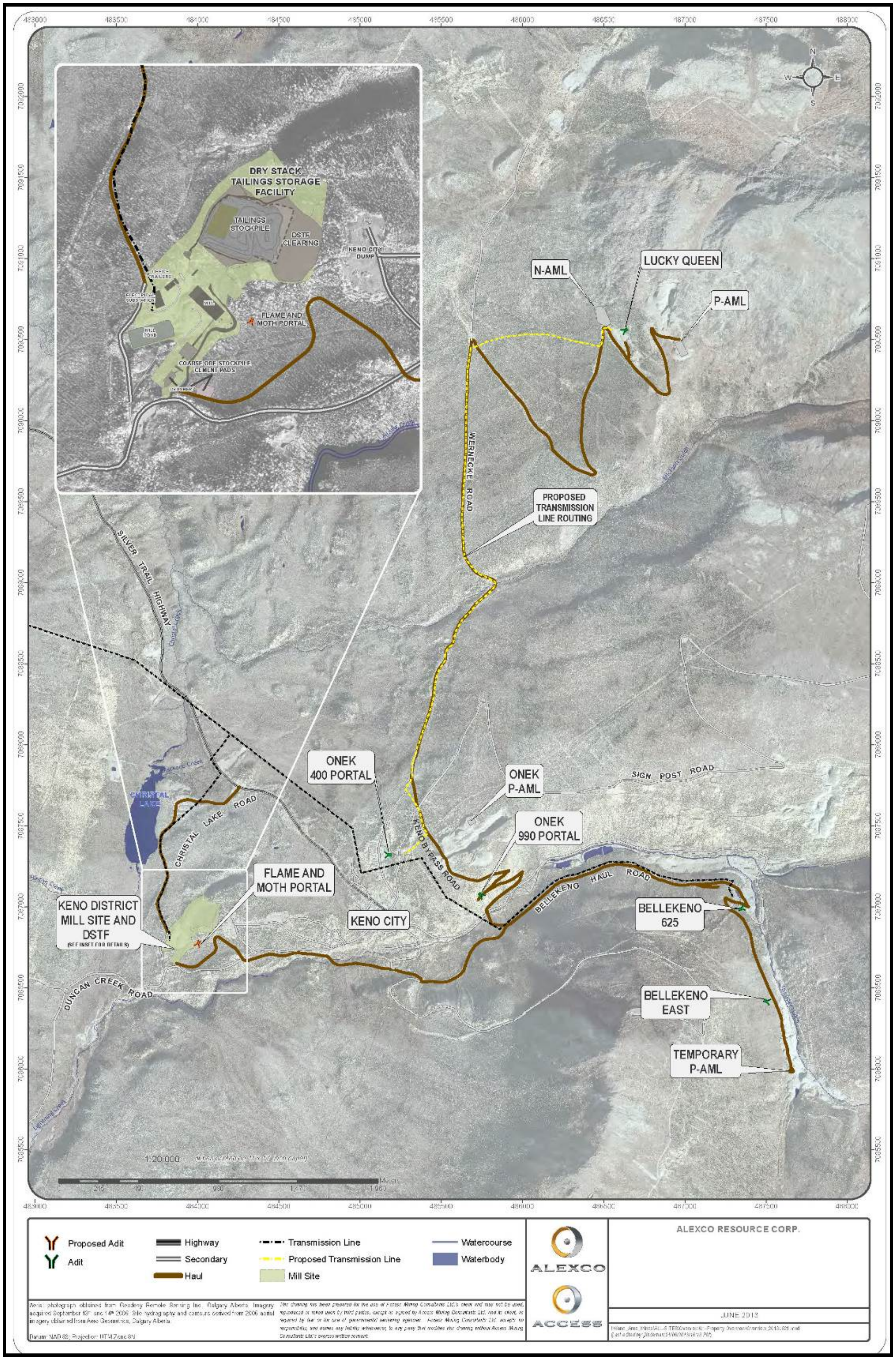


Figure 18.1: Bellekeno, Lucky Queen, Flame & Moth, and Mill Facility Infrastructure (Alexco, 2013)

A metallurgical and assay laboratory conducts all basic testwork to monitor and improve the process flowsheet metallurgy and efficiency, and to support environmental monitoring.

The assay laboratory was constructed as a pre-packaged unit consisting of two retrofitted 40-foot shipping containers converted into laboratory modules, which are located adjacent to the mill building. The laboratory is equipped with the necessary analytical instruments to provide all routine assays for the mine, plant, and environmental quality control monitoring. The equipment included allows the preparation and analysis of approximately 80 samples per 12-hour shift. Standard analysis includes acid digestion of samples followed by analysis on an atomic absorption spectrometer.

18.1.4 Area Haul Road System

Alexco has constructed a series of access and haul roads to route mine traffic around the Keno City community.

All traffic between Elsa and the mill facility and/or the Bellekeno mine is routed along the Christal Lake road and subsequently the Bellekeno haul road.

During mine production, heavy truck traffic from Lucky Queen will be routed along the Keno City bypass road to/from the Bellekeno haul road. Light truck traffic from Lucky Queen will continue to be routed through Keno City during mine operations. The Keno City bypass road was developed from the Wernecke road, crossing Sign Post road, along the historic Onek power line, to the Onek 990 portal, crossing Lightning Creek road and the Onek access bridge across Lightning Creek to the Bellekeno haul road. The bypass road is approximately 2.1 km long and 6 - 9 m wide as per Yukon Workers' Compensation Health and Safety Board regulations and the identified haul road type (i.e., single or double lane).

18.1.5 Bellekeno Mine Surface Infrastructure

The Bellekeno East portal is fully equipped with all infrastructure needed to operate the underground mine including miners' office buildings with septic storage, maintenance shop, miners' dry area, warehouse containers, and surface layout area.

A temporary potential acid metal leaching (P-AML) storage pad is located near the Bellekeno East portal.

Water discharge from the Bellekeno mine is treated at the Bellekeno 625 adit portal water treatment facility.

18.1.6 Lucky Queen Mine Surface Infrastructure

The existing Lucky Queen portal pad, developed on a historic waste dump, will be used to support mining operations at Lucky Queen.

Mine support facilities, such as the miners' dry area, equipment and supplies laydown area, offices and trailers, and fuel storage are in place on the Lucky Queen portal pad.

A set of fresh air fans with mine air heaters are also installed at the portal. Compressed air and power were being supplied by a portable diesel compressor and a diesel generator set mounted in a seacan. The plan is to replace the diesel compressor with an electrical compressor once the planned power line extension is completed.

A planned return air ventilation raise will provide additional ventilation to the underground workings and function as an emergency escapeway to surface. A small building will be constructed over the ventilation raise surface break through and signage will be installed warning of the open hole hazard.

Non-acid metal leaching (N-AML) waste rock generated from development and mining at Lucky Queen will be deposited in a new N-AML waste rock storage facility, which will be built as an extension to the historic waste rock storage area at Lucky Queen. P-AML waste rock is expected to be deposited in a P-AML waste rock storage facility constructed nearby.

A settling pond is located on top of the historic waste rock storage area near the Lucky Queen portal and is used to settle suspended solids from adit water prior to discharge. A diversion ditch is proposed above the Lucky Queen portal and the non-acid or metal leaching (N-AML) waste rock storage facility.

Fuel and petroleum products are held in two Envirotanks to supply fuel for mine development and production operations: one 28,500 L main tank and a 2,100 L “day tank” for the diesel generator.

At Lucky Queen, up to 4,500 kg of explosives will be stored in an appropriate location on the portal bench. Explosives use, transport, handling, storage, and disposal are governed by the Yukon *Occupational Health and Safety Act*, Blasting Regulations and Occupational Health & Safety Regulations, and the *Transport of Dangerous Goods Act* and Regulations.

18.1.7 Flame & Moth Mine Planned Surface Infrastructure

The Flame & Moth mine will use a combination of planned and existing infrastructure at the mill site. Existing infrastructure consists of geology and engineering office trailers, maintenance shop and fuel storage facility.

The planned infrastructure in the area of the proposed Flame & Moth mine portal, northeast of the mill building, consists of:

- a miners’ office trailer and miners’ dry facility;
- cold storage structure;
- air compressors;
- settling pond for mine water discharge, with clarified water supplying the underground mine.

The fresh air raise collar location is planned south of the crusher and coarse vein material stockpile (Figure 18.1). The main ventilation fans and mine air heater will be located at the raise collar.

18.1.8 Electrical Power

The KHSD project is supplied with electrical power from a hydroelectric plant near Mayo. In the past, this facility had sufficient capacity to supply electricity to the mill and all of the various mines. However, after the closure of UKHM, Yukon Energy Corporation (YEC) built a transmission line from Mayo to Dawson City to allow the shutdown of diesel power generation in Dawson City. There remains ample capacity on the grid to power the combined mine and mill operations at a 400 tpd throughput.

The Yukon and federal governments announced in August 2009 approval and financing for the expansion of the hydroelectric plant in Mayo (Mayo B Project) as well as the extension of the power line from Pelly Crossing to Stewart Crossing, thus completing the northern grid and tying in Mayo/Elsa with the entire southern Yukon electrical generating and distribution systems. The power line extension was completed in 2010 and is able to provide ample power for any future mine throughput increases at Bellekeno and throughout the rest of the Keno Hill Silver District.

A new 69 kV/4.16 kV 3 MVA substation was installed to deliver power to the mill facility and associated infrastructure.

Alexco owns several substations in the area, including the Elsa substation, the Onek substation, and the Bellekeno 625 portal substation. It also owns the transmission line connecting the latter two. Power for the Bellekeno mine is now provided exclusively by the YEC electrical distribution system and no diesel powered generators are required.

Electrical power for Lucky Queen was initially provided by on-site diesel-powered generators and eventually will transition to grid power. Under full operating conditions, Lucky Queen is expected to require 750 kW. A transmission line (via surface teck cable) will be established along Wernecke road to the site, as shown on Figure 18.1.

Power for the camp is supplied from the local grid that runs through Elsa to Keno City.

19 Market Studies and Contracts

19.1 Smelter Contract

Production of both a silver/lead concentrate and a zinc concentrate from the mill facility was being sold under contract. Alexco and Glencore Ltd., of Stamford, Connecticut (Glencore), a branch of a wholly owned subsidiary of the Swiss-based international resources group Glencore International AG, entered into a lead and zinc concentrate off-take agreement in December 2010, coincident with the initiation of concentrate shipments from Alexco's Bellekeno operations.

The terms of the contract are reviewed and renegotiated annually to reflect current market conditions. The terms of the current contract are considered confidential, but the structure is typical of such contracts and includes:

- formula for payable metal;
- price determination for payable metal;
- concentrate treatment charge;
- metal refining charge;
- penalties determination and cost;
- a price participation clause.

The terms of the current contract are included in the economic model in order to generate NSR values for the LoM plan.

19.2 Concentrate Transportation

Table 19.1 shows the estimated annual concentrate production for the LoM plan.

Table 19.1: Estimated Annual Concentrate Shipments

Concentrates	2015	2016	2017	2018	2019	2020	2021	Total
Pb-Ag Conc.								
Dry Tonnes	**3,040**	**7,630**	**4,790**	**4,860**	**4,380**	**3,770**	**830**	**29,300**
Pb, %	68	66	60	61	59	59	62	62
Zn, %	5.7	6.0	8.4	9.2	11.2	11.2	5.3	8.3
Au, gpt	0.4	4.4	8.4	7.9	8.9	9.2	6.8	6.6
Ag, gpt	7,536	12,818	20,728	23,717	24,797	22,714	16,407	18,537
Zn Conc.								
Dry Tonnes	**2,520**	**9,800**	**9,450**	**9,020**	**7,720**	**7,160**	**1,500**	**47,180**
Pb, %	0.65	0.48	0.40	0.43	0.46	0.43	0.41	0.45
Zn, %	42	43	42	42	40	41	42	42
Au, gpt	0.1	0.6	0.8	0.8	1.0	0.9	0.7	0.83
Ag, gpt	642	680	680	554	669	703	629	654

The concentrates were being trucked directly to the smelter using standard 40-ton capacity trailers and semi-trucks at a typical cost of US$270 per wmt. During April and May of each year, costs can increase due to load restrictions put in place by the various municipalities along the route.

These trucking costs, including approximately six weeks of load restrictions every spring, are included in the economic model.

The same trucks are utilized to back haul bulkier supplies such as bagged cement, shotcrete, and rock bolts from suppliers in British Columbia.

19.3 Contracts

Alexco has entered into contracts with the following companies to support the operations of the KHSD project:

- As discussed above, Alexco has a lead and zinc concentrate off-take agreement with Glencore.
- Procon Mining and Tunnelling (mining contractor) was, since start-up, performing a full scope of service covering underground development and stope production at the Bellekeno mine. This included provision of equipment, manpower, supervision, and procurement of certain mining supplies. When operations at the site resume, a mining contract will not be required as Alexco plans to conduct development and production mining activities with its own equipment and employees.
- Boart Longyear (core drilling contractor) provides equipment and manpower for surface and underground exploration drilling.
- ESS Compass Group (camp catering company) is contracted to operate Alexco's main camp and kitchen located at Flat Creek approximately 1 km west of Elsa.
- Canadian Lynden Transport is contracted by Alexco to transport lead and zinc concentrates to a smelter in North America.
- Yukon Energy provides power under contract to various substations and to the Bellekeno mine and mill facility.
- Superior Propane provides propane under contract to Bellekeno with the largest consumption for mine air heating in the winter.

SRK has reviewed the concentrate off-take agreement, and has conducted a review of rates and charges included in the actual operating costs for the KHSD project. It is SRK's opinion that the contract rates and charges are within industry norms.

Alexco will require these contracts or similar contracts (except for a mining contractor) for re-starting site operations. Development activity is planned to resume on April 1, 2014 with production stoping and processing planned to start January 1, 2015.

20 Environmental Studies, Permitting, and Social Impact

20.1 Site and Regulatory Context

The Bellekeno, Lucky Queen, and Flame & Moth deposits are part of the former UKHM claims, which include a number of historical mines and processing operations within the Keno Hill Silver District. The historical operations in the district are spread out over 15,000 hectares, and include nine major mines, three tailings disposal areas, and dozens of different shafts and adits. The Bellekeno and Lucky Queen sites both have historical mine workings, waste rock storage areas, and mine water discharges, whereas the Flame & Moth site only has historical mine workings and a waste rock storage area that was reclaimed during the construction of the mill.

The property is located within the Yukon Plateau (North) Ecoregion and is characterized by rolling upland areas and wide open valleys. Vegetation communities include Northern boreal forests along the lower slopes and valley bottoms, and open scree slopes above treeline. Many of the valley bottoms include open peatlands, fens, and meadows. A variety of wildlife, birds, and fish species are present in the area. The Keno Hill Silver District is situated in the traditional territory of the First Nation of Na-cho Nyak Dun. The Bellekeno, Lucky Queen, and Flame & Moth sites are located in close proximity to the community of Keno City, which has roughly 12 permanent residents, and 50 km from the community of Mayo, which has a population of approximately 450 residents. The region supports mineral development activities (including placer mining), tourism, and recreation and traditional pursuits.

Alexco and its subsidiary, ERDC, have a unique arrangement with the Government of Canada in which Alexco is responsible for the care, maintenance, and closure of the historical mines, with government and company funding provided to address the historical liabilities. The company, along with territorial, federal, and First Nation governments, is responsible for developing a district-wide closure plan that addresses these historic environmental liabilities arising from past mining activities. However, some high priority activities have already been implemented. Currently, active water treatment is carried out at five locations in the Keno Hill Silver District.

Under this agreement, Alexco is responsible for environmental assessment, permitting, compliance, and costs associated with its ongoing exploration and mine development activities. Additionally, if a new mine is brought into production including infrastructure associated with a historic mine, terrestrial liabilities (i.e., waste rock storage areas and roads) and water related liabilities located within a designated “Production Unit” become the responsibility of Alexco. For example, water treatment from the Bellekeno workings (which are intermixed with historical workings) is now Alexco’s responsibility. At this time, Bellekeno is the only area that has been defined as an active Production Unit. However, once commercial operations commence, the other mining areas would be classified as production units for which Alexco would be responsible for historic terrestrial and water related liabilities.

20.2 Environmental Assessment and Permitting

Existing approvals for the care and maintenance, exploration, and mine development activities are summarized in Table 20.1. These existing licences cover all aspects of the mine development at the Bellekeno and Lucky Queen mines. Although licences are also in place for Onek, there are currently no plans to bring this deposit into production.

Table 20.1: Relevant Assessment and Regulatory Approvals – KHSD project

Purpose	YESAA Approval	Quartz Mining Act Approval	Water Use Licence
Onek and Lucky Queen Mine Production	Project#2011-0315 Decision Document	Quartz Mining Licence (QML-0009, amendment 1, expires 2025)[e]	Type A Water Use Licence QZ09-092, amendment 1 expires 2020[d]
Bellekeno Mine Production	Project # 2009-0030 Decision Document	Quartz Mining Licence (QML-0009, expires 2025)[a]	Type A Water Use Licence QZ09-092, expires 2020[b]
Advanced Exploration	Project # 2008-0039 Decision Document	Class 4 Mining Land Use Approval (LQ00240, expires 2018)	Type B Water Use Licence QZ07-078/Amendment 1 QZ10-0606, expires 2018[c]
Care and Maintenance	Project # 2006-0293	N/A	Type B Water Use Licence QZ12-057 expires 2018[d]

* a http://www.emr.gov.yk.ca/mining/pdf/mml_khsdmo_QML_0009.pdf

** b www.yukonwaterboard.ca/registers/quartz/QZ09092/Volume%204/10-1%20Water%20Use%20Licence.pdf

*** c www.yukonwaterboard.ca/registers/quartz/QZ10-060/Licence.pdf

**** d http://www.yukonwaterboard.ca/WATERLINE/

*****e http://www.emr.gov.yk.ca/mining/pdf/mml_khsdmo_QML_0009.pdf

Production from the Flame & Moth deposit will require as a minimum, amendment of the existing mine production Water Use Licence QZ09-092 and Quartz Mining Licence QML-0009. Additional minor approvals will also be required. Under the Yukon Environmental and Socio-economic Assessment Act (YESAA) process, these amendments require a review by the Yukon Environmental and Socio-economic Assessment Board (YESAB). The review for the Flame & Month project was completed on October 5, 2014, and YESAB has made a recommendation to the Yukon Government to allow the Project to proceed, subject to a number of specified terms and conditions (YESAB 2014). A Decision Document was issued by Yukon Government on November 4, 2014. The terms and conditions for the Flame and Moth development, outlined in the Decision Document, include additional water treatment requirements, provision for a liner under the DSTF, additional equipment to reduce noise from the mill area crusher, and increased air quality and noise monitoring and community consultation to address community concerns regarding air quality and noise related issues. Following the issuance of the decision document, both the Water Licence (submitted to the Yukon Water Board October, 2014) and the QML will be amended. A detailed permitting schedule for the Flame & Moth mine is presented in

Table 20.2. The colours in the table indicate common types of activities (yellow – project proposal, dark grey – QML amendment, blue – water licence amendment and light grey – underground development and mineral processing).

Table 20.2: Flame & Moth Permitting Schedule

	2014		2015		
Activity	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
YESAB Project Proposal					
Decision Document					
QML Amendment					
Water License Amendment					
Underground Development					
Mineral Processing					

20.3 Environmental and Socio-Economic Considerations

Key environmental and socio-economic considerations associated with this project are:

- water quality (metal leaching and acid rock drainage, nutrient release);
- noise/traffic/dust;
- land, resource use, and heritage resources; and
- community and First Nations relations.

20.3.1 Water Quality Considerations

The underground mine workings, waste rock and tailings are all potential sources of metal leaching and/or acid rock drainage. Residues from blasting may also be a source of ammonia and nitrate from these areas.

Information on the water quality and the geochemistry of waste rock and tailings was provided in the project proposal (Alexco, 2012a), and in annual monitoring reports from the site (Alexco, 2012b), and is summarized below. Information on the water quality and the geochemistry of waste rock and tailings for Flame & Moth was provided in the project proposal (Alexco, 2014). Although this section of the PEA was prepared by a geochemical specialist, detailed review of the data and assumptions was not part of the scope of this PEA.

Mine Workings

Adit drainages from Bellekeno have neutral pH levels but elevated total zinc concentrations. Active mining operations have also resulted in slightly elevated ammonia concentrations. This water is treated to remove metals and ammonia prior to discharge. Treatment for metals is likely to continue over the long-term, and it is assumed that Alexco will be responsible for the costs. The current approved closure plan indicates that the Bellekeno 625 water treatment ponds will be converted to a passive treatment system (bioreactor) for treatment of long-term adit drainage.

Historical adit drainages at Lucky Queen have metal concentrations below the licensed discharge criteria, with slightly elevated zinc concentrations that are below effluent quality standards. The water is currently directed to a settling pond for control of total suspended solids (TSS), and is then allowed to infiltrate into the ground. Flows are small (approximately 1 L/s), and there is approximately 3 km of distance before groundwater flows from this area would reach Christal Creek, suggesting that attenuation mechanisms should be sufficient to protect down gradient water quality.

The new workings at Lucky Queen will not intersect the historical workings and will be above the current groundwater table as understood at present. However, the new workings will connect with the 500 level adit, and, therefore, any water from this new area will be allowed to mix with water from the historical area. Water balance estimates (Alexco, 2012a) indicate that the new workings represent a 23% increase in surface area for meteoric water infiltration, resulting in a potential increase in flows from 56 m^3/day to 85 m^3/day.

During operations, much of this water will be consumed as part of operations, but at closure, this additional water would likely report to the 500 level adit drainage. It is assumed that this water will continue to meet discharge criteria. SRK notes that due to the geometry of these workings, it is possible that some of the flow originating from both the historical and the new workings could infiltrate into the groundwater system. Alexco should ensure that there is adequate monitoring in the down gradient environment to assess potential changes in flow or chemistry resulting from the new workings, and should consider some sampling and testing of water from within the mine to assess whether the water quality data from the portal is representative of the water quality from the mine as a whole. Additionally, further consideration of the groundwater system may be warranted.

The majority of the Flame & Moth mine workings are expected to be below the water table; however, the portal will be developed approximately 20 metres above the water table. As such, long-term discharge from the site is not anticipated.

A review of the existing groundwater data in the mill area and a drilling program were undertaken to characterize the potential mine inflow rates and water quality associated with the Flame & Moth deposit. Water encountered in the underground workings is anticipated to be similar or better than that observed at the Bellekeno 625 adit. Water balance estimates indicate a potential adit discharge of 2912 m^3/day. Water that is dewatered from the proposed workings will be pumped to surface and directed to a water treatment plant to be constructed on the mill site.

The mill pond currently has a design storage capacity of 5,000 m^3 and has effluent quality standards listed in water licence QZ09-092 for a discharge up to 10 L/s via land disposal (not exceeding 0.8% of the flow in Christal Creek at KV-6).

Waste Rock

Prior to mining, an assessment of acid rock drainage and metal leaching (ARD/ML) potential of waste rock from Bellekeno was completed. Approximately 26% of the rock was identified as being P-AML, while the remainder was identified as N-AML. Alexco is using a field segregation method to separate these materials during mining and direct them to an appropriate disposal location. Monitoring data presented in the annual reports (Alexco, 2012b) indicates that the screening criteria currently used to segregate P-AML and N-AML waste rock is working reasonably well.

The project proposal (Alexco, 2012a) documents geochemical characterization work completed by Access Consultants on Lucky Queen. The geology and mineralization at Lucky Queen was reported to be similar to that of Bellekeno. The main rock types are quartzite, graphitic schist with interbedded carbonaceous quartzite and schist, greenstone, and sericite schist. Acid base accounting tests and metal analyses were used to characterize the ARD/ML potential of the waste rock from this site. Analysis of the Lucky Queen data set (Alexco, 2012a) indicated that while much of the rock is unlikely to produce net acidity and/or metal leaching, a significant proportion is indicated to be P-AML. The following key distinctions between Lucky Queen and Bellekeno are presented below:

- A higher overall proportion of samples at Lucky Queen are indicated by acid base accounting testing and geochemical screening criteria as P-AML when compared with Bellekeno.
- The Lucky Queen deposit contains generally lower base metal concentrations (especially zinc) than the Bellekeno deposit, both within the veins and in the surrounding country rock, leading to less likelihood of metal leaching from these materials.
- While sulphur content and net acid potential are similar at Lucky Queen, calcium content and neutralization potential are significantly lower than Bellekeno.

Based on this information, Lucky Queen was estimated to have approximately 35% P-AML rock and 65% N-AML rock.

The geochemical characterization program for Flame & Moth included static testing of 50 drill core samples for metals, acid base accounting, and shake flask extraction, five kinetic field leach bins, and a humidity cell on N-AML waste rock (Access 2013). Key findings of the program are presented as follows:

- The geology and style of mineralization is similar to that of the other deposit areas, resulting in similar geochemical characteristics. However, more of the rock will be from areas outside of the mineralized zones, resulting in more
- Favourable geochemical characteristics (smaller proportion of P-AML rock) within the planned development and excavation area at Flame and Moth.
- Results of kinetic testing (humidity cell, weeks 0-56) on one Flame & Moth waste rock composite sample show moderate amounts of sulphate and low levels of leachable metals.
- Field barrels constructed with rock classified as N-AML under the proposed Flame & Moth geochemical screening criteria showed higher levels of leachable metals (loid). However all were below the existing effluent quality standards and loading rates calculated from the field barrels were generally in line with, or lower than, those scaled from the humidity cell data (AKHM 2014)

Seepage monitoring data for P-AML rock stored in the Bellekeno East temporary waste rock storage facility (Station KV-78b) was sampled on three occasions in 2011 and 2012. Seepage pHs were neutral, but cadmium and zinc concentrations were somewhat elevated (cadmium ranging from 0.004 to 0.016 mg/L and zinc from 0.17 to 0.81 mg/L), indicating that the more mineralized waste rock is a potential source of metals in any of the surface waste rock storage facilities. There was no seepage data for any N-AML waste rock. Therefore, the potential for metal leaching is unknown.

Nonetheless, the total footprint area of the new waste rock sources are expected to be relatively small, and the flows associated with these are minor in comparison to the adit drainages.

Tailings

Tailings are stored in a DSTF located near the mill. The tailings from Bellekeno and Lucky Queen are non-acid generating. For the purposes of this PEA, it is assumed that tailings from Flame & Moth will also be non-acid generating and, therefore, will not result in any appreciable differences in water quality. Alexco has completed geochemical characterization of tailings generated from Flame and Moth metallurgical testing that confirms this assumption. Seepage and runoff are currently directed to the mill for use as make-up water. At closure, the DSTF will be covered, and the mill pond will be converted to a bioreactor to remove any residual metals that originate from this area. For the purposes of this PEA, SRK has assumed that this system will function as expected and will not result in any additional closure related costs. Progressive reclamation has already begun on the DSTF with final slopes being recontoured and revegetated with a soil cover.

20.3.2 Noise, Vibrations, Dust and Traffic Considerations

Due to the close proximity of this site to the community of Keno City, noise, dust, and traffic have been high profile issues at this site, and are the subject of ongoing discussions with the community. Several specific issues were raised during the YESAA process, and have been included in the decision document. These will need to be addressed during permitting and ongoing consultation with the community. Mitigation measures that have already been implemented or that are proposed by the company include limiting certain activities (e.g. crusher operations) and types of traffic to the hours of 7 am – 7 pm, and better communication regarding scheduled blasts.

Dust is closely managed and monitored at the site. The dust monitoring data are compared to the Yukon ambient air standards.

Traffic-related issues have resulted in the construction of bypass roads and signage to separate public traffic from mine operations in key areas. A new bypass road has been constructed to haul vein material from Lucky Queen to the mill facility. No additional roads are required for the Flame & Moth mine.

20.3.3 Land, Resource Use, and Heritage Resources

The local community and First Nations have expressed concerns regarding continued access for recreation and tourism in the area, subsistence harvesting and traditional use, sport and commercial hunting, fishing and trapping, mineral development, and preservation of historical resources. Although impacts are expected to be minor, Alexco is working with the various stakeholders to address these concerns.

20.3.4 Community and First Nations Relations

Alexco has met regularly with stakeholders and First Nations regarding their ongoing operations as well as the new plans for Flame & Moth, presenting detailed information about the project and seeking expression of concerns. Additional consultation facilitated by the regulators is also part of the formal YESAA and licencing processes.

Alexco has signed a comprehensive Cooperation and Benefits Agreement with the First Nation of Na-cho Nyak Dun (FNNND) that recognizes the rights, obligations, and opportunities of the two parties. Individual chapters in the Agreement include human resources (employment and training), contracting, a formal drug and alcohol policy, business contracting and business partnering opportunities, environmental issues, and financial resourcing for the Agreement including legacy funding contributions.

Since environmental matters occupy prime importance with FNNND, the Agreement includes detailed discussion about respecting and protecting the environment, including enhanced opportunities for FNNND to be involved in environmental management of all operations, from mining through to closure and reclamation. The Agreement also describes a "Cooperative Engagement Process" that allows for early engagement of FNNND in the mine permitting process.

20.4 Waste and Water Management Plans

20.4.1 Overview

In the application for recent amendments to the Water Use License and QMLs (Alexco, 2012a), it was assumed that production from the Lucky Queen and Onek deposits[1] would be incorporated into the current mining operations without expanding either currently licensed mill throughput or total tonnage mined. Additionally, it was assumed that there would be no additional tonnage of tailings deposited on the DSTF, no additional tonnage of waste rock or P-AML waste rock stored on surface, no increase in the use of water for milling and no change to the mill water balance resulting from the addition of the Lucky Queen and Onek mines. Therefore, the current licence approvals allow for the production of 613,000 t of ore, storage of 322,000 t of tailings within a DSTF, and the production of 500,000 t of waste rock from the underground workings, and include specific limits on the amount of material that can be placed in the various approved surface storage locations. The licence amendments allow the site to reallocate some of this production between the three sites, depending on the performance of the three mines. However, the majority of the production is still expected to be from Bellekeno until the commissioning of Flame & Moth. Further amendments to the water licence will be required to increase the amount of production and the size of the tailings and waste rock storage areas.

20.4.2 Waste Rock

Annual monitoring reports record the actual waste rock production (Alexco, 2011; 2012b). Bellekeno mine production between 2010 and 2012 generated 58,535 tonnes of N-AML waste rock, which was brought to surface and used for road construction and rehandled for underground backfill. A total of only 2,059 tonnes of P-AML waste rock was stored in in the temporary P-AML waste rock storage facility and upon temporary suspension of operations all of this P-AML material was used as underground backfill. The remainder of the development rock was used as underground backfill.

As part of this PEA, SRK has estimated the amount of waste rock that would be produced from Bellekeno from Q4 2014 to Q4 2015 when Bellekeno operations cease. The total waste rock broken during this period is estimated at 32,000 t, while the planned use of waste rock for backfill

[1] The Onek deposit has since been dropped from the current production plans, but the approvals remain in place.

requirements is approximately 14,000 t. Therefore, an additional 18,000 t of waste rock will be available for construction or backfill, or will need to be stored on surface. It may be possible to incorporate into backfill all of the P-AML rock from previous and future operations in the underground mine.

For the Lucky Queen mine, SRK has estimated that approximately 114,000 t of waste rock will be produced between Q2 2016 and Q2 2020, and that approximately 112,000 t will be required for backfill. This will result in a net storage requirement of 2,000 t of waste rock on surface. Alexco is proposing a new P-AML waste rock storage facility of 5,000 m^2 based on an approved generic design, and a new N-AML disposal area of 8,000 m^2. The new P-AML facility is estimated to cost approximately $144,000 to construct. The P-AML facility is designed to hold 44,000 t, and the N-AML is designed to hold 80,000 t. However, the current licence allows for additional storage if required. During operations, seepage from the P-AML storage area will be monitored, and if needed, water would be collected and trucked to the Bellekeno water treatment facility. At closure, if any P-AML material remains that cannot be used as backfill, the storage area will be covered with 0.5 m of low permeability borrow material.

It is projected that 300,000 t of waste rock will be produced from Flame & Moth between Q2 2014 and Q1 2020, and that 230,000 t will be used in backfill. This leaves approximately 70,000 t of excess waste rock. Alexco plans to use the majority of the excess waste rock to construct a toe berm for the expansion of the DSTF, while a small quantity will require permanent storage on surface. An additional temporary waste rock storage facility with a maximum capacity of 63,000 t will be built for temporary stockpiling of waste rock until it can be used underground as backfill.

20.4.3 Tailings

Tailings will continue to be deposited in the licensed DSTF or used as backfill in the operating mines.

Based on the information provided on the tailings geochemistry, the introduction of tailings from Lucky Queen ore is not expected to have a negative impact on the geochemical stability of tailings within the DSTF. Metallurgical tests have been completed to characterize the tailings from Flame & Moth and the results can be compared to the Bellekeno and Lucky Queen tailings. For the purpose of this PEA, it is assumed that the Flame & Moth tailings will be geochemically similar to the already licensed tailings and that no additional measures will be required to control metal leaching/acid rock drainage.

As of September 2013, 181,000 t of tailings have been placed in the DSTF. The current material balance for the project indicates that a total of 736,000 t of tailings will be produced from Q3 2015 to Q1 2021. Of this, 586,000 t will be stored in the DSTF, bringing the total storage requirements for the DSTF to 767,000 t. Although a relatively low quantity of tailings (<10% of total) has been used as backfill to date as a consequence of using more waste rock for backfill than originally predicted, current projections indicate that approximately 20% or 150,000 t of the future tailings produced can be backfilled into the underground workings (comprising 31% of the backfill by mass).

Although the water licence allows for the production and placement of 322,000 t of tailings, the operation, maintenance, and surveillance manual for the DSTF (EBA, 2010) indicates that it has a design capacity of 123,220 m^3 (or 198,000 t based on placed density of 1606 kg/m^3). Designs are now complete for an expanded facility that would bring the capacity up to 322,000 t, which is the current permitted capacity of the facility. Future expansions for a total capacity of 850,000 t are also planned, as shown in Figure 20.1. This expansion will require additional amendments to the permits and licences. EBA (pers comm. Justin Pigage) have indicated that the expansion would be constructed using the same foundation system, tailings placement techniques, and geometry (side slopes and bench elevations) as the current DSTF design. All other conditions regarding placement and compaction of the tailings as detailed in the DSTF Operation, Maintenance, and Surveillance Manual (EBA, 2010) are assumed to remain the same as those used in the current facility. The subsurface conditions within the footprint of the expansion are assumed to be generally similar to those under the existing approved footprint, but will be investigated as part of the detailed design.

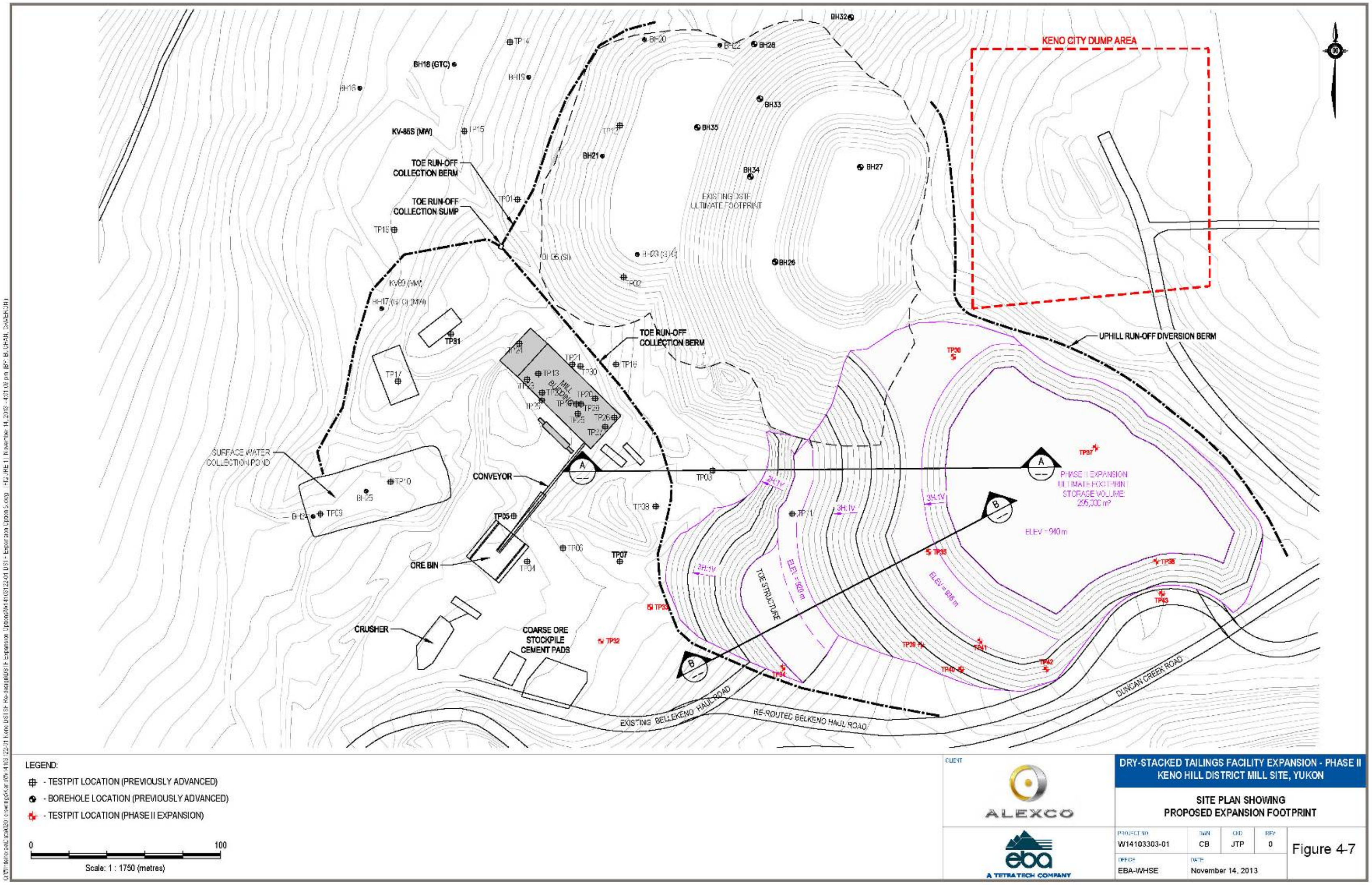


Figure 20.1: Preliminary Dry Stack Expansion Design to 850,000 Tonnes (Alexco, 2013)

20.5 Reclamation and Closure

In September 2012, Alexco submitted a revised reclamation and closure plan that encompasses all of the active mining and processing activities in the Keno Hill Silver District (Alexco, 2012c). Some key aspects of the closure plan are listed as below:

- P-AML waste rock will either be placed as backfill in the mine or sloped to shed water and then covered with a 0.5 m layer of low permeability borrow material. Reclaimed areas will be covered with growth material and then seeded to promote vegetative growth.
- N-AML waste rock storage facilities will be regraded and then scarified. Organic materials may be blended into the surface to promote growth of vegetation.
- Adits and raises will be sealed to prevent access. Bulkheads will be constructed in some areas to enhance water management activities.
- At the Bellekeno mine, in-pool treatment measures will be implemented to reduce metal loadings. The active treatment system will be converted to a passive bioreactor system.
- All buildings and equipment that are not needed for the treatment activities will be removed from the portal areas. Any additional debris will be transferred to the Elsa solid waste disposal facility. The portal areas will be re-contoured and scarified to facilitate re-vegetation.
- Linear disturbances (roads) will be subject to standard decommissioning measures such as removal of culverts, scarification, re-vegetation, and removal of safety berms.
- The Flat Creek camp will be downsized as needed to support ongoing care and maintenance activities in the Keno Hill Silver District.
- Buildings and other infrastructure in the mill area will be dismantled and sold for salvage or demolished on site and disposed of in an approved landfill. Concrete footings will be covered with overburden, scarified, and re-vegetated.
- The DSTF will be covered. If monitoring indicates that it is necessary, meteoric water will be directed to a passive biological treatment system for polishing prior to discharge.
- Various monitoring activities will continue until the performance of the closure measures has been verified.

Alexco will have a site presence for many years while reclamation of the historical liabilities occurs. Therefore, monitoring of the Bellekeno, Lucky Queen, and Flame & Moth mine areas can be integrated with Keno Hill Silver District monitoring programs over the long term. This is expected to improve the efficiency of these ongoing water treatment and monitoring activities.

A key aspect of the closure planning is how liabilities associated with the new mine development will be separated from historical liabilities that are also under Alexco’s mandate. Alexco’s position on the liabilities for Lucky Queen is summarized in Table 20.3.

Table 20.3: Lucky Queen Development and Production Project Liabilities

Alexco Liabilities	Aboriginal Affairs and Northern Development Canada (AANDC) Liabilities
Lucky Queen	
New N-AML waste rock storage facility(ies)	
Newly rehabilitated Lucky Queen portal	Wernecke Road
Portal pad	
New mine water management	
New P-AML waste rock storage facility(ies)	
Existing Waste rock storage areas	

The Government of Yukon requires financial security in the form of a letter of credit to cover potential liabilities associated with the cost of reclamation and closure. As part of QML-0009, the Government of Yukon currently holds $4,172,850 in security for the Bellekeno, Lucky Queen, and Onek operations, including the mill area and DSTF. This amount was set in January 2013, following a third party review of Alexco's costs. Alexco has estimated that the costs for reclaiming this area would be on the order of $3,910,000.

Additional closure costs may be incurred if the effectiveness of the current closure concepts cannot be demonstrated. For example, active water treatment may be required at Bellekeno if passive bio reactors are not capable of meeting the discharge criteria. A fullscale pilot bio reactor has operated successfully at Galkeno 900 to support the long term water management and treatment assumptions in the closure plan. The ongoing monitoring programs will be critical for ensuring that there is sufficient information available to support final closure plans for these production areas.

The reclamation and closure plan will be updated to incorporate Flame & Moth and it will include the associated DSTF expansion, mine portal closure, any new waste rock disposal area or storage facility (as required) and water treatment (if required). It is also anticipated that a modest credit may be possible given that Onek is no longer part of the production plans, and that the overall closure costs will be adjusted to reflect progressive reclamation activities. Alexco has estimated that the total closure costs associated with the project are on the order of $4,196,000 which is comparable to the current amount of security held by the Government of Yukon. Therefore, SRK has not included any additional reclamation costs in the economic model for this study.

21 Capital and Operating Costs

21.1 Capital Cost Estimate

Capital expenditures up to the end of 2014 are treated as sunk costs, and the project economics are assessed from January 2015 forward. Capital costs have been estimated in 2013 Canadian dollars on a quarterly basis for the period from January 1, 2015 to the end of the planned plant feed schedule in early 2021. In Q3 2015, all production will be sourced from the Bellekeno mine. Flame & Moth will begin producing plant feed material in Q4 2015 while Lucky Queen production starts Q4 2016.

For the two new mine start-ups, SRK considers commercial production to begin in the quarter that 70% of the planned production rate is achieved. This defines the following pre-production periods:

- Q3 2014 through Q1 2016 for the Flame & Moth mine, reaching commercial production in Q2 2016;
- Q2 2016 through Q2 2017 for the Lucky Queen mine, reaching commercial production in Q3 2017.

Capital cost estimation work was undertaken as follows:

- Mine capital by SRK, representing more than 90% of the total estimate;
- Mill, site services, and health and safety capital by Alexco with review by SRK.

SRK considers the accuracy of capital cost estimate components to be at a scoping level.

21.1.1 Capital Cost Summary

Table 21.1 shows the LoM estimate of total capital. It is important to note that initial capital is distributed in time as defined by the pre-production periods described above. It is not all front end loaded in the cash flow model. All capital costs are expressed in Canadian dollars.

Table 21.1: Capital Cost Summary

Area	Capital Costs (CDN$x1,000,000)		
	Initial	Sustaining	Total
Silver Wheaton Payment	$22.5		$22.5
Bellekeno Mine		$5.2	$5.2
Lucky Queen Mine	$9.3	$9.8	$19.0
Flame & Moth Mine	$26.2	$10.7	$36.9
Mill		$2.0	$2.0
Site Services		$0.9	$0.9
Health & Safety		$0.9	$0.9
Community Consultation		$ 0.2	$ 0.2
Contingency	$5.8	$2.2	$8.0
Total Capital	**$63.8**	**$31.8**	**$95.6**

The following report sections provide details on the capital costs shown in the summary above.

21.1.2 Bellekeno Mine

Bellekeno mine capital includes $4.2 M for lateral development (738 m) and $0.8 M for mining equipment. It also includes a small amount of unspecified sustaining capital.

21.1.3 Lucky Queen Mine

Lucky Queen mine capital includes $11.3 M for lateral development (2,383 m) and $1.4 M for raising (216 m of Alimak ventilation/escape raise). It also includes $3.0 M for mining equipment, $0.5 M for project capital (power supply upgrade, and raise collar surface preparation), $2.7 M capitalized operating costs (11,000 tonnes mined during pre-production), and unspecified sustaining capital.

21.1.4 Flame & Moth Mine Capital

Flame & Moth mine capital is shown in Table 21.2. Flame & Moth mine will contribute 370 tpd to plant feed when it is in full operation.

Capitalized underground development work includes 3,412 m of lateral development and 369 m of raising (197 m raise bored 3.0 m diameter fresh air raise plus other ventilation raising).

Flame & Moth equipment capital includes mining equipment purchased directly ($3.2 M before contingency) as well as equipment procured on a lease to own basis. Leased equipment amounts to $9.6 M before contingency, on terms including 25% down ($2.4 M before contingency), and 7.0% annual interest rate over four years.

Table 21.2: Flame & Moth Mine Capital

Flame & Moth Mine	**Cost**
Capital Item	**$M**
UG Development	$16.0
Equipment Fleet	$5.6
Capitalized Equipment Lease	$1.4
UG Construction	$4.3
Surface Facilities	$0.9
Definition Drilling	$2.6
Capitalized Operating	$2.7
Sustaining	$3.4
Sub-total	**$36.9**
Contingency	$6.1
Total Capital	**$43.0**

Underground construction includes:

- main sump and area sumps;
- small maintenance shop;
- fuel storage;
- underground booster fans;
- auxiliary ventilation fans;
- explosives storage;
- refuge stations; and
- underground electrical distribution.

Surface facilities include:

- water treatment plant;
- settling pond;
- air compressors;
- mine air heater; and
- main ventilation fans.

Definition drilling includes 11,980 m of HQ underground core drilling for deposit definition.

Capitalized operating costs cover 20,400 t mined during pre-production.

21.1.5 Mill Facility

Mill capital includes $1.3 M for expanding the DSTF, $0.6 M for completing the installation of a second ball mill that has already been purchased, installation of a dust suppression cover over the crushing plant, and unspecified sustaining capital at $45,000 per year.

21.1.6 Site Services and Health and Safety

The site services capital includes unspecified sustaining capital of $37,500 per quarter which is intended mainly for purchasing critical spares and components for maintaining and upgrading the surface infrastructure and site services fleet of heavy equipment.

The health and safety capital includes unspecified sustaining capital at $37,500 per quarter which is intended mainly for purchasing mine rescue, fire-fighting, first aid and industrial hygiene equipment.

A community consultation allocation of $12,500 per quarter has also been included along with $1.9 M in project contingency on items which do not have separate contingency estimates.

21.2 Operating Cost Estimate

21.2.1 Site Operating Cost Summary

Site operating costs have been estimated in 2013 dollars based on SRK's review of Alexco's 2012 and 2013 operating budgets and on actual reported operating costs for 2011 and 2012. SRK's operating cost estimates reflect Alexco's ongoing and planned initiatives aimed at reducing the site unit operating cost.

These initiatives include:

- Future mine operations including development and production are planned as owner operated (instead of contractor) using Alexco's own equipment and workforce.
- Direct purchasing of new and used equipment for Lucky Queen and Flame & Moth instead of paying contractor monthly rental costs.
- Establishing long term supply contracts with suppliers and eliminating dependence on a contractor to supply basic materials such as ground support, explosives and other materials.
- Upgrading the mill facility to ensure that it can reliably process 400 tpd.

Table 21.3 shows the LoM site operating cost estimate. It is based on LoM plant feed of 812.9 kt as shown in the economic model.

Table 21.3: LoM Site Operating Cost Summary

Area	LoM Site Opex ($M)	Unit Cost ($/tonne)
Mine	$127.6	$157
Mill	$56.5	$70
G&A	$23.0	$28
LoM Total Site	**$207.1**	**$255**

21.2.2 Mine Operating Cost Estimates

SRK's operating cost estimates for the individual mines are shown in Table 21.4. Tonnes shown in the table include tonnes mined during pre-production for Lucky Queen and Flame & Moth but exclude the capitalized operating costs associated with those tonnes. The Flame & Moth mine operating cost includes $8.1M for equipment lease payments, equivalent to $14.39/t.

Table 21.4: Individual Mine Operating Cost Estimates (excludes capitalized operating costs)

Mine	Individual Mine Opex ($M)	LoM kt	Mine Unit Cost ($/tonne)
Bellekeno Mine	$12.3	85.7	$143
Lucky Queen	$32.5	142.2	$228
Flame & Moth	$82.9	585.0	$142
Subtotal Mines	**$127.6**	**812.9**	**$157**

21.2.3 Bellekeno Mine Operating Cost Estimate

Table 21.5 shows an estimate of Bellekeno mine's operating cost breakdown. The costs are broken down in the same manner as the 2013 budget with some additional details.

Table 21.5: Bellekeno Mine Operating Cost Details

Area/Function	Unit Cost($/t)
Operational Indirects	$18.96
C&F Stoping & Lateral Development	$36.68
Stoping LH	$27.03
Backfill - Rockfill	$0.27
Backfill - Cemented Tailings	$7.53
Truck Haulage	$6.30
Mine General	$10.51
Mine Maintenance	$16.58
Energy	$16.00
Environmental	$3.25
Total Unit Operating Cost	**$143.11**

The Bellekeno mine operating costs were estimated from Alexco's Bellekeno mine 2013 budget costs. To estimate the various operating cost components, capitalized costs were removed and the remaining line items factored to account for the expected changes over the LoM. Several items were broken out of the original data to better represent the future production profile. The most significant was that the stoping category was broken into cut and fill stoping (which includes development on vein for longhole production) and longhole stoping as the cost structure of these two methods is quite different.

The results were benchmarked against historic cost data from the Bellekeno mine and other data sources.

21.2.4 Lucky Queen Mine Operating Cost Estimate

Table 21.6 shows a breakdown of Lucky Queen's estimated average mine operating cost over the operating period from Q3-2017 to Q1 2021 (average production rate of 97 tpd). The costs are broken down in the same manner as the 2013 budget with some additional details.

Table 21.6: Lucky Queen Mine Operating Cost Details

Area/Function	**Unit Cost ($/t)**
Operational Indirects	$23.19
Lateral Development	$19.03
C&F Stoping	$121.57
Backfill - Cemented Rockfill	$26.76
Truck Haulage	$8.81
Mine General	$14.07
Mine Maintenance	$15.81
Energy	$16.00
Environmental	$2.28
Total Unit Operating Cost	**$247.51**

The Lucky Queen mine operating costs were estimated from the Bellekeno mine costs presented above by adjusting to account for the differences in mining methods, distance from mill, internal haulage distances, and other limiting factors such as equipment sizes and productivities.

Adjustments were made to the estimate to account for:

- Lucky Queen is all mechanized cut and fill with a much flatter dip than encountered at Bellekeno;
- The existing 500 level access drift is too small for standard haulage trucks or larger LHDs for waste development.

21.2.5 Flame & Moth Mine Operating Cost Estimate

Table 21.7 shows the average Flame & Moth operating cost estimate for the Flame & Moth operating period (average production rate of 320 tpd).

Table 21.7: Flame & Moth Mine Operating Cost Details

Area/Function	Unit Cost ($/t)
Alexco Mine Supervision	$8.92
Safety & Training	$2.47
Lateral Development	$11.89
Stoping	$31.55
Truck Haulage	$11.03
Backfilling	$13.81
Mine Services	$10.22
Surface	$0.53
Maintenance Supervision	$5.38
Mine Maintenance	$17.69
Technical Services	$9.52
Energy	$9.44
Equipment Lease Cost	$14.39
Total Unit Operating Cost	**$146.84**

The Flame & Moth mine operating cost was estimated by factoring the actual Bellekeno mine operating cost from Q4 2012. The breakdown of cost by function is based on an SRK cost model prepared for Bellekeno with adjustments made to account for:

- Better stoping productivity for Flame & Moth due to thicker veins being mined.
- No separate surface trucks required to haul vein material to the mill for Flame & Moth.
- Reduced operating development per tonne at Flame & Moth compared to Bellekeno.
- Extra costs at Flame & Moth for leased equipment.
- Higher production rate at Flame & Moth compared to Bellekeno.

21.2.6 Mill Facility

Alexco provided SRK with the actual mill operating cost for Q4 2012. During that quarter, the mill throughput was 26,777 t (291 tpd), which represented the highest mill throughput since start-up. SRK reviewed the mill cost details and made assumptions regarding fixed and variable operating costs as shown in Table 21.8 in order to prepare a factored mill operating cost estimate for a 400 tpd throughput rate.

Table 21.8: Estimated Mill Operating Cost at 400 TPD

Mill Cost Item	Fixed or Variable	Actual	Factored	
		Q4 2012	Quarterly	400 TPD
		291 TPD	400 TPD	Unit
		Cost ($ 000)	Cost ($ 000)	Cost ($/t)
Crushing & Conveying	V	$22.2	$30.5	$0.85
Grinding	V	$72.8	$100.1	$2.78
Floatation	V	$148.6	$204.3	$5.67
Dewatering	V	$79.4	$109.1	$3.03
DSTF Management	F	$25.2	$25.2	$0.70
Assay Lab	F	$15.9	$15.9	$0.44
Mill General	F	$522.3	$522.3	$14.51
Electricity	V	$262.3	$360.5	$10.01
Fuels	F	$179.4	$179.4	$4.98
Labour Costs	F	$954.8	$954.8	$26.52
Total Mill Operating		**$2,283**	**$2,502**	**$69.50**

21.2.7 General and Administration

Table 21.9 shows SRK's estimate for the project's general and administration operating costs per quarter at 400 tpd.

Alexco prepares a separate general and administration site cost, (G&A) and then allocates it to operating departments on a percentage basis. SRK reorganized the G&A costs in order to report a separate G&A cost, and also mine and mill costs without G&A allocations.

SRK's G&A cost estimate is based on both Alexco's 2013 budget and on actual costs for Q4 2012. SRK selected a cost between these two sources that was comparatively about 10% different. The G&A operating cost estimate is factored for 400 tpd based on the assumption that 20% of the costs are variable.

Table 21.9: Estimated Site G&A Cost per Quarter at 400 TPD

G&A Operating Cost Item	Cost/Qtr 400 TPD Cost ($ 000)
Materials & Supplies	$49
Vehicle Oper. & Maint.	$85
Labour	$228
Travel	$25
Electricity & Fuels	$62
Camp	$264
Site Environmental	$60
Business Services	$113
Other Items	$52
Total G&A Items	**$938**

22 Economic Analysis

22.1 Input and Assumptions

22.1.1 Inferred Mineral Resources

This PEA is preliminary in nature. The “potentially mineable tonnes” disclosed in the mine plans are partly derived from Inferred mineral resources by the application of a cut-off net smelter return (NSR) value ($/t), and dilution and mining recovery factors. Inferred mineral resources are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that this PEA will be realized.

SRK estimates that Inferred mineral resources form the basis of 6% of the “potentially mineable tonnes” included in the plant feed schedule of this PEA.

22.1.2 Input Parameters

Input parameters to the economic analysis include:

- The terms of the Silver Purchase Agreement, Amendment No.7 dated June 16, 2014;
- Economic analysis based on the period from January 1, 2015 to the end of Q1 2021;
- Three deposits contribute to plant feed: Bellekeno, Lucky Queen, and Flame & Moth;
- LoM plant feed of 812.9 kt with average metal grades of 754 gpt silver, 2.71% lead, 4.53% zinc, and 0.40 gpt gold;
- Plant feed schedule as shown in Table 16.23 with an average plant feed rate of 398 tpd;
- Average NSR value of plant feed of $398/t using metal prices and exchange rate listed below;
- Metal prices of US$18.50/oz silver, US$0.98/t lead, US$1.00/t zinc, and US$1210/oz gold,;
- Exchange rate of US$0.89/C$1.00;
- Metallurgical recoveries based on actual mill performance and testwork results;
- Smelter terms for lead and zinc concentrates based on off-take agreements between Alexco and Glencore Ltd. of Stamford, CT, USA;
- Payable silver 17.1 million ounces;
- LoM revenue of US$321 million (CDN$361 million);
- An LoM average site operating cost of CDN$255/t processed comprised of CND$157/t mining, CDN$70/t milling, and CDN$28/t G&A;
- Capital costs totalling CDN$95.6 million including a CDN$22.5 million payment to Silver Wheaton Corp. to finalize Amendment No.7 of the Silver Purchase Agreement.

- Equivalent to CDN$117/t processed including Amendment No.7 payment, or CDN$90/t processed excluding the Amendment No.7 payment;
- The Government of Yukon currently holds $4,172,850 in security for the Bellekeno, Lucky Queen, and Onek operations, including the mill area and DSTF. It is anticipated that the financial security will be reviewed and adjusted as part of the Quartz Mining Licence amendment for Flame and Moth. As part of that process, Alexco anticipates that they will also receive a modest credit for ongoing reclamation activities and to account for removing Onek from the current production plans. On this basis, Alexco has estimated that the total closure costs associated with the project are on the order of $4,196,000 which is comparable to the current amount of security held by the Government of Yukon. Therefore, SRK has not included any additional reclamation costs in the economic model for this study.

22.2 Economic Model and Results

The KHSD project economic model is shown in Table 22.1.

Indicative economic results on an after tax basis are:

- Net cash contribution of $35.7 million;
- Internal rate of return (IRR) of 22.1%;
- NPV(5%) of $23.3 million;
- Payback period is 3.75 years from January 1, 2015.

Federal and territorial royalties and taxes applicable to the mine are shown in the table.

Table 22.1: KHSD project Economic Model

Plant Feed	Units ktonne	2015 45.7	2016 151.2	2017 151.9	2018 151.2	2019 153.6	2020 135.7	2021 23.6	2022	Total 812.9
Metal Grades										
Silver	gpt	591	735	741	842	790	718	667		754
Gold	gpt	0.04	0.37	0.44	0.42	0.43	0.42	0.40		0.40
Lead	%	5.17	3.86	2.35	2.41	2.10	2.04	2.64		2.71
Zinc	%	4.40	5.13	4.85	4.64	3.91	4.10	4.78		4.53
Metal Prices										
Silver	US$/oz	$18.50	$18.50	$18.50	$18.50	$18.50	$18.50	$18.50		$18.50
Gold	US$/oz	$1,210	$1,210	$1,210	$1,210	$1,210	$1,210	$1,210		$1,210
Lead	US$/lb	$0.98	$0.98	$0.98	$0.98	$0.98	$0.98	$0.98		$0.98
Zinc	US$/lb	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00		$1.00
Revenue (NSR)	**US$ M**	**$15.1**	**$61.0**	**$58.9**	**$66.2**	**$62.0**	**$49.8**	**$8.3**		**$321.4**
Exchange Rate		0.89	0.89	0.89	0.89	0.89	0.89	0.89		0.89
Revenue (NSR)	**C$ M**	**$17.0**	**$68.6**	**$66.2**	**$74.4**	**$69.7**	**$56.0**	**$9.3**		**$361.1**
Gov't of Canada Royalty	C$ M		$1.03	$0.99	$1.12	$0.86				$4.0
Operating Costs										
Mining	C$ M	$5.4	$21.1	$23.0	$26.1	$25.9	$22.2	$3.9		$127.6
Milling	C$ M	$3.2	$10.5	$10.6	$10.5	$10.7	$9.4	$1.6		$56.5
General & Administration	C$ M	$3.2	$3.8	$3.8	$3.8	$3.8	$3.7	$0.9		$23.0
Total Site Operating Cost	**C$ M**	**$11.8**	**$35.4**	**$37.3**	**$40.4**	**$40.4**	**$35.4**	**$6.4**		**$207.1**
Capital Costs										
Bellekeno	C$ M	$4.4	$0.7							$5.2
Lucky Queen	C$ M		$3.9	$6.7	$3.2	$4.4	$0.8	$0.1		$19.0
Flame and Moth	C$ M	$21.7	$13.4	$3.4	$2.1	$1.8	$0.6			$43.0
Subtotal Mining	**C$ M**	**$26.1**	**$18.0**	**$10.1**	**$5.3**	**$6.2**	**$1.4**	**$0.1**		**$67.2**
Milling	C$ M	$0.7	$0.2	$0.2	$0.3	$0.3	$0.1	$0.0		$2.0
Site Services, H&S	C$ M	$0.4	$0.4	$0.4	$0.4	$0.3	$0.3	$0.1		$2.1
Silver Wheaton Payment	C$ M	$22.5								$22.5
Contingency	C$ M	$0.3	$0.3	$0.8	$0.2	$0.2	$0.1	$0.0		$1.9
Total Capital Cost	**C$ M**	**$49.9**	**$18.9**	**$11.5**	**$6.1**	**$6.9**	**$2.0**	**$0.3**		**$95.6**
Net Cash Contribution Pre-Tax	C$ M	($44.7)	$13.2	$16.4	$26.7	$21.5	$18.7	$2.6		**$54.4**
Pre-Tax Cash Flow - Operations	C$ M	$5.1	$32.1	$27.9	$32.8	$28.4	$20.7	$2.9		$150.0
Income Taxes										
Federal	C$ M				($2.82)	($3.16)	($2.43)	($0.10)	$0.22	-$8.3
Territorial	C$ M				($2.82)	($3.16)	($2.43)	($0.10)	$0.22	-$8.3
Yukon Mine Royalty Tax	C$ M		($0.64)	($0.25)	($0.77)	($0.64)	($0.36)			-$2.6
Terminal value of CDE pool	C$ M								$0.52	$0.5
Total Taxes	**C$ M**		**($0.64)**	**($0.25)**	**($6.40)**	**($6.95)**	**($5.23)**	**($0.20)**	**$0.95**	**-$18.7**
Net Cash Flow from Operations	C$ M	$5.1	$31.5	$27.6	$26.4	$21.5	$15.4	$2.7	$0.9	$131.2
Capital Cost	C$ M	$49.9	$18.9	$11.45	$6.12	$6.94	$1.97	$0.27		$95.6
Net Cash Flow	**C$ M**	**($44.74)**	**$12.58**	**$16.18**	**$20.31**	**$14.52**	**$13.46**	**$2.40**	**$0.95**	**$35.7**
IRR	%	22.1%								
NPV(5%)	C$ M	$23.3								

22.3 Sensitivities

Table 22.2 shows the sensitivity of the after tax net cash flow to changes in selected cash flow model input parameters. For the inputs evaluated, the order of importance is as follows:

- Metal grades - economic results most sensitive;
- Metal prices;
- Operating costs;
- Capital costs - economic results least sensitive.

Table 22.2: Sensitivity Analyses – After Tax Net Cash Flow

	Net Cash Flow after tax ($ million)			
Change	Metal Prices	Metal Grades	Operating Costs	Capital Costs*
20%	$76.0	$84.1	$8.1	$21.0
15%	$67.3	$72.1	$15.1	$24.7
10%	$58.6	$60.0	$22.0	$28.4
5%	$49.7	$47.9	$28.8	$32.0
Base Case	**$35.7**	**$35.7**	**$35.7**	**$35.7**
-5%	$21.5	$23.4	$42.5	$39.3
-10%	$7.0	$11.0	$49.3	$43.0
-15%	($9.9)	($1.6)	$56.0	$46.6
-20%	($31.3)	($19.4)	$62.7	$50.3

* The Silver Wheaton Payment portion of the Capital Costs was not varied but held constant at 22.5M for the purpose of the sensitivity analysis.

22.4 Impact of Silver Purchase Agreement

22.4.1 Silver Purchase Agreement Impact

The indicative economic results shown above in section 22.2 include the impact of the Silver Purchase Agreement between Alexco and Silver Wheaton whereby 25% of all future silver production from Keno Hill Silver District properties owned or controlled by Alexco at the time of the consummation of the Silver Purchase Agreement Amendment No.7 will be delivered to Silver Wheaton in exchange for a payment according to the following definition of “Fixed Price”.

“Fixed Price” means:

c) If the Spot Silver Price is less than or equal to US$19.45, the amount equal to the greater of: (A) (US$18.00 + (Spot Silver Price – US$19.45) x 0.91); and (B) the Minimum Silver Price; or

d) If the Spot Silver Price is greater than US$19.45, the amount equal to the greater of: (A) (US$18.00 - (Spot Silver Price – US$19.45) x 0.91); and (B) the Minimum Silver Price.

A base silver price of US$18.50/oz is used in the PEA economic model which results in a Silver Purchase Agreement price of US$17.14. The price differential between the base price and the Silver Purchase Agreement price is US$1.36/oz. Payable ounces of silver attributed to Silver Wheaton under this agreement amount to 4.3 million ounces representing an undiscounted LoM revenue reduction of C$5.85 million for Alexco.

If this additional revenue is included in the economic model, the after tax net present value at 5% discounting (NPV_5) increases from $23.3 to $26.9 million.

22.4.2 SRK Comments

SRK provides this information so that readers may better understand the context of the indicative economic results generated by the KHSD project, in particular the significance of the Silver Purchase Agreement. These results should not be considered as a sensitivity exercise as the Silver Purchase Agreement is an executed legal agreement between the parties.

22.5 Economic Analysis of Individual Mines

Table 22.3 shows a comparison of the three mines on the basis of pre-tax net cash contribution. The analysis is annual starting on January 1, 2014 as in Table 22.1.

Table 22.3: Analysis of Individual Mine Indicative Pre-Tax Economic Results

Pre-Tax		**Lucky**	**Flame**	
Cash Flow Item ($M)	**Bellekeno**	**Queen**	**& Moth**	**Total ($M)**
NSR Value of Metals	**$36.5**	**$84.2**	**$240.3**	**$361.1**
Operating Costs:				
Mine	$12.3	$32.5	$82.9	$127.6
Mill	$6.0	$9.9	$40.7	$56.5
G&A	$2.4	$4.0	$16.5	$23.0
Total Operating Cost	**$20.6**	**$46.4**	**$140.1**	**$207.1**
Mine Capital Costs	$5.2	$19.0	$43.0	$67.2
Allocated Capital Costs	$0.7	$0.8	$4.4	$5.9
Silver Wheaton Payment	$2.1	$5.5	$14.9	$22.5
Government Royalty	$0.3	$0.9	$2.8	$4.0
Net Cash Contribution	**$7.6**	**$11.6**	**$35.2**	**$54.4**

22.6 Potential Opportunity for Extended Mine Life

To minimize potential ground water inflows, the Flame & Moth mine design includes a 30 m (vertical) crown pillar and 20 m wide pillars that bracket the Mill fault. The PEA production plan assumes that a 50% pillar mining recovery will be achieved. The non-recoverable pillar tonnes, excluded from the

PEA production plan, amount to 66 kt with average metal grades of 604 gpt silver, 2.40% lead, 6.38% zinc, and 0.51gpt gold.

Alexco conducted preliminary hydrogeology fieldwork and assessments in November 2013 which suggest that groundwater conditions are more favourable than originally anticipated.

There is a potential opportunity to extend the PEA LoM production plan that is based on mining 812.9 kt over 5.7 years. Mining the Flame & Moth pillars to a 95% mining recovery would add 66 kt to production tonnage and roughly six months to the mine life. The impact on pre-tax indicative economics would be an increase in the net cash contribution from $54.4 million (Table 22.3) to $58.2 million. Additional hydrogeological and geotechnical evaluation is recommended to investigate this potential opportunity.

23 Adjacent Properties

There are no adjacent properties considered relevant to this technical report.

24 Other Relevant Data and Information

24.1 Risks

24.1.1 Geology and Mineral Resources

- At Lucky Queen, high-grade silver-bearing vein material is confined by hydrothermal vein minerals and highly deformed fault rocks. The vein location has been determined by Alexco drill hole data, historical drill hole data, and geologic mapping conducted by UKHM. Historical drift and stope mapping is considered by Alexco to be accurate and representative, however, field verification of the mapping could not be performed by Alexco geologists because of the inaccessibility of the underground workings.
- Additional definition drilling will be required prior to mining in order to properly locate the mineralized veins.

24.1.2 Mine Geotechnical and Hydrogeology

- Assessments of ground conditions at Lucky Queen and Flame & Moth are based solely on core review and have not considered the impact of wet conditions on the rock mass whereas assessments at Bellekeno have benefitted from Alexco's current mining experience and achievements.
- As the overall level of extraction increases at the Bellekeno mine, it is likely that some stress induced failures will be encountered. These may impact the mining schedule and the cost of mining.
- There is a possibility of significant water inflow to the planned Flame & Moth underground workings. The hydrogeological context and potential water ingress from faulting, overburden materials, and surface water features represents a potential risk to the project.
- Poor ground conditions associated with a weak and wet rock mass, could increase Flame & Moth mining costs and reduce planned extraction.

24.1.3 Mining

Risks common to all underground mines in the production plan:

- The LoM plan is based upon "potential mineable tonnes" that include a portion of Inferred mineral resources. Inferred mineral resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves;
- Encountering areas of unexpectedly adverse ground conditions can cause:
  - Short term loss of production or reduced productivity.
  - Potential for unexpected additional costs to control ground such as reconditioning costs, increased amounts of spilling and increased amounts of shotcrete.
  - Excessive amounts of shotcrete reporting to mill can impact mill recoveries.

  - Increased external dilution.
  - Loss of potential mineable tonnes due to excessive overbreak and dilution.
- Alexco must build up a skilled underground workforce to achieve the planned development and production ramp up in 2015 and 2016. There is a risk that some contractor support could be needed, increasing operating costs.
- There is a risk that certain planned longhole mining areas in the LoM plan may have to be mined by mechanized cut and fill methods or left in place due to severe ground conditions, which would negatively impact operating costs and productivity.

24.1.4 Processing

- The LoM production plan used in this study indicates significant blending of different sources and a wide range of head grades. Estimates of the mill facility performance are based on metallurgical testwork conducted on unblended samples of grades much higher and lower than the production plan averages. Consequently, there is uncertainty in these plant performance estimates.
- No assessment of ball mill grindability has been done for Lucky Queen or Flame & Moth material. If the hardness of these deposits is significantly higher than that measured during the study conducted by Starkey & Associates in February 2013, there is a risk that design capacity will not be achieved even with the additional ball mill capacity currently planned for Q1 2015. The result will either be a coarser flotation feed grind size and/or lower mill throughput.
- A potential processing-related risk is the production of zinc concentrate, especially for Flame & Moth material. The current production plan indicates that 73% of the mill feed will be sourced from Flame & Moth. To date, one composite sample from Flame & Moth has been tested and it indicated that the current mill facility flowsheet (without any regrinding) could result in poor zinc flotation performance. Additional testwork is warranted to determine if a regrinding capacity should be installed prior to the Flame & Moth deposit coming into production significantly in 2016.

24.1.5 Environmental and Permitting

- There is potential for additional water treatment costs at closure, for water from the Bellekeno workings. It is not clear whether the current closure plan includes sufficient provision for long-term maintenance and operations of water treatment. Passive water treatment systems typically require periodic addition of a carbon source (e.g., ethanol) and oversight to ensure that they are working effectively. Additionally, passive water treatment systems are not always effective at removing metals to discharge levels.
- There is considerable uncertainty associated with the cost of ongoing dust, vibration, noise, and traffic management. These costs should be reviewed on a regular basis.
- There is also considerable uncertainty related to the potential for groundwater inflows to the Flame & Moth underground mine. In addition to the potential impacts to mining operations resulting from excess groundwater inflows, there may be additional costs related to management and treatment of mine water if the rates of inflow are high.

24.1.6 Economic Assessment

- Project economic results will be significantly impacted by a 15% drop in metal prices below those used in this PEA. Table 22.2 indicates a negative cash flow under such a scenario. SRK notes that the sensitivity results do not account for any mitigation measures that could be implemented by Alexco.
- The KHSD project has relatively high fixed costs. It is in a remote location with a long cold winter, and the project must support these associated logistical costs. Operations at the site itself are spread out over a large area (242 square kilometres total property area), accessed by a network of roads that must be maintained year round (Figure 4.2 and Figure 18.1). Examples of key road distances are Flat Creek camp to mill facility 13.5 km, mill facility to Bellekeno mine and Lucky Queen mine 4.7 km and 8.0 km, respectively.
- The economic viability of the project depends on maintaining a certain minimum tonnes processed per day to reduce the site unit operating cost. The site unit costs are directly linked to the mine planning cut-off NSR and quantity of mineral resources that can economically be included in the mine plan.
- The challenge and risk for the project is to maintain the necessary plant throughput from multiple mines that are characterized by narrow vein mining in locally poor ground conditions.

24.2 Opportunities

24.2.1 Geology and Mineral Resources

- There are approximately 30 known deposits in the area, many of which have been subject to small scale mining operation over the last century. There is good potential to develop additional mineral resources by expanding the exploration programs to the unexplored deposits.
- Drilling on the Flame & Moth deposit in 2013 identified additional mineralization along strike to the southwest that has the potential to add mineral resource with infill drilling. Exploration drilling in the vicinity of the Flame & Moth deposit demonstrates the potential occurrence of additional mineralized vein structures.
- The Lucky Queen vein structure has a strike length, defined by drilling, of approximately 650 m and is open along strike to both the northeast and southwest with reported thicknesses of a few centimetres to several metres. In all likeliness, additional drilling along the structure will identify additional mineralization.

24.2.2 Mine Geotechnical and Hydrogeology

- With good extraction sequencing, excavation monitoring, and tactical support at the Bellekeno mine the impacts of increased stress levels on schedule and mining cost can be managed.
- Depending on the impact of hydrogeology on the Flame & Moth mine plan, there may be an opportunity to achieve more than the 50% planned extraction of the barrier pillars along the Mill fault and within crown pillar areas.

24.2.3 Mining

- Actual mining experience at Bellekeno mine has yielded more tonnage at a similar grade than predicted by previous versions of the underground mine plan (based on the same resource block model) such that the currently planned mine life could be extended if the trend continues.
- It is possible that the East zone at the Bellekeno mine could be brought into production if economic conditions were to improve sufficiently.
- The Flame & Moth underground mine plan should be optimized based on the results of any additional metallurgical test results and further hydrogeology and mine geotechnical assessment. There may be an opportunity to increase the potentially mineable tonnes.
- The Flame & Moth mining shapes are sensitive to the selection of cut-off criteria, and higher metal prices would increase the potentially mineable tonnes.
- In two of the three deposits there are some potentially mineable tonnes that were excluded from the PEA production plan for various reasons. This excluded tonnage amounts to 143 kt with average metal grades of 517 gpt silver, 3.00% lead, 4.00% zinc, and 0.07 gpt gold, representing a potential future mining opportunity.

24.2.4 Processing

- Further metallurgical testing should be performed to increase the confidence in the project economics. Testing blended samples representative of the LoM production plan blends and grades may result in better flotation results than the ones estimated in this report.
- Grindability testwork will allow for a more accurate estimate of future plant throughput to be made. The current changes suggested for the grinding circuit are based exclusively on current mill conditions. Hardness tests on Lucky Queen and Flame & Moth samples may reveal better grindability than the current expectation. Better ball mill grindability has the potential to decrease power consumption, improve mill throughput, achieve finer flotation feed size and, therefore, higher recoveries and concentrate grades.

24.2.5 Economic Assessment

- The project is sensitive to higher metal prices. A 20% increase in prices compared to study prices (silver price of US$22.20/oz for example) would increase estimated after tax net cash flow by roughly 2.1 times (Table 22.2).
- Within the Keno Hill Silver District, Alexco has identified several high-grade silver exploration/development targets that represent a pipeline of potential projects. If successful in advancing any of these targets (former silver producing mines) to production, it may be possible to sustain a nominal plant feed rate of 400 tpd beyond 2020 (Table 16.23), thus improving the project economics.

25 Interpretation and Conclusions

25.1.1 Geology and Mineral Resources

- Exploration by Alexco on the Lucky Queen and Flame & Moth deposits has resulted in the identification of significant mineral resources that will provide additional feed to Alexco's mill facility;
- The databases used to estimate the Bellekeno mine updated mineral resource and the Flame & Moth updated mineral resource were audited by SRK. SRK is of the opinion that the current drilling information is sufficiently reliable to interpret with confidence the boundaries of the polymetallic mineralization and that the assay data are sufficiently reliable to support mineral resource estimation.
- In the opinion of SRK, the resource evaluations reported herein are a reasonable representation of the global polymetallic mineral resources in the Bellekeno and Lucky Queen mines and the Flame & Moth deposit given the current level of sampling.

25.1.2 Mine Geotechnical and Hydrogeology

- The Keno Hill Silver District is known for high grade silver deposits and challenging ground conditions that limit the mining methods to fully supported methods with limited spans such as cut and fill or very small scale longhole.
- The Bellekeno mine had been in production for close to three years. In that time, a great deal of effort has been put into understanding the structural context of the deposit and learning how the ground behaves in the 99 and Southwest zones and the best means of controlling the ground. The operation has been successful in controlling the ground to date.
- Based on geotechnical assessment and experience at the Bellekeno mine, Alexco has developed detailed standards for ground support in development and production headings.
- In all mining areas, weak, wet ground conditions will result in elevated mining risk. Areas exhibiting these conditions will need to be exposed early and dewatered.
- The Flame & Moth deposit is situated below the floor of a valley. The hydrogeological context indicates the potential for water ingress from faulting, overburden materials, and surface water features.

25.1.3 Mining

Overall Mine Plan

- Operations at the KHSD project were temporarily suspended on August 31, 2013. Alexco intends to resume site production activities in the third quarter of 2015.
- Applicable underground mining methods for the three deposits included in the production plan include mechanized cut and fill, drift and fill where spans are greater than 7 m, and small scale longhole stoping.

- NSR estimates were used as a measure of resource block value for mine planning since the targeted mineralization includes four economic metals (silver, lead, zinc, and gold) in two concentrates.
- All three deposits in the mine plan exhibit good vein continuity after the application of cut-off NSR values.
- Nominal planned production rates for the deposits are Bellekeno mine - 250 tpd, Lucky Queen - 100 tpd, and Flame & Moth - 370 tpd.
- SRK has identified LoM potentially mineable tonnes totalling 812.9 kt with average metal grades of 754 gpt silver, 2.71% lead, 4.53% zinc, and 0.40 gpt gold, and an average NSR value of US$398/t.
- The average percentage of Inferred mineral resources in the LoM plan is about 6%.
- Estimated average external dilution by deposit is Bellekeno - 19%, Lucky Queen - 44%, and Flame & Moth - 15%.
- The LoM production schedule from January 1, 2015 forward averages 398 tpd through to Q1 2021.
- The peak waste development advance rate planned of 12.0 m/day occurs in Q3 2015 with 1,082 m scheduled.
- The KHSD project achieves a LoM ratio of 75 tonnes/lateral waste metre.

Bellekeno

- The Bellekeno deposit was previously mined by underground methods including mechanized cut and fill and small scale longitudinal retreat longhole incorporating full backfilling.
- Bellekeno potentially mineable tonnes, 11% of the LoM plant feed, are estimated at 86 kt with average metal grades of 660 gpt silver, 6.47% lead, and 4.15% zinc, and NSR value of $381/t.
- The mine reached commercial production at the start of 2011. Operations were temporarily suspended at the end of August 2013. A July 2015 production re-start is planned.

Lucky Queen

- The Lucky Queen deposit requires the use of mechanized cut and fill methods in order to extract the mineral resource due to the average 45° dip of the deposit. Cemented rockfill is planned to provide adequate support to the hangingwall.
- Lucky Queen potentially mineable tonnes, which account for 17% of the LoM plant feed, are estimated at 142 kt with average metal grades of 1,059 gpt silver, 2.40% lead, 1.42% zinc, and 0.12 gpt gold, and NSR value of $530/t.
- The project is expected to be able to reach +70% of its planned production rate in Q3 2017, approximately one year after mine development resumes.

Flame & Moth

- A previous unpublished trade-off study by SRK, commissioned by Alexco, determined that Flame & Moth should be mined by underground mining methods (open pit was found less attractive).
- The Flame & Moth deposit can be mined by underground methods incorporating full backfilling without causing surface disturbance that could put the mill at risk.
- Flame & Moth potentially mineable tonnes, 72% of the LoM plant feed, are estimated at 585 kt with average metal grades of 693 gpt silver, 2.19% lead, 5.35% zinc, and 0.52 gpt gold, and an average NSR value of $368/t.
- A pre-production period of six quarters (1.5 years) from portal construction is required to get the project up to +70% of its planned production rate. One of the main drivers of this result is the planned main ramp advance rate of 4 metres per day.
- Flame & Moth mineable tonnes are sensitive to metal prices. Boundaries of mining shapes are mostly located in areas of gradational resource block value (as opposed to sharp geologic contacts).

25.1.4 Processing

- An additional ball mill for the mill facility is planned for Q1 2015 to address the issue of grinding circuit limitations. This additional mill power may result in a coarser flotation feed size at the higher throughput and possibly under harder feed conditions from the two new deposits.
- Testwork suggests that zinc performance (both recovery and concentrate grade) may be sensitive to regrinding, which currently is not part of the flowsheet. In particular, the single Flame & Moth sample tested to date demonstrated sensitivity to regrinding. The addition of regrind milling might be necessary to achieve acceptable zinc concentrate grade when Flame & Moth represents a significant proportion of the mill feed.
- The relationships used in this report to estimate grades and recoveries to the two concentrates need to be verified with additional data. This includes testwork on a range of blends from all three deposits that reflect the latest production plan.
- Estimates for lead recovery to lead concentrate and zinc recovery to zinc concentrate should be considered accurate to ±5% absolute; perhaps even broader, considering the lack of information available to date. As inputs to a technical economic model, a range of likely recoveries and grades should be used to test their influence on the overall project economics.

25.1.5 Environmental and Permitting

- Discharges from both the historical underground mine workings and areas that were previously under development contain elevated concentrations of zinc and sometimes cadmium. Water management is, therefore, a key consideration at this site, with active treatment required throughout operations. Alexco has proposed converting the current systems into passive treatment systems at closure.

- The tailings and portions of the waste rock are a potential source of metal leaching. The tailings are currently stored in the DSTF, where they will be covered at closure. This facility can be expanded to accommodate future production.
- The Government of Yukon currently holds $4.2 million in financial security to cover the potential costs of addressing environmental liabilities at this site. Additional financial security may be required to cover the potential costs of additional liabilities from these sites – principally the expanded DSTF and additional waste rock storage areas.
- All of the regulatory approvals required for mining activities associated with the Bellekeno and Lucky Queen deposits are currently in place.
- The required expansion of the DSTF and the addition of the Flame & Moth deposit development have been reviewed under the YESAA process. YESAB has made a recommendation to the Yukon Government to allow the Project to proceed, subject to a number of specified terms and conditions (YESAB 2014). Pending formal approval, the Flame and Moth development will also require amendments to the Quartz Mining Licence and Water Use Licence, which could take two to three months and six-to nine months respectively from the time of submission. The terms and conditions for the Flame and Moth development, as recommended in the YESAB report include additional water treatment requirements, provision for a liner under the DSTF, additional equipment to reduce noise from the mill area crusher, and increased air quality and noise monitoring and community consultation and mediation to address community concerns regarding air quality and noise related issues.

25.1.6 Economic Assessment

This PEA is preliminary in nature. Approximately 6% of the “potentially mineable tonnes” disclosed in the mine plans are derived from Inferred mineral resources by the application of a cut-off NSR value ($/t), and dilution and mining recovery factors. Inferred mineral resources are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that this PEA will be realized.

Inputs to the economic assessment included:

- The terms of the Silver Purchase Agreement.
- LoM plant feed of 812.9 kt averaging 754 gpt silver, 2.71% lead, and 4.53% zinc, and 0.40 gpt gold.
- Metal prices of US$18.50/oz silver, US$0.98/t lead, and US$1.00/t zinc, and US$1210/oz gold.
- Exchange rate of US$0.89/C$1.00.
- Metallurgical recoveries based on actual mill performance and testwork results.
- Smelter terms for lead and zinc concentrates based on existing off-take agreements.
- Average NSR value of plant feed of $398/t.
- A LoM average site operating cost of $255/t processed comprised of $157/t mining, $70/t milling, and $28/t G&A.

- Capital costs totalling CDN$95.6 million including a CDN$22.5 million payment to Silver Wheaton Corp. to finalize Amendment No.7 of the Silver Purchase Agreement.
- Equivalent to CDN$117/t processed including Amendment No.7 payment, or CDN$90/t processed excluding the Amendment No.7 payment;

Indicative economic results on an after tax basis are:

- net cash contribution of $35.7 million;
- IRR of 22.1%;
- NPV(5%) of $23.3 million;
- payback period is 3.75 years from January 1, 2015.

26 Recommendations

26.1.1 Mine Geotechnical and Hydrogeology

- SRK's mine design recommendations are described in report Section 16.4.6. They include span limits for man entry headings, non-entry stope design, and the design of geotechnical pillars. These recommendations have been taken into account in the PEA mine designs.
- SRK's ground support recommendations are described in report Section 16.4.8. They include support recommendations for waste development headings and production headings driven on vein. In each case, they are based on previously defined "ground classes". Implementation of these recommendations will be part of the planned mine operating costs.
- Mining sequences, monitoring, and tactical support requirements will need to be evaluated at the Bellekeno mine as extraction levels increase. An estimated budget for this work is $40,000.
- Additional hydrogeological and geotechnical evaluation needs to be undertaken at Flame & Moth to fully assess the impact of the hydrogeology on the proposed mining plan. An estimated budget for this work is $450,000 to $550,000 depending on the amount of drilling done in the field.
- For Flame & Moth, a system of barrier pillars will need to be designed along the Mill fault and below the overburden areas to minimize the potential for water inflow. (This has already been incorporated in the Flame & Moth mine design).

26.1.2 Mining

- The Lucky Queen underground mine plan should be optimized based on the results of additional metallurgical test results and increased understanding of the geology and geotechnical conditions resulting from sill drifting on vein. An estimated budget for this work is $75,000.
- The Flame & Moth underground mine plan should be optimized based on the results of additional metallurgical test results and the results of the 2013 fieldwork related to hydrogeology and mine geotechnical assessments. An estimated budget for this work is $75,000.

26.1.3 Processing

- Further metallurgical testing and mineralogical analysis is recommended on additional samples representing the blends of deposits and expected grades shown in the LoM production plan. These testwork results can be used to better estimate the recovery and grades of both lead and zinc concentrates.
- Additional testwork should also include ball mill grindability, flotation performance, and a range of samples to measure variability. The flotation conditions for Flame & Moth zinc concentrate production need to be optimized. Testing of additional samples for settling and geochemical characteristics is also warranted.
- SRK estimates the cost for such a metallurgical program to be $250,000 to $500,000, depending on the number of samples tested.

26.1.4 Environmental and Permitting

- No recommendations.

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28 Date and Signature Page

This Technical Report was written by the following “Qualified Persons” and contributing authors. The effective date of this Technical Report is November 15, 2014.

Table 28.1: Qualified Persons

Qualified Person	Signature	Date
Dr. Gilles Arseneau, PGeo	“original signed”	December 10, 2014
Stephen Taylor, PEng	“original signed”	December 10, 2014
Ken Reipas, PEng	“original signed”	December 10, 2014
Dr. Adrian Dance, PEng	“original signed”	December 10, 2014
Kelly Sexsmith, PGeo	“original signed”	December 10, 2014
Bruce Murphy, FSAIMM	“original signed”	December 10, 2014
Alan McOnie, FAusIMM	“original signed”	December 10, 2014
David Farrow, Pr.Sci.Nat., PGeo	“original signed”	December 10, 2014
James Richard Trimble, PEng	“original signed”	December 10, 2014
Scott Smith, PEng	“original signed”	December 10, 2014
Laura Battison, PGeo	“original signed”	December 10, 2014

Reviewed by

“original signed”

Chris Elliott, PEng.

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CERTIFICATE OF QUALIFIED PERSON

To Accompany the Technical Report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, and Canada Effective Date:** November 15, 2014.

I, Dr. Gilles Arseneau, residing in North Vancouver, British Columbia do hereby certify that

1) I am an Associate Consultant with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 2200, 1066 West Hastings Street, Vancouver, British Columbia, Canada.
2) I graduated with a B.Sc. in Geology from the University of New Brunswick, 1979; a M.Sc. in Geology from the University of Western Ontario, 1984 and a Ph.D. in Geology from the Colorado School of Mines, 1995. I have been involved with exploration projects and consulting covering a wide range of minerals, including deposits similar to Bellekeno in Canada and Mexico. I have over ten years of experience in resource estimation using Gemcom software.
3) I am a Professional Geoscientist registered with the Association of Professional Engineers and Geoscientists of British Columbia, registration #23474.
4) I have personally visited the Keno Hill Silver District project site from May 7 and 8, 2012 and July 26 to 28, 2010.
5) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101.
6) I am an author of this report and responsible for Sections 5, 6.2, 6.4, 6.5, 7.3.2, 7.3.4, 7.3.5, 8, 9.2, 9.4, 9.5, 10.2.3, 10.2.4, 10.2.7 – 10.2.10, 10.3, 11.1.1, 11.2, 11.3, 12.2, 14.12.2, 14.12.4, 14.12.5, and co-authored Sections 1, 11.1.2, 12.1, 14.1 – 14.11, 24, 25, and 26.
7) My prior involvement with the project consists of resource estimation for the Flame & Moth, Lucky Queen and Bermingham deposits in 2011 and 2012 and I was a co-author of an updated PEA report on the project completed in November of 2013.
8) I have read National Instrument 43-101 and the definition of Qualified Person set out in the Instrument and certify that by virtue of my education, affiliation on to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
9) SRK Consulting (Canada) Inc. and its supporting team of consultants were retained by .Alexco Resources Corporation (Alexco) to prepare an Updated Preliminary Economic Assessment of the KHSD project. In conducting the assessment, SRK followed CIM "Best practices" and Canadian Securities Administrators National Instrument 43-101 guidelines. The preceding Technical Report is based on a site visit, a review of project files, and discussions with Alexco personnel.
10) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Alexco Resource Corporation.
11) That, as of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dr. Gilles Arseneau, PGeo
Associate Consultant

Vancouver
December 10, 2014

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CERTIFICATE OF QUALIFIED PERSON

To Accompany the report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada and Effective Date:** November 15, 2014.

I, Stephen Taylor, residing at 1352 Hastings Crescent, Sudbury, Ontario do hereby certify that:

1) I am a Principal Mining Engineer with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite101, 1984 Regent Street South, Sudbury, Ontario, Canada.
2) I am a graduate of Laurentian University in Sudbury, Ontario with a B.Eng in Mining Engineering in 1992 and I also obtained an M.Sc (Mining Engineering) from the University of Nevada-Reno, Mackay School of Mines in 1995. I have practiced my profession continuously since 1995. My work has involved mine planning and mine supervision/operations for 15 years, and consulting on underground projects in several countries since 2010.
3) I am a Professional Engineer registered with the Professional Engineers of Ontario (PEO#90365834).
4) I have personally visited the Keno Hills Silver District project site from June 25 to 27, 2012.
5) That, as a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101.
6) I am responsible for report Sections 16.5, 16.7, 16.8 and I co-authored Sections 1, 16.10, 21, 24, 25 and 26.
7) My prior involvement with the project consists of co-authoring an Updated PEA report, completed in November, 2013.
8) I have read National Instrument 43-101 and the definition of Qualified Person set out in the Instrument and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
9) SRK Consulting (Canada) Inc. and its supporting team of consultants were retained by Alexco Resources Corporation (Alexco) to prepare an Updated Preliminary Economic Assessment of the KHSD project. In conducting the assessment, SRK followed CIM “Best practices” and Canadian Securities Administrators National Instrument 43-101 guidelines. The preceding Technical Report is based on a site visit, a review of project files and discussions with Alexco personnel.
10) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Alexco Resource Corp.
11) That, as of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Sudbury, Canada	Stephen Taylor, PEng
December 10, 2014	Principal Mining Engineer

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To Accompany the Technical Report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada and Effective Date:** November 15, 2014.

I, Ken Reipas, residing at 43 Deverell Street, Whitby, Ontario do hereby certify that

1) I am a Principal Consultant with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 1300, 151 Yonge Street, Toronto, Ontario, Canada
2) I am a graduate of Queen's University with a BSc in Mining Engineering in 1981, and have practiced my profession continuously since 1981. My work has involved mine planning and mine supervision/operations for 16 years, and consulting on underground projects in several countries since 1997.
3) I am a Professional Engineer registered with the Professional Engineers of Ontario (PEO), registration number 100015286.
4) I have personally visited the Bellekeno project site from March 7 to 13, 2013.
5) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101;
6) I am responsible for report Sections 2, 3, 14.14, 15, 16.1, 16.6, 16.9, 18, 19, 22, 23 and I co-authored Sections 1, 16.10, 21, 24, 25 and 26 and have reviewed the Technical Report.
7) My prior involvement with the project consists of co-authoring an Updated PEA Report, completed in November, 2013.
8) I have read National Instrument 43-101 and the definition of Qualified Person set out in the Instrument and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
9) SRK Consulting (Canada) Inc. and its supporting team of consultants were retained by .Alexco Resources Corporation (Alexco) to prepare an Updated Preliminary Economic Assessment of the KHSD project. In conducting the assessment, SRK followed CIM "Best practices" and Canadian Securities Administrators National Instrument 43-101 guidelines. The preceding report is based on a site visit, a review of project files and discussions with Alexco personnel.
10) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Alexco Resource Corp.
11) That, as of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

"Original Signed and Stamped"

Vancouver
December 10, 2014

Ken Reipas, PEng
Principal Consultant

SRK Consulting (Canada) Inc.
2200–1066 West Hastings Street
Vancouver, BC V6E 3X2

T: +1.604.681.4196
F: +1.604.687.5532

vancouver@srk.com
www.srk.com

CERTIFICATE OF QUALIFIED PERSON

To Accompany the Technical Report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada and Effective Date:** November 15, 2014.

I, Dr. Adrian Dance, residing in West Vancouver, British Columbia do hereby certify that:

1) I am a Principal Consultant with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 2200, 1066 West Hastings Street, Vancouver, British Columbia, Canada.
2) I am a graduate of the University of British Columbia in 1987 where I obtained a Bachelor of Applied Science and a graduate of the University of Queensland in 1992 where I obtained a Doctorate. I have practiced my profession continuously since 1992 including eight years as a consultant and have experience working in a number of base metal flotation operations around the world.
3) I am a Professional Engineer registered with the Association of Professional Engineers & Geoscientists of British Columbia, license number 37151.
4) I have not visited the subject property, but relied on site visits conducted by co-authors of this Technical Report: Stephen Taylor, Ken Reipas, Gilles Arseneau, Bruce Murphy, Kelly Sexsmith and David Farrow over the period 2010 to 2013.
5) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101.
6) I am responsible for report Sections 13 and 17 and co-authored Section 1, 24, 25 and 26 and have reviewed the Technical Report.
7) My prior involvement with the project consists of a co-authoring an Updated Preliminary Economic Assessment, completed in November, 2013.
8) I have read National Instrument 43-101 and the definition of "Qualified Person" set out in the Instrument and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
9) SRK Consulting (Canada) Inc. and its supporting team of consultants were retained by .Alexco Resources Corporation(Alexco) to prepare an Updated Preliminary Economic Assessment of the KHSD project. In conducting the assessment, SRK followed CIM "Best practices" and Canadian Securities Administrators National Instrument 43-101 guidelines. The preceding report is based on a site visit, a review of project files and discussions with Alexco personnel.
10) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Alexco Resource Corp.
11) That, as of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

"Original Signed and Stamped"

Vancouver
December 10, 2014

Dr. Adrian Dance, PEng
Principal Consultant

SRK Consulting (Canada) Inc.
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CERTIFICATE OF QUALIFIED PERSON

To Accompany the report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada and Effective Date:** November 15, 2014.

I, Kelly Sexsmith, residing in North Vancouver, British Columbia do hereby certify that

1) I am a Principal Geochemist with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 2200, 1066 West Hastings Street, Vancouver, British Columbia, Canada.
2) I am a graduate of the University of British Columbia with a B.Sc in Geology in 1990 and of the Colorado School of Mines with an M.S. in Environmental Science in 1996, and have practiced my profession continuously between 1991 and 1994, and then 1997 and present. My work has involved geochemical characterization, monitoring and management of mine wastes in Canada and Internationally for the duration of my career.
3) I am a Professional Geologist registered with both the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) Registration #21397, and the Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) Registration #13977.
4) I have personally visited the Keno Hill Silver District project site from July 27 to 28, 2012.
5) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101.
6) I am a co- author of this report and responsible for sections 4.3, 4.4, 20 except 20.4.3, and co-authored sections 1, 20.4.3, 24, 25, and 26.
7) My prior involvement with the project consists of a co-authoring an Updated PEA report, completed in November, 2013.
8) I have read National Instrument 43-101 and the definition of Qualified Person set out in the Instrument and certify that by virtue of my education, affiliation on to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
9) SRK Consulting (Canada) Inc. and its supporting team of consultants were retained by .Alexco Resources Corporation (Alexco) to prepare an Updated Preliminary Economic Assessment of the KHSD project. In conducting the assessment, SRK followed CIM "Best practices" and Canadian Securities Administrators National Instrument 43-101 guidelines. The preceding Technical Report is based on a site visit, a review of project files and discussions with Alexco personnel.
10) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Alexco Resource Corp.
11) That, as of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

"Original Signed and Stamped"

Vancouver
December 10, 2014

Kelly Sexsmith, PGeo
Principal Geochemist

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CERTIFICATE OF QUALIFIED PERSON

To Accompany the Technical Report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada and Effective Date:** November 15, 2014.

I, Bruce Murphy, residing in North Vancouver, British Columbia do hereby certify that:

1) I am a Principal Consultant with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 2200, 1066 West Hastings Street, Vancouver, British Columbia, Canada.
2) I am a graduate of University of the Witwatersrand, Johannesburg, South Africa with a M.Sc. degree in Mining Engineering. I have practiced my profession continuously since graduation (1989) working in the rock engineering field on operating mines till 2002 and then in the consulting field.
3) I am a Fellow of the South African Institute of Mining and Metallurgy (FSAIMM).
4) I have personally visited the Keno Hill Silver District project site from March 7 to 11, 2013.
5) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101.
6) I am responsible for report Sections 16.2 and 16.3, and co-authored Sections 1, 24, 25, and 26.
7) My prior involvement with the project consists of a co-authoring an Updated Preliminary Economic Assessment, completed in November, 2013.
8) I have read National Instrument 43-101 and the definition of Qualified Person set out in the Instrument and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
9) SRK Consulting (Canada) Inc. and its supporting team of consultants were retained by .Alexco Resources Corp. to prepare an Updated Preliminary Economic Assessment of the KHSD project. In conducting the assessment, SRK followed CIM “Best practices” and Canadian Securities Administrators National Instrument 43-101 guidelines. The preceding Technical Report is based on a site visit, a review of project files and discussions with Alexco personnel.
10) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Alexco Resource Corp. (Alexco).
11) That, as of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

“Original Signed”

Vancouver
December 10, 2014

Bruce Murphy, FSAIMM
Principal Consultant

CERTIFICATE OF QUALIFIED PERSON

To Accompany the Technical Report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada**
Effective Date: November 15, 2014.

I, Alan McOnie, residing in Katikati, New Zealand do hereby certify that:

1) I am Vice President, Exploration of Alexco Resource Corp. of 1150 – 200 Granville Street, Vancouver, British Columbia, Canada, V6C 1S4, and accordingly am not independent of Alexco Resource Corp..
2) I graduated with a Bachelor of Science (Hons) degree in geology from the University of Otago, Dunedin, New Zealand in 1969, and a Master of Science degree in geology from the University of Toronto, Ontario, Canada in 1971. I have practiced my profession as a geologist for over 35 years.
3) I am a Fellow of the Australasian Institute of Mining and Metallurgy, Member 226668.
4) I am responsible for sections 4.1, 4.2, 6.3, 7.1 to 7.3, 7.3.3, 9.3, 10.1, 10.2, 10.2.5, 10.2.6, and co-authored section 11.1.2 of the Technical Report. I have visited the Property that is the subject of this Technical Report on multiple occasions between 2007 and 2010 as consulting geologist, and between 2011 and 2014 in connection with my management of the exploration programs, drilling, core logging and sampling procedures conducted on the Flame & Moth Property in each of those years.
5) I have read National Instrument 43-101 and the definition of "Qualified Person" set out in the Instrument and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101. Further, I have read this Technical Report, and certify that it has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
6) That, as of the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

"Signed and Sealed"

Vancouver, BC, Canada	Alan McOnie, FAusIMM
December 10, 2014	VP Exploration

CERTIFICATE OF QUALIFIED PERSON

To Accompany the Technical Report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada Effective Date:** November 15, 2014.

I, David Farrow, residing in North Vancouver, British Columbia do hereby certify that:

1) I am a Geologist with GeoStrat Consulting Services Inc of 40-4055 Indian River Drive, North Vancouver, British Columbia, V7G 2R7, Canada.
2) I am a graduate of the University of the Witwatersrand, Johannesburg, South Africa (GDE (Geostatistics) 1998) and the University of Cape Town, Cape Town, South Africa (B.Sc. (Hons) 1982). I have practiced my profession continuously since graduation.
3) I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia (License # 33860). I am also a member in good standing of The South African Council for Natural Science Professions (License # 400074/87).
4) I visited the subject property in October, 2011.
5) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101.
6) I am responsible for the preparation of section 14.3.1, 14.3.3, 14.4.1, 14.4.3, 14.5.1, 14.5.3, 14.6.1, 14.6.3, 14.7.1, 14.7.3, 14.8.1, 14.8.2, 14.8.3, 14.8.4, 14.8.6, 14.9.1, 14.9.3, 14.10.1, 14.10.3, 14.11.1, 14.11.3, 14.12.1, 14.12.3, 14.13.1, 14.13.2. and co–authored sections 1, 12 and 25 of the Technical Report.
7) I have had prior involvement with the property that is the subject of the Technical Report, co-authoring a report for Alexco Resource Corporation on the Flame and Moth Deposit, (Farrow and McOnie 2013). I also co-authored an Updated PEA report on the project, completed in November, 2013.
8) I have read National Instrument 43-101 and the definition of "Qualified Person" set out in the Instrument and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101. Further, I have read this Technical Report, and certify that it has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
9) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Alexco Resource Corp. (Alexco).
10) That, as of the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

"Signed and Sealed"

Vancouver
December 10, 2014

David Farrow, Pr.Sci.Nat., PGeo
Geologist

CERTIFICATE OF QUALIFIED PERSON

To Accompany the Technical Report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada Effective Date:** November 15, 2014.

I, James Richard Trimble, residing at 17 Cedar Crescent, Whitehorse, Yukon, do hereby certify that:

1) I am a Principal Consultant with the firm of Tetra Tech EBA (formerly EBA Engineering Consultants Ltd.) (EBA) with an office at 61 Wasson Place, Whitehorse, Yukon, Canada.
2) I am a graduate of Queen's University with an MSc in Civil Engineering in 1977 and I have practiced my profession continuously since 1977. My work has involved geotechnical and permafrost engineering for numerous mine sites in Canada since that time.
3) I am a Professional Engineer registered with the Professional Engineers of Yukon, Northwest Territories and Nunavut, Alberta, and British Columbia.
4) I have personally visited the Keno Hill Silver District project site on several occasions from 2007 to present.
5) As a qualified person, I am independent of the issuer as defined in Section 1.5 of National Instrument 43-101.
6) I am a co- author of this report and responsible for section 20.4.3 and accept professional responsibility for that section of this Technical Report.
7) My prior involvement with the project consists of numerous geotechnical investigations and design for numerous structures at the site.
8) I have read National Instrument 43-101 and the definition of "Qualified Person" set out in the Instrument and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101. Further, I have read this Technical Report, and certify that it has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
9) EBA was retained by Alexco Resources Corp. to complete a site investigation program and prepare a design report on a Dry Stack Tailings Facility (DSTF) at the site – an expansion of the area previously designed by EBA and currently in use.
10) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Alexco Resource Corp. (Alexco).
11) That, as of the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

"Signed and Sealed"

Whitehorse, Yukon	James Richard Trimble, PEng
December 10, 2014	Principal Consultant

CERTIFICATE OF QUALIFIED PERSON

To Accompany the Technical Report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada Effective Date:** November 15, 2014.

I, Scott Smith, residing in Vernon, British Columbia do hereby certify that:

1) I am an Alternate Mine Manager – Mine Superintendent for Pretivm Resources, headquartered at 1600-570 Granville Street, Vancouver, BC, V6C 3P1
2) I graduated with a Bachelor of Science degree in Engineering from Dalhousie University in 1996. I have practiced my profession for the past sixteen years.
3) I am a Registered member of the Association of Professional Engineers and Geoscientists of British Columbia, Member # 27716.
4) I was acting Mine Manager of the KHSD property from March, 2010 to October, 2013.
5) I am responsible for the Silver King Historical Resource in Section 6.0 of the Technical Report.
6) I had not had any prior involvement with the project prior to my employment with Alexco, beginning March 2010.
7) I have read National Instrument 43-101 and the definition of "Qualified Person" set out in the Instrument and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101. Further, I have read this Technical Report, and certify that it has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
8) That, as of the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

"Signed and Sealed"

Vernon, BC
December 10, 2014

Scott Smith, PEng

CERTIFICATE OF QUALIFIED PERSON

To Accompany the report entitled: **Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada Effective Date:** November 15, 2014.

I, Laura Battison, residing in Campbell River, British Columbia do hereby certify that:

1) I was the Senior Mine Geologist at Alexco Resource Corporation, (Alexco) with an office at the Keno Hill Project, Bellekeno Mine; PO Box 7, Elsa Yukon, Y0B 1J0.
2) I am a graduate of Laurentian University with a Hons B.Sc in Geology 1998, and have practiced my profession continuously since 1998. My work has involved exploration and underground production geology, development and management of diamond drilling programs, as well as geologic interpretation, data verification, and supervision for the past 14 years across a variety of deposits.
3) I am a Professional Geologist registered with the Association of Professional Engineers and Geologists of BC (APEGBC); Registration number 36367.
4) I have personally worked at the KHSD property from August 2011 to August 2013.
5) I am responsible for sections 6.1, 7.3.1, 9.1, 10.2.1, 10.2.2, and co-authored sections 12.1 and have reviewed the Technical Report.
6) I had not had any prior involvement with the project prior to my employment with Alexco, beginning August 2011.
7) I have read National Instrument 43-101 and the definition of "Qualified Person" set out in the Instrument and certify that by virtue of my education, affiliation to a professional association, and past relevant work experience, I fulfill the requirements to be a Qualified Person for the purposes of National Instrument 43-101. Further, I have read this Technical Report, and certify that it has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
8) That, as of the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

"Signed and Sealed"

Campbell River	Laura Battison, PGeo.
December 10, 2014	Geologist

APPENDIX A

Mineral Tenure Information

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
43	301305615	YC32217		Alexco Exploration Canada Corp. - 100%	21/08/2004	23/08/2004	31/12/2018
83	301508717	56501	NM00059	Elsa Reclamation & Development Company Ltd. - 100%	17/09/1947	24/09/1947	24/07/2021
"X"	301420279	15331	NM00244	Elsa Reclamation & Development Company Ltd. - 100%	09/05/1929	30/05/1929	28/02/2024
A.A.	301381019	56502	NM00060	Elsa Reclamation & Development Company Ltd. - 100%	17/09/1947	24/09/1947	24/07/2021
ABEL	301459554	55590	NM00297	Alexco Keno Hill Mining Corp. - 100%	08/10/1946	28/03/1947	23/02/2025
ACE-HI	301536375	55548	NM00322	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	13/02/1947	08/02/2025
ACE-HI 1	301438253	55549	NM00323	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	13/02/1947	08/02/2025
ACE-HI 10	301321731	55559	NM00331	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	14/02/1947	08/02/2025
ACE-HI 11	301321732	55560	NM00332	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	14/02/1947	08/02/2025
ACE-HI 2	301438252	55550	NM00324	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	13/02/1947	08/02/2025
ACE-HI 4	301432492	55552	NM00325	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	14/02/1947	08/02/2025
ACE-HI 5	301560276	55553	NM00326	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	14/02/1947	08/02/2025
ACE-HI 6	301518062	55555	NM00327	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	14/02/1947	08/02/2025
ACE-HI 7	301297440	55556	NM00328	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	14/02/1947	08/02/2025
ACE-HI 8	301484074	55557	NM00329	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	14/02/1947	08/02/2025
ACE-HI 9	301419162	55558	NM00330	Elsa Reclamation & Development Company Ltd. - 100%	17/10/1946	14/02/1947	08/02/2025
ACRE FRACTION	301336568	56575	NM00170	Elsa Reclamation & Development Company Ltd. - 100%	14/07/1948	21/07/1948	12/06/2022
ADA	301418684	14858		Elsa Reclamation & Development Company Ltd. - 100%	30/07/1923	30/08/1923	31/12/2017
ADAM FRACTION	301458313	83011	NM00593	Elsa Reclamation & Development Company Ltd. - 100%	29/06/1963	09/07/1963	02/11/2027
ADONAIS	301407911	55477	OM00013	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1946	24/01/1947	15/12/2017
Ag	301577588	YC02775		Alexco Exploration Canada Corp. - 100%	09/07/2001	10/07/2001	31/12/2021
AGRAM	301344981	62132	NM00555	Alexco Keno Hill Mining Corp. - 100%	03/06/1952	17/06/1952	02/11/2027
AJAX	301298153	12840	NM00361	Elsa Reclamation & Development Company Ltd. - 100%	09/09/1919	28/10/1919	30/04/2025
AJAX	301548115	14466	OM00033	Elsa Reclamation & Development Company Ltd. - 100%	30/09/1921	07/12/1921	18/08/2018
ALBERTA L	301463551	80178	NM00499	Elsa Reclamation & Development Company Ltd. - 100%	07/12/1956	13/12/1956	26/11/2025
Alex 1	301471041	YC48132		Alexco Keno Hill Mining Corp. - 100%	26/05/2006	02/06/2006	31/12/2019
Alex 10	301491169	YC48141		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 100	301458352	YC48231		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 101	301356595	YC48232		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 102	301555169	YC48233		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 103	301323578	YC48234		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 104	301377561	YC48235		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 105	301376213	YC48236		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 106	301457825	YC48237		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 107	301555180	YC48238		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 108	301589018	YC48239		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 109	301589017	YC48240		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 11	301584394	YC48142		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 110	301308670	YC48241		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 111	301461093	YC48242		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 112	301297793	YC48243		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 113	301574209	YC48244		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 114	301396508	YC48245		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 115	301361398	YC48246		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 116	301435752	YC48247		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 117	301382840	YC48248		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 118	301532328	YC48249		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 119	301532327	YC48250		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 12	301584185	YC48143		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 120	301465838	YC48251		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 121	301397007	YC48252		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 122	301365617	YC48253		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 123	301384597	YC48254		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 124	301405863	YC48255		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 125	301436132	YC48256		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 126	301406116	YC48257		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 127	301517484	YC48258		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2019
Alex 128	301550054	YC48259		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2019
Alex 129	301550051	YC48260		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2019
Alex 13	301526776	YC48144		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 130	301337119	YC48261		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2019
Alex 131	301384655	YC48262		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 132	301436106	YC48263		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 133	301475191	YC48264		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 134	301469176	YC48265		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 135	301493025	YC48266		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 136	301550260	YC48267		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 137	301419883	YC48268		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Alex 138	301339029	YC48269		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 139	301339028	YC48270		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 14	301390378	YC48145		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 140	301576139	YC48271		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 141	301514438	YC48272		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 142	301362785	YC48273		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 143	301457589	YC48274		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 144	301372905	YC48275		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 145	301351900	YC48276		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 146	301558446	YC48277		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 147	301314383	YC48278		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 148	301510937	YC48279		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 149	301510936	YC48280		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 15	301346550	YC48146		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 150	301421158	YC48281		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 151	301491998	YC48282		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 152	301348904	YC48283		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 153	301475326	YC48284		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 154	301386984	YC48285		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 155	301299909	YC48286		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 156	301412731	YC48287		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 157	301431841	YC48288		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 158	301457272	YC48289		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 159	301457274	YC48290		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 16	301461406	YC48147		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 160	301429808	YC48291		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 161	301531282	YC48292		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 162	301575639	YC48293		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 163	301473994	YC48294		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 164	301573967	YC48295		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 165	301490756	YC48296		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 166	301561660	YC48297		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 167	301522321	YC48298		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 168	301494164	YC48299		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 169	301457273	YC48300		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 17	301456267	YC48148		Alexco Keno Hill Mining Corp. - 100%	26/05/2006	02/06/2006	31/12/2020
Alex 170	301429809	YC48301		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 171	301531283	YC48302		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 172	301575638	YC48303		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 173	301473996	YC48304		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 174	301573968	YC48305		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 175	301490760	YC48306		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2023
Alex 176	301561661	YC48307		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2023
Alex 177	301522322	YC48308		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 178	301494157	YC48309		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 179	301494158	YC48310		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 18	301526350	YC48149		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 180	301583618	YC48311		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 181	301438785	YC48312		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 182	301372666	YC48313		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 183	301332547	YC48314		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 184	301530439	YC48315		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 185	301587926	YC48316		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 186	301337500	YC48317		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 187	301408492	YC48318		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 188	301319782	YC48319		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 189	301319784	YC48320		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 19	301526349	YC48150		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 190	301346229	YC48321		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 191	301566117	YC48322		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 192	301508599	YC48323		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 193	301434995	YC48324		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 194	301547550	YC48325		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 195	301342910	YC48326		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 196	301415477	YC48327		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 197	301566646	YC48328		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 198	301384417	YC48329		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 199	301384422	YC48330		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Alex 2	301381728	YC48133		Alexco Keno Hill Mining Corp. - 100%	26/05/2006	02/06/2006	31/12/2019
Alex 20	301483793	YC48151		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 200	301493676	YC48331		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 201	301365640	YC48332		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 202	301545382	YC48333		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 203	301367301	YC48334		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 204	301491962	YC48335		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 205	301352429	YC48336		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 206	301562622	YC48337		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 207	301449049	YC48338		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 208	301366915	YC48548		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 209	301509315	YC48339		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 21	301366972	YC48152		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 210	301509316	YC48340		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 211	301498969	YC48341		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 212	301323390	YC48342		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 213	301292581	YC48343		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 214	301443669	YC48344		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 215	301415208	YC48345		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 216	301514536	YC48346		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 217	301519741	YC48347		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 218	301594235	YC48348		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 219	301362128	YC48349		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 22	301542406	YC48153		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 220	301362129	YC48350		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 221	301559986	YC48351		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2020
Alex 222	301497078	YC48352		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2020
Alex 223	301330828	YC48353		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2020
Alex 224	301578301	YC48354		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2020
Alex 225	301357470	YC48355		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2020
Alex 226	301342378	YC48356		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2020
Alex 227	301390269	YC48357		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 228	301298748	YC48358		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 229	301335702	YC48359		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2019
Alex 23	301297083	YC48154		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 230	301335699	YC48360		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2019
Alex 231	301440456	YC48361		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2019
Alex 232	301454791	YC48362		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2019
Alex 233	301326780	YC48363		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2019
Alex 234	301434188	YC48364		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2019
Alex 235	301456724	YC48365		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2019
Alex 236	301340018	YC48366		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2019
Alex 237	301589381	YC48367		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 238	301553553	YC48368		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 239	301378713	YC48369		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 24	301495143	YC48155		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 240	301378712	YC48370		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 241	301366067	YC48371		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 242	301317723	YC48372		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 243	301318903	YC48373		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 244	301333078	YC48374		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 245	301326298	YC48375		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 246	301307724	YC48376		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 247	301345058	YC48377		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 248	301537862	YC48378		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 249	301442926	YC48379		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 25	301516758	YC48156		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 250	301442920	YC48380		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 251	301476181	YC48381		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 252	301387628	YC48382		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 253	301356856	YC48383		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 254	301554009	YC48384		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 255	301533325	YC48385		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 256	301345916	YC48386		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 257	301575556	YC48387		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 258	301373708	YC48388		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 259	301342494	YC48389		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 26	301571686	YC48157		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Alex 260	301342496	YC48390		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 261	301425381	YC48391		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 262	301398119	YC48392		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 263	301488257	YC48393		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 264	301300027	YC48549		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 265	301516532	YC48394		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 266	301312385	YC48395		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 267	301443706	YC48396		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 268	301410079	YC48397		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 269	301535287	YC48398		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 27	301447829	YC48158		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 270	301494040	YC48399		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 271	301342495	YC48400		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 272	301425382	YC48401		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 273	301398118	YC48402		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 274	301488256	YC48403		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 275	301516533	YC48404		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 276	301312386	YC48405		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2019
Alex 277	301443705	YC48406		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2023
Alex 278	301410080	YC48407		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2023
Alex 279	301535286	YC48408		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2023
Alex 28	301487784	YC48159		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 280	301494041	YC48409		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2023
Alex 287	301494039	YC48410		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2020
Alex 288	301335885	YC48411		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2020
Alex 289	301582405	YC48412		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2020
Alex 29	301487783	YC48160		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 290	301297682	YC48413		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2020
Alex 291	301450603	YC48414		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2020
Alex 292	301395309	YC48415		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2020
Alex 293	301578050	YC48416		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2020
Alex 294	301470928	YC48417		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2020
Alex 295	301338237	YC48418		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 296	301321283	YC48419		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 297	301321282	YC48420		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 298	301466352	YC48421		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 299	301323888	YC48422		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 3	301330916	YC48134		Alexco Keno Hill Mining Corp. - 100%	26/05/2006	02/06/2006	31/12/2019
Alex 30	301494927	YC48161		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2020
Alex 300	301514590	YC48423		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 301	301413152	YC48424		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 302	301322715	YC48425		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 303	301496923	YC48426		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 304	301417359	YC48427		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 305	301592381	YC48428		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 306	301476886	YC48429		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 307	301476885	YC48430		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 308	301392661	YC48431		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 309	301398179	YC48432		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 31	301484178	YC48162		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 310	301430316	YC48433		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 311	301460277	YC48434		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 312	301580438	YC48435		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 313	301312976	YC48436		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 314	301519303	YC48437		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 315	301479051	YC48438		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 316	301547156	YC48439		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 317	301547155	YC48440		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 318	301522887	YC48441		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 319	301457439	YC48442		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 32	301419289	YC48163		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 320	301349123	YC48443		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 321	301506651	YC48444		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 322	301342802	YC48445		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 323	301557941	YC48446		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 324	301427073	YC48447		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 325	301462014	YC48448		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 326	301520850	YC48449		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Alex 327	301520851	YC48450		Alexco Keno Hill Mining Corp. - 100%	19/05/2006	02/06/2006	31/12/2020
Alex 328	301343280	YC48451		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 329	301338258	YC48452		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 33	301556455	YC48164		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 330	301434215	YC48453		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 331	301308293	YC48454		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 332	301570126	YC48455		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 333	301370955	YC48456		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 334	301566335	YC48457		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 335	301544673	YC48458		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 336	301507182	YC48459		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 337	301507183	YC48460		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 338	301308302	YC48461		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 339	301539261	YC48462		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 34	301588327	YC48165		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 340	301459573	YC48463		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 341	301442982	YC48464		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 342	301522706	YC48465		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2019
Alex 343	301463688	YC48466		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 344	301402712	YC48467		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 345	301577479	YC48468		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 346	301335158	YC48469		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 347	301335157	YC48470		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 348	301504188	YC48471		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 349	301408577	YC48472		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 35	301562623	YC48166		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 350	301377394	YC48473		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 351	301355987	YC48474		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 352	301585381	YC48475		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 353	301560005	YC48476		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 354	301538824	YC48477		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 355	301487228	YC48478		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 356	301412773	YC48479		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 357	301412771	YC48480		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 358	301355864	YC48481		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 359	301307966	YC48482		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 36	301362974	YC48167		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 360	301564123	YC48483		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 361	301574106	YC48484		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 362	301562578	YC48485		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 363	301467697	YC48486		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 364	301538821	YC48487		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 365	301369567	YC48488		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 366	301459107	YC48489		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 367	301459106	YC48490		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 368	301357768	YC48491		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 369	301395613	YC48492		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 37	301320219	YC48168		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 371	301475230	YC48493		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 372	301471685	YC48494		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 373	301531596	YC48495		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 374	301495920	YC48496		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 375	301337011	YC48497		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 376	301586194	YC48498		Alexco Keno Hill Mining Corp. - 100%	02/06/2006	02/06/2006	31/12/2019
Alex 377	301400001	YC48499		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2023
Alex 379	301459108	YC48500		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 38	301481438	YC48169		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 380	301357767	YC48501		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 381	301395612	YC48502		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 382	301475232	YC48503		Alexco Keno Hill Mining Corp. - 100%	23/05/2006	02/06/2006	31/12/2019
Alex 383	301471686	YC48504		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2019
Alex 384	301531599	YC48505		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2019
Alex 386	301495919	YC48506		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2019
Alex 39	301481437	YC48170		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 4	301592514	YC48135		Alexco Keno Hill Mining Corp. - 100%	26/05/2006	02/06/2006	31/12/2019
Alex 40	301552348	YC48171		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 400	301337010	YC48507		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2016
Alex 401	301586195	YC48508		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2016

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Alex 403	301400003	YC48509		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2016
Alex 404	301400002	YC48510		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2016
Alex 41	301587530	YC48172		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 42	301298555	YC48173		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 423	301462345	YC48511		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2016
Alex 424	301377383	YC48512		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2016
Alex 425	301441470	YC48513		Alexco Keno Hill Mining Corp. - 100%	24/05/2006	02/06/2006	31/12/2016
Alex 429	301317879	YC48514		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 43	301484586	YC48174		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 430	301344157	YC48515		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 431	301557745	YC48516		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 432	301582038	YC48517		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 433	301566110	YC48518		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 434	301307530	YC48519		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 435	301307527	YC48520		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 436	301462321	YC48521		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 437	301519055	YC48522		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 438	301505419	YC48523		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 439	301546319	YC48524		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 44	301447313	YC48175		Alexco Keno Hill Mining Corp. - 100%	15/05/2006	02/06/2006	31/12/2019
Alex 440	301443523	YC48525		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 441	301490804	YC48526		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 442	301383316	YC48527		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 443	301335346	YC48528		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 444	301471936	YC48529		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 445	301471937	YC48530		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 446	301358280	YC48531		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 447	301504732	YC48532		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 448	301401547	YC48533		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 449	301440011	YC48534		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 45	301582701	YC48176		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 450	301581600	YC48535		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 451	301444212	YC48536		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 452	301484996	YC48537		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 453	301382939	YC48538		Alexco Keno Hill Mining Corp. - 100%	17/05/2006	02/06/2006	31/12/2020
Alex 454	301397389	YC48539		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 455	301397387	YC48540		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 456	301385670	YC48541		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 457	301307169	YC48542		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 458	301489191	YC48543		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 459	301537460	YC48544		Alexco Keno Hill Mining Corp. - 100%	16/05/2006	02/06/2006	31/12/2020
Alex 46	301389604	YC48177		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 460	301408393	YC48545		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 461	301451787	YC48546		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 462	301498702	YC48547		Alexco Keno Hill Mining Corp. - 100%	18/05/2006	02/06/2006	31/12/2020
Alex 463	301428894	YC56176		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	12/06/2007	12/12/2019
Alex 464	301558155	YC56177		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	12/06/2007	12/12/2019
Alex 465	301407175	YC56178		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 466	301539032	YC56179		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 467	301539033	YC56180		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 468	301440302	YC56181		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 469	301468105	YC56182		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 47	301560848	YC48178		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 470	301405015	YC56183		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 471	301548985	YC56184		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 472	301374257	YC56185		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 473	301486666	YC56186		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 474	301482108	YC56187		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 475	301362903	YC56188		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 476	301449018	YC56189		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 477	301449017	YC56190		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 478	301580942	YC56191		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 479	301555388	YC56192		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 48	301409448	YC48179		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 480	301415210	YC56193		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 481	301413914	YC56194		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 482	301292933	YC56195		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 483	301514641	YC56196		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Alex 484	301334591	YC56197		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 485	301304368	YC56198		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 486	301454942	YC56199		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 487	301449019	YC56200		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 488	301580939	YC56201		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 489	301555390	YC56202		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 49	301409447	YC48180		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 490	301415212	YC56203		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 491	301413915	YC56204		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 492	301292934	YC56205		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 493	301514642	YC56206		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 494	301334590	YC56207		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 495	301304362	YC56208		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 496	301454943	YC56209		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 497	301454941	YC56210		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 498	301405400	YC56211		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 499	301454332	YC56212		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 5	301549734	YC48136		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 50	301314667	YC48181		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 500	301583808	YC56213		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 501	301381944	YC56214		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 502	301350476	YC56215		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 503	301570239	YC56216		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 504	301572103	YC56217		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 505	301478979	YC56218		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 506	301534654	YC56219		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 507	301534653	YC56220		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 508	301494596	YC56221		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 509	301572254	YC56222		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 51	301359036	YC48182		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 510	301520714	YC56223		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 511	301478542	YC56224		Alexco Keno Hill Mining Corp. - 100%	09/06/2007	22/06/2007	22/12/2019
Alex 512	301340210	YC56225		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 513	301324328	YC56226		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 514	301517941	YC56227		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 515	301449042	YC56228		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 516	301471706	YC56229		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 517	301471708	YC56230		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 518	301556918	YC56231		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 519	301317484	YC56232		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 52	301325939	YC48183		Alexco Keno Hill Mining Corp. - 100%	21/05/2006	02/06/2006	31/12/2019
Alex 520	301569034	YC56233		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 521	301541812	YC56234		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 522	301392881	YC56235		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 523	301356832	YC56236		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 524	301391478	YC56237		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 525	301360646	YC56238		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 526	301495674	YC56239		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 527	301495673	YC56240		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 528	301464865	YC56241		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 529	301389488	YC56242		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 53	301427518	YC48184		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 530	301325166	YC56243		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 531	301492294	YC56244		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 532	301386881	YC56245		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 533	301445396	YC56246		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 534	301489063	YC56247		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 535	301512411	YC56248		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 536	301545865	YC56249		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 537	301545863	YC56250		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 538	301343684	YC56251		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 539	301582319	YC56252		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 54	301418200	YC48185		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 540	301365554	YC56253		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 541	301437614	YC56254		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 542	301341015	YC56255		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 543	301430964	YC56256		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 544	301549583	YC56257		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Alex 545	301359969	YC56258		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 546	301399033	YC56259		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 547	301399035	YC56260		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 548	301437009	YC56261		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 549	301379590	YC56262		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 55	301306449	YC48186		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 550	301400083	YC56263		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 551	301487573	YC56264		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 552	301510547	YC56265		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 553	301308476	YC56266		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	22/06/2007	22/12/2019
Alex 554	301387824	YC56267		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 556	301573649	YC56268		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 558	301322104	YC56269		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 56	301365929	YC48187		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 560	301322094	YC56270		Alexco Keno Hill Mining Corp. - 100%	22/06/2007	22/06/2007	22/12/2019
Alex 562	301420708	YC56271		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	22/06/2007	22/12/2019
Alex 564	301442770	YC56272		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	22/06/2007	22/12/2019
Alex 565	301427349	YC56273		Alexco Keno Hill Mining Corp. - 100%	10/06/2007	13/06/2007	13/12/2019
Alex 57	301416541	YC48188		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 58	301471301	YC48189		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 59	301471300	YC48190		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 6	301483564	YC48137		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 60	301385242	YC48191		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 601	301366499	YC56874		Alexco Keno Hill Mining Corp. - 100%	14/07/2007	24/07/2007	31/12/2016
Alex 602	301515774	YC56875		Alexco Keno Hill Mining Corp. - 100%	14/07/2007	24/07/2007	31/12/2016
Alex 603	301310894	YC56876		Alexco Keno Hill Mining Corp. - 100%	14/07/2007	24/07/2007	31/12/2016
Alex 604	301419750	YC56877		Alexco Keno Hill Mining Corp. - 100%	14/07/2007	24/07/2007	31/12/2016
Alex 605	301593789	YC56878		Alexco Keno Hill Mining Corp. - 100%	14/07/2007	24/07/2007	31/12/2016
Alex 606	301461362	YC56879		Alexco Keno Hill Mining Corp. - 100%	14/07/2007	24/07/2007	31/12/2016
Alex 61	301420296	YC48192		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 62	301336387	YC48193		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 63	301394570	YC48194		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 64	301576551	YC48195		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 65	301353779	YC48196		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 66	301541186	YC48197		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 67	301585483	YC48198		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 68	301551889	YC48199		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 69	301471302	YC48200		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 7	301553022	YC48138		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 70	301385244	YC48201		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 71	301420297	YC48202		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 72	301336384	YC48203		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 73	301394569	YC48204		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 74	301576552	YC48205		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 75	301353780	YC48206		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 76	301541185	YC48207		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 77	301585486	YC48208		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 78	301551888	YC48209		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 79	301551890	YC48210		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 8	301364142	YC48139		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 80	301377257	YC48211		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 81	301296086	YC48212		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 82	301434923	YC48213		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 83	301408499	YC48214		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 84	301568052	YC48215		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 85	301416469	YC48216		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 86	301593952	YC48217		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 87	301473673	YC48218		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 88	301356680	YC48219		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 89	301356679	YC48220		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 9	301364140	YC48140		Alexco Keno Hill Mining Corp. - 100%	20/05/2006	02/06/2006	31/12/2019
Alex 90	301483395	YC48221		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 91	301396181	YC48222		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 92	301545716	YC48223		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 93	301450552	YC48224		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 94	301424094	YC48225		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 95	301363148	YC48226		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 96	301426341	YC48227		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Alex 97	301483143	YC48228		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 98	301400925	YC48229		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
Alex 99	301400927	YC48230		Alexco Keno Hill Mining Corp. - 100%	22/05/2006	22/05/2006	31/12/2020
ALICE	301293450	55573	NM00276	Elsa Reclamation & Development Company Ltd. - 100%	25/10/1946	17/02/1947	18/04/2024
ALICE	301492958	59013	NM00070	Elsa Reclamation & Development Company Ltd. - 100%	28/08/1948	01/09/1948	08/08/2021
ALICE 1	301370765	62317	NM00470	Elsa Reclamation & Development Company Ltd. - 100%	25/07/1953	05/08/1953	26/11/2025
ALICE 2	301431044	62318	NM00471	Elsa Reclamation & Development Company Ltd. - 100%	25/07/1953	05/08/1953	26/11/2025
ALLA 4	301485411	YB29727		Elsa Reclamation & Development Company Ltd. - 100%	15/03/1993	19/03/1993	31/12/2021
ALLA 5	301506932	YB29728		Elsa Reclamation & Development Company Ltd. - 100%	16/03/1993	19/03/1993	31/12/2021
ALLA 6	301377164	YB29729		Elsa Reclamation & Development Company Ltd. - 100%	16/03/1993	19/03/1993	31/12/2021
ANDY	301297778	81223	NM00651	Elsa Reclamation & Development Company Ltd. - 100%	21/06/1962	26/06/1962	12/03/2031
ANEROID	301507869	13108	NM00058	Elsa Reclamation & Development Company Ltd. - 100%	27/04/1920	10/06/1920	18/07/2021
ANTHONY	301354042	12909	NM00642	Elsa Reclamation & Development Company Ltd. - 100%	13/10/1919	17/12/1919	24/03/2030
APEX FR.	301405479	56443	OM00022	Elsa Reclamation & Development Company Ltd. - 100%	11/07/1947	15/07/1947	15/12/2017
APOLLO	301392671	55476	OM00014	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1946	23/01/1947	15/12/2017
ARCTIC	301532178	14089	4088	Elsa Reclamation & Development Company Ltd. - 100%	03/05/1921	26/07/1921	19/12/2014
ARDELLE	301303309	16589	NM00351	Elsa Reclamation & Development Company Ltd. - 100%	12/06/1925	23/07/1925	30/03/2025
ARETHUSA	301423641	55474	OM00016	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1946	23/01/1947	15/12/2017
ARGENTUM	301296081	16393	NM00174	Nora Ethel Swenson - 50%, Elsa Reclamation & Development Company Ltd. - 50%	02/02/1928	25/02/1928	16/11/2022
ARIZONA	301409963	16561	4126	Elsa Reclamation & Development Company Ltd. - 100%	02/06/1925	30/06/1925	27/01/2016
ARNOLD	301309921	14225	NM00134	Elsa Reclamation & Development Company Ltd. - 100%	18/07/1921	24/09/1921	07/05/2022
ARTEMIS	301416698	55475	OM00015	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1946	23/01/1947	15/12/2017
ASTORIA	301311681	38819	NM00163	Elsa Reclamation & Development Company Ltd. - 100%	28/10/1934	19/11/1934	12/06/2022
ATLANTIC	301552570	14998	4094	Elsa Reclamation & Development Company Ltd. - 100%	18/06/1924	14/07/1924	29/01/2015
AUGUST	301506607	38687	OM00036	Elsa Reclamation & Development Company Ltd. - 100%	13/08/1930	16/09/1930	18/08/2018
B & H	301470817	62200	NM00370	Elsa Reclamation & Development Company Ltd. - 100%	25/07/1952	04/08/1952	30/04/2025
BALTO	301421831	55429	NM00533	Alexco Keno Hill Mining Corp. - 100%	25/05/1946	06/06/1946	02/11/2027
BANKER	301406372	59373	NM00195	Elsa Reclamation & Development Company Ltd. - 100%	28/07/1949	29/07/1949	16/06/2023
BANKER 1	301368511	59374	NM00196	Elsa Reclamation & Development Company Ltd. - 100%	28/07/1949	29/07/1949	16/06/2023
BANKER 2	301417726	59375	NM00197	Elsa Reclamation & Development Company Ltd. - 100%	28/07/1949	29/07/1949	16/06/2023
BANKER 3	301464972	59376	NM00198	Elsa Reclamation & Development Company Ltd. - 100%	28/07/1949	29/07/1949	16/06/2023
Barb One	301356592	YB43712		Elsa Reclamation & Development Company Ltd. - 100%	12/10/1994	12/10/1994	31/12/2020
BARKER Jr	301340915	14446	NM00061	Elsa Reclamation & Development Company Ltd. - 100%	13/10/1921	01/12/1921	24/07/2021
BARKY	301546608	55569	NM00014	Elsa Reclamation & Development Company Ltd. - 100%	24/10/1946	17/02/1947	27/07/2019
BEAR	301523038	15306	NM00097	Elsa Reclamation & Development Company Ltd. - 100%	27/10/1928	29/11/1928	26/08/2021
BEE	301436712	55048	NM00109	Elsa Reclamation & Development Company Ltd. - 100%	01/10/1937	29/10/1937	28/08/2021
BELL YORK	301471863	14826		Elsa Reclamation & Development Company Ltd. - 100%	04/06/1923	09/07/1923	31/12/2017
BEN	301462927	59518	NM00005	Elsa Reclamation & Development Company Ltd. - 100%	01/11/1949	01/11/1949	27/07/2019
BERRHOME	301494248	59474	NM00098	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1949	03/09/1949	26/08/2021
BERRMAC 1	301562605	59121	NM00138	Elsa Reclamation & Development Company Ltd. - 100%	04/11/1948	10/11/1948	07/05/2022
BERRMAC 2	301341070	59122	NM00139	Elsa Reclamation & Development Company Ltd. - 100%	04/11/1948	10/11/1948	07/05/2022
BERRMAC 3	301371334	59123	NM00140	Elsa Reclamation & Development Company Ltd. - 100%	04/11/1948	10/11/1948	07/05/2022
BERRMAC 4	301472704	59124	NM00141	Elsa Reclamation & Development Company Ltd. - 100%	04/11/1948	10/11/1948	07/05/2022
BERRNAT	301398777	59476	NM00143	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1949	03/09/1949	07/05/2022
BES	301441783	56533	NM00436	Elsa Reclamation & Development Company Ltd. - 100%	09/06/1948	23/06/1948	26/11/2025
BETS	301363768	59342	NM00018	Elsa Reclamation & Development Company Ltd. - 100%	14/07/1949	19/07/1949	27/07/2019
BETTY	301481399	56524	NM00062	Elsa Reclamation & Development Company Ltd. - 100%	05/06/1948	11/06/1948	24/07/2021
BILLYS	301370973	38831	NM00164	Elsa Reclamation & Development Company Ltd. - 100%	25/04/1935	15/05/1935	12/06/2022
BINGO	301477894	55371	NM00365	Elsa Reclamation & Development Company Ltd. - 100%	20/07/1945	25/10/1945	30/04/2025
BIRMINGHAM	301310522	14084	4096	Elsa Reclamation & Development Company Ltd. - 100%	03/05/1921	25/07/1921	15/01/2015
BLACK CAP	301316283	12869	NM00175	Elsa Reclamation & Development Company Ltd. - 100%	27/09/1919	12/11/1919	19/11/2022
BLACK MAGGIE	301465651	13480	4161	Elsa Reclamation & Development Company Ltd. - 100%	13/08/1920	13/10/1920	03/09/2016
BLOOD	301310888	62272	NM00344	Elsa Reclamation & Development Company Ltd. - 100%	13/09/1952	17/09/1952	15/02/2025
Blue	301295084	YC01993		Alexco Exploration Canada Corp. - 100%	09/09/1999	10/09/1999	31/12/2017
BLUE BELL	301353476	13143	NM00617	Elsa Reclamation & Development Company Ltd. - 100%	07/05/1920	16/06/1920	31/01/2030
BLUE BIRD	301569229	59160	NM00015	Elsa Reclamation & Development Company Ltd. - 100%	11/11/1948	22/11/1948	27/07/2019
BLUE FOX 10	301416424	59366	NM00209	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	20/07/2023
BLUE FOX 2	301377372	59343	NM00202	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	27/07/2023
BLUE FOX 3	301363053	59359	NM00201	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	27/07/2023
BLUE FOX 4	301363054	59360	NM00203	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	20/07/2023
BLUE FOX 5	301551598	59361	NM00204	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	20/07/2023
BLUE FOX 6	301513722	59362	NM00205	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	20/07/2023
BLUE FOX 7	301347490	59363	NM00206	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	20/07/2023
BLUE FOX 8	301362720	59364	NM00207	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	20/07/2023
BLUE FOX 9	301496174	59365	NM00208	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	20/07/2023
Blue Fr. 2	301320061	YC90545		Alexco Exploration Canada Corp. - 100%	17/09/2011	20/09/2011	31/12/2016
Blue Fr. 3	301492119	YC90546		Alexco Exploration Canada Corp. - 100%	17/09/2011	20/09/2011	31/12/2016

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
BLUE ROCK	301303615	13122	NM00044	Elsa Reclamation & Development Company Ltd. - 100%	28/04/1920	12/06/1920	14/11/2020
BLUE STONE	301478360	13151	NM00636	Elsa Reclamation & Development Company Ltd. - 100%	07/05/1920	16/06/1920	31/12/2029
BLUE-FOX 1	301320168	59351	NM00210	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	27/07/2023
BOB	301317841	59543	NM00189	Elsa Reclamation & Development Company Ltd. - 100%	14/04/1950	01/05/1950	09/02/2023
BOB	301469174	55394		Elsa Reclamation & Development Company Ltd. - 100%	07/02/1946	05/03/1946	31/12/2017
BOBBIE 10	301506665	59494	NM00192	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	12/02/2023
BOBBIE 2	301549441	59486	NM00456	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
BOBBIE 3	301340745	59487	NM00457	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
BOBBIE 4	301480163	59488	NM00458	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
BOBBIE 7	301359405	59491	NM00190	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	12/02/2023
BOBBIE 9	301404292	59493	NM00191	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	12/02/2023
BOKA	301476454	55365	NM00275	Elsa Reclamation & Development Company Ltd. - 100%	08/07/1945	25/10/1945	18/04/2024
BOYLE	301367376	59026	NM00064	Elsa Reclamation & Development Company Ltd. - 100%	11/09/1948	13/09/1948	24/07/2021
BOYLE	301495251	15250	NM00063	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1928	06/08/1928	24/07/2021
BRIDGETTE	301495253	15249	NM00242	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1928	06/08/1928	28/02/2024
BRISTOL	301469791	59316	NM00287	Elsa Reclamation & Development Company Ltd. - 100%	11/07/1949	19/07/1949	27/06/2024
BRITANNIA	301378057	12988	NM00274	Elsa Reclamation & Development Company Ltd. - 100%	10/03/1920	09/04/1920	18/04/2024
BUCK	301357367	62152	NM00319	Elsa Reclamation & Development Company Ltd. - 100%	14/06/1952	02/07/1952	01/02/2025
BUCKEYE	301370540	59041	NM00171	Elsa Reclamation & Development Company Ltd. - 100%	20/09/1948	21/09/1948	12/06/2022
BUCKO	301568363	59795	NM00572	Elsa Reclamation & Development Company Ltd. - 100%	29/09/1950	02/10/1950	02/11/2027
BUCONJO 1	301416752	55504	NM00302	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1946	01/02/1947	31/01/2025
BUCONJO 10	301548045	55513	NM00311	Elsa Reclamation & Development Company Ltd. - 100%	15/09/1946	03/02/1947	31/01/2025
BUCONJO 11	301495692	55514	NM00312	Elsa Reclamation & Development Company Ltd. - 100%	15/09/1946	03/02/1947	31/01/2025
BUCONJO 12	301299426	55515	NM00313	Elsa Reclamation & Development Company Ltd. - 100%	19/09/1946	03/02/1947	31/01/2025
BUCONJO 13	301395565	55516	NM00314	Elsa Reclamation & Development Company Ltd. - 100%	19/09/1946	03/02/1947	31/01/2025
BUCONJO 14	301537659	55517	NM00315	Elsa Reclamation & Development Company Ltd. - 100%	24/09/1946	03/02/1947	31/01/2025
BUCONJO 15	301422752	55518	NM00316	Elsa Reclamation & Development Company Ltd. - 100%	19/09/1946	03/02/1947	31/01/2025
BUCONJO 16	301561188	62154	NM00317	Elsa Reclamation & Development Company Ltd. - 100%	16/06/1952	02/07/1952	31/01/2025
BUCONJO 2	301295001	55505	NM00303	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1946	01/02/1947	31/01/2025
BUCONJO 3	301462291	55506	NM00304	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1946	01/02/1947	31/01/2025
BUCONJO 4	301363770	55507	NM00305	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1946	01/02/1947	31/01/2025
BUCONJO 5	301449201	55508	NM00306	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1946	01/02/1947	31/01/2025
BUCONJO 6	301485512	55509	NM00307	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1946	01/02/1947	31/01/2025
BUCONJO 7	301485510	55510	NM00308	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1904	01/02/1947	31/01/2025
BUCONJO 8	301549642	55511	NM00309	Elsa Reclamation & Development Company Ltd. - 100%	15/09/1946	03/02/1947	31/01/2025
BUCONJO 9	301511468	55512	NM00310	Elsa Reclamation & Development Company Ltd. - 100%	15/09/1946	03/02/1947	31/01/2025
BUCONJO FRACTIO	301297467	55503	NM00301	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1946	01/02/1947	31/01/2025
BUDDY	301295904	14884	NM00065	Elsa Reclamation & Development Company Ltd. - 100%	02/09/1923	22/10/1923	24/07/2021
BULL FROG	301337568	13454	4261	Elsa Reclamation & Development Company Ltd. - 100%	29/07/1920	02/10/1920	30/03/2017
Bulldozer 1	301478939	YA39498		Elsa Reclamation & Development Company Ltd. - 100%	03/04/1979	04/04/1979	31/12/2021
BULLDOZER F 2	301311688	YC90503		Alexco Exploration Canada Corp. - 100%	26/08/2012	27/08/2012	31/12/2021
Bunk	301439879	83133	NM00656	Elsa Reclamation & Development Company Ltd. - 100%	12/08/1963	13/08/1963	12/03/2031
BUNKER	301470384	59534	NM00543	Alexco Keno Hill Mining Corp. - 100%	18/03/1950	01/04/1950	02/11/2027
BUNKER NO. 1	301566195	59535	NM00544	Alexco Keno Hill Mining Corp. - 100%	18/03/1950	01/04/1950	02/11/2027
BUNNY	301429339	13058	NM00035	Elsa Reclamation & Development Company Ltd. - 100%	03/04/1920	11/05/1920	25/04/2020
BUNNY	301489518	16166	NM00084	Elsa Reclamation & Development Company Ltd. - 100%	08/06/1926	12/07/1926	20/08/2021
BUNT	301317574	59542	NM00186	Elsa Reclamation & Development Company Ltd. - 100%	14/04/1950	01/05/1950	09/02/2023
BUSH	301550442	14445	NM00099	Elsa Reclamation & Development Company Ltd. - 100%	11/10/1921	01/12/1921	26/08/2021
CACHI 1	301322042	59420	NM00100	Elsa Reclamation & Development Company Ltd. - 100%	27/07/1949	10/08/1949	26/08/2021
CACHI 2	301320921	59421	NM00101	Elsa Reclamation & Development Company Ltd. - 100%	27/07/1949	10/08/1949	26/08/2021
CACHI 3	301319191	59422	NM00102	Elsa Reclamation & Development Company Ltd. - 100%	27/07/1949	10/08/1949	26/08/2021
CAIN	301456212	55587	NM00294	Alexco Keno Hill Mining Corp. - 100%	08/10/1946	28/03/1947	23/02/2025
CAKE	301515955	62341	NM00288	Elsa Reclamation & Development Company Ltd. - 100%	11/11/1953	20/11/1953	27/06/2024
CALF	301355065	62282	NM00280	Elsa Reclamation & Development Company Ltd. - 100%	21/09/1952	02/10/1952	18/04/2024
CALUMET 1	301491524	13114	NM00290	Elsa Reclamation & Development Company Ltd. - 100%	27/04/1920	11/06/1920	15/08/2024
CALUMET 2	301341510	15319	NM00243	Elsa Reclamation & Development Company Ltd. - 100%	01/03/1929	27/03/1929	28/02/2024
CAMARRILA	301593289	59249	NM00268	Elsa Reclamation & Development Company Ltd. - 100%	28/05/1949	31/05/1949	18/01/2024
CAMEO	301366749	59248	NM00267	Elsa Reclamation & Development Company Ltd. - 100%	28/05/1949	31/05/1949	18/01/2024
CAMOROTE	301540294	13175	NM00666	Elsa Reclamation & Development Company Ltd. - 100%	05/05/1920	19/06/1920	31/10/2033
CANADA	301469698	55484	NM00135	Elsa Reclamation & Development Company Ltd. - 100%	26/08/1946	24/01/1947	07/05/2022
CANADIAN	301313566	12970	NM00041	Elsa Reclamation & Development Company Ltd. - 100%	19/09/1919	04/03/1920	14/08/2020
CAPSTAN	301593290	59250	NM00269	Elsa Reclamation & Development Company Ltd. - 100%	28/05/1949	31/05/1949	18/01/2024
CARIBOU	301584734	12878	NM00021	Elsa Reclamation & Development Company Ltd. - 100%	06/09/1919	26/11/1919	14/09/2019
Carol	301533659	81152		Alexco Keno Hill Mining Corp. - 100%	29/05/1962	04/06/1962	31/12/2019
Carol 1	301493768	80239		Alexco Keno Hill Mining Corp. - 100%	08/10/1957	16/10/1957	31/12/2019
Carol 2	301493766	80240		Alexco Keno Hill Mining Corp. - 100%	08/10/1957	16/10/1957	31/12/2019
Carol 3	301532633	80241		Alexco Keno Hill Mining Corp. - 100%	08/10/1957	16/10/1957	31/12/2019
Carol 4	301553430	80242		Alexco Keno Hill Mining Corp. - 100%	08/10/1957	16/10/1957	31/12/2019

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Carol 5	301548858	80348		Alexco Keno Hill Mining Corp. - 100%	26/06/1959	02/07/1959	31/12/2019
Case 1	301427365	Y 68414		Elsa Reclamation & Development Company Ltd. - 100%	03/08/1972	17/08/1972	31/12/2020
Case 2	301587203	Y 68415		Elsa Reclamation & Development Company Ltd. - 100%	03/08/1972	17/08/1972	31/12/2020
Case 3	301358711	Y 68416		Elsa Reclamation & Development Company Ltd. - 100%	07/08/1972	17/08/1972	31/12/2020
CAT	301562313	62236	NM00403	Elsa Reclamation & Development Company Ltd. - 100%	25/08/1952	27/08/1952	12/06/2025
CATHY	301415454	81226	NM00653	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1962	26/06/1962	12/03/2031
CATHY FRACTION	301549208	83012	NM00594	Elsa Reclamation & Development Company Ltd. - 100%	29/06/1963	09/07/1963	02/11/2027
CHANCE	301292670	38779	NM00665	Elsa Reclamation & Development Company Ltd. - 100%	29/03/1934	18/04/1934	17/06/2033
CHANCE	301575827	55120	OM00020	Elsa Reclamation & Development Company Ltd. - 100%	05/11/1938	28/11/1938	15/12/2017
CHARITY	301402158	59796	NM00573	Elsa Reclamation & Development Company Ltd. - 100%	29/09/1950	02/10/1950	02/11/2027
CHIEF	301441641	13089	OM00039	Elsa Reclamation & Development Company Ltd. - 100%	16/04/1920	08/06/1920	18/08/2018
CHIEF 2	301378056	13088	OM00038	Elsa Reclamation & Development Company Ltd. - 100%	16/04/1920	08/06/1920	18/08/2018
CHIEF 3	301485129	13092	NM00103	Elsa Reclamation & Development Company Ltd. - 100%	18/04/1920	08/06/1920	26/08/2021
CHIEF 4	301509937	13093	NM00627	Elsa Reclamation & Development Company Ltd. - 100%	18/04/1920	09/06/1920	06/12/2029
Chiko 1	301540633	YC02670		Alexco Keno Hill Mining Corp. - 100%	12/10/2000	27/10/2000	31/12/2018
Chiko 10	301457003	YC02679		Alexco Keno Hill Mining Corp. - 100%	14/10/2000	27/10/2000	31/12/2018
Chiko 2	301535189	YC02671		Alexco Keno Hill Mining Corp. - 100%	12/10/2000	27/10/2000	31/12/2018
Chiko 3	301494909	YC02672		Alexco Keno Hill Mining Corp. - 100%	12/10/2000	27/10/2000	31/12/2018
Chiko 4	301463080	YC02673		Alexco Keno Hill Mining Corp. - 100%	12/10/2000	27/10/2000	31/12/2018
Chiko 5	301308862	YC02674		Alexco Keno Hill Mining Corp. - 100%	12/10/2000	27/10/2000	31/12/2018
Chiko 6	301439320	YC02675		Alexco Keno Hill Mining Corp. - 100%	12/10/2000	27/10/2000	31/12/2018
Chiko 7	301413480	YC02676		Alexco Keno Hill Mining Corp. - 100%	14/10/2000	27/10/2000	31/12/2018
Chiko 8	301361259	YC02677		Alexco Keno Hill Mining Corp. - 100%	14/10/2000	27/10/2000	31/12/2018
Chiko Fr. 9	301394927	YC02678		Alexco Keno Hill Mining Corp. - 100%	14/10/2000	27/10/2000	31/12/2018
CITY	301321397	62284	NM00467	Elsa Reclamation & Development Company Ltd. - 100%	27/09/1952	02/10/1952	26/11/2025
CLIMBEAGLE	301345408	59475	NM00104	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1949	03/09/1949	26/08/2021
CLIMBER	301538880	59120	NM00105	Elsa Reclamation & Development Company Ltd. - 100%	04/11/1948	10/11/1948	26/08/2021
CLOSURE	301566811	80358	NM00580	Elsa Reclamation & Development Company Ltd. - 100%	09/07/1959	21/07/1959	02/11/2027
COMPLEX	301438221	55421	NM00023	Elsa Reclamation & Development Company Ltd. - 100%	25/05/1946	16/08/1946	28/08/2019
CON	301396075	62153	NM00320	Elsa Reclamation & Development Company Ltd. - 100%	14/06/1952	02/07/1952	01/02/2025
CORA	301327616	55480	NM00031	Elsa Reclamation & Development Company Ltd. - 100%	26/08/1946	24/01/1947	11/02/2020
CORA	301578106	56473	NM00601	Elsa Reclamation & Development Company Ltd. - 100%	11/08/1947	25/08/1947	22/07/2028
CORA 2	301401195	56574	NM00162	Elsa Reclamation & Development Company Ltd. - 100%	09/07/1948	21/07/1948	02/06/2022
CORA Fr 2	301536926	59765	NM00055	Elsa Reclamation & Development Company Ltd. - 100%	23/09/1950	27/09/1950	17/06/2021
CORAL	301347307	14094	NM00363	Elsa Reclamation & Development Company Ltd. - 100%	04/05/1921	26/07/1921	30/04/2025
CROESUS	301390769	55420	NM00564	Elsa Reclamation & Development Company Ltd. - 100%	22/05/1946	27/05/1946	02/11/2027
CUB	301575416	13418	NM00372	Elsa Reclamation & Development Company Ltd. - 100%	26/07/1920	25/09/1920	10/05/2025
D.C.	301457641	59005	NM00509	Elsa Reclamation & Development Company Ltd. - 100%	11/08/1948	26/08/1948	01/11/2026
DAISY FRACTION	301307131	59645	NM00545	Alexco Keno Hill Mining Corp. - 100%	15/07/1950	22/07/1950	02/11/2027
DARWIN	301516147	14883	4091	Elsa Reclamation & Development Company Ltd. - 100%	16/09/1923	18/10/1923	28/01/2015
DAVID	301410790	16097	NM00531	Alexco Keno Hill Mining Corp. - 100%	14/11/1925	08/12/1925	02/11/2027
DAWSON	301587609	62367	NM00472	Elsa Reclamation & Development Company Ltd. - 100%	19/06/1954	21/06/1954	26/11/2025
DE CHUCK	301544131	59367	NM00176	Elsa Reclamation & Development Company Ltd. - 100%	21/07/1949	25/07/1949	19/11/2022
DELIA	301389044	55315	NM00046	Elsa Reclamation & Development Company Ltd. - 100%	22/09/1944	19/02/1945	14/11/2020
DENTON	301506148	59253	NM00270	Elsa Reclamation & Development Company Ltd. - 100%	01/06/1949	03/06/1949	18/01/2024
DENVER	301485213	14846	4086	Elsa Reclamation & Development Company Ltd. - 100%	17/07/1923	11/08/1923	14/10/2014
DEVON	301406304	55577	NM00277	Elsa Reclamation & Development Company Ltd. - 100%	19/09/1946	20/03/1947	18/04/2024
Dice 1	301391229	YA40163		Elsa Reclamation & Development Company Ltd. - 100%	14/06/1979	29/06/1979	29/12/2018
Dice 11	301366865	YA40173		Elsa Reclamation & Development Company Ltd. - 100%	15/06/1979	29/06/1979	29/12/2018
Dice 12	301321292	YA40174		Elsa Reclamation & Development Company Ltd. - 100%	15/06/1979	29/06/1979	29/12/2018
Dice 13	301513251	YA40175		Elsa Reclamation & Development Company Ltd. - 100%	15/06/1979	29/06/1979	29/12/2018
Dice 14	301453869	YA40176		Elsa Reclamation & Development Company Ltd. - 100%	15/06/1979	29/06/1979	29/12/2018
Dice 2	301542163	YA40164		Elsa Reclamation & Development Company Ltd. - 100%	14/06/1979	29/06/1979	29/12/2018
Dice 3	301372727	YA40165		Elsa Reclamation & Development Company Ltd. - 100%	14/06/1979	29/06/1979	29/12/2018
Dice 4	301425666	YA40166		Elsa Reclamation & Development Company Ltd. - 100%	14/06/1979	29/06/1979	29/12/2018
Dice 5	301578502	YA40167		Elsa Reclamation & Development Company Ltd. - 100%	14/06/1979	29/06/1979	29/12/2018
Dice 6	301398402	YA40168		Elsa Reclamation & Development Company Ltd. - 100%	14/06/1979	29/06/1979	29/12/2018
Dice 7	301505626	YA40169		Elsa Reclamation & Development Company Ltd. - 100%	14/06/1979	29/06/1979	29/12/2018
Dice 8	301505627	YA40170		Elsa Reclamation & Development Company Ltd. - 100%	14/06/1979	29/06/1979	29/12/2018
Dice 9	301466043	YA40171		Elsa Reclamation & Development Company Ltd. - 100%	15/06/1979	29/06/1979	29/12/2018
DIVIDE	301333402	55362	NM00430	Elsa Reclamation & Development Company Ltd. - 100%	08/07/1945	25/10/1945	26/11/2025
DIVORCE	301387999	62283	NM00466	Elsa Reclamation & Development Company Ltd. - 100%	21/09/1952	02/10/1952	26/11/2025
DIXIE	301379835	14903	4110	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1923	21/11/1923	07/10/2015
DIXIE	301536650	55585	NM00567	Elsa Reclamation & Development Company Ltd. - 100%	10/11/1946	20/03/1947	02/11/2027
DOE	301380081	55333	OM00018	Elsa Reclamation & Development Company Ltd. - 100%	23/05/1945	16/10/1945	15/12/2017
Doh Fr.	301325277	YC57134		Alexco Exploration Canada Corp. - 100%	04/08/2007	21/08/2007	31/12/2018
Dolly Varden	301298885	14228	4254	Elsa Reclamation & Development Company Ltd. - 100%	24/07/1921	24/09/1921	15/02/2017
DON FRACTION	301376886	61599	NM00550	Alexco Keno Hill Mining Corp. - 100%	23/05/1951	25/05/1951	02/11/2027

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
DON FRACTION	301520449	61733	NM00397	Elsa Reclamation & Development Company Ltd. - 100%	07/07/1951	19/07/1951	12/06/2025
DONNIE	301418995	16497	NM00669	Elsa Reclamation & Development Company Ltd. - 100%	20/07/1924	28/08/1924	24/11/2033
DONNIE	301590453	15393	NM00559	Elsa Reclamation & Development Company Ltd. - 100%	17/07/1929	26/08/1929	02/11/2027
DORA	301544534	59692	NM00200	Alexco Keno Hill Mining Corp. - 100%	11/09/1950	19/09/1950	29/07/2023
DOT	301465224	61021	NM00574	Elsa Reclamation & Development Company Ltd. - 100%	26/10/1950	27/10/1950	02/11/2027
DOUBT	301557333	62294	NM00404	Elsa Reclamation & Development Company Ltd. - 100%	04/10/1952	11/10/1952	12/06/2025
DOUG 1	301541557	YB28942		Alexco Keno Hill Mining Corp. - 100%	31/08/1992	04/09/1992	31/12/2024
DOUG 2	301353289	YB28943		Alexco Keno Hill Mining Corp. - 100%	31/08/1992	04/09/1992	31/12/2024
DOUG 3	301526566	YB28944		Alexco Keno Hill Mining Corp. - 100%	31/08/1992	04/09/1992	31/12/2024
DOUG 4	301510736	YB28945		Alexco Keno Hill Mining Corp. - 100%	31/08/1992	04/09/1992	31/12/2024
Doug 5	301362307	YB28998		Alexco Keno Hill Mining Corp. - 100%	10/09/1992	25/09/1992	31/12/2024
Doug 6	301526947	YB28999		Alexco Keno Hill Mining Corp. - 100%	10/09/1992	25/09/1992	31/12/2024
Doug 7	301456954	YB29000		Alexco Keno Hill Mining Corp. - 100%	10/09/1992	25/09/1992	31/12/2024
Doug 8	301296328	YB29001		Alexco Keno Hill Mining Corp. - 100%	10/09/1992	25/09/1992	31/12/2024
DOUG 9	301505702	YB29395		Alexco Keno Hill Mining Corp. - 100%	18/11/1992	18/11/1992	31/12/2024
DOUGLAS	301305128	55440	NM00431	Elsa Reclamation & Development Company Ltd. - 100%	01/07/1946	06/07/1946	26/11/2025
DRAKE	301364478	62268	NM00340	Elsa Reclamation & Development Company Ltd. - 100%	13/09/1952	17/09/1952	15/02/2025
DREADNAUGHT	301445577	14223	NM00071	Elsa Reclamation & Development Company Ltd. - 100%	17/07/1921	24/09/1921	08/08/2021
DUCE	301400920	62271	NM00343	Elsa Reclamation & Development Company Ltd. - 100%	13/09/1952	17/09/1952	15/02/2025
DUDE	301505862	59932	NM00548	Alexco Keno Hill Mining Corp. - 100%	05/10/1950	11/10/1950	02/11/2027
DUNCAN 1	301591441	59468	NM00367	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	30/04/2025
DUNCAN 2	301380076	59469	NM00368	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	30/04/2025
DUNCAN 3	301380077	59470	NM00369	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	30/04/2025
Duncan Fr. 4	301541674	YC90504		Alexco Exploration Canada Corp. - 100%	13/09/2013	13/09/2013	13/09/2014
DUPLEX	301485511	55499	NM00026	Elsa Reclamation & Development Company Ltd. - 100%	12/09/1946	01/02/1947	12/10/2019
EAGLE	301449451	16588	NM00350	Elsa Reclamation & Development Company Ltd. - 100%	12/06/1925	23/07/1925	30/03/2025
EDBO	301376500	61908	NM00462	Elsa Reclamation & Development Company Ltd. - 100%	07/08/1951	22/08/1951	26/11/2025
EDBO 2	301495553	61909	NM00463	Elsa Reclamation & Development Company Ltd. - 100%	07/08/1951	22/08/1951	26/11/2025
EDITH-CAVELL 1	301313881	59478	NM00449	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
EDITH-CAVELL 2	301519817	59479	NM00450	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
EDITH-CAVELL 3	301519816	59480	NM00451	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
EDITH-CAVELL 4	301484434	59481	NM00452	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
EDITH-CAVELL 5	301462029	59482	NM00453	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
EDITH-CAVELL 6	301326274	59483	NM00454	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
EDITH-CAVELL 7	301479985	59484	NM00455	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2025
EDITH-CAVELL 8	301348893	59485	NM00597	Elsa Reclamation & Development Company Ltd. - 100%	03/09/1949	06/09/1949	26/11/2027
EDITH-CAVELL 9	301473758	59670	NM00386	Elsa Reclamation & Development Company Ltd. - 100%	05/08/1950	16/08/1950	22/05/2025
EFFIE	301333785	16496	NM00085	Elsa Reclamation & Development Company Ltd. - 100%	04/08/1924	28/08/1924	20/08/2021
EILEEN	301445383	56591	NM00355	Elsa Reclamation & Development Company Ltd. - 100%	19/08/1948	20/08/1948	30/03/2025
EILEEN	301576492	59754	NM00020	Elsa Reclamation & Development Company Ltd. - 100%	24/09/1950	26/09/1950	27/07/2019
ELI	301426300	55319	NM00563	Elsa Reclamation & Development Company Ltd. - 100%	12/10/1944	19/02/1945	02/11/2027
ELI 2	301322040	59419	NM00570	Elsa Reclamation & Development Company Ltd. - 100%	20/07/1949	08/08/1949	02/11/2027
ELINOR 1	301426422	59296	NM00072	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1949	30/06/1949	08/08/2021
ELINOR 2	301541936	59302	NM00073	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1949	30/06/1949	08/08/2021
ELINOR 3	301391049	59297	NM00074	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1949	30/06/1949	08/08/2021
ELINOR 4	301570062	59298	NM00075	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1949	30/06/1949	08/08/2021
ELSA	301299394	16523	4262	Elsa Reclamation & Development Company Ltd. - 100%	13/09/1924	11/10/1924	12/05/2017
ELSIE FRACTIONA	301406194	13169	OM00027	Elsa Reclamation & Development Company Ltd. - 100%	11/05/1920	18/06/1920	08/01/2018
ENDYMION	301487238	55473	OM00017	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1946	23/01/1947	15/12/2017
ERICA	301332649	62247	NM00465	Elsa Reclamation & Development Company Ltd. - 100%	04/09/1952	05/09/1952	26/11/2025
ETHEL	301467842	38737	NM00066	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1932	11/04/1932	24/07/2021
ETTA	301362753	14169	4089	Elsa Reclamation & Development Company Ltd. - 100%	10/07/1921	14/09/1921	19/12/2014
EUREKA	301302141	14327	OM00025	Elsa Reclamation & Development Company Ltd. - 100%	21/08/1921	11/10/1921	15/12/2017
EUREKA	301447521	12877	NM00038	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1919	26/11/1919	20/08/2020
EVY	301384457	59519	NM00542	Alexco Keno Hill Mining Corp. - 100%	24/11/1949	30/11/1949	02/11/2027
EVY	301523202	61916	NM00554	Alexco Keno Hill Mining Corp. - 100%	16/08/1951	29/08/1951	02/11/2027
EXTENSION	301510102	16087	OM00024	Elsa Reclamation & Development Company Ltd. - 100%	19/10/1925	24/11/1925	15/12/2017
EXTENSION	301494998	16026	NM00348	Elsa Reclamation & Development Company Ltd. - 100%	29/07/1925	31/08/1925	30/03/2025
FAIR FRACTION	301535012	62944	NM00474	Elsa Reclamation & Development Company Ltd. - 100%	30/12/1955	06/01/1956	26/11/2025
FALLOT	301573308	61725	NM00525	Elsa Reclamation & Development Company Ltd. - 100%	09/07/1951	16/07/1951	01/11/2026
FALLS 1	301497752	59437	NM00510	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FALLS 10	301322328	59446	NM00519	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FALLS 11	301433203	59447	NM00520	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	01/11/2026
FALLS 12	301486341	59448	NM00521	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	01/11/2026
FALLS 13	301323075	59449	NM00522	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	01/11/2026
FALLS 14	301323076	59450	NM00523	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	01/11/2026
FALLS 15	301464426	59451	NM00524	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	01/11/2026
FALLS 16	301332260	59452	NM00384	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	22/05/2025

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
FALLS 2	301434897	59438	NM00511	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FALLS 3	301538691	59439	NM00512	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FALLS 4	301538693	59440	NM00513	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FALLS 5	301340515	59441	NM00514	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FALLS 6	301517704	59442	NM00515	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FALLS 7	301489600	59443	NM00516	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FALLS 8	301574878	59444	NM00517	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FALLS 9	301516342	59445	NM00518	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	01/11/2026
FIG TREE	301490900	14085	4098	Elsa Reclamation & Development Company Ltd. - 100%	03/05/1921	25/07/1921	08/01/2015
FILL	301437188	80347	NM00578	Elsa Reclamation & Development Company Ltd. - 100%	03/06/1959	10/06/1959	02/11/2027
FILTER FRACTION	301346341	62826	NM00289	Elsa Reclamation & Development Company Ltd. - 100%	16/06/1955	23/06/1955	27/06/2024
FINAL	301410303	80359	NM00581	Elsa Reclamation & Development Company Ltd. - 100%	09/07/1959	21/07/1959	02/11/2027
FISHER	301317985	12876	NM00022	Elsa Reclamation & Development Company Ltd. - 100%	02/09/1919	26/11/1919	14/09/2019
FLAME	301437244	38643	4175	Elsa Reclamation & Development Company Ltd. - 100%	13/10/1929	13/11/1929	29/11/2016
FLY FRACTION	301336917	55527	NM00377	Elsa Reclamation & Development Company Ltd. - 100%	18/09/1946	04/02/1947	22/05/2025
FORAKER FRACTIO	301316285	12870	OM00009	Elsa Reclamation & Development Company Ltd. - 100%	01/10/1919	13/11/1919	27/12/2017
FOREST	301294812	13412		Elsa Reclamation & Development Company Ltd. - 100%	24/07/1920	24/09/1920	31/12/2017
FOX	301293424	61877	NM00553	Alexco Keno Hill Mining Corp. - 100%	13/08/1951	15/08/1951	02/11/2027
FOX	301354432	55592	NM00539	Alexco Keno Hill Mining Corp. - 100%	12/10/1946	28/03/1947	02/11/2027
FOX	301327865	12845	NM00056	Elsa Reclamation & Development Company Ltd. - 100%	04/09/1919	28/10/1919	11/03/2021
FRANCES 3	301495109	55599	NM00261	Elsa Reclamation & Development Company Ltd. - 100%	29/03/1947	18/04/1947	09/01/2024
FRANCES 4	301459553	55600	NM00262	Elsa Reclamation & Development Company Ltd. - 100%	29/03/1947	18/04/1947	09/01/2024
FRANCES 5	301548439	56401	NM00263	Elsa Reclamation & Development Company Ltd. - 100%	29/03/1947	18/04/1947	09/01/2024
FRANCES 6	301576807	56402	NM00264	Elsa Reclamation & Development Company Ltd. - 100%	29/03/1947	18/04/1947	09/01/2024
FRANCES 7	301389553	56403	NM00265	Elsa Reclamation & Development Company Ltd. - 100%	29/03/1947	18/04/1947	09/01/2024
FRANCES 8	301366525	56404	NM00266	Elsa Reclamation & Development Company Ltd. - 100%	29/03/1947	18/04/1947	09/01/2024
FRANK	301582502	14220	NM00076	Elsa Reclamation & Development Company Ltd. - 100%	17/07/1921	24/09/1921	08/08/2021
FRIENDSHIP	301314692	13152	4066	Elsa Reclamation & Development Company Ltd. - 100%	07/05/1920	16/06/1920	30/01/2014
FROG	301554103	55317	NM00132	Elsa Reclamation & Development Company Ltd. - 100%	11/10/1944	19/02/1945	03/02/2022
FRONTIER	301370329	59125	OM00041	Elsa Reclamation & Development Company Ltd. - 100%	11/11/1948	13/11/1948	06/01/2019
GAIL FRACTION	301500122	80517	NM00584	Elsa Reclamation & Development Company Ltd. - 100%	19/07/1960	04/08/1960	02/11/2027
Galaxy	301353338	Y 69403		Elsa Reclamation & Development Company Ltd. - 100%	22/05/1973	05/06/1973	31/12/2017
Galena	301425124	YA77506		Elsa Reclamation & Development Company Ltd. - 100%	06/06/1984	13/06/1984	31/12/2018
GALENA FARM	301467013	13032	NM00193	Elsa Reclamation & Development Company Ltd. - 100%	04/03/1920	06/05/1920	22/03/2023
GALENA HILL	301409803	38812	4071	Elsa Reclamation & Development Company Ltd. - 100%	03/10/1934	12/11/1934	14/04/2014
GIBRALTAR	301578840	14816	NM00106	Elsa Reclamation & Development Company Ltd. - 100%	28/02/1923	13/04/1923	26/08/2021
GLORIA FRACTION	301335782	84616	OM00003	Elsa Reclamation & Development Company Ltd. - 100%	06/08/1965	24/08/1965	08/10/2017
GNAT	301335916	80361	NM00583	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1959	22/07/1959	02/11/2027
GOPHER	301302929	55386	NM00050	Elsa Reclamation & Development Company Ltd. - 100%	09/08/1945	26/10/1945	14/11/2020
GRACE	301302892	59821	NM00460	Elsa Reclamation & Development Company Ltd. - 100%	01/10/1950	02/10/1950	26/11/2025
GREEN BACK	301344316	15304	4256	Elsa Reclamation & Development Company Ltd. - 100%	04/10/1928	27/11/1928	13/03/2017
GREENSTONE	301422777	14336	NM00649	Elsa Reclamation & Development Company Ltd. - 100%	24/08/1921	19/10/1921	28/05/2030
GRETA	301458463	55593	NM00540	Alexco Keno Hill Mining Corp. - 100%	16/10/1946	28/03/1947	02/11/2027
GROUND HOG	301344346	12817	NM00273	Elsa Reclamation & Development Company Ltd. - 100%	04/09/1919	20/10/1919	18/04/2024
GROUSE	301311037	61600	NM00551	Alexco Keno Hill Mining Corp. - 100%	13/05/1951	25/05/1951	02/11/2027
GRUB STAKE	301435443	15305	NM00086	Elsa Reclamation & Development Company Ltd. - 100%	10/10/1928	27/11/1928	20/08/2021
HAP	301520629	80357	NM00579	Elsa Reclamation & Development Company Ltd. - 100%	09/07/1959	21/07/1959	02/11/2027
HAPPY	301515572	10269	NM00011	Elsa Reclamation & Development Company Ltd. - 100%	05/07/1936	22/07/1936	27/07/2019
HARDIX	301400072	59315	NM00087	Elsa Reclamation & Development Company Ltd. - 100%	25/06/1949	13/07/1949	20/08/2021
HARDWICK	301468168	55177	NM00364	Elsa Reclamation & Development Company Ltd. - 100%	08/10/1940	19/12/1940	30/04/2025
HARRIETT	301460571	56525	NM00353	Elsa Reclamation & Development Company Ltd. - 100%	12/06/1948	14/06/1948	30/03/2025
HAVLOCK	301401979	59030	NM00137	Elsa Reclamation & Development Company Ltd. - 100%	13/09/1948	17/09/1948	07/05/2022
HAWKS NEST	301377738	16025	NM00668	Elsa Reclamation & Development Company Ltd. - 100%	28/07/1925	31/08/1925	24/11/2033
HAY	301591715	55428	NM00054	Elsa Reclamation & Development Company Ltd. - 100%	02/06/1946	19/08/1946	14/11/2020
HECLA	301297834	55582	NM00565	Elsa Reclamation & Development Company Ltd. - 100%	24/10/1946	20/03/1947	02/11/2027
HECTOR	301357708	16326	NM00663	Elsa Reclamation & Development Company Ltd. - 100%	09/05/1927	30/05/1927	17/06/2033
HELEN	301324349	14908	NM00425	Elsa Reclamation & Development Company Ltd. - 100%	01/11/1923	27/11/1923	26/11/2025
HELEN	301409870	55364	OM00007	Elsa Reclamation & Development Company Ltd. - 100%	08/07/1945	25/10/1945	01/11/2017
HENRY	301312442	55318	NM00429	Elsa Reclamation & Development Company Ltd. - 100%	11/10/1944	19/02/1945	26/11/2025
HESPERIDES	301515565	55478	OM00012	Elsa Reclamation & Development Company Ltd. - 100%	31/08/1946	24/01/1947	15/12/2017
HIGHLANDER	301357146	13072	NM00034	Elsa Reclamation & Development Company Ltd. - 100%	03/04/1920	04/06/1920	25/04/2020
HILL	301423463	56506	4160	Elsa Reclamation & Development Company Ltd. - 100%	21/11/1947	28/11/1947	23/05/2016
HOBO	301511640	56577	NM00067	Elsa Reclamation & Development Company Ltd. - 100%	19/07/1948	03/08/1948	24/07/2021
HOBO	301521442	38720	NM00248	Elsa Reclamation & Development Company Ltd. - 100%	04/07/1931	24/07/1931	28/02/2024
HOBO 3	301560377	61209	NM00387	Elsa Reclamation & Development Company Ltd. - 100%	04/12/1950	18/12/1950	22/05/2025
Hoito 1	301360986	YC02323		Alexco Keno Hill Mining Corp. - 100%	11/12/1999	29/12/1999	29/12/2022
Hoito 2	301434561	YC02324		Alexco Keno Hill Mining Corp. - 100%	11/12/1999	29/12/1999	29/12/2022
Hoito 3	301364057	YC02325		Alexco Keno Hill Mining Corp. - 100%	12/12/1999	29/12/1999	29/12/2022

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Hoito 4	301392994	YC02326		Alexco Keno Hill Mining Corp. - 100%	12/12/1999	29/12/1999	29/12/2022
Hoito 5	301433603	YC02327		Alexco Keno Hill Mining Corp. - 100%	12/12/1999	29/12/1999	29/12/2022
Hoito 6	301539408	YC02328		Alexco Keno Hill Mining Corp. - 100%	12/12/1999	29/12/1999	29/12/2022
Hoito 7	301590016	YC02329		Alexco Keno Hill Mining Corp. - 100%	12/12/1999	29/12/1999	29/12/2022
Hoito 8	301590017	YC02330		Alexco Keno Hill Mining Corp. - 100%	12/12/1999	29/12/1999	29/12/2022
HOLIDAY 1	301484331	56592	NM00225	Elsa Reclamation & Development Company Ltd. - 100%	15/08/1948	23/08/1948	22/08/2023
HOLIDAY 10	301391439	56600	NM00232	Elsa Reclamation & Development Company Ltd. - 100%	14/08/1948	23/08/1948	22/08/2023
HOLIDAY 11	301329791	59001	NM00233	Elsa Reclamation & Development Company Ltd. - 100%	14/08/1948	23/08/1948	22/08/2023
HOLIDAY 12	301379049	59002	NM00234	Elsa Reclamation & Development Company Ltd. - 100%	14/08/1948	23/08/1948	22/08/2023
HOLIDAY 13	301433987	59003	NM00235	Elsa Reclamation & Development Company Ltd. - 100%	14/08/1948	23/08/1948	22/08/2023
HOLIDAY 14	301503644	59004	NM00236	Elsa Reclamation & Development Company Ltd. - 100%	14/08/1948	23/08/1948	22/08/2023
HOLIDAY 2	301430648	56593	NM00226	Elsa Reclamation & Development Company Ltd. - 100%	15/08/1948	23/08/1948	22/08/2023
HOLIDAY 3	301561037	56594	NM00227	Elsa Reclamation & Development Company Ltd. - 100%	12/08/1948	23/08/1948	22/08/2023
HOLIDAY 4	301455809	56595	NM00228	Elsa Reclamation & Development Company Ltd. - 100%	12/08/1948	23/08/1948	22/08/2023
HOLIDAY 7	301392939	56597	NM00229	Elsa Reclamation & Development Company Ltd. - 100%	12/08/1948	23/08/1948	22/08/2023
HOLIDAY 8	301445842	56598	NM00230	Elsa Reclamation & Development Company Ltd. - 100%	12/08/1948	23/08/1948	22/08/2023
HOLIDAY 9	301375501	56599	NM00231	Elsa Reclamation & Development Company Ltd. - 100%	14/08/1948	23/08/1948	22/08/2023
HOMESTAKE	301390869	13133	4114	Elsa Reclamation & Development Company Ltd. - 100%	29/04/1920	15/06/1920	27/02/2015
HONEYMOON 1	301488457	59171	NM00279	Elsa Reclamation & Development Company Ltd. - 100%	16/01/1949	25/01/1949	18/04/2024
HONEYMOON 2	301509539	59172	NM00379	Elsa Reclamation & Development Company Ltd. - 100%	16/01/1949	25/01/1949	22/05/2025
HONEYMOON 3	301504071	59173	NM00380	Elsa Reclamation & Development Company Ltd. - 100%	16/01/1949	25/01/1949	22/05/2025
HONEYMOON 4	301468851	59174	NM00381	Elsa Reclamation & Development Company Ltd. - 100%	16/01/1949	25/01/1949	22/05/2025
HONEYMOON 5	301450456	59175	NM00382	Elsa Reclamation & Development Company Ltd. - 100%	16/01/1949	25/01/1949	22/05/2025
HONEYMOON 6	301573853	59176	NM00383	Elsa Reclamation & Development Company Ltd. - 100%	16/01/1949	25/01/1949	22/05/2025
HOPE	301338283	55377	NM00366	Elsa Reclamation & Development Company Ltd. - 100%	04/08/1945	26/10/1945	30/04/2025
HORSESHOE	301459555	55589	NM00296	Alexco Keno Hill Mining Corp. - 100%	08/10/1946	28/03/1947	23/02/2025
HUB	301301073	55273	NM00298	Elsa Reclamation & Development Company Ltd. - 100%	21/10/1943	27/05/1944	30/01/2025
HUSKY	301566930	55536	NM00212	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	12/02/1947	10/08/2023
HUSKY 1	301385950	55537	NM00213	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	12/02/1947	10/08/2023
HUSKY 12	301464666	56576	NM00224	Elsa Reclamation & Development Company Ltd. - 100%	19/07/1948	21/07/1948	10/08/2023
HUSKY 2	301498725	55538	NM00214	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	12/02/1947	10/08/2023
HUSKY 3	301315734	55539	NM00215	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	22/10/1946	10/08/2023
HUSKY 4	301315737	55540	NM00216	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	22/10/1946	10/08/2023
HUSKY 5	301565497	55541	NM00217	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	22/10/1946	10/08/2023
HUSKY 6	301365599	55542	NM00218	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	22/10/1946	10/08/2023
HUSKY 7	301471674	55543	NM00219	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	22/10/1946	10/08/2023
HUSKY 8	301559284	55544	NM00220	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	12/02/1947	10/08/2023
HUSKY 9	301454744	55545	NM00221	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1946	22/10/1946	10/08/2023
HUXLEY	301371597	14087	4097	Elsa Reclamation & Development Company Ltd. - 100%	03/05/1921	26/07/1921	20/01/2015
IDOL	301327617	55479	NM00602	Elsa Reclamation & Development Company Ltd. - 100%	26/08/1946	24/01/1947	22/07/2029
IKWOGGY	301555545	16554	NM00247	Elsa Reclamation & Development Company Ltd. - 100%	29/05/1925	15/06/1925	28/02/2024
INCA	301566127	59385	NM00272	Elsa Reclamation & Development Company Ltd. - 100%	23/07/1949	29/07/1949	18/01/2024
INCA FRACTION	301500003	80346	NM00577	Elsa Reclamation & Development Company Ltd. - 100%	23/04/1959	30/04/1959	02/11/2027
INDIANA	301541537	56567	NM00169	Elsa Reclamation & Development Company Ltd. - 100%	26/06/1948	28/06/1948	12/06/2022
IRENE	301314732	55326	NM00373	Elsa Reclamation & Development Company Ltd. - 100%	06/04/1945	16/10/1945	22/05/2025
IVAN	301401952	13799		Elsa Reclamation & Development Company Ltd. - 100%	12/05/1921	23/06/1921	31/12/2017
IVY	301481801	12810	NM00394	Elsa Reclamation & Development Company Ltd. - 100%	23/08/1919	14/10/1919	12/06/2025
JACK	301479649	61744	NM00398	Elsa Reclamation & Development Company Ltd. - 100%	14/07/1951	20/07/1951	12/06/2025
JARRET 1	301446175	YB29440		Alexco Keno Hill Mining Corp. - 100%	18/12/1992	18/12/1992	31/12/2024
Jarret 2	301360648	YC01768		Alexco Keno Hill Mining Corp. - 100%	24/04/1999	30/04/1999	31/12/2021
JAY	301594353	55427	NM00053	Elsa Reclamation & Development Company Ltd. - 100%	01/06/1946	19/08/1946	14/11/2020
JEAN	301351724	16524	4263	Elsa Reclamation & Development Company Ltd. - 100%	12/09/1924	11/10/1924	19/05/2017
JEAN	301481802	12809	NM00393	Elsa Reclamation & Development Company Ltd. - 100%	23/08/1919	10/10/1919	12/06/2025
JEAN FRACTIONAL	301309263	84626	OM00005	Elsa Reclamation & Development Company Ltd. - 100%	20/08/1965	26/08/1965	08/10/2017
JEFFREY SPECIAL	301344314	15294	NM00180	Elsa Reclamation & Development Company Ltd. - 100%	06/09/1928	28/09/1928	02/02/2023
JEFFY FRACTION	301366632	81139	NM00587	Elsa Reclamation & Development Company Ltd. - 100%	29/05/1962	31/05/1962	02/11/2027
JENBET	301486840	55581	NM00133	Elsa Reclamation & Development Company Ltd. - 100%	24/10/1946	20/03/1947	03/02/2022
JENNY 3	301423902	83532	NM00624	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1964	17/07/1964	28/02/2030
JENNY FRACTION	301501519	81228	NM00588	Elsa Reclamation & Development Company Ltd. - 100%	13/06/1962	28/06/1962	02/11/2027
JENNY TOO FRACT	301455740	83003	NM00590	Elsa Reclamation & Development Company Ltd. - 100%	05/06/1963	12/06/1963	02/11/2027
JESSIE	301504268	38694	4075	Elsa Reclamation & Development Company Ltd. - 100%	26/10/1930	21/11/1930	14/04/2014
JESSIE 1	301411555	59178	NM00237	Elsa Reclamation & Development Company Ltd. - 100%	20/01/1949	25/01/1949	29/08/2023
JESSIE 3	301357159	59180	NM00238	Elsa Reclamation & Development Company Ltd. - 100%	20/01/1949	25/01/1949	29/08/2023
JEWEL	301406575	38744	4073	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1932	21/07/1932	14/04/2014
JIB NO. 2	301489743	61598	NM00549	Alexco Keno Hill Mining Corp. - 100%	16/05/1951	25/05/1951	02/11/2027
JIGGYWIG	301337751	15366	NM00008	Elsa Reclamation & Development Company Ltd. - 100%	09/06/1929	18/07/1929	27/07/2019
JIMMIE	301360369	55330	NM00047	Elsa Reclamation & Development Company Ltd. - 100%	01/05/1945	16/10/1945	14/11/2020
JOCK	301483959	38715	NM00664	Elsa Reclamation & Development Company Ltd. - 100%	03/05/1931	20/05/1931	17/06/2033

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Joe 2	301532523	84489		Alexco Keno Hill Mining Corp. - 100%	28/05/1965	02/06/1965	31/12/2019
Joe No. 1	301513612	80453		Alexco Keno Hill Mining Corp. - 100%	18/07/1960	27/05/1960	31/12/2019
JOY FRACTION	301556160	61919	NM00399	Elsa Reclamation & Development Company Ltd. - 100%	30/08/1951	31/08/1951	12/06/2025
Joyce	301300840	82531	NM00655	Elsa Reclamation & Development Company Ltd. - 100%	05/03/1963	12/03/1963	12/03/2031
JUMBO	301403790	14880	NM00107	Elsa Reclamation & Development Company Ltd. - 100%	29/09/1923	17/10/1923	26/08/2021
JUNE	301412252	62992	NM00614	Elsa Reclamation & Development Company Ltd. - 100%	24/06/1956	11/07/1956	21/08/2029
JUNE	301410754	59274	OM00008	Elsa Reclamation & Development Company Ltd. - 100%	12/06/1949	22/06/1949	01/11/2017
K 1	301331956	YC42549		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2020
K 10	301472500	YC42558		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 100	301479976	YC56127		Alexco Keno Hill Mining Corp. - 100%	15/06/2007	15/06/2007	31/12/2020
K 101	301389826	YC56128		Alexco Keno Hill Mining Corp. - 100%	15/06/2007	15/06/2007	31/12/2020
K 102	301588932	YC56129		Alexco Keno Hill Mining Corp. - 100%	15/06/2007	15/06/2007	31/12/2024
K 103	301382261	YC56155		Alexco Keno Hill Mining Corp. - 100%	21/06/2007	22/06/2007	31/12/2017
K 104	301310094	YC56156		Alexco Keno Hill Mining Corp. - 100%	21/06/2007	22/06/2007	31/12/2017
K 105	301586979	YC56157		Alexco Keno Hill Mining Corp. - 100%	21/06/2007	22/06/2007	31/12/2017
K 106	301522288	YC56158		Alexco Keno Hill Mining Corp. - 100%	21/06/2007	22/06/2007	31/12/2017
K 107	301361388	YC56159		Alexco Keno Hill Mining Corp. - 100%	21/06/2007	22/06/2007	31/12/2017
K 11	301399736	YC42559		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 12	301399737	YC42560		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 13	301470862	YC42561		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 14	301423169	YC42562		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 15	301411886	YC42563		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 16	301309433	YC42564		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 17	301575479	YC42565		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 18	301548725	YC42566		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 19	301588008	YC42567		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 2	301331955	YC42550		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2020
K 20	301537099	YC42568		Alexco Keno Hill Mining Corp. - 100%	29/11/2005	15/12/2005	15/12/2020
K 21	301474190	YC42569		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 22	301474191	YC42570		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 23	301438699	YC42571		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 24	301299183	YC42572		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 25	301565113	YC42573		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 26	301306374	YC42574		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 27	301510972	YC42575		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	15/12/2021
K 28	301498476	YC42576		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	15/12/2021
K 29	301434977	YC42577		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	15/12/2021
K 3	301537431	YC42551		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2020
K 30	301394754	YC42578		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	15/12/2021
K 31	301358540	YC42579		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	15/12/2021
K 32	301358541	YC42580		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	15/12/2021
K 33	301553489	YC42581		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 34	301448908	YC42582		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 35	301315517	YC42583		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	01/12/2005	31/12/2020
K 36	301492961	YC42584		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	01/12/2005	31/12/2020
K 37	301373022	YC42585		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	01/12/2005	31/12/2020
K 38	301546634	YC42586		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	01/12/2005	31/12/2020
K 39	301411341	YC42587		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 4	301395322	YC42552		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2020
K 40	301306602	YC42588		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 41	301569252	YC42589		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	15/12/2016
K 42	301569250	YC42590		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	15/12/2016
K 43	301506820	YC42591		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2016
K 44	301334319	YC42592		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2016
K 45	301477140	YC42593		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2016
K 46	301443874	YC42594		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2016
K 47	301543106	YC42595		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2016
K 48	301342030	YC42596		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2016
K 49	301374516	YC42597		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	03/12/2005	31/12/2016
K 5	301588244	YC42553		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2020
K 50	301477536	YC42598		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	15/12/2016
K 51	301577349	YC42599		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	15/12/2005	31/12/2016
K 52	301569251	YC42600		Alexco Keno Hill Mining Corp. - 100%	03/12/2005	03/12/2005	03/12/2016
K 53	301506821	YC42601		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	05/12/2005	31/12/2017
K 54	301334320	YC42602		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2017
K 55	301477139	YC42603		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2017
K 56	301443873	YC42604		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2017
K 57	301543105	YC42605		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2018

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
K 58	301342031	YC42606		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2018
K 59	301374517	YC42607		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2018
K 6	301561832	YC42554		Alexco Keno Hill Mining Corp. - 100%	04/12/2005	15/12/2005	15/12/2020
K 60	301477537	YC42608		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2018
K 61	301577347	YC42609		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2020
K 62	301577348	YC42610		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2020
K 63	301553488	YC42611		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 64	301344704	YC42612		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 65	301351071	YC42613		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 66	301462591	YC42614		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 67	301392669	YC42615		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 68	301557335	YC42616		Alexco Keno Hill Mining Corp. - 100%	01/12/2005	15/12/2005	15/12/2020
K 69	301336742	YC42617		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2020
K 7	301545646	YC42555		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 70	301349325	YC42618		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2020
K 71	301568982	YC42619		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2020
K 72	301568983	YC42620		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2020
K 73	301327089	YC42621		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2020
K 74	301432598	YC42622		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2020
K 75	301479702	YC42623		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2020
K 76	301359491	YC42624		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2020
k 77	301434316	YC42625		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2020
k 78	301379645	YC42626		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2020
K 79	301474659	YC42627		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2017
K 8	301315648	YC42556		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 80	301593004	YC42628		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2017
K 81	301403674	YC42629		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2017
K 82	301403671	YC42630		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2017
K 83	301548654	YC42631		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2017
K 84	301582464	YC42632		Alexco Keno Hill Mining Corp. - 100%	02/12/2005	15/12/2005	15/12/2017
K 85	301428960	YC42633		Alexco Keno Hill Mining Corp. - 100%	05/12/2005	15/12/2005	15/12/2018
K 87	301321194	YC55953		Alexco Keno Hill Mining Corp. - 100%	26/05/2007	28/05/2007	31/12/2020
K 88	301387401	YC56115		Alexco Keno Hill Mining Corp. - 100%	13/06/2007	13/06/2007	31/12/2017
K 89	301333767	YC56116		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	13/06/2007	31/12/2020
K 9	301562690	YC42557		Alexco Keno Hill Mining Corp. - 100%	30/11/2005	15/12/2005	15/12/2020
K 90	301305604	YC56117		Alexco Keno Hill Mining Corp. - 100%	12/06/2007	13/06/2007	31/12/2019
K 91	301462676	YC56118		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	13/06/2007	31/12/2018
K 92	301396907	YC56119		Alexco Keno Hill Mining Corp. - 100%	11/06/2007	13/06/2007	31/12/2018
K 93	301396902	YC56120		Alexco Keno Hill Mining Corp. - 100%	13/06/2007	13/06/2007	31/12/2018
K 94	301427475	YC56121		Alexco Keno Hill Mining Corp. - 100%	13/06/2007	13/06/2007	31/12/2018
K 95	301301352	YC56122		Alexco Keno Hill Mining Corp. - 100%	14/06/2007	15/06/2007	31/12/2018
K 96	301448458	YC56123		Alexco Keno Hill Mining Corp. - 100%	14/06/2007	15/06/2007	31/12/2018
K 97	301397428	YC56124		Alexco Keno Hill Mining Corp. - 100%	14/06/2007	15/06/2007	15/12/2018
K 98	301562195	YC56125		Alexco Keno Hill Mining Corp. - 100%	14/06/2007	15/06/2007	15/12/2018
K 99	301405207	YC56126		Alexco Keno Hill Mining Corp. - 100%	14/06/2007	15/06/2007	15/12/2018
K Fr. 109	301498622	YC90502		Alexco Exploration Canada Corp. - 100%	19/08/2012	10/09/2012	10/09/2018
K Fr. 110	301351640	YC90501		Alexco Exploration Canada Corp. - 100%	19/08/2012	10/09/2012	10/09/2018
K.P.O.	301392030	80345		Elsa Reclamation & Development Company Ltd. - 100%	07/10/1958	14/10/1958	31/12/2020
K.P.O. 1	301315039	80082		Elsa Reclamation & Development Company Ltd. - 100%	05/10/1956	05/10/1956	31/12/2020
K.P.O. 13	301492543	80362		Elsa Reclamation & Development Company Ltd. - 100%	15/07/1959	24/07/1959	31/12/2020
K.P.O. 15	301421507	80364		Elsa Reclamation & Development Company Ltd. - 100%	15/07/1959	24/07/1959	31/12/2020
K.P.O. 17	301355387	80366		Elsa Reclamation & Development Company Ltd. - 100%	15/07/1959	24/07/1959	31/12/2020
K.P.O. 18	301379555	80367		Elsa Reclamation & Development Company Ltd. - 100%	15/07/1959	24/07/1959	31/12/2020
K.P.O. 19	301301907	80368		Elsa Reclamation & Development Company Ltd. - 100%	15/07/1959	24/07/1959	31/12/2020
K.P.O. 2	301314641	80083		Elsa Reclamation & Development Company Ltd. - 100%	05/10/1956	05/10/1956	31/12/2020
K.P.O. 20	301501245	80369		Elsa Reclamation & Development Company Ltd. - 100%	15/07/1959	24/07/1959	31/12/2020
K.P.O. 21	301501247	80370		Elsa Reclamation & Development Company Ltd. - 100%	16/07/1959	24/07/1959	31/12/2020
K.P.O. 23	301439096	80372		Elsa Reclamation & Development Company Ltd. - 100%	16/07/1959	24/07/1959	31/12/2020
K.P.O. 25	301500943	80374		Elsa Reclamation & Development Company Ltd. - 100%	17/07/1959	24/07/1959	31/12/2020
K.P.O. 27	301308850	80376		Elsa Reclamation & Development Company Ltd. - 100%	18/07/1959	24/07/1959	31/12/2020
K.P.O. 29	301378767	80378		Elsa Reclamation & Development Company Ltd. - 100%	19/07/1959	28/07/1959	31/12/2020
K.P.O. 3	301593803	80084		Elsa Reclamation & Development Company Ltd. - 100%	05/10/1956	05/10/1956	31/12/2020
K.P.O. 4	301360044	80085		Elsa Reclamation & Development Company Ltd. - 100%	05/10/1956	05/10/1956	31/12/2020
K108F	301364791	YC69940	NM00641	Alexco Keno Hill Mining Corp. - 100%	02/09/2008	10/09/2008	23/02/2030
KANGAROO FRACTI	301528103	80561	NM00586	Elsa Reclamation & Development Company Ltd. - 100%	18/10/1960	25/10/1960	02/11/2027
KARIN	301375111	62248	NM00526	Elsa Reclamation & Development Company Ltd. - 100%	04/09/1952	05/09/1952	01/11/2026
KARL	301398480	62198	NM00401	Elsa Reclamation & Development Company Ltd. - 100%	21/07/1952	04/08/1952	12/06/2025
KAY R.	301327309	59177	NM00286	Elsa Reclamation & Development Company Ltd. - 100%	19/01/1949	25/01/1949	27/06/2024

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
KAYE	301312253	59336	NM00017	Elsa Reclamation & Development Company Ltd. - 100%	14/07/1949	19/07/1949	27/07/2019
KENO	301387915	55024	OM00035	Elsa Reclamation & Development Company Ltd. - 100%	14/10/1936	30/10/1936	18/08/2018
KENO	301476790	16556	4257	Elsa Reclamation & Development Company Ltd. - 100%	29/05/1925	18/06/1925	21/03/2017
KENO	301497618	12784	NM00622	Elsa Reclamation & Development Company Ltd. - 100%	29/07/1919	10/09/1919	23/02/2030
KENO	301548213	55579	NM00278	Elsa Reclamation & Development Company Ltd. - 100%	19/09/1946	20/03/1947	18/04/2024
KENT	301352597	62295	NM00468	Elsa Reclamation & Development Company Ltd. - 100%	04/10/1952	11/10/1952	26/11/2025
KID	301318601	12812	4109	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1919	16/10/1919	19/10/2015
KID	301470648	62310	NM00469	Elsa Reclamation & Development Company Ltd. - 100%	02/07/1953	15/07/1953	26/11/2025
KIDDO	301490961	13060	NM00024	John Hawthorne - 50%, Elsa Reclamation & Development Company Ltd. - 50%	03/04/1920	11/05/1920	11/11/2019
KIJO	301323848	56419	NM00088	Elsa Reclamation & Development Company Ltd. - 100%	31/05/1947	10/06/1947	20/08/2021
KIM	301569396	15264	NM00346	Elsa Reclamation & Development Company Ltd. - 100%	28/07/1928	10/08/1928	30/03/2025
KING	301568278	62270	NM00342	Elsa Reclamation & Development Company Ltd. - 100%	13/09/1952	17/09/1952	15/02/2025
KING	301568117	12818	NM00660	Elsa Reclamation & Development Company Ltd. - 100%	04/09/1919	20/10/1919	27/09/2031
KLONDIKE	301587435	15323	NM00181	Elsa Reclamation & Development Company Ltd. - 100%	07/03/1929	25/04/1929	02/02/2023
LADUE	301581982	13558	NM00603	Elsa Reclamation & Development Company Ltd. - 100%	11/09/1920	05/11/1920	07/07/2029
LAKE 1	301325287	13225	NM00645	Elsa Reclamation & Development Company Ltd. - 100%	08/06/1920	13/07/1920	27/04/2030
LAKE 2	301452368	13276	NM00646	Elsa Reclamation & Development Company Ltd. - 100%	08/06/1920	25/08/1920	27/04/2030
LAKE 3	301355354	13277	NM00647	Elsa Reclamation & Development Company Ltd. - 100%	08/06/1920	25/08/1920	27/04/2030
Lakehead 10	301463424	YB64191		Alexco Keno Hill Mining Corp. - 100%	27/06/1995	28/06/1995	31/12/2023
Lakehead 11	301478248	YB64194		Alexco Keno Hill Mining Corp. - 100%	29/06/1995	30/06/1995	31/12/2023
Lakehead 12	301511843	YB64195		Alexco Keno Hill Mining Corp. - 100%	29/06/1995	30/06/1995	31/12/2023
Lakehead 13	301343385	YB64196		Alexco Keno Hill Mining Corp. - 100%	29/06/1995	30/06/1995	31/12/2023
Lakehead 3	301562510	YB64192		Alexco Keno Hill Mining Corp. - 100%	29/06/1995	30/06/1995	31/12/2023
Lakehead 4	301553479	YB64193		Alexco Keno Hill Mining Corp. - 100%	29/06/1995	30/06/1995	31/12/2023
Lakehead 5	301459305	YB64186		Alexco Keno Hill Mining Corp. - 100%	27/06/1995	28/06/1995	31/12/2023
Lakehead 6	301395524	YB64187		Alexco Keno Hill Mining Corp. - 100%	27/06/1995	28/06/1995	31/12/2023
Lakehead 7	301338059	YB64188		Alexco Keno Hill Mining Corp. - 100%	27/06/1995	28/06/1995	31/12/2023
Lakehead 8	301372824	YB64189		Alexco Keno Hill Mining Corp. - 100%	27/06/1995	28/06/1995	31/12/2023
Lakehead 9	301372825	YB64190		Alexco Keno Hill Mining Corp. - 100%	27/06/1995	28/06/1995	31/12/2023
LAKOTA	301551900	13222	NM00635	Elsa Reclamation & Development Company Ltd. - 100%	07/06/1920	09/07/1920	31/12/2029
LAMB FRACTION	301396258	62051	NM00400	Elsa Reclamation & Development Company Ltd. - 100%	26/10/1951	07/11/1951	12/06/2025
LAST CHANCE	301348810	12961	NM00028	Elsa Reclamation & Development Company Ltd. - 100%	06/09/1919	26/02/1920	05/02/2020
LE BLANC	301309132	62977	NM00650	Elsa Reclamation & Development Company Ltd. - 100%	10/06/1956	21/06/1956	12/03/2031
Lem 1	301520112	YA17395	NM00638	Alexco Keno Hill Mining Corp. - 100%	04/11/1977	14/11/1977	23/02/2030
Lem 10	301482060	YA17404		Alexco Keno Hill Mining Corp. - 100%	10/11/1977	14/11/1977	31/12/2016
Lem 11	301520114	YA17405		Alexco Keno Hill Mining Corp. - 100%	10/11/1977	14/11/1977	31/12/2016
Lem 2	301568759	YA17396	NM00639	Alexco Keno Hill Mining Corp. - 100%	04/11/1977	14/11/1977	23/02/2030
Lem 3	301343117	YA17397	NM00640	Alexco Keno Hill Mining Corp. - 100%	04/11/1977	14/11/1977	23/02/2030
Lem 4	301514886	YA17398		Alexco Keno Hill Mining Corp. - 100%	04/11/1977	14/11/1977	31/12/2016
Lem 5	301386506	YA17399		Alexco Keno Hill Mining Corp. - 100%	10/11/1977	14/11/1977	31/12/2016
Lem 6	301365888	YA17400		Alexco Keno Hill Mining Corp. - 100%	10/11/1977	14/11/1977	31/12/2016
Lem 7	301556118	YA17401		Alexco Keno Hill Mining Corp. - 100%	10/11/1977	14/11/1977	31/12/2016
Lem 8	301458721	YA17402		Alexco Keno Hill Mining Corp. - 100%	10/11/1977	14/11/1977	31/12/2016
Lem 9	301395640	YA17403		Alexco Keno Hill Mining Corp. - 100%	10/11/1977	14/11/1977	31/12/2016
LEO	301309240	61635		Elsa Reclamation & Development Company Ltd. - 100%	10/06/1951	11/06/1951	31/12/2020
LEO 1	301378141	59710		Elsa Reclamation & Development Company Ltd. - 100%	23/09/1950	26/09/1950	31/12/2020
LEO 10	301532583	59850		Elsa Reclamation & Development Company Ltd. - 100%	27/09/1950	02/10/1950	31/12/2020
LEO 11	301434812	59851		Elsa Reclamation & Development Company Ltd. - 100%	27/09/1950	02/10/1950	31/12/2020
LEO 12	301398057	59852		Elsa Reclamation & Development Company Ltd. - 100%	27/09/1950	02/10/1950	31/12/2020
LEO 13	301401020	59853		Elsa Reclamation & Development Company Ltd. - 100%	27/09/1950	02/10/1950	31/12/2020
LEO 14	301583619	59854		Elsa Reclamation & Development Company Ltd. - 100%	27/09/1950	02/10/1950	31/12/2020
LEO 15	301300247	59855		Elsa Reclamation & Development Company Ltd. - 100%	27/09/1950	02/10/1950	31/12/2020
LEO 16	301536732	59856		Elsa Reclamation & Development Company Ltd. - 100%	27/09/1950	02/10/1950	31/12/2020
LEO 17	301295824	59857		Elsa Reclamation & Development Company Ltd. - 100%	27/09/1950	02/10/1950	31/12/2020
LEO 18	301325259	59941		Elsa Reclamation & Development Company Ltd. - 100%	09/10/1950	12/10/1950	31/12/2020
LEO 19	301542166	59942		Elsa Reclamation & Development Company Ltd. - 100%	09/10/1950	12/10/1950	31/12/2020
LEO 2	301546430	59711		Elsa Reclamation & Development Company Ltd. - 100%	23/09/1950	26/09/1950	31/12/2020
LEO 3	301568138	59712		Elsa Reclamation & Development Company Ltd. - 100%	23/09/1950	26/09/1950	31/12/2020
LEO 4	301575515	59714		Elsa Reclamation & Development Company Ltd. - 100%	23/09/1950	26/09/1950	31/12/2020
LEO 5	301400276	59715		Elsa Reclamation & Development Company Ltd. - 100%	23/09/1950	26/09/1950	31/12/2020
LEO 6	301348859	59716		Elsa Reclamation & Development Company Ltd. - 100%	23/09/1950	26/09/1950	31/12/2020
LEO 7	301491498	59717		Elsa Reclamation & Development Company Ltd. - 100%	23/09/1950	26/09/1950	31/12/2020
LEO 8	301450543	59718		Elsa Reclamation & Development Company Ltd. - 100%	23/09/1950	26/09/1950	31/12/2020
LEO 9	301532581	59849		Elsa Reclamation & Development Company Ltd. - 100%	27/09/1950	02/10/1950	31/12/2020
LILL	301386724	16512	NM00671	Elsa Reclamation & Development Company Ltd. - 100%	14/08/1924	09/09/1924	24/11/2033
LILY	301441246	14222	NM00501	Elsa Reclamation & Development Company Ltd. - 100%	17/07/1921	24/09/1921	31/03/2026
LIME	301385974	55442	NM00284	Elsa Reclamation & Development Company Ltd. - 100%	21/07/1946	30/07/1946	27/06/2024

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
LINK	301453668	15364	4258	Elsa Reclamation & Development Company Ltd. - 100%	07/06/1929	16/07/1929	22/03/2017
LION	301309727	12830	4108	Elsa Reclamation & Development Company Ltd. - 100%	27/08/1919	23/10/1919	24/10/2015
LITE FRACTION	301366024	82289	NM00589	Elsa Reclamation & Development Company Ltd. - 100%	01/08/1962	07/08/1962	02/11/2027
LITTLE CHARLIE	301457304	14229	NM00077	Elsa Reclamation & Development Company Ltd. - 100%	18/08/1921	24/09/1921	08/08/2021
LITTLE FRACTION	301295330	15329	4255	Elsa Reclamation & Development Company Ltd. - 100%	07/04/1929	16/05/1929	08/03/2017
LITTLE GIRL	301473893	55269	NM00045	Elsa Reclamation & Development Company Ltd. - 100%	28/06/1943	09/11/1943	14/11/2020
LIZZIE	301474819	12821	NM00423	Elsa Reclamation & Development Company Ltd. - 100%	07/09/1919	20/10/1919	26/11/2025
LJ 1	301300835	YD63291		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LJ 10	301319137	YD63300		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LJ 11	301492721	YC90548		Alexco Exploration Canada Corp. - 100%	31/08/2011	02/09/2011	31/12/2020
LJ 2	301427214	YD63292		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LJ 3	301390195	YD63293		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LJ 4	301398612	YD63294		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LJ 5	301589297	YD63295		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LJ 6	301458330	YD63296		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LJ 7	301423027	YD63297		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LJ 8	301524657	YD63298		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LJ 9	301537539	YD63299		Alexco Exploration Canada Corp. - 100%	20/12/2010	22/12/2010	22/12/2020
LONE STAR	301476212	12965	NM00030	Elsa Reclamation & Development Company Ltd. - 100%	02/09/1919	01/03/1920	20/02/2020
LOON	301535448	59673	NM00396	Elsa Reclamation & Development Company Ltd. - 100%	07/09/1950	08/09/1950	12/06/2025
LOOS	301393877	56516	NM00321	Elsa Reclamation & Development Company Ltd. - 100%	18/04/1948	21/04/1948	02/02/2025
LORNE	301295002	55495	NM00025	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1946	01/02/1947	12/10/2019
LOTUS	301464988	13019	NM00625	Elsa Reclamation & Development Company Ltd. - 100%	22/02/1920	04/05/1920	25/11/2029
LOUIS 1	301313122	56405	NM00433	Elsa Reclamation & Development Company Ltd. - 100%	29/03/1947	18/04/1947	26/11/2025
LOUIS 2	301416691	56406	NM00596	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1947	18/04/1947	26/11/2027
LOUIS 3	301447938	56407	NM00434	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1947	18/04/1947	26/11/2025
LOUIS 4	301386521	56408	NM00435	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1947	18/04/1947	26/11/2025
LOUISE	301582503	14219	NM00078	Elsa Reclamation & Development Company Ltd. - 100%	17/07/1921	24/09/1921	08/08/2021
LOVIE	301506822	55501	NM00300	Elsa Reclamation & Development Company Ltd. - 100%	15/09/1946	01/02/1947	30/01/2025
LUCKY	301361913	16585	2198	Elsa Reclamation & Development Company Ltd. - 100%	09/06/1925	11/06/1925	29/03/2017
LUCKY QUEEN	301337145	13021	4067	Elsa Reclamation & Development Company Ltd. - 100%	18/02/1920	04/05/1920	17/02/2014
LUCKY STRIKE	301493113	16552	2204	Elsa Reclamation & Development Company Ltd. - 100%	22/05/1925	15/06/1925	14/06/2017
LUNA	301486868	13586	NM00637	Elsa Reclamation & Development Company Ltd. - 100%	09/09/1920	12/11/1920	31/12/2029
M.T.	301324917	38857	NM00632	Elsa Reclamation & Development Company Ltd. - 100%	22/08/1935	01/10/1935	06/12/2029
MABEL	301429773	2201	OM00028	Elsa Reclamation & Development Company Ltd. - 100%	23/02/1913	17/03/1913	15/02/2018
MAGGIE	301377309	14233	NM00659	Elsa Reclamation & Development Company Ltd. - 100%	28/06/1921	24/09/1921	24/09/2031
MAGGIE	301421267	62202	NM00464	Elsa Reclamation & Development Company Ltd. - 100%	31/07/1952	05/08/1952	26/11/2025
MALCOM	301325608	56529	NM00502	Alexco Keno Hill Mining Corp. - 100%	12/06/1948	14/06/1948	28/11/2025
Man	301390098	YC02774		Alexco Exploration Canada Corp. - 100%	09/07/2001	10/07/2001	31/12/2021
MAPLE LEAF	301309725	12829	4111	Elsa Reclamation & Development Company Ltd. - 100%	27/08/1919	23/10/1919	15/10/2015
MARG	301384463	59520	NM00385	Elsa Reclamation & Development Company Ltd. - 100%	10/12/1949	14/12/1949	22/05/2025
MARIE ELENA	301325609	56530	NM00508	Elsa Reclamation & Development Company Ltd. - 100%	11/06/1948	17/06/1948	01/11/2026
MARMOT	301418386	55385	NM00049	Elsa Reclamation & Development Company Ltd. - 100%	09/08/1945	26/10/1945	14/11/2020
MARY	301341625	13787	NM00618	Elsa Reclamation & Development Company Ltd. - 100%	09/05/1921	21/06/1921	31/01/2030
Mary 1	301586489	YB29002		Alexco Keno Hill Mining Corp. - 100%	10/09/1902	25/09/1992	31/12/2023
Mary 2	301332792	YB29003		Alexco Keno Hill Mining Corp. - 100%	10/09/1992	25/09/1992	31/12/2023
Mary 3	301425041	YB29004		Alexco Keno Hill Mining Corp. - 100%	10/09/1902	25/09/1992	31/12/2027
Mary 4	301317968	YB29005		Alexco Keno Hill Mining Corp. - 100%	10/09/1902	25/09/1992	31/12/2027
MARY 6	301350479	YB29394		Alexco Keno Hill Mining Corp. - 100%	18/11/1992	18/11/1992	31/12/2023
Mary A 0	301493240	YC10995		Alexco Keno Hill Mining Corp. - 100%	19/08/2003	02/09/2003	31/12/2020
Mary B 0	301507472	YC10996		Alexco Keno Hill Mining Corp. - 100%	19/08/2003	02/09/2003	31/12/2020
MARY L.	301572037	59014	NM00136	Elsa Reclamation & Development Company Ltd. - 100%	28/08/1948	01/09/1948	07/05/2022
MASTIFF	301309485	14168	4087	Elsa Reclamation & Development Company Ltd. - 100%	10/07/1921	14/09/1921	14/11/2014
MATHOLE	301586453	12937	4163	Elsa Reclamation & Development Company Ltd. - 100%	12/10/1919	03/01/1920	07/09/2016
MATTAGAMI	301425730	59255	NM00271	Elsa Reclamation & Development Company Ltd. - 100%	01/06/1949	03/06/1949	18/01/2024
MAY	301380868	38748	4162	Elsa Reclamation & Development Company Ltd. - 100%	25/07/1932	15/08/1932	03/09/2016
MAYO	301363771	55497	NM00027	Elsa Reclamation & Development Company Ltd. - 100%	12/09/1946	01/02/1947	12/10/2019
MAYO	301432182	56573	NM00438	Elsa Reclamation & Development Company Ltd. - 100%	22/06/1948	12/07/1948	26/11/2025
MAYO	301464993	12919	4113	Elsa Reclamation & Development Company Ltd. - 100%	09/09/1919	22/12/1919	21/12/2015
McCARTHY FRACTI	301412802	38619	OM00026	Elsa Reclamation & Development Company Ltd. - 100%	15/08/1929	19/09/1929	08/01/2018
METEOR	301446787	62131	NM00006	Elsa Reclamation & Development Company Ltd. - 100%	15/06/1952	16/06/1952	27/07/2019
MIDWAY	301410073	14088	4090	Elsa Reclamation & Development Company Ltd. - 100%	03/05/1921	26/07/1921	30/12/2014
MIKE	301391438	56590	NM00568	Elsa Reclamation & Development Company Ltd. - 100%	12/08/1948	18/08/1948	02/11/2027
MIKE	301546083	59764	NM00571	Elsa Reclamation & Development Company Ltd. - 100%	21/09/1950	26/09/1950	02/11/2027
MINERVA	301302900	16571	4134	Elsa Reclamation & Development Company Ltd. - 100%	29/05/1925	07/07/1925	22/03/2016
MINERVA JR.	301350260	16040	4135	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1925	23/09/1925	14/04/2016
MINK FRACTION	301419795	62837	NM00406	Elsa Reclamation & Development Company Ltd. - 100%	26/07/1955	03/08/1955	12/06/2025
MINTO	301303624	12814	NM00633	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1919	17/08/1919	16/12/2029

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
MINTO 2	301464989	12920	NM00424	Elsa Reclamation & Development Company Ltd. - 100%	10/09/1919	22/12/1919	26/11/2025
MIRAMICHI	301577055	12879	NM00039	Elsa Reclamation & Development Company Ltd. - 100%	30/08/1919	26/09/1919	16/09/2020
Mo	301337001	81227	NM00654	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1962	26/06/1962	12/03/2031
MOHAWK	301305447	15236	4136	Elsa Reclamation & Development Company Ltd. - 100%	16/05/1928	13/06/1928	20/04/2016
Mom 1	301381194	YC32221		Alexco Exploration Canada Corp. - 100%	19/08/2004	23/08/2004	31/12/2018
Mom 2	301504668	YC32222		Alexco Exploration Canada Corp. - 100%	19/08/2004	23/08/2004	31/12/2018
Mom 3	301380433	YC32223		Alexco Exploration Canada Corp. - 100%	19/08/2004	23/08/2004	31/12/2018
Mom 4	301513745	YC32224		Alexco Exploration Canada Corp. - 100%	19/08/2004	23/08/2004	31/12/2018
Mom 5	301424926	YC32225		Alexco Exploration Canada Corp. - 100%	17/08/2004	23/08/2004	31/12/2018
Mom 6	301537438	YC32226		Alexco Exploration Canada Corp. - 100%	17/08/2004	23/08/2004	31/12/2018
Mom 7	301382522	YC32227		Alexco Exploration Canada Corp. - 100%	18/08/2004	23/08/2004	31/12/2018
Mom 8	301352333	YC32228		Alexco Exploration Canada Corp. - 100%	18/08/2004	23/08/2004	31/12/2018
MONARCH	301531786	55443	NM00432	Elsa Reclamation & Development Company Ltd. - 100%	22/07/1946	26/08/1946	26/11/2025
MONOPLY	301413533	16568	NM00672	Elsa Reclamation & Development Company Ltd. - 100%	28/05/1925	07/07/1925	24/11/2033
MONTE CARLO	301365377	16569	NM00673	Elsa Reclamation & Development Company Ltd. - 100%	05/06/1925	07/07/1925	24/11/2033
MONTY	301524415	55312	NM00165	Elsa Reclamation & Development Company Ltd. - 100%	24/07/1944	13/02/1945	12/06/2022
MOOSE	301382751	12819	NM00037	Elsa Reclamation & Development Company Ltd. - 100%	02/09/1919	20/10/1919	21/08/2020
MORGAN	301451849	62267	NM00339	Elsa Reclamation & Development Company Ltd. - 100%	13/09/1952	17/09/1952	15/02/2025
MOSS	301334278	55332	NM00374	Elsa Reclamation & Development Company Ltd. - 100%	22/05/1945	16/10/1945	22/05/2025
MOSSBACK	301325340	62366	NM00358	Elsa Reclamation & Development Company Ltd. - 100%	30/05/1954	08/06/1954	30/03/2025
MOTH	301416581	38642	4176	Elsa Reclamation & Development Company Ltd. - 100%	10/10/1929	13/11/1929	08/12/2016
NABOB	301367229	13025	NM00012	Elsa Reclamation & Development Company Ltd. - 100%	07/03/1920	05/05/1920	27/07/2019
NAETHING	301299840	14990	NM00359	Elsa Reclamation & Development Company Ltd. - 100%	10/06/1924	09/07/1924	12/04/2025
NANCE	301395059	59341	NM00019	Elsa Reclamation & Development Company Ltd. - 100%	14/07/1949	19/07/1949	27/07/2019
NANCY	301578220	15374	NM00427	Elsa Reclamation & Development Company Ltd. - 100%	21/06/1929	24/07/1929	26/11/2025
NAPOLEON	301577057	12880	NM00033	Elsa Reclamation & Development Company Ltd. - 100%	16/09/1919	28/11/1919	13/03/2020
NEIN	301559432	38873	NM00630	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1935	04/12/1935	06/12/2029
NEWLYWED 1	301590619	59169	NM00443	Elsa Reclamation & Development Company Ltd. - 100%	16/01/1949	25/01/1949	26/11/2025
NEWLYWED 2	301590620	59170	NM00444	Elsa Reclamation & Development Company Ltd. - 100%	16/01/1949	25/01/1949	26/11/2025
NIKKA	301591671	55583	NM00566	Elsa Reclamation & Development Company Ltd. - 100%	23/10/1946	20/03/1947	02/11/2027
NIP FRACTION	301396510	83004	NM00591	Elsa Reclamation & Development Company Ltd. - 100%	10/06/1963	12/06/1963	02/11/2027
NM	301330748	62235	NM00576	Elsa Reclamation & Development Company Ltd. - 100%	26/08/1952	27/08/1952	02/11/2027
NO CASH	301470654	16511	NM00670	Elsa Reclamation & Development Company Ltd. - 100%	09/08/1924	09/09/1924	24/11/2033
No name	301522081	YC39585		Alexco Exploration Canada Corp. - 100%	24/08/2005	01/09/2005	31/12/2014
NOD FR.	301534111	16170	OM00023	Elsa Reclamation & Development Company Ltd. - 100%	13/06/1926	13/07/1926	15/12/2017
NOIDER	301359292	38658	NM00504	Elsa Reclamation & Development Company Ltd. - 100%	07/01/1930	27/01/1930	01/11/2026
North F.	301471526	YC10897		Alexco Keno Hill Mining Corp. - 100%	07/08/2003	08/08/2003	31/12/2020
NORTH FRACTION	301363562	83010	NM00592	Elsa Reclamation & Development Company Ltd. - 100%	24/06/1963	25/06/1963	02/11/2027
NORTH STAR	301405573	16012	NM00347	Elsa Reclamation & Development Company Ltd. - 100%	08/07/1925	14/08/1925	30/03/2025
NORTH STAR	301481469	13415	NM00173	Elsa Reclamation & Development Company Ltd. - 100%	24/07/1920	25/09/1920	13/11/2022
O No Fr.	301565664	YC57135		Alexco Exploration Canada Corp. - 100%	22/08/2007	22/08/2007	31/12/2018
O.K. 1	301304706	Y 33741		Alexco Keno Hill Mining Corp. - 100%	10/12/1970	11/12/1970	31/12/2019
O.K. 10	301558108	Y 85968		Alexco Keno Hill Mining Corp. - 100%	02/10/1973	10/10/1973	31/12/2019
O.K. 2	301515142	Y 33742		Alexco Keno Hill Mining Corp. - 100%	10/12/1970	11/12/1970	31/12/2019
O.K. 3	301524893	Y 56174		Alexco Keno Hill Mining Corp. - 100%	11/09/1971	15/09/1971	31/12/2019
O.K. 4	301566493	Y 56175		Alexco Keno Hill Mining Corp. - 100%	11/09/1971	15/09/1971	31/12/2019
O.K. 5	301572244	Y 85963		Alexco Keno Hill Mining Corp. - 100%	02/10/1973	10/10/1973	31/12/2019
O.K. 6	301345007	Y 85964		Alexco Keno Hill Mining Corp. - 100%	02/10/1973	10/10/1973	31/12/2019
O.K. 7	301458286	Y 85965		Alexco Keno Hill Mining Corp. - 100%	02/10/1973	10/10/1973	31/12/2019
O.K. 8	301415249	Y 85966		Alexco Keno Hill Mining Corp. - 100%	02/10/1973	10/10/1973	31/12/2019
O.K. 9	301477759	Y 85967		Alexco Keno Hill Mining Corp. - 100%	02/10/1973	10/10/1973	31/12/2019
OBOE	301410305	80360	NM00582	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1959	22/07/1959	02/11/2027
OHIO	301367568	56566	NM00168	Elsa Reclamation & Development Company Ltd. - 100%	26/06/1948	28/06/1948	12/06/2022
OK FRACTION	301465714	13094	NM00556	Elsa Reclamation & Development Company Ltd. - 100%	18/04/1920	09/06/1920	02/11/2027
One	301341824	YC01994		Alexco Exploration Canada Corp. - 100%	23/09/1999	28/09/1999	09/09/2018
ONEK	301318109	61596	NM00461	Elsa Reclamation & Development Company Ltd. - 100%	15/05/1951	21/05/1951	26/11/2025
ORANGE	301334059	14086	4092	Elsa Reclamation & Development Company Ltd. - 100%	03/05/1921	25/07/1921	21/01/2015
ORCHID 10	301348526	62959		Elsa Reclamation & Development Company Ltd. - 100%	18/05/1956	30/05/1956	31/12/2018
ORCHID 11	301348527	62960		Elsa Reclamation & Development Company Ltd. - 100%	18/05/1956	30/05/1956	31/12/2018
ORCHID 12	301487899	62961		Elsa Reclamation & Development Company Ltd. - 100%	18/05/1956	30/05/1956	31/12/2018
ORCHID 13	301510094	80123	NM00490	Elsa Reclamation & Development Company Ltd. - 100%	07/12/1956	13/12/1956	26/11/2025
ORCHID 14	301331813	80124	NM00491	Elsa Reclamation & Development Company Ltd. - 100%	07/12/1956	13/12/1956	26/11/2025
ORCHID 17	301383073	62964		Elsa Reclamation & Development Company Ltd. - 100%	18/05/1956	30/05/1956	31/12/2018
ORCHID 19	301548881	62966		Elsa Reclamation & Development Company Ltd. - 100%	18/05/1956	30/05/1956	31/12/2018
ORCHID 2	301473184	62951		Elsa Reclamation & Development Company Ltd. - 100%	16/05/1956	30/05/1956	31/12/2018
ORCHID 21	301506546	62968		Elsa Reclamation & Development Company Ltd. - 100%	18/05/1956	30/05/1956	31/12/2020
ORCHID 22	301593758	62969		Elsa Reclamation & Development Company Ltd. - 100%	18/05/1956	30/05/1956	31/12/2020
ORCHID 23	301593759	62970		Elsa Reclamation & Development Company Ltd. - 100%	18/05/1956	30/05/1956	31/12/2020

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
ORCHID 24	301568081	62971		Elsa Reclamation & Development Company Ltd. - 100%	18/05/1956	30/05/1956	31/12/2020
ORCHID 28	301378518	62975	NM00482	Elsa Reclamation & Development Company Ltd. - 100%	19/05/1956	30/05/1956	26/11/2025
ORCHID 29	301508102	62976	NM00483	Elsa Reclamation & Development Company Ltd. - 100%	19/05/1956	30/05/1956	26/11/2025
ORCHID 30	301417561	80179	NM00500	Elsa Reclamation & Development Company Ltd. - 100%	07/05/1957	10/05/1957	26/11/2025
ORCHID 34	301543007	80120	NM00487	Elsa Reclamation & Development Company Ltd. - 100%	04/12/1956	13/12/1956	26/11/2025
ORCHID 35	301587255	80121	NM00488	Elsa Reclamation & Development Company Ltd. - 100%	07/12/1956	13/12/1956	26/11/2025
ORCHID 36	301466353	80122	NM00489	Elsa Reclamation & Development Company Ltd. - 100%	07/12/1956	13/12/1956	26/11/2025
ORCHID 39	301507599	80164	NM00494	Elsa Reclamation & Development Company Ltd. - 100%	27/03/1957	03/04/1957	26/11/2025
ORCHID 4	301573606	62953		Elsa Reclamation & Development Company Ltd. - 100%	16/05/1956	30/05/1956	31/12/2018
ORCHID 40	301552626	80165	NM00495	Elsa Reclamation & Development Company Ltd. - 100%	27/03/1957	03/04/1957	26/11/2025
ORCHID 43	301459936	80168	NM00498	Elsa Reclamation & Development Company Ltd. - 100%	27/03/1957	03/04/1957	26/11/2025
ORCHID 44	301593352	80169		Elsa Reclamation & Development Company Ltd. - 100%	27/03/1957	03/04/1957	31/12/2020
ORCHID 45	301593351	80170		Elsa Reclamation & Development Company Ltd. - 100%	27/03/1957	03/04/1957	31/12/2020
Orchid 46	301518813	Y 68364		Elsa Reclamation & Development Company Ltd. - 100%	12/07/1972	19/07/1972	31/12/2020
Orchid 47	301521878	Y 68365		Elsa Reclamation & Development Company Ltd. - 100%	12/07/1972	19/07/1972	31/12/2020
Orchid 48	301586662	Y 68366		Elsa Reclamation & Development Company Ltd. - 100%	12/07/1972	19/07/1972	31/12/2020
Orchid 49	301476683	Y 68367		Elsa Reclamation & Development Company Ltd. - 100%	12/07/1972	19/07/1972	31/12/2020
Orchid 50	301543531	Y 68368		Elsa Reclamation & Development Company Ltd. - 100%	12/07/1972	19/07/1972	31/12/2020
Orchid 51	301445740	Y 68369		Elsa Reclamation & Development Company Ltd. - 100%	12/07/1972	19/07/1972	31/12/2020
Orchid 52	301445739	Y 68370		Elsa Reclamation & Development Company Ltd. - 100%	12/07/1972	19/07/1972	31/12/2020
Orchid 53	301568443	Y 68371		Elsa Reclamation & Development Company Ltd. - 100%	12/07/1972	19/07/1972	31/12/2020
ORCHID 6	301430944	62955		Elsa Reclamation & Development Company Ltd. - 100%	16/05/1956	30/05/1956	31/12/2018
ORCHID 7	301538273	62956		Elsa Reclamation & Development Company Ltd. - 100%	16/05/1956	30/05/1956	31/12/2018
ORCHID 8	301464155	62957		Elsa Reclamation & Development Company Ltd. - 100%	16/05/1956	30/05/1956	31/12/2018
ORCHID 9	301575670	62958		Elsa Reclamation & Development Company Ltd. - 100%	16/05/1956	30/05/1956	31/12/2018
ORPHAN	301395925	12852	NM00179	Elsa Reclamation & Development Company Ltd. - 100%	15/09/1919	31/10/1919	18/01/2023
OUTCAST FRACTIO	301469673	13542	NM00530	Elsa Reclamation & Development Company Ltd. - 100%	01/10/1920	25/10/1920	18/11/2026
OVERTIME 1	301440229	56581	NM00187	Elsa Reclamation & Development Company Ltd. - 100%	07/08/1948	13/08/1948	09/02/2023
OVERTIME 13	301312372	56583	NM00439	Elsa Reclamation & Development Company Ltd. - 100%	07/08/1948	13/08/1948	26/11/2025
OVERTIME 14	301537124	56584	NM00440	Elsa Reclamation & Development Company Ltd. - 100%	07/08/1948	13/08/1948	26/11/2025
OVERTIME 15	301544690	56585	NM00441	Elsa Reclamation & Development Company Ltd. - 100%	09/08/1948	13/08/1948	26/11/2025
OVERTIME 16	301412774	56586	NM00442	Elsa Reclamation & Development Company Ltd. - 100%	09/08/1948	13/08/1948	26/11/2025
OVERTIME 17	301422782	59453	NM00445	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	26/11/2025
OVERTIME 18	301559197	59454	NM00446	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	26/11/2025
OVERTIME 19	301547964	59455	NM00447	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	26/11/2025
OVERTIME 2	301321083	56582	NM00188	Elsa Reclamation & Development Company Ltd. - 100%	07/08/1948	13/08/1948	09/02/2023
OVERTIME 20	301481693	59456	NM00448	Elsa Reclamation & Development Company Ltd. - 100%	17/08/1949	19/08/1949	26/11/2025
OXO	301551001	59040	NM00285	Elsa Reclamation & Development Company Ltd. - 100%	18/09/1948	21/09/1948	27/06/2024
PACIFIC	301511205	14999	4095	Elsa Reclamation & Development Company Ltd. - 100%	18/06/1924	14/07/1924	29/01/2015
PACSAX	301581099	59294	NM00178	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1949	30/06/1949	29/12/2022
Paddy	301443240	59313		Alexco Keno Hill Mining Corp. - 100%	29/06/1949	08/07/1949	31/12/2019
Paddy 2	301414632	83253		Alexco Keno Hill Mining Corp. - 100%	09/10/1963	16/10/1963	31/12/2019
Paddy 3	301531666	83254		Alexco Keno Hill Mining Corp. - 100%	09/10/1963	16/10/1963	31/12/2019
Paddy 4	301550740	83721		Alexco Keno Hill Mining Corp. - 100%	25/10/1964	26/10/1964	31/12/2019
Paddy 5	301459713	83722		Alexco Keno Hill Mining Corp. - 100%	25/10/1964	26/10/1964	31/12/2019
PAGODA	301486629	14093	NM00089	Elsa Reclamation & Development Company Ltd. - 100%	04/05/1921	26/07/1921	20/08/2021
PAL OF MINE	301530576	16564	OM00031	Elsa Reclamation & Development Company Ltd. - 100%	18/05/1925	30/06/1925	28/05/2018
PASCO	301407641	14091	NM00362	Elsa Reclamation & Development Company Ltd. - 100%	04/05/1921	26/07/1921	30/04/2025
PATRICIA	301507036	2203	NM00318	Elsa Reclamation & Development Company Ltd. - 100%	25/03/1913	08/04/1913	01/02/2025
PEACH	301382750	12820	NM00360	Elsa Reclamation & Development Company Ltd. - 100%	04/09/1919	20/10/1919	30/04/2025
PEARL	301484707	55206	NM00562	Elsa Reclamation & Development Company Ltd. - 100%	14/08/1941	30/10/1941	02/11/2027
PERRY FRACTIONA	301333531	12873	OM00010	Elsa Reclamation & Development Company Ltd. - 100%	01/10/1919	14/11/1919	28/12/2017
PHOENIX	301484866	13158	3537	Elsa Reclamation & Development Company Ltd. - 100%	01/05/1920	17/06/1920	27/02/2013
PIL	301331323	55500	NM00299	Elsa Reclamation & Development Company Ltd. - 100%	14/09/1946	01/02/1947	30/01/2025
PINOCHLE	301487822	12785	3749	Elsa Reclamation & Development Company Ltd. - 100%	30/07/1919	11/09/1919	29/10/2014
PIRATE	301351117	55561	NM00166	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1946	17/02/1947	12/06/2022
PIRATE 1	301594523	55562	NM00167	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1946	17/02/1947	12/06/2022
PIRATE 2	301354352	55563	NM00333	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1946	17/02/1947	08/02/2025
PIRATE 3	301558478	55564	NM00334	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1946	17/02/1947	15/02/2025
PIRATE 4	301453368	55565	NM00335	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1946	17/02/1947	15/02/2025
PIRATE 5	301310812	55566	NM00336	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1946	17/02/1947	15/02/2025
PIRATE 6	301436608	55567	NM00337	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1946	17/02/1947	15/02/2025
PIRATE 7	301460037	55568	NM00338	Elsa Reclamation & Development Company Ltd. - 100%	31/10/1946	17/02/1947	15/02/2025
PIRATE EAST	301526989	59299	NM00172	Elsa Reclamation & Development Company Ltd. - 100%	22/06/1949	30/06/1949	12/06/2022
PLATA	301594011	16499	NM00349	Elsa Reclamation & Development Company Ltd. - 100%	07/08/1924	28/08/1924	30/03/2025
POCA PLATA	301493430	13182	NM00615	Elsa Reclamation & Development Company Ltd. - 100%	07/05/1920	21/06/1920	30/09/2029
POO FRACTION	301463151	56559	NM00239	Elsa Reclamation & Development Company Ltd. - 100%	23/06/1948	25/06/1948	29/08/2023
PORCUPINE	301333459	12875	4065	Elsa Reclamation & Development Company Ltd. - 100%	03/10/1919	15/11/1919	21/01/2014

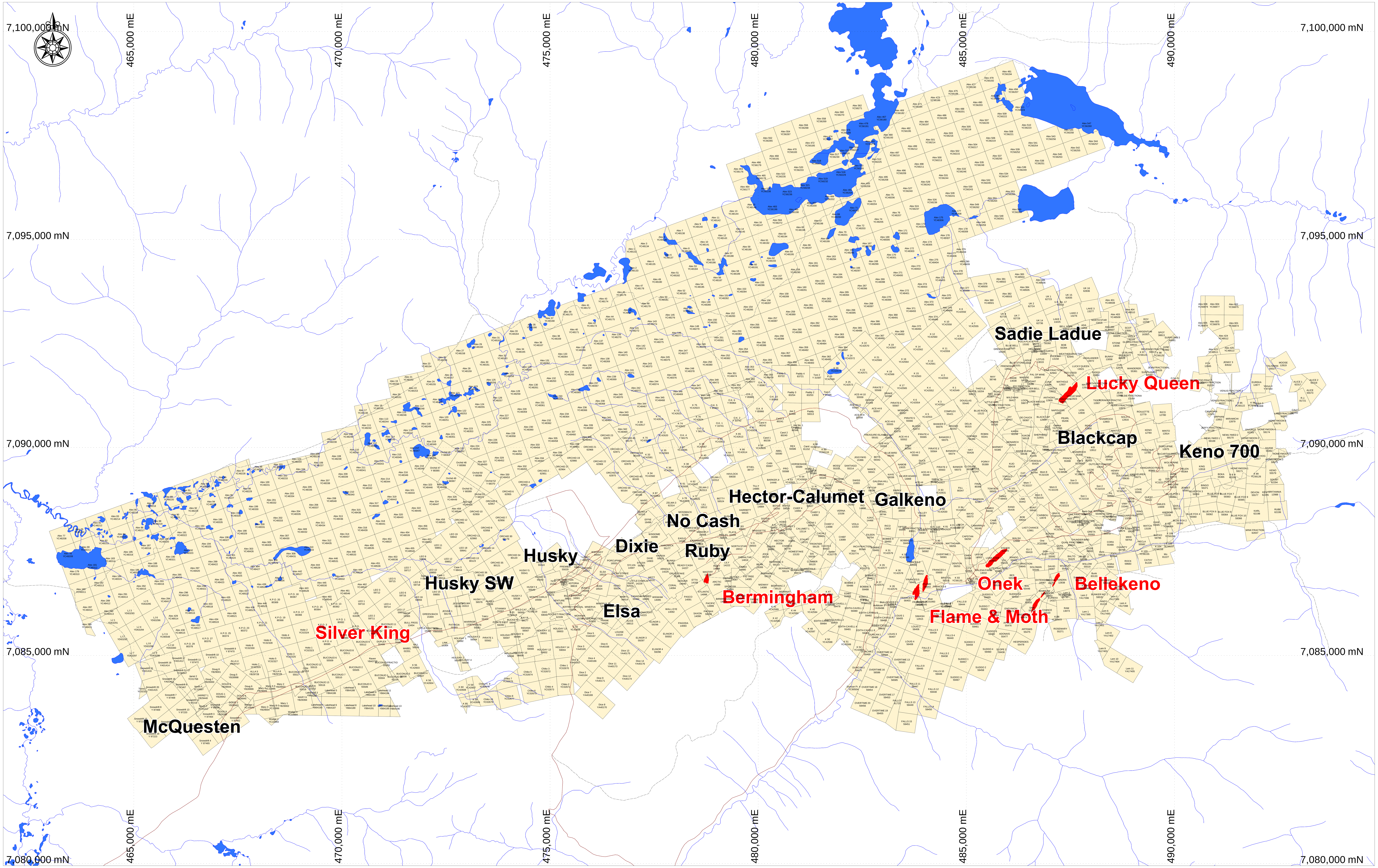
Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
PORCUPINE	301352953	16553	4265	Elsa Reclamation & Development Company Ltd. - 100%	28/05/1925	15/06/1925	20/06/2017
PORKY	301405440	55389	NM00052	Elsa Reclamation & Development Company Ltd. - 100%	12/08/1945	26/10/1945	14/11/2020
PREMIER	301466396	55029	NM00183	Elsa Reclamation & Development Company Ltd. - 100%	19/01/1937	15/02/1937	02/02/2023
PRINCE	301594385	55308	NM00506	Elsa Reclamation & Development Company Ltd. - 100%	18/06/1944	12/02/1945	01/11/2026
PRINCESS FRACTI	301476749	62558	NM00473	Elsa Reclamation & Development Company Ltd. - 100%	10/10/1954	27/10/1954	26/11/2025
PRO	301581474	55588	NM00295	Alexco Keno Hill Mining Corp. - 100%	08/10/1946	28/03/1947	23/02/2025
PUEBLO	301484276	59387	NM00569	Elsa Reclamation & Development Company Ltd. - 100%	21/07/1949	29/07/1949	02/11/2027
PUNCH	301353801	16558	OM00040	Elsa Reclamation & Development Company Ltd. - 100%	28/05/1925	18/06/1925	29/12/2019
QUAIL	301425175	59275	NM00541	Alexco Keno Hill Mining Corp. - 100%	13/06/1949	22/06/1949	02/11/2027
QUAIL FRACTION	301591063	59824	NM00547	Alexco Keno Hill Mining Corp. - 100%	22/09/1950	02/10/1950	02/11/2027
QUEEN	301568277	62269	NM00341	Elsa Reclamation & Development Company Ltd. - 100%	13/09/1952	17/09/1952	15/02/2025
QUEST	301428540	56522	NM00111	Alexco Keno Hill Mining Corp. - 100%	05/06/1948	08/06/1948	19/06/2021
QUILL	301327074	59273	NM00112	Alexco Keno Hill Mining Corp. - 100%	12/06/1949	21/06/1949	19/06/2021
R.J.	301308420	81721	NM00658	Elsa Reclamation & Development Company Ltd. - 100%	02/07/1962	10/07/1962	10/07/2031
RAM	301383252	13073	NM00042	Elsa Reclamation & Development Company Ltd. - 100%	10/04/1920	04/06/1920	17/10/2020
RAND	301560149	55436	NM00283	Elsa Reclamation & Development Company Ltd. - 100%	10/06/1946	24/06/1946	27/06/2024
RANDO	301573080	55022	NM00561	Elsa Reclamation & Development Company Ltd. - 100%	01/10/1936	28/10/1936	02/11/2027
Raven	301364545	YB43729		Elsa Reclamation & Development Company Ltd. - 100%	18/10/1994	18/10/1994	31/12/2017
READY CASH	301406028	14227	NM00090	Elsa Reclamation & Development Company Ltd. - 100%	17/07/1921	24/09/1921	20/08/2021
RENO	301380934	12800	4112	Elsa Reclamation & Development Company Ltd. - 100%	05/08/1919	01/10/1919	19/10/2015
RENO	301470646	62309	NM00405	Elsa Reclamation & Development Company Ltd. - 100%	02/07/1952	15/07/1952	12/06/2025
REVENGE FRACTIO	301465790	84617	2231	Elsa Reclamation & Development Company Ltd. - 100%	06/08/1965	24/08/1965	08/10/2017
REX	301511572	55586	NM00293	Alexco Keno Hill Mining Corp. - 100%	08/10/1946	28/03/1947	23/02/2025
REX	301318421	55387	NM00051	Elsa Reclamation & Development Company Ltd. - 100%	10/08/1945	26/10/1945	14/11/2020
REX (F)	301406237	56578	NM00354	Elsa Reclamation & Development Company Ltd. - 100%	25/07/1948	03/08/1948	30/03/2025
RICO	301520811	12780	NM00619	Elsa Reclamation & Development Company Ltd. - 100%	21/07/1919	27/08/1919	18/02/2030
RICO	301451275	13452	NM00643	Evelyn Crandall Exec Est.Bessie E.Stewart - 50%, Elsa Reclamation & Development Company Ltd. - 50%	02/08/1920	02/10/1920	28/03/2030
RING	301317204	16350	NM00036	Alexco Keno Hill Mining Corp. - 100%	31/07/1927	27/08/1927	19/08/2020
RIO	301324348	14898	4070	Elsa Reclamation & Development Company Ltd. - 100%	12/10/1923	15/11/1923	14/04/2014
ROAD	301415603	55384	NM00507	Elsa Reclamation & Development Company Ltd. - 100%	06/08/1945	26/10/1945	01/11/2026
ROBIN	301429191	55341	NM00048	Elsa Reclamation & Development Company Ltd. - 100%	09/06/1945	17/10/1945	14/11/2020
ROCK	301573330	59683	NM00546	Alexco Keno Hill Mining Corp. - 100%	11/09/1950	19/09/1950	02/11/2027
ROCKET FRACTION	301423878	62339	NM00291	Elsa Reclamation & Development Company Ltd. - 100%	01/10/1953	02/10/1953	13/07/2024
ROSE	301351975	55526	NM00376	Elsa Reclamation & Development Company Ltd. - 100%	18/09/1946	04/02/1947	22/05/2025
ROSEMARY	301404708	55271	NM00529	Elsa Reclamation & Development Company Ltd. - 100%	01/07/1943	09/11/1943	09/11/2026
ROULETTE	301520813	12779	NM00616	Elsa Reclamation & Development Company Ltd. - 100%	10/07/1919	27/08/1919	26/01/2030
ROY	301390795	13709	NM00558	Elsa Reclamation & Development Company Ltd. - 100%	12/04/1921	28/05/1921	02/11/2027
ROZ FRACTION	301335949	61976	NM00575	Elsa Reclamation & Development Company Ltd. - 100%	19/09/1951	19/09/1951	02/11/2027
RUBE	301325081	62199	NM00402	Elsa Reclamation & Development Company Ltd. - 100%	21/07/1952	04/08/1952	12/06/2025
RUBY	301299835	14989	NM00667	Elsa Reclamation & Development Company Ltd. - 100%	09/06/1924	09/07/1924	24/11/2033
SADIE	301444472	13038	NM00634	Elsa Reclamation & Development Company Ltd. - 100%	18/03/1920	06/05/1920	17/12/2029
SAM	301411834	55327	2221	Elsa Reclamation & Development Company Ltd. - 100%	10/04/1945	16/10/1945	15/12/2017
SANTIAGO	301503436	55214	NM00009	Elsa Reclamation & Development Company Ltd. - 100%	06/11/1941	23/02/1942	27/07/2019
SAXON	301532180	14090	NM00091	Elsa Reclamation & Development Company Ltd. - 100%	03/05/1921	26/07/1921	20/08/2021
SCOT	301518667	13591	NM00557	Elsa Reclamation & Development Company Ltd. - 100%	06/01/1921	18/02/1921	02/11/2027
SCOTTY	301420109	12783	NM00621	Elsa Reclamation & Development Company Ltd. - 100%	29/07/1919	10/09/1919	24/01/2030
SEGLE	301553005	56534	NM00437	Elsa Reclamation & Development Company Ltd. - 100%	09/06/1948	23/06/1948	26/11/2025
SEXTANT	301573235	14288	NM00648	Elsa Reclamation & Development Company Ltd. - 100%	08/08/1921	04/10/1921	15/05/2030
SHAMROCK	301387065	12803	2116	Elsa Reclamation & Development Company Ltd. - 100%	04/08/1919	08/10/1919	28/04/2015
SHAMROCK	301476610	55309	NM00428	Elsa Reclamation & Development Company Ltd. - 100%	27/06/1944	12/02/1945	26/11/2025
SHEPHERD	301498983	12931	NM00177	Elsa Reclamation & Development Company Ltd. - 100%	15/10/1919	31/12/1919	19/11/2022
SILVER BELL	301441643	12990	NM00661	Elsa Reclamation & Development Company Ltd. - 100%	20/02/1920	15/04/1920	28/09/2031
SILVER FR.	301391117	38730	2223	Elsa Reclamation & Development Company Ltd. - 100%	20/08/1931	16/09/1931	15/12/2017
SILVER HOARD	301313565	13069	NM00013	Elsa Reclamation & Development Company Ltd. - 100%	07/03/1920	31/05/1920	27/07/2019
SILVER SPOON	301523251	14216	NM00079	Elsa Reclamation & Development Company Ltd. - 100%	17/07/1921	24/09/1921	08/08/2021
SIS	301305920	55039	NM00631	Elsa Reclamation & Development Company Ltd. - 100%	13/08/1937	03/09/1937	06/12/2029
SISTER	301340527	59027	NM00068	Elsa Reclamation & Development Company Ltd. - 100%	11/09/1948	13/09/1948	24/07/2021
SIWASH	301324436	12915	NM00040	Elsa Reclamation & Development Company Ltd. - 100%	22/09/1919	19/12/1919	13/08/2020
SLIVER	301299423	38882	NM00629	Elsa Reclamation & Development Company Ltd. - 100%	16/03/1936	31/03/1936	06/12/2029
SLOPE 2	301350404	59436	NM00249	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SMILES	301354043	13009	NM00199	Alexco Keno Hill Mining Corp. - 100%	13/02/1920	28/04/1920	29/07/2023
SNOW	301355470	62946	NM00476	Elsa Reclamation & Development Company Ltd. - 100%	08/02/1956	10/02/1956	26/11/2025
Snowdrift	301378909	Y 88686		Elsa Reclamation & Development Company Ltd. - 100%	31/05/1974	05/06/1974	31/12/2021
Snowdrift 1	301295631	Y 87462		Elsa Reclamation & Development Company Ltd. - 100%	15/03/1974	21/03/1974	31/12/2021
Snowdrift 10	301577238	Y 87471		Elsa Reclamation & Development Company Ltd. - 100%	18/03/1974	21/03/1974	31/12/2021
Snowdrift 11	301481484	Y 87472		Elsa Reclamation & Development Company Ltd. - 100%	18/03/1974	21/03/1974	31/12/2021
Snowdrift 12	301331167	Y 97219		Elsa Reclamation & Development Company Ltd. - 100%	18/12/1974	23/12/1974	31/12/2021

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
Snowdrift 13	301331166	Y 97220		Elsa Reclamation & Development Company Ltd. - 100%	18/12/1974	23/12/1974	31/12/2020
Snowdrift 14	301431732	Y 97221		Elsa Reclamation & Development Company Ltd. - 100%	18/12/1974	23/12/1974	31/12/2020
Snowdrift 15	301451659	Y 97222		Elsa Reclamation & Development Company Ltd. - 100%	18/12/1974	23/12/1974	31/12/2020
Snowdrift 16	301314917	Y 97223		Elsa Reclamation & Development Company Ltd. - 100%	18/12/1974	23/12/1974	31/12/2020
Snowdrift 17	301339549	YA01412		Elsa Reclamation & Development Company Ltd. - 100%	22/09/1975	08/10/1975	31/12/2021
Snowdrift 18	301396089	YA01413		Elsa Reclamation & Development Company Ltd. - 100%	22/09/1975	08/10/1975	31/12/2020
Snowdrift 19	301410140	YA01414		Elsa Reclamation & Development Company Ltd. - 100%	22/09/1975	08/10/1975	31/12/2021
Snowdrift 2	301374320	Y 87463		Elsa Reclamation & Development Company Ltd. - 100%	15/03/1974	21/03/1974	31/12/2021
Snowdrift 20	301318093	YA01415		Elsa Reclamation & Development Company Ltd. - 100%	22/09/1975	08/10/1975	31/12/2020
Snowdrift 21	301344158	YA01416		Elsa Reclamation & Development Company Ltd. - 100%	22/09/1975	08/10/1975	31/12/2021
Snowdrift 3	301388290	Y 87464		Elsa Reclamation & Development Company Ltd. - 100%	15/03/1974	21/03/1974	31/12/2021
Snowdrift 4	301554818	Y 87465		Elsa Reclamation & Development Company Ltd. - 100%	18/03/1974	21/03/1974	31/12/2020
Snowdrift 5	301410161	Y 87466		Elsa Reclamation & Development Company Ltd. - 100%	18/03/1974	21/03/1974	31/12/2020
Snowdrift 6	301396767	Y 87467		Elsa Reclamation & Development Company Ltd. - 100%	18/03/1974	21/03/1974	31/12/2020
Snowdrift 7	301417063	Y 87468		Elsa Reclamation & Development Company Ltd. - 100%	18/03/1974	21/03/1974	31/12/2020
Snowdrift 8	301421163	Y 87469		Elsa Reclamation & Development Company Ltd. - 100%	18/03/1974	21/03/1974	31/12/2020
Snowdrift 9	301421164	Y 87470		Elsa Reclamation & Development Company Ltd. - 100%	18/03/1974	21/03/1974	31/12/2021
Snowdrift Fr. 17	301306581	YC90547		Alexco Exploration Canada Corp. - 100%	31/08/2011	02/09/2011	31/12/2017
SOL	301439411	55446	NM00536	Alexco Keno Hill Mining Corp. - 100%	20/08/1946	21/08/1946	02/11/2027
SOLO 2	301309839	12816	NM00620	Elsa Reclamation & Development Company Ltd. - 100%	15/08/1919	18/10/1919	18/02/2030
SOLO FRACTION	301550271	59630	NM00459	Elsa Reclamation & Development Company Ltd. - 100%	18/07/1950	21/07/1950	26/11/2025
SOLOMAN	301473361	55445	NM00535	Alexco Keno Hill Mining Corp. - 100%	16/08/1946	16/08/1946	02/11/2027
Son 1	301453371	YC32218		Alexco Exploration Canada Corp. - 100%	17/08/2004	23/08/2004	31/12/2018
Son 2	301335710	YC32219		Alexco Exploration Canada Corp. - 100%	17/08/2004	23/08/2004	31/12/2018
Son 3	301335709	YC32220		Alexco Exploration Canada Corp. - 100%	17/08/2004	23/08/2004	31/12/2018
Son 4	301547017	YC39676		Alexco Exploration Canada Corp. - 100%	26/08/2005	01/09/2005	31/12/2019
Son 5	301440042	YC39586		Alexco Exploration Canada Corp. - 100%	08/09/2005	12/09/2005	31/12/2019
Son 6	301322651	YC39587		Alexco Exploration Canada Corp. - 100%	08/09/2005	12/09/2005	31/12/2019
South F	301560753	YC01212		Alexco Keno Hill Mining Corp. - 100%	04/07/1998	06/07/1998	31/12/2020
SPENCER	301379834	14893	4093	Elsa Reclamation & Development Company Ltd. - 100%	01/10/1923	14/11/1923	27/01/2015
Spider	301322024	YC02773		Alexco Exploration Canada Corp. - 100%	06/07/2001	10/07/2001	31/12/2021
SPOT	301295602	38813	NM00160	Elsa Reclamation & Development Company Ltd. - 100%	08/10/1934	12/11/1934	02/06/2022
STANWIX	301520284	55307	NM00184	Elsa Reclamation & Development Company Ltd. - 100%	06/06/1944	12/02/1945	02/02/2023
STAURT	301580734	13721	NM00108	Elsa Reclamation & Development Company Ltd. - 100%	26/04/1921	07/06/1921	26/08/2021
STONE	301338356	13035	NM00503	Elsa Reclamation & Development Company Ltd. - 100%	18/03/1920	06/05/1920	01/11/2026
STONE FRACTION	301434932	83023	NM00595	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1963	16/07/1963	02/11/2027
SUDDO 1	301446537	59457	NM00250	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUDDO 10	301567012	59466	NM00259	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUDDO 11	301376665	59467	NM00260	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUDDO 2	301362343	59458	NM00251	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	18/08/1949	19/12/2023
SUDDO 3	301320644	59459	NM00252	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUDDO 4	301320643	59460	NM00253	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUDDO 5	301412966	59461	NM00254	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUDDO 6	301536139	59462	NM00255	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUDDO 7	301314657	59463	NM00256	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUDDO 8	301354636	59464	NM00257	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUDDO 9	301512643	59465	NM00258	Elsa Reclamation & Development Company Ltd. - 100%	16/08/1949	19/08/1949	19/12/2023
SUNRISE	301496460	55433	NM00534	Alexco Keno Hill Mining Corp. - 100%	15/06/1946	20/06/1946	02/11/2027
SURPLOMB 2	301509515	84580	2228	Elsa Reclamation & Development Company Ltd. - 100%	07/07/1965	14/07/1965	08/10/2017
SURPLOMB 3	301328478	84581	2229	Elsa Reclamation & Development Company Ltd. - 100%	10/07/1965	14/07/1965	08/10/2017
SUSY Q.	301568201	81225	NM00652	Elsa Reclamation & Development Company Ltd. - 100%	15/06/1962	26/06/1962	12/03/2031
SWISS	301474260	15303	OM00037	Elsa Reclamation & Development Company Ltd. - 100%	29/09/1928	26/10/1928	18/08/2018
SYLDIX	301425682	59293	NM00080	Elsa Reclamation & Development Company Ltd. - 100%	17/06/1949	30/06/1949	08/08/2021
SYLVIA	301305193	14307	NM00241	Elsa Reclamation & Development Company Ltd. - 100%	20/07/1921	06/10/1921	28/02/2024
TAKU	301515860	55334	NM00240	Elsa Reclamation & Development Company Ltd. - 100%	23/05/1945	16/10/1945	07/09/2023
TALISMAN	301299478	59327	NM00407	Elsa Reclamation & Development Company Ltd. - 100%	13/07/1949	19/07/1949	19/06/2025
TARM	301489037	61601	NM00552	Alexco Keno Hill Mining Corp. - 100%	13/05/1951	25/05/1951	02/11/2027
TECH	301463768	83132	NM00623	Elsa Reclamation & Development Company Ltd. - 100%	06/08/1963	13/08/1963	28/02/2030
TESS	301539422	84628	2233	Elsa Reclamation & Development Company Ltd. - 100%	27/08/1965	09/09/1965	08/10/2017
THELMA	301428164	16313	NM00182	Elsa Reclamation & Development Company Ltd. - 100%	14/03/1927	07/04/1927	02/02/2023
THISTLE	301438547	16204	NM00626	Elsa Reclamation & Development Company Ltd. - 100%	16/07/1926	12/08/1926	03/12/2029
THUNDER BIRD	301531212	55520	NM00538	Alexco Keno Hill Mining Corp. - 100%	15/09/1946	04/02/1947	02/11/2027
TICK	301479582	15207	NM00281	Elsa Reclamation & Development Company Ltd. - 100%	31/03/1928	28/04/1928	27/06/2024
TIGER	301521233	12807	4107	Elsa Reclamation & Development Company Ltd. - 100%	27/08/1919	10/10/1919	27/10/2015
TILLY	301443295	14885	NM00069	Elsa Reclamation & Development Company Ltd. - 100%	02/09/1923	22/10/1923	24/07/2021
TIN CAN	301370949	13027	NM00007	Elsa Reclamation & Development Company Ltd. - 100%	07/03/1920	05/05/1920	27/07/2019
TIP TOP	301465011	59335	NM00010	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	15/05/2020
TIPPY	301524210	16253	4074	Elsa Reclamation & Development Company Ltd. - 100%	20/09/1926	06/10/1926	14/04/2014

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
TIPTOE	301409234	59295	NM00110	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1949	30/06/1949	29/08/2021
TIPTOP	301564287	55065	NM00010	Elsa Reclamation & Development Company Ltd. - 100%	04/03/1938	28/03/1938	27/07/2019
TOM BOY	301324243	56505	NM00092	Elsa Reclamation & Development Company Ltd. - 100%	06/10/1947	10/10/1947	22/08/2021
TOMTOM	301392279	38741	4072	Elsa Reclamation & Development Company Ltd. - 100%	30/05/1932	20/06/1932	14/04/2014
Toni 1	301475586	Y 31586		Alexco Keno Hill Mining Corp. - 100%	29/11/1968	02/12/1968	31/12/2019
Toni 2	301593863	Y 31587		Alexco Keno Hill Mining Corp. - 100%	29/11/1968	02/12/1968	31/12/2019
TOO GOOD	301385884	16079	4076	Elsa Reclamation & Development Company Ltd. - 100%	12/09/1925	29/11/1925	11/06/2014
TOPOLO	301418068	56504	NM00093	Elsa Reclamation & Development Company Ltd. - 100%	15/09/1947	26/09/1947	22/08/2021
TRAVICE	301499540	13622	NM00644	Elsa Reclamation & Development Company Ltd. - 100%	12/03/1921	23/04/1921	22/04/2030
TREASURE ISLAND	301400503	59161	NM00016	Elsa Reclamation & Development Company Ltd. - 100%	18/11/1948	22/11/1948	27/07/2019
TREY	301515468	62281	NM00345	Elsa Reclamation & Development Company Ltd. - 100%	27/09/1952	02/10/1952	15/02/2025
TRIANGLE	301336515	14332	NM00604	Elsa Reclamation & Development Company Ltd. - 100%	24/08/1921	18/10/1921	11/07/2029
TUNDRA	301388856	12838	NM00043	Elsa Reclamation & Development Company Ltd. - 100%	06/09/1919	27/10/1919	01/11/2020
TUNNEL	301505690	14833	NM00662	Elsa Reclamation & Development Company Ltd. - 100%	04/06/1923	19/07/1923	30/09/2031
Twins 7	301431968	YC02322		Alexco Keno Hill Mining Corp. - 100%	14/12/1999	29/12/1999	29/12/2021
U. N.	301553999	55525	NM00375	Elsa Reclamation & Development Company Ltd. - 100%	18/09/1946	04/02/1947	22/05/2025
U.K. No. 17	301571398	83533	NM00657	Elsa Reclamation & Development Company Ltd. - 100%	14/07/1964	17/07/1964	12/03/2031
UK 1	301520269	62723	NM00606	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1955	29/03/1955	30/04/2029
UK 13	301298027	62735	NM00610	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1955	29/03/1955	30/04/2029
UK 14	301297866	62736	NM00611	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1955	29/03/1955	30/04/2029
UK 15	301359790	62835	NM00612	Elsa Reclamation & Development Company Ltd. - 100%	06/07/1955	08/07/1955	30/04/2029
UK 16	301514990	62836	NM00613	Elsa Reclamation & Development Company Ltd. - 100%	06/07/1955	08/07/1955	30/04/2029
UK 2	301423322	62724	NM00607	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1955	29/03/1955	30/04/2029
UK 7	301515155	62729	NM00608	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1955	29/03/1955	30/04/2029
UK 8	301515156	62730	NM00609	Elsa Reclamation & Development Company Ltd. - 100%	22/03/1955	29/03/1955	30/04/2029
UNCLE SAM	301375873	12923	4068	Elsa Reclamation & Development Company Ltd. - 100%	12/10/1919	26/12/1919	12/03/2014
UPTON	301317372	14002	NM00029	Elsa Reclamation & Development Company Ltd. - 100%	07/05/1921	25/06/1921	05/02/2020
V.D.	301473895	55270	NM00505	Elsa Reclamation & Development Company Ltd. - 100%	29/06/1943	09/11/1943	01/11/2026
V.O.	301364953	56503	NM00352	Elsa Reclamation & Development Company Ltd. - 100%	17/09/1947	24/09/1947	30/03/2025
VALLEY	301365262	59338	NM00142	Elsa Reclamation & Development Company Ltd. - 100%	15/07/1949	19/07/1949	07/05/2022
VAN KEUREN	301408181	16271	NM00194	Elsa Reclamation & Development Company Ltd. - 100%	01/09/1926	23/10/1926	22/02/2023
VANGUARD FRAC.	301383230	13258	NM00211	Alexco Keno Hill Mining Corp. - 100%	19/06/1920	28/07/1920	13/09/2023
VENTURE	301387884	16375	NM00282	Elsa Reclamation & Development Company Ltd. - 100%	04/09/1927	18/10/1927	27/06/2024
Venus 3	301368535	Y 33308		Elsa Reclamation & Development Company Ltd. - 100%	05/04/1970	06/04/1970	31/12/2018
Venus 4	301375853	Y 97333		Elsa Reclamation & Development Company Ltd. - 100%	08/05/1975	09/05/1975	31/12/2018
VENUS FRACTION 1	301314910	80227	NM00527	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1957	03/07/1957	07/11/2026
VENUS FRACTION 2	301415330	80228	NM00528	Elsa Reclamation & Development Company Ltd. - 100%	20/06/1957	03/07/1957	07/11/2026
VERNA	301521836	13156	OM00034	Elsa Reclamation & Development Company Ltd. - 100%	05/05/1920	17/06/1920	18/08/2018
VIMY	301539276	15346	NM00426	Elsa Reclamation & Development Company Ltd. - 100%	31/05/1929	21/06/1929	26/11/2025
VIOLA	301353318	13153	4069	Elsa Reclamation & Development Company Ltd. - 100%	18/05/1920	16/06/1920	14/03/2014
VIOLA	301420047	38723	NM00560	Elsa Reclamation & Development Company Ltd. - 100%	27/07/1931	14/08/1931	02/11/2027
WALL EYE	301481499	14092	NM00081	Elsa Reclamation & Development Company Ltd. - 100%	04/05/1921	26/07/1921	08/08/2021
WALSH	301507872	12998	NM00032	Elsa Reclamation & Development Company Ltd. - 100%	28/02/1920	17/04/1920	28/02/2020
WANDERER	301361992	55361	NM00161	Elsa Reclamation & Development Company Ltd. - 100%	04/07/1945	25/10/1945	02/06/2022
WARREN	301462290	55496	NM00131	Elsa Reclamation & Development Company Ltd. - 100%	15/09/1946	01/02/1947	03/02/2022
WARRIOR	301582815	13367	2114	Elsa Reclamation & Development Company Ltd. - 100%	12/08/1920	12/10/1920	27/02/2015
WASP	301587293	15365	2201	Elsa Reclamation & Development Company Ltd. - 100%	11/06/1929	11/07/1929	27/03/2017
WATCH	301387148	13109	NM00130	Elsa Reclamation & Development Company Ltd. - 100%	27/04/1920	10/06/1920	18/07/2021
WEATHER FRACTIO	301559680	62945	NM00475	Elsa Reclamation & Development Company Ltd. - 100%	30/12/1955	06/01/1956	26/11/2025
Webfoot	301394433	YB65005		Elsa Reclamation & Development Company Ltd. - 100%	28/09/1995	29/09/1995	31/12/2017
Wedge 1	301475757	YC10946		Alexco Keno Hill Mining Corp. - 100%	09/09/2003	09/09/2003	31/12/2020
Wedge 2	301405822	YC10993		Alexco Keno Hill Mining Corp. - 100%	10/09/2003	18/09/2003	31/12/2020
Wedge 3	301520984	YC10994		Alexco Keno Hill Mining Corp. - 100%	10/09/2003	18/09/2003	31/12/2020
WESTON	301547332	16557	2133	Elsa Reclamation & Development Company Ltd. - 100%	30/05/1925	18/06/1925	07/03/2016
WETT	301322440	14231	NM00094	Elsa Reclamation & Development Company Ltd. - 100%	18/07/1921	24/09/1921	20/08/2021
WHIPSAW	301556538	14081	OM00011	Elsa Reclamation & Development Company Ltd. - 100%	11/06/1921	23/07/1921	15/12/2017
WHITEHORSE	301387150	13110	OM00032	Elsa Reclamation & Development Company Ltd. - 100%	27/04/1920	10/06/1920	05/08/2018
WIGWAM	301521642	14095	NM00082	Elsa Reclamation & Development Company Ltd. - 100%	04/05/1921	26/07/1921	08/08/2021
WILD CAT	301574959	56500	NM00185	Elsa Reclamation & Development Company Ltd. - 100%	18/09/1947	22/09/1947	02/02/2023
WILD MAN	301417679	56417	NM00378	Elsa Reclamation & Development Company Ltd. - 100%	05/06/1947	10/06/1947	22/05/2025
WILDCAT	301480017	55426	NM00532	Alexco Keno Hill Mining Corp. - 100%	25/05/1946	03/06/1946	02/11/2027
WILLIAM FOURTH	301489786	14404	NM00605	Elsa Reclamation & Development Company Ltd. - 100%	20/09/1921	05/11/1921	11/07/2029
WILLOW	301531211	55519	NM00537	Alexco Keno Hill Mining Corp. - 100%	05/09/1946	04/02/1947	02/11/2027
WINFRED	301300368	16083	NM00083	Elsa Reclamation & Development Company Ltd. - 100%	11/09/1925	20/11/1925	08/08/2021
WINSOME	301586201	16498	NM00095	Elsa Reclamation & Development Company Ltd. - 100%	04/08/1924	28/08/1924	20/08/2021
WOLVERINE	301421852	12871	3750	Elsa Reclamation & Development Company Ltd. - 100%	03/10/1919	13/11/1919	30/10/2014
WREN FRACTION	301307996	80518	NM00585	Elsa Reclamation & Development Company Ltd. - 100%	19/07/1960	04/08/1960	02/11/2027
YUKON	301431193	55392		Elsa Reclamation & Development Company Ltd. - 100%	03/11/1945	30/01/1946	31/12/2017

Claim Name	Quartz Claim	Grant Number	Lease Number	Owner	Staking Date	Recorded Date	Expiry Date
YUKON	301531248	56515	NM00096	Elsa Reclamation & Development Company Ltd. - 100%	15/04/1948	19/04/1948	22/08/2021
ZELMA 1	301570618	62312	NM00391	Elsa Reclamation & Development Company Ltd. - 100%	19/07/1953	31/07/1953	22/05/2025
ZELMA 2	301481957	62313	NM00392	Elsa Reclamation & Development Company Ltd. - 100%	19/07/1953	31/07/1953	22/05/2025
ZELMA 3	301403007	62314	NM00356	Elsa Reclamation & Development Company Ltd. - 100%	19/07/1953	31/07/1953	30/03/2025
ZELMA 4	301502868	62315	NM00357	Elsa Reclamation & Development Company Ltd. - 100%	19/07/1953	31/07/1953	30/03/2025

APPENDIX B
Detailed Claims Map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7,095,000 mN
7,090,000 mN
7,085,000 mN
7,080,000 mN
465,000 mE
470,000 mE
475,000 mE
480,000 mE
485,000 mE
490,000 mE
Sadie Ladue
Lucky Queen
Blackcap
Keno 700
Hector-Calumet
Galkeno
No Cash
Dixie
Ruby
Husky
Husky SW
Elsa
Bermingham
Onek
Bellekeno
Flame & Moth
Silver King
McQuesten