



## **NI 43-101 RESOURCE ESTIMATE FOR THE BLENDE PROPERTY**

*Yukon Territory*

Centered at 64 24' 39" N and 134 40' 21" W

Submitted to:  
**Blende Silver Corp.**

June 29, 2021

**Moose Mountain Technical Services**

Sue Bird, M.Sc., P.Eng.

Robert J. Morris, M.Sc., P.Geo.

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## **DATE & SIGNATURE PAGES**

Herewith, our report entitled "Resource Estimate for the Blende Property" dated June 29, 2021.

*"signed and sealed"*

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**Susan C. Bird, M.Sc., P.Eng**  
MMTS

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**Dated the 29<sup>th</sup> day of June, 2021**

*"signed and sealed"*

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**Robert J. Morris, P.Geo**  
MMTS

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**Dated the 29<sup>th</sup> day of June, 2021**

*"signed and sealed"*

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**Frank Wright, P.Eng.**

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**Dated the 29<sup>th</sup> day of June, 2021**

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## CERTIFICATE & DATE – SUSAN C. BIRD

I, Susan C. Bird, M.Sc., P.Eng. do hereby certify that as a co-author of the report titled - “Resource Estimate for the Blende Property” dated June 29, 2021:

1. I am a Principal of Moose Mountain Technical Services, with a business address of #210 1510 2<sup>nd</sup> St North Cranbrook BC, V1C 3L2.
2. I graduated with a Geologic Engineering degree (B.Sc.) from the Queen’s University in 1989 and a M.Sc. in Mining from Queen’s University in 1993.
3. I am a member of the Association of Professional Engineers and Geoscientists of B.C. (No. 25007).
4. I have worked as an engineering geologist for over 25 years since my graduation from university. My relevant experience with similar deposits includes acting as qualified person (QP) for the resource estimate on a number of deposits.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 and certify that because of education, experience, independence, and affiliation with a professional organization, I meet the requirements of an Independent Qualified Person as defined in National Instrument 43-101.
6. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
7. I am independent of Blind Creek Resource as defined in Item 1.5 of National Instrument 43-101.
8. I am responsible for Section 14, as well as sections pertaining to the Resource in Sections 1 of the report “**Resource Estimate for the Blende Property - June 29, 2021**”.
9. I have had no previous involvement with the property that is the subject of the Technical Report other than the 2018 Resource Estimate.
10. As of the date of this certificate, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.

**Dated this 29<sup>th</sup> day of June, 2021**

*“signed and sealed”*

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**Sue Bird, M.Sc., P.Eng.**

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## CERTIFICATE & DATE – ROBERT J. MORRIS

I, Robert J. Morris, M.Sc., P.Geo., do hereby certify that:

1. I am a Principal of Moose Mountain Technical Services, #210 1510 – 2nd Street North Cranbrook, BC, Canada V1C 3L2.
2. I graduated with a B.Sc. from the University of British Columbia in 1973.
3. I graduated with a M.Sc. from Queen’s University in 1978.
4. I am a member of the Association of Professional Engineers and Geoscientists of B.C. (#18301).
5. I have worked as a geologist for over forty years since my graduation from university.
6. My past experience with zinc/lead mineral deposit mining includes work at the Faro mine, as well as extensive exploration in the Yukon and SE BC.
7. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and certify that by reason of education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a “qualified person” for the purpose of NI 43-101.
8. This certificate applies to the NI 43-101 entitled “Resource Estimate for the Blende Property” dated June 29, 2021 (“Technical Report”) prepared for Blind Creek Resources Ltd., Vancouver, British Columbia, Canada.
9. A site visit to the property was completed 9-11 September 2017 to collect samples for SG and metallurgical testing. I have had no prior involvement with the Blende Project.
10. I am independent of Blind Creek Resources Ltd., and work as a geological consultant to the mining industry.
11. I am independent of the Issuer applying the test set out in Section 1.5 of NI 43-101.
12. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose, which makes the Technical Report misleading.
13. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
14. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.

**Dated this 29<sup>th</sup> day of June, 2021**

*“signed and sealed”*

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**Robert J. Morris, M.Sc., P.Geo.**

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## CERTIFICATE & DATE – FRANK WRIGHT

**I, Frank Wright, P.Eng., do hereby certify that:**

1. I am a consulting metallurgical engineer and Principal of F. Wright Consulting Inc., practicing at #45-10605 Delsom Cr., Delta, British Columbia, Canada V4C 0A1.
2. This certificate applies to the NI 43-101 entitled “Resource Estimate for the Blende Property” dated June 29, 2021 (“Technical Report”) prepared for Blind Creek Resources Ltd., Vancouver, British Columbia, Canada.
3. I am a graduate of the University of Alberta, Edmonton Alberta, in 1979 with a Bachelor of Science in Metallurgical Engineering, and a graduate of Simon Fraser University, Burnaby BC, in 1983 with a Bachelor of Business Administration.
4. I am a member in good standing of the Association of Professional Engineers and Geoscientists of BC. (Member ID.# 119331)
5. I have continuously practiced my profession in the areas of mineral process and metallurgical engineering since 1979, as an employee of various resource companies and consulting firms. Since 1998, I have been principal and an independent consultant with F. Wright Consulting Inc., primarily providing services to junior and mid-tier mineral exploration and mining firms.
6. I have not visited the Blende Property.
7. In the independent NI 43-101 report titled “Resource Estimate for the Blende Property”, I am responsible for Section 13.
8. I have had no prior involvement in the Property, which is the subject of this technical report.
9. I am independent of Blind Creek Resources Ltd. as defined in Section 1.5 of National Instrument 43-101.
10. I have read the definition of “qualified person” set out in National Instrument 43-101 and certify that by reason of education, experience, independence and affiliation with a professional association, I fulfill the requirements of a Qualified Person as defined in National Instrument 43-101.
11. I am not aware of any material fact or material change with respect to the subject matter of Section 13 of the technical report that is not reflected in the Technical Report and that this technical report contains all scientific and technical information that is required to be disclosed to make Section 13 of the technical report not misleading.
12. I have read National Instrument 43-101, Standards for Disclosure of Mineral Properties and Form 43-101F1. The portions of the technical report for which I am responsible have been prepared in compliance with that instrument and form.

**Dated this 29<sup>th</sup> day of June, 2021**

*“signed and sealed”*

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**Frank Wright, P.Eng.**

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## **1 Summary**

### **1.1 Overview**

Moose Mountain Technical Services (MMTS) was retained by Blende Silver Corporation (“Blende”, or the “Company”) to update the previous resource estimate in view of updated metal prices and change of issuer.

### **1.2 Property Description and Location**

The Blende Property is in the Yukon Territory and includes a carbonate-hosted polymetallic deposit on the south edge of the Mackenzie Platform, hosted by Middle Proterozoic Gillespie Group dolomite. The Blende Deposit has features of both Irish-type and clastic-dominated Zn-Pb deposits (M. Moroskat et al., Mineral Deposita 2015) and is the largest known carbonate-hosted Zn-Pb deposit in Yukon (M. Robinson and C.I. Godwin, Economic Geology 1995).

The Blende Property consists of 260 claim units (5434ha) situated 110km northeast of Mayo and 64km northeast of Keno Hill, Yukon Territory.

### **1.3 Accessibility, Climate, Local Resources and Physiography**

The Wind River Trail or "winter road" passes within 11km of the Blende Property between Elsa and Wind River. Currently, the most practical access is by helicopter from Mayo, on the Stewart River. Mayo is accessed by paved highway 450km away.

The area has long cold winters and short moderately warm summers. Exploration is practically restricted to the months of June to September, but snow can occur at any time. Permafrost exists in the area. A remote weather station was installed on the Blende Property in 2006 to collect environmental data over the winter season. Essential supplies are available in Mayo, but most supplies are generally brought in from the much larger Territorial capital, Whitehorse, which is the business and government center of Yukon. The nearest town of Mayo has essential facilities such as fuel, food and lodging, telephone, post office and basic groceries and supplies. It has a gravel airstrip and float plane facilities. Power from the Yukon grid extends from Mayo along the gravel access road to the Elsa and the Keno Hill mine (now owned by Alexco Resource Corp.).

The Blende Property is on the southern flank of the Wernecke Mountains, characterized by rugged ridges and numerous glacial cirques. To the south lies the Pacific watershed of the Yukon River drainage and to the north lies the Pacific watershed of the Wind River. At Mt. Williams, elevations range from 1,200m to 1,860m. The tree line is at approximately 1,300m. The Blende Property has sparse grass and lichen vegetation. Outcrop is most common on steep, north facing cirque walls, creek gullies and ridges whereas; south facing exposures are less precipitous and are covered by talus and scree.

### **1.4 History**

As early as 1905, Camsell and Keele, of the Geological Survey of Canada ascended Stewart and Beaver Rivers as far as the mouth of Braine Creek, just northwest of the Blende Property at Mt. Williams.

Silver and lead deposits were discovered in 1922 on McKay hill in the Upper Beaver River area shortly after the discovery of the rich silver deposits at Keno Hill. Billiton drilled 77 holes on the property totaling over 14,000m along 3.2km of strike length, reporting numerous high-grade intercepts at relatively shallow depths. Subsequent step-out drilling by NDU Resources Ltd. confirmed the continuation of ore-grade mineralization westward, with the addition of significant copper values.

In 2004, B.J. Price was retained by Eagle Plains Resource Ltd to review the historic resource calculations on the Blende Property. This review formed part of his 2004 Technical Report on the Blende Zinc-Lead-Silver Deposit. Price concluded that the historic resource estimations are relevant.

In 2005 R.J. Sharp, M.Sc., P.Geol., (Alberta and NWT), an expert in carbonate hosted base metal deposits, was retained by Eagle Plains. Mr. Sharp reviewed the “Price Report”, visited the property, and looked at drill core and drill hole locations. Mr. Sharp also reviewed the Billiton sampling methodology, protocol and resource calculation and agreed with Price’s conclusions that the resources were reliable and relevant. Based on the recommendations of Price and Sharp, diamond drilling, geological mapping, prospecting, and geochemical surveying was carried out by Eagle Plains and Blind Creek in 2006–2008 to test areas of known mineralization and extensions to them, as well as new exploration targets.

In 2006 a total of 4,235.8m of drilling was completed in 23 holes with an additional 3,410.9m in 15 holes completed in 2007.

The 2008 program consisted of seven holes totaling 1,047.3m. Added to the historic drilling of 17,598m in 87 drill holes, the total amount of drilling done on the Blende property is 132 drill holes totaling 25,195.62m.

## **1.5 Geological Setting**

The Blende Zinc (Zn)-Lead (Pb)-Silver (Ag) Deposit is a large, structurally controlled, breccia-hosted system on the south edge of the Mackenzie Platform, hosted by Lower Proterozoic Gillespie Group dolomite. The Blende Deposit has features of both Irish-type and clastic-dominated Zn-Pb deposits (M.Moroskat et.al., Mineral Deposita 2015) and is the largest known carbonate-hosted Zn-Pb deposit in Yukon (M. Robinson and C.I. Godwin, Economic Geology 1995).

The Blende area is situated on the “Mackenzie Platform” or “Yukon Block”, part of the relatively stable craton overlain by Proterozoic to Paleozoic sedimentary units with minor volcanic components. The Mackenzie Platform is separated from the Selwyn Basin by the Dawson Thrust Fault, an east-west trending and south dipping fault with Proterozoic and Paleozoic history

## **1.6 Mineralization**

The mineralization consists of yellow, fine to coarse grained sphalerite and galena. Other sulphide minerals include pyrite and minor chalcopyrite plus tetrahedrite. Some syngenetic or early diagenetic mineralization has been found associated with oolites and dewatering structures. Studies by C. Godwin, Ph.D., indicate a lead isotopic age of 1.54 Billion years (“Ga”).

## **1.7 Deposit Types**

Although initially the Blende deposit was originally identified as a Mississippi Valley type (MVT) deposit, current thinking lies more along the lines of shear or fault-hosted breccias and veins or Irish type carbonate hosted deposits. The fluid inclusion temperatures for main stage mineralization at 285°C (Robinson and Godwin, 1995) are too high for the deposit to fall into the conventional MVT class and the deposits may be structurally controlled replacements or veins.

## **1.8 Exploration and Drilling**

Total drilling done on the Blende Property from 1988 to the end of 2008 is 132 holes totaling 25,195.62m.

- 2006 - All work on the property was carried out under the supervision of R.J. Sharp, P. Geol. NQ

diamond drilling totaling 5,550.4m in 23 holes, was drilled between June 18, 2006 and September 15, 2006.

- 2007 - All work on the property was carried out under the supervision of co-author Chris Gallagher, M. Sc. NQ diamond drilling totaling 3,410.9m in 15 holes, was drilled between June 15, 2007 and July 14, 2007.
- 2008 - All work on the property was carried out under the supervision of Jo Van Randen B. Sc. NQ diamond drilling totaling 1047.3m in 7 holes, was drilled between August 4, 2008 and August 20, 2008.

## **1.9 Sample Preparation, Analyses and Security**

In summary, the analysis of control samples for the 2006-2008 drilling campaigns gives reasonable results, but not ideal. This is primarily due to low accuracy for the 2006 standard samples, lack of field duplicates in all years, and no duplicates at all in 2007 and 2008. The 2006-2008 data can be accepted at this inferred level of resource estimation. However, for future work at a higher level of confidence, a significant check assay program may be necessary to validate this data.

### **1.10 Data Verification**

Through the 2017 site visit completed by the QP to collect additional sg samples, and data verification is the opinion of the QP that the assay database is sufficiently good to host resource estimation.

### **1.11 Metallurgical Testing**

Basic metallurgical evaluation has been performed on samples from the Blende project and show that separate lead and zinc concentrates can be produced. Silver generally follows into the lead concentrate. The use of dense media separation (DMS) as a pre-treatment to flotation has also shown encouraging results. There is limited data on representative samples to assign recovery to specific mineralized zones. The primary variables being grade, and the extent of sulphide mineral oxidation with the corresponding effect on flotation circuit response.

Previous metallurgical studies were initiated by Blind Creek in 2011 and completed in 2012 by Hazen Research Inc., and in 2017 on archived drill core by BV Minerals under the direction of Frank Wright, P.Eng., Principal of F. Wright Consulting Inc., and can be found in Section 13 of this Technical Report. Other historic laboratory testwork was sponsored by Billiton and reported by Bacon Donaldson & Associates in 1991.

### **1.12 Mineral Resources Estimate**

Mineral resources are estimated using MineSight<sup>®</sup> modeling software in 6m by 6m-by-6m blocks. Grade estimates are based on 3m composited assay data and interpolation completed using Ordinary Kriging (OK). The model is validated by grade comparison with the nearest neighbor (NN) interpolations. The NN model is then corrected for Volume-Variance effects using the Indirect lognormal correction (ILC) to create a Nearest Neighbour Corrected (NNC) model for model validation using Swath Plots and Grade-Tonnage curves.

The Mineral Resource has been constrained by a pit shell to determine a shape for the “reasonable prospects of eventual economic extraction”. The constrained pit delineated resource is presented in Table 1-1 with the base case Zinc equivalent (ZnEqv) cutoff of 1.5% ZnEqv highlighted. The effective date of the Mineral Resource Estimate is March 15, 2021. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. These mineral resource estimates include inferred mineral resources that are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves. It is reasonably expected that the majority of inferred

mineral resources could be upgraded to Indicated. Mineral Resources were estimated using the 2019 CIM Best Practice Guidelines and are reported using the 2014 CIM Definition Standards.

The following factors, among others, could affect the Mineral Resource estimate: commodity price and exchange rate assumptions; pit slope angles; assumptions used in generating the LG pit shell, including metal recoveries, and mining and process cost assumptions. The QP, Sue Bird is not aware of any environmental, permitting, legal, title, taxation, socioeconomic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

**Table 1-1 Mineral Resource Estimate for the Blende Project (Effective date: March 15, 2021)**

Class	Cutoff	In situ Tonnage	In situ Grades					In situ Metal Content			
			ZnEq1	Zn	Pb	Ag	NSR	OXRAT	Zn	Pb	Ag
		(ktonnes)	(%)	(%)	(%)	(gpt)	(\$CDN/t)		(Mlbs)	(Mlbs)	(koz)
Indicated	1.0	5,304	4.18	1.69	1.47	27.22	92.60	0.07	198	171	4,642
	1.5	4,643	4.60	1.82	1.63	30.32	101.85	0.08	187	167	4,526
	2.0	3,996	5.06	1.95	1.83	34.00	112.06	0.08	172	161	4,368
	2.5	3,351	5.60	2.08	2.07	38.72	124.04	0.08	153	153	4,172
	3.0	2,780	6.19	2.19	2.33	44.29	137.05	0.09	134	143	3,959
	3.5	2,284	6.83	2.30	2.63	50.60	151.26	0.09	116	132	3,715
	4.0	1,905	7.44	2.40	2.90	57.06	164.87	0.09	101	122	3,495
	5.0	1,375	8.59	2.56	3.41	69.92	190.18	0.10	78	103	3,090
Inferred	1.0	47,692	4.12	1.70	1.47	25.00	91.22	0.21	1,785	1,550	38,331
	1.5	42,243	4.49	1.83	1.62	27.48	99.41	0.21	1,706	1,505	37,320
	2.0	36,734	4.90	1.97	1.78	30.44	108.53	0.21	1,596	1,439	35,956
	2.5	31,833	5.31	2.10	1.94	33.58	117.58	0.21	1,473	1,362	34,368
	3.0	26,816	5.79	2.23	2.14	37.56	128.20	0.21	1,315	1,268	32,380
	3.5	22,423	6.29	2.35	2.36	41.86	139.23	0.21	1,160	1,166	30,177
	4.0	18,448	6.83	2.46	2.60	46.95	151.35	0.21	1,000	1,059	27,848
	5.0	12,559	7.95	2.66	3.11	57.80	176.03	0.21	736	862	23,339

**Notes to Table**

- The Mineral Resource Estimate has been prepared by Sue Bird, P.Eng., an independent Qualified Person.
- Resources are reported using the 2014 CIM Definition Standards and were estimated using the 2019 CIM Best Practices Guidelines.
- Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- The Mineral Resource has been confined by a "reasonable prospects of eventual economic extraction" pit using the following assumptions: US \$1.3/lb zn, US \$1.0/lb Pb and US\$26/oz Ag at a currency exchange rate of 0.77 US\$ per \$CDN; Recoveries of 70% Zn, 85% Pb and 90% Ag, a 3% NSR royalty and Payable of 88% payable Zn, 83% payable Pb, 73% payable .
- The resulting ZnEq is:  

$$\text{ZnEq} = \text{Zn}\% + (\text{Pb}\% * \$1.0 * 0.85 * 0.95) / (\text{Zn}\% * \$1.3 * 0.70 * 0.85) + \text{Aggpt} / 31.1034 * \$26 * 0.90 * 0.80 / (\text{Zn}\% * 1.3 * 0.70 * 0.85 * 22.0462)$$
- The specific gravity of the deposit has been determined by correlation with Zn and b grades.  $\text{sg} = (\text{Zn}\% + \text{Pb}\%) * 0.015 + 2.8$
- Pit slope angles are assumed at 45°
- Numbers may not add due to rounding.

## **1.13 Interpretations and Conclusions**

### **1.13.1 Conclusions**

The work that has been completed to date has demonstrated that the Blende deposit contains Ag-Pb-Zn resource and additional drilling, explorations and metallurgical studies are warranted.

### **1.13.2 Opportunities**

Metallurgical testwork show the opportunity for higher-than-expected recovery from subsequent lifts and saturation of heap leach material beyond the 70-day leach cycle.

The property is incompletely explored, and potential exists to discover both additional Ag-Pb-Zn mineralization as well as potential for a Cu zone mineralization in under-explored area to the north.

### **1.13.3 Risks**

Mineral resources that are not mineral reserves do not have demonstrated economic viability. These mineral resource estimates include inferred mineral resources that are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves. It is reasonably expected that the majority of inferred mineral resources could be upgraded to Indicated.

## **1.14 Recommendations**

A proposed work program includes:

- Infill drilling in the West Zone-area and East-area zones to increase confidence in the resource estimation.
- Exploration drilling to extend the known West and Far West Zones both down-dip and along strike, as well as to test the Far East Zone.
- Continued metallurgical studies to better determine appropriate process procedures and optimal recoveries.
- Continual geological investigation in the Central, the Far East area, and the northwest, southeast and northern extensions of the claim group.



## 2 Introduction

Moose Mountain Technical Services (MMTS) was retained by Blende Silver Corp. (Blende Silver, or the Company) to prepare an updated Mineral Resource Estimate (MRE) and a National Instrument (NI) 43-101 Technical Report for the Blende Zinc-Lead-Silver Property (Technical Report) in the Yukon Territory.

Blende Silver is a public company registered in British Columbia. Blende Silver acquired a 100% interest in the Blende Property on Nov. 30, 2008, by issuing 4.5 million shares to the former Blende Property owners Eagle Plains Resources Ltd (Eagle Plains). A 1% NSR is held in favor of Bernie Kreft and a 2% NSR for Sandstorm Gold Ltd. (Sandstorm). Blind Creek is entitled at any time to purchase Bernie Kreft's entire 1% NSR by paying the sum of \$1,000,000 and to purchase 1% of Sandstorm's 2% Royalty Interest by paying the sum of \$1,000,000.

The purpose of this Technical Report is to provide an NI 43-101 Mineral Resource Estimate on the Blende Property for Blind Creek Resources Ltd, (Blind Creek) a public company listed on the Toronto Stock Exchange Venture board (TSX.V) with trading symbol BCK.V.

### 2.1 QPs and Site Visits

The author Robert J. Morris, P.Geo of MMTS visited the Blende Property on September 9-11, 2017, accompanied by Clive Aspinall, P.Geo., representing Blind Creek. There has been no drilling or exploration on the property from this time up to and including the effective date of this report.

Robert J. Morris, P.Geo. is the QP responsible for Sections 1.1 through 1.10, 1.13.2, 1.14, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 20, 23, 24, 25.1, & 26.2.

Frank Wright, P.Eng. is the QP responsible for Section 1.11, 1.13.2, 13, 25.2, & 26.1.

Sue Bird, P.Eng is the QP responsible for Sections 1.12, 1.13.1, 1.13.3, 14, & 25.3.

### 2.2 Frequently Used Acronyms, Abbreviations, Definitions and Units of Measure

All costs are presented in Canadian dollars. Units of measurement are metric. Only common and standard abbreviations were used wherever possible. A list of abbreviations used is as follows:

<b>Distances:</b>	mm	– millimetre
	cm	– centimetre
	m	– metre
	km	– kilometre
	mbgl	– metres below ground level
	masl	– metres above sea level
<b>Areas:</b>	m <sup>2</sup> or sqm	– square metre
	ha	– hectare
	km <sup>2</sup>	– square kilometre
<b>Weights:</b>	oz	– troy ounces
	Koz	– 1,000 troy ounces
	Moz	– 1,000,000 troy ounces

	g	– grams
	kg	– kilograms
	T or t	– tonne (1000 kg)
	Kt	– 1,000 tonnes
	Mt	– 1,000,000 tonnes
<b>Time:</b>	min	– minute
	h or hr	– hour
	op hr	– operating hour
	d	– day
	yr	– year
	Ma	– Mega-annum (one million years)
<b>Volume/Flow:</b>	m <sup>3</sup> or cu m	– cubic metre
	m <sup>3</sup> /h	– cubic metres per hour
	L/s	– litres per second
<b>Assay/Grade:</b>	g/t	– grams per tonne
	kg/t	– kilograms per tonne
	g Au/t	– grams gold per tonne
	g Ag/t	– grams silver per tonne
	g Cu/t	– grams copper per tonne
	ppm	– parts per million
	ppb	– parts per billion
<b>Other:</b>	TPD or tpd	– metric tonnes per day
	ktpy	– 1,000 tonnes per year
	m <sup>3</sup> /h/m <sup>2</sup>	– cubic metres per hour per square metre
	Lph/m <sup>2</sup>	– litres per hour per square metre
	L/s/km <sup>2</sup>	– litres per second per square kilometres
	g/L	– grams per litre
	Ag	– silver
	As	– arsenic
	Au	– gold
	Cu	– copper
	Pb	– lead
	Zn	– zinc
	US\$	– United States dollar
	DDH	– diamond drill boreholes
	LOM	– life of mine
	kWh	– Kilowatt-hours
	P <sub>80</sub>	– 80% passing
	P <sub>100</sub>	– 100% passing
	UTM	– Universal Transverse Mercator coordinates

### **3 Reliance on Other Experts**

This Technical Report is based on the synthesis of existing geological data and on data and observations generated by exploration programs conducted by Eagle Plains Resources Ltd (Eagle Plains) and Bootleg Exploration Inc. (Bootleg). Sources of information include all available published sources, including government and industry Assessment Reports on the Blende Property and surrounding area and from other reports that were made available to the authors by the Company. The author has relied on the accuracy of the public data in the preparation of part of this Technical Report.

Blind Creek Sources of information are listed in the References, Item 27.

For royalties and purchase stipulations, Land Use Approvals and Land Use permits, the authors have relied on information provided by Blende Silver which has not been independently verified.

For Mineral Titles, the authors have relied on information from the Yukon Government Mining Recorders online Quartz Mining Claims database. For regional and local geology, the authors have relied on previous technical reports that have obtained descriptive information by J.G. Abbott, G.D. Delaney, L.H. Green, C.F. Roots, and other geologists employed by the Geological Survey of Canada and the Yukon Geological Survey.

## 4 Property Description and Location

### 4.1 Property Location

The Blende Property surrounds Mt. Williams, 64km north of Keno Hill, Yukon Territory. Mt Williams lies on the Continental Divide, just to the south and east of Braine Pass, which separates Beaver River and Stewart River (Yukon River drainage) from Wind River (Mackenzie River drainage). This is at 64° 24' North Latitude and 134° 40' west Longitude in Map sheet 106-D-7 in the north central Yukon. The UTM coordinates at the center of the Blende Property are roughly 516500 East and 7142500 North (UTM NAD83 – Zone 08N).

### 4.2 Property Description

The Blende Property consists of a contiguous package of 260 Quartz Mining Claims belonging to Quartz Mining Land Use Permit number LQ00474 as summarized in Figure 4-1 and illustrated in Figure 4-2. The claims are owned by Blende Silver (formerly Blind Creek) who purchased a 100% interest on Nov. 30, 2008, by issuing 4.5 million shares to former Blende Property owners Eagle Plains.

A 1% Net Smelter Royalty (NSR) is held in favor of Bernie Kreft and a 2% NSR for Sandstorm Gold Ltd. (Sandstorm). Under the Royalty Interest, the Company is required to pay Sandstorm, as an advance royalty payment against the Royalty Interest: (i) \$50,000 on the date a Feasibility Report is completed on the Blende Property and (ii) \$50,000 on or before every anniversary date of such Feasibility Report until the date of commencement of commercial production on the Blende Property. The Company is entitled at any time to (i) purchase 1% of the 2% Royalty Interest by paying Sandstorm the sum of \$1,000,000 and (ii) purchase the entire Underlying Royalty Interest by paying Bernie Kreft the sum of \$1,000,000.

The claims are in good standing with an expiry date ranging between 2023 and 2025. The claims have not been surveyed. The known showings as described in this Technical Report lie within the claims.



Claim Status report

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Claim status	Claim name and number	Grant number	Claim expiry date	Claim owner	NTS Map	Grouping number	Notification Approval
Active	Max 1 - Max 64	YC50636 - YC50699	2024-12-08	Blende Silver Corp - 100%	106D07	HM02859	LQ00474
Active	Max 66 - Max 153	YC50700 - YC50787	2024-12-08	Blende Silver Corp - 100%	106D07	HM02859	LQ00474
Active	Max 154 - Max 161	YC54978 - YC54985	2025-12-08	Blende Silver Corp - 100%	106D07	HM02859	LQ00474
Active	Mix 1 - Mix 16	YC09985 - YC10000	2025-12-08	Blende Silver Corp - 100%	106D07	HM02859	LQ00474
Active	Trax 1 - Trax 28	YC39822 - YC39849	2022-12-08	Blende Silver Corp - 100%	106D07	HM02859	LQ00474
Active	Trix 1 - Trix 46	YC11723 - YC11768	2025-12-08	Blende Silver Corp - 100%	106D07	HM02859	LQ00474
Active	Trix 47 - Trix 56	YC32293 - YC32302	2023-12-08	Blende Silver Corp - 100%	106D07	HM02859	LQ00474

Figure 4-1 Claims Status Report (Yukon Government: <https://apps.gov.yk.ca/ymcs>)

Blende Silver Corp. holds a 5-year Class 4 Quartz Mining Land Use Approval to provide for exploration activities at the Blende Property. The Company also holds a 2-year Land Use Permit to allow for Blende Property road access via the Wind River Winter Trail by the Yukon Department of Energy Mines and Resources, subject to certain conditions.

Other permits governed by laws and regulations pertaining to development, mining, production, taxes, labor standards, occupational health, waste disposal, toxic substances, land use, environmental protection, mine safety and other matters, may be required as the project progresses.

There are no social or environmental issues known to the author which would affect title. There are, to the best knowledge of the author, no liens, or encumbrances on the claims.

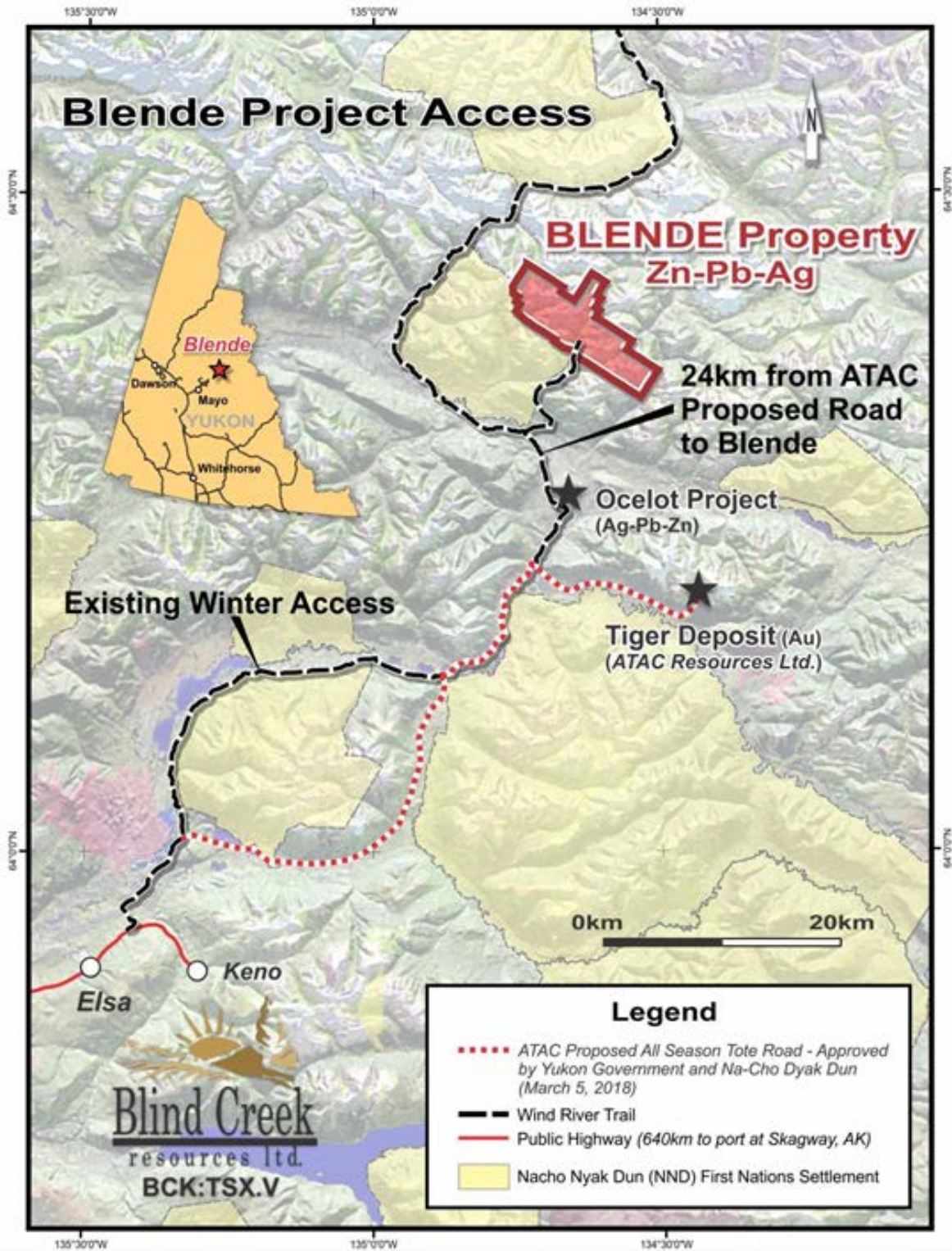


Figure 4-2 Location Map of the Blende Property Land Use Permit (Blind Creek, 2018)

## **5 Accessibility, Climate, Local Resources, Infrastructure and Physiography**

### **5.1 Access**

The Wind River Trail or "winter road" passes within 11km of the Blende Property between Elsa and Wind River. Currently, the most practical access is by helicopter from Mayo, on the Stewart River. Mayo is accessed by paved highway 450km from Whitehorse, by float plane or by wheeled Fixed Wing aircraft. Helicopters are available in Mayo or in Whitehorse.

### **5.2 Climate**

The area has long cold winters and short moderately warm summers. Exploration is practically restricted to the months of June to September, but snow can occur at any time. Permafrost exists in the area. A remote weather station was installed on the Blende Property in 2006 to collect environmental data over the winter season.

### **5.3 Local Resources and Infrastructure**

Essential supplies are available in Mayo, but most supplies are generally brought in from the much larger Territorial capital, Whitehorse, which is the business and government center of Yukon.

Whitehorse has daily flights from Vancouver. The nearest town of Mayo has essential facilities such as fuel, food and lodging, telephone, post office and basic groceries and supplies. It has a gravel airstrip and float plane facilities. Power from the Yukon grid extends from Mayo along the gravel access road to the Elsa and the Keno Hill mine (now owned by Alexco Resource Corp.). A good pool of trained labour is available in the Yukon. Major supplies and equipment are generally purchased in Whitehorse or in Dawson City, about two hours by road from Mayo.

### **5.4 Physiography**

The Blende Property is on the southern flank of the Wernecke Mountains, characterized by rugged ridges and numerous glacial cirques. To the south lies the Pacific watershed of the Yukon River drainage and to the north lies the Pacific watershed of the Wind River. At Mt. Williams, elevations range from 1,200m to 1,860m. The tree line is at approximately 1,300m. The Blende Property has sparse grass and lichen vegetation. Outcrop is most common on steep, north facing cirque walls, creek gullies and ridges whereas; south facing exposures are less precipitous and are covered by talus and scree.

## 6 History

As early as 1905, Camsell and Keele, of the Geological Survey of Canada ascended Stewart and Beaver Rivers as far as the mouth of Braine Creek, just northwest of the Blende Property at Mt. Williams.

Silver and lead deposits were discovered in 1922 on McKay hill in the Upper Beaver River area shortly after the discovery of the rich silver deposits at Keno Hill. A stampede occurred and many claims were staked (Cockfield 1924). Further exploration led to discovery of deposits on Silver Hill, Carpenter Hill, and Grey Copper Hill (1923). Basic geological mapping was accomplished by Cockfield in 1924 (GSC Summary Report 1924 Pt "A"). Considerable activity in the area was initiated by the development of the Keno Hill Mines, and the activity led to the discovery of numerous other showings in the area. The following is a summary of exploration on the Blende Property itself.

**1961** - Mineralization at the Blende Property was originally noted by the Geological Survey of Canada in 1961.

**1975** - The Blende Property was staked by Cyprus Anvil Mining Corp. (Cyprus Anvil) as the Will claims. Cyprus Anvil completed geological mapping, sampling, and detailed silt and soil geochemical sampling later in the year.

**1981** - Archer Cathro & Associates (1981) Ltd. (Archer Cathro) Re-staked the Blende Property in April 1981 and conducted trenching and rock sampling from 1981 to 1984. Expenditures from 1981 to 1983 are said to be \$22,500 (Franzen 1988).

**1984** - Archer Cathro and Norvista Development Ltd. completed geological mapping, hand trenching and detailed trench sampling in 1984 (Cathro and Carne, 1984) with total expenditures of \$33,000.

**1985** - Inco Exploration Ltd. optioned the Blende Property, tied on more claims (YA77655) in October 1984 and explored with mapping and sampling in 1985 before dropping the option. Their expenditures are not known.

**1987** - NDU purchased the Blende Property outright in 1987. A comprehensive report was written in 1988 by Jeff Franzen, P.Eng. In 1988, NDU explored the Blende Property by mapping and hand trenching and later drilled three holes from one location totaling 718 meters. The results were favorable with long intercepts of silver-lead-zinc mineralization and Franzen noted "...*The Blende Property has potential to host a major lead-zinc-silver deposit*". Based on the results (which are described in a subsequent section of this Technical Report) Franzen proposed a two-stage comprehensive exploration program which was budgeted at approximately \$7 million for both stages.

**1989** - NDU carried out further mapping, road construction, soil sampling, magnetic and VLF-EM surveys.



**1989** - Billiton optioned the Blende Property from NDU in September 1989. The agreement allowed Billiton to earn 50% equity in the Blende Property by expending an aggregate of \$4.3 million in option payments and work by December 31, 1991.

**1990** - Billiton as project operator drilled 15 holes on the main “West” Zone, totaling 3659.7m. This work led to the calculation of a preliminary diluted in situ open-pit Mineral Resource of 11.5 million tonnes averaging 3% lead, 2.20 % zinc, and 1.46 oz//tonne silver (50 grams/tonne).

**1991** - Billiton completed soil geochemical and geophysical surveys, drill-testing of the deposit over a 3.3km strike length, and preliminary metallurgical tests. The 1991 drilling consisted of 62 holes totaling 11,525m, including 15 holes in the West Zone, 34 holes in the East Zone and 13 holes in the central area between the two zones.

**1993** - Billiton elected in 1993 to convert its 50% equity interest to a 10% net profits royalty. It is assumed by the writer that the “earn-in” was completed. Control of the Blende Property in terms of operation returned to NDU.

**1994** - NDU drilled 7 step-out holes (596m) which successfully extended the West Zone 150m further westward (the West Zone remains open in this direction). This activity is NDU’s last recorded exploration of the Blende Property.

**1998** - NDU merged with United Keno Hill Mines Ltd. (UKHM) and the Blende Property came under the control of UKHM, which subsequently went into receivership and the claims subsequently lapsed.

**2002** - The Blende Property was re-staked by prospector Bernie Kreft.

**2005** - The Blende Property was optioned by Eagle Plains It was then farmed out to Shoshone Silver, a U.S. based OTC Company, but the option was not maintained.

**2005** - The Blende Property was optioned by Eagle Plains to Blind Creek.

**2006, 2007, 2008** - 45 additional diamond drill holes were drilled for a total of 8694.0m of drilling.

The past work has been described in detail in past Technical Reports filed on SEDAR from 2004 to 2008.

## **6.1 Historical Resources**

### **1990 Estimate**

Resource estimation and preliminary pit design was undertaken for Billiton by John Paterson, P.Eng. of Roscoe, Postle & Associates in the fall of 1990 to provide an order of magnitude grade, tonnage, and stripping ratio for the West Zone. This was done using a sectional method of calculation. PC-XPLOR and GEOMODEL software from GEMCOM Services Inc. were used for database management, section and plan generation and volume calculations based on geological interpretations provided by BMCI.

The results of this work indicated the potential for 11.5Mt of diluted mineralization with an in-situ value of C\$56.23 above the 1650m level grading 3.01% Pb, 2.20% Zn and 1.46 opt Ag and contained within a potential pit having a strip ratio of about 2:1.

## 7 Geological Setting and Mineralization

### 7.1 Overview

The Blende Zinc (Zn)-Lead (Pb)-Silver (Ag) Deposit is a large, structurally controlled, breccia-hosted system on the south edge of the Mackenzie Platform, hosted by Lower Proterozoic Gillespie Group dolomite. The Blende Deposit has features of both Irish-type and clastic-dominated Zn-Pb deposits (M. Moroskat et al., Mineral Deposita 2015) and is the largest carbonate-hosted Zn-Pb deposit in Yukon (M. Robinson and C.I. Godwin, Economic Geology 1995). The Blende Deposit is tabular and dips steeply to the south-east, cutting bedding approximately at moderate to high angles. Mineralization occurs intermittently along the structural zone for about 6km and is up to 200m in width. The zone is defined by a large-amplitude open, upright anticline and sub-vertical shear/fault zones that follow fracture cleavage. Mineralization is epigenetic and forms the matrix in a series of parallel breccia zones which strike east west and dip steeply south. These Pb-Zn-Ag-Cu mineralized breccia zones appear to be controlled by a weakly to moderately developed axial planar cleavage or parting which strikes ENE and dips steeply to the SWS.

Blende mineralization consists of yellow, fine to coarse grained sphalerite and galena. Other sulphide minerals include pyrite and minor chalcopyrite plus tetrahedrite. Some syngenetic or early diagenetic mineralization has been found associated with oolites and dewatering structures. Studies by C. Godwin, Ph.D., indicate a lead isotopic age of 1.54 billion years ("Ga").

On surface, the Blende Deposit is outlined by soil anomalies up to 10,000 parts per million (ppm) Zn. Most geophysical methods including IP, VLF and Max-Min EM work well due to the inert nature of the host dolomite, but graphitic sediments inter-layered within the Gillespie Group dolostones can create spurious anomalies.

### 7.2 Regional Geology

Regional geology was taken from a previous technical report by Transpolar Geological Consultants Inc., 2006, and is shown in Figure 7-1.

The Blende Property is situated on the "Mackenzie Platform" or "Yukon Block", part of the relatively stable craton overlain by Proterozoic to Paleozoic sedimentary units with minor volcanic components. The Mackenzie Platform is separated from the Selwyn Basin by the Dawson Thrust Fault, an east-west trending and south dipping fault with Proterozoic and Paleozoic history.

Farther to the south are additional south dipping Tombstone and Robert Service thrust faults. To the south of the thrust faults, on the south side of the Selwyn Basin, is the regional Tintina strike slip fault with considerable lateral displacement.

The Yukon Block lay on the margin of the Proterozoic supercontinent of Nena when the Wernecke Supergroup was deposited with the Fairchild Lake Group at its base through the Quartet Group to the Gillespie Lake Group at its top. The Racklan Orogeny folded the Wernecke Supergroup and either non-deposition or erosion removed over 300Ma from the stratigraphic column resulting in the Middle Proterozoic Pinguicula Group sitting unconformably on the Gillespie Lake Group at the Blende Property (Thorkelson, 2000).

The Wernecke Supergroup extends northward and westward beneath lower Paleozoic rocks of the Mackenzie Platform where it is regionally exposed in erosional “windows” or inliers. The Blende Property is underlain by the upper two groups of the Wernecke Supergroup, which are the Quartet Group and Gillespie Lake Group. These are overlain by a unit referred to, by Mustard et al. (1990), as “Unit 4” which is tentatively correlated with the Pinguicula Group exposed to the north of the Blende Property. A regional unconformity separates the Lower Proterozoic Wernecke Supergroup from the Middle Proterozoic Pinguicula Group, Figure 7-2.

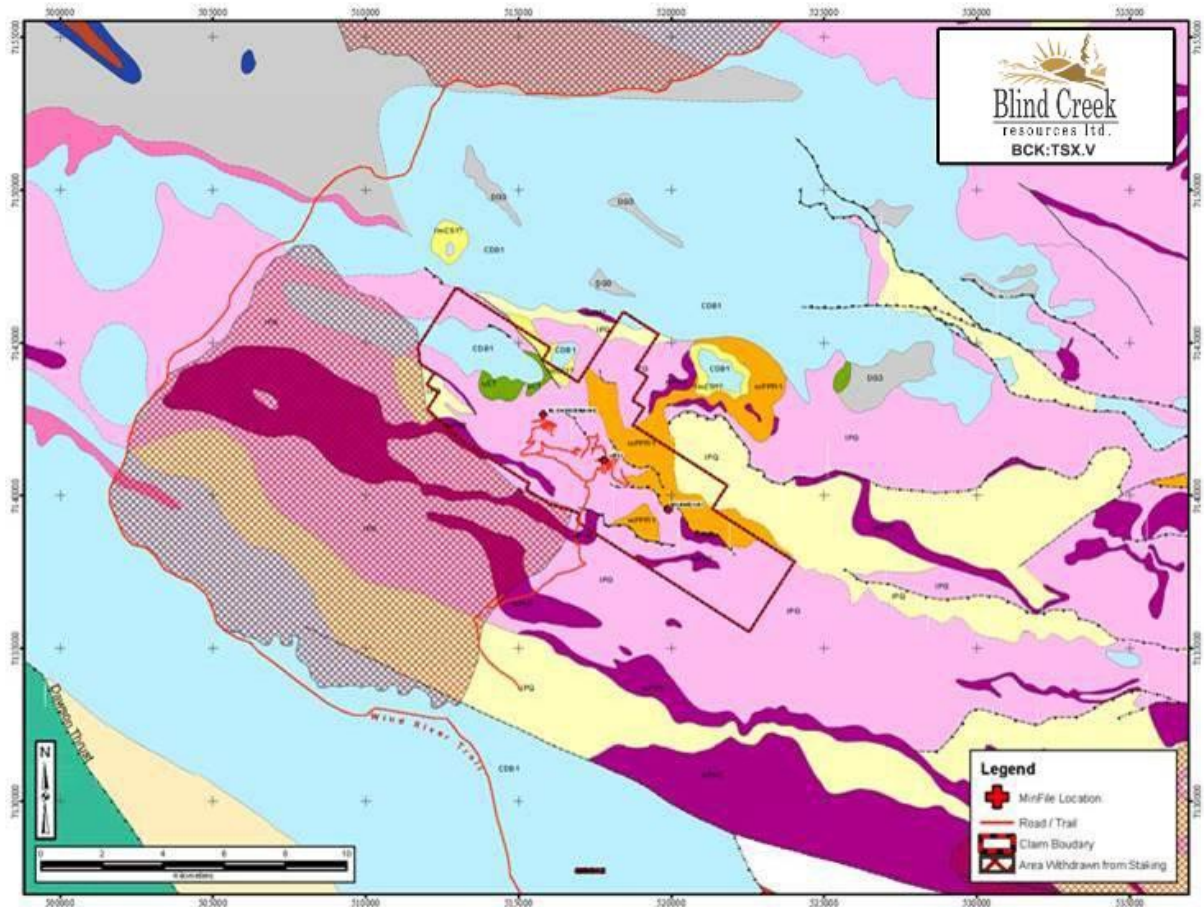
**The Quartet Group** consists of a turbiditic succession of dark brown and black siltstone, argillite, and minor sandstone (Roots, 1990). Beds are normally graded and separated by thin white laminae. The base of the unit is not observed, and the top is gradational with the Gillespie Lake Group (Roots, 1990). Locally, this contact is reportedly an angular unconformity, and the underlying Quartet Group is folded and cleaved.

**The Gillespie Lake Group** is mapped in two divisions by Roots (1990). The Lower Division (G1) is turbiditic and comprises 1-5m thick fining upward successions of graded dolomitic sandstone/siltstone with argillaceous tops. The Upper Division (G2) consists of thickly bedded dololite with stromatolitic sections, and commonly contains oolites, dissolution structures, mudcracks and intraclasts which are indicative of shallow water and emergent conditions. Unit G2 of the Gillespie Lake Group is pervasively dolomitized which locally obliterates original sedimentary structures and it is this unit that hosts the Blende Zn-Pb-Ag mineralization.

**Pinguicula Group (Unit 4)**, 4 kilometres east of Mt. Williams, comprises pebble to cobble conglomerate disconformably overlying the Gillespie Lake Group. On the Blende Property, dark siliceous fine sandstone and siltstone overlie the Gillespie Lake Group (Roots, 1990). This succession contains thin beds of fine cross-laminated dolostone which passes upward into light-coloured platy siltstone and is overlain by a light pink dolostone characterized by fine algal laminae and small budding stromatolite heads atop large columns (units P1-P3). Stratigraphy is illustrated in a diagrammatic section.

### 7.3 Intrusive rocks

Numerous sills, plugs and dykes of brown weathering hornblende gabbro intrude the Gillespie Lake Group in the Blende Property and form broad bands and rugged ridges that trend southeast across the area. These intrusions, named by Abbott as the Hart River sills, are reported to cut "Unit 4" rocks (Roots, 1990).
















Geology Legend	
<b>Carboniferous to Permian</b>	
 CPT: TSICHU:	Thin to medium bedded, siliceous calcarenite, dolostone, sandy dolostone and minor grey quartzite; buff and grey weathering; thick bedded, dark grey bioclastic limestone; black to silvery shale; minor chert, and chert pebble conglomerate
<b>Mississippian</b>	
 MK: KENO HILL:	Massive to thick bedded quartz arenite; thin to medium bedded quartz arenite interstratified with black shale or carbonaceous phyllite; local scour surfaces and shale intraclasts; locally foliated and lineated
<b>Lower and Middle Devonian</b>	
 DO3: GOSSAGE:	Limestone and dolostone, light grey and dark brownish grey, fine to medium grained, mostly alternating dark and light coloured medium to thick beds
<b>Ordovician to Lower Devonian</b>	
 ODR: ROAD RIVER - SELWYN:	Black shale and chert (1) overlain by orange siltstone (2) or buff silty limestone (3); locally contains beds as old as Middle Cambrian (4); correlations with basalinal strata in Richardson Mountains include: ODR1 with ODR2 (upper part) and ODR2 with ODR4 (Road River Op.)
<b>Upper Cambrian and Lower Devonian</b>	
 CDB1: BOUVETTE:	Grey- and buff-weathering dolostone and limestone, medium to thick bedded; white to light grey weathering, massive dolostone; minor platy black argillaceous limestone, limestone conglomerate, and black shale, massive bluish-grey weathering dolostone
<b>Upper Cambrian</b>	
 UCT: TAIGA:	Striped yellow and orange weathering fine crystalline, light grey limestone; light grey weathering, thick bedded and massive dolostone; minor brown and green shale
<b>Lower to Middle Cambrian</b>	
 IMCS1: SLATS CREEK:	Rusty brown weathering, turbiditic, quartz sandstone with minor shale and siltstone; pale red weathering siltstone, quartzite pebble and cobble conglomerate and limestone; maroon with green argillite with minor quartzite and limestone
<b>Upper Proterozoic to Lower Cambrian</b>	
 PCH: HYLAND:	Consists upwards of coarse turbiditic clastics (1), limestone (2) and fine clastics typified by maroon and green shale (3); may include younger (4) units; includes scattered mafic volcanic rocks (5)
<b>Middle Proterozoic</b>	
 CSM6: MARMOT:	Grey- to dark grey weathering, dark volcanic rocks, many partly serpentinized, brown-weathering grey-green limy tuff and argillite, and thin-bedded brown limestone
<b>Lower Proterozoic</b>	
 nPH2: HART RIVER:	Resistant dark weathering diorite and gabbro sills and dykes
 nPPF11: PINGUICULA/FIFTEEN MILE:	Basal siliciclastic red laminates; thin bedded laminated and fissured limestone, laminated dolomite, massive white dolostone with wavy, cryptalgal lamination, cross bedding, tepee structures, extensive dolomite veinlets and chert
<b>Lower Proterozoic</b>	
 IPO: GILLESPIE LAKE:	Dolostone and silty dolostone, locally stromatolitic, locally with chert nodules and sperry kerol fillings, interbedded with lesser black siltstone and shale, laminated mudstone, and quartzose sandstone; local dolostone boulder conglomerate
 IPO: QUARTET:	Black weathering shale, finely laminated dark grey weathering siltstone, and thin to thickly interbedded planar to cross laminated light grey weathering siltstone and fine grained sandstone; minor interbeds of orange weathering dolostone in upper part

Figure 7-1 Regional Geology (Source: Blind Creek, 2018)

### 7.1 Stratigraphy

Details on the stratigraphy are contained within the 2006 NI 43-101 Technical Report on the Blende Property by R.J. Sharp. No significant new information on the stratigraphy on the Blende Property has been collected during the 2006 -2017 drilling, mapping programs, and density collection programs.

Figure 7-2 illustrates the major components of the Gillespie Lake Group stratigraphy.

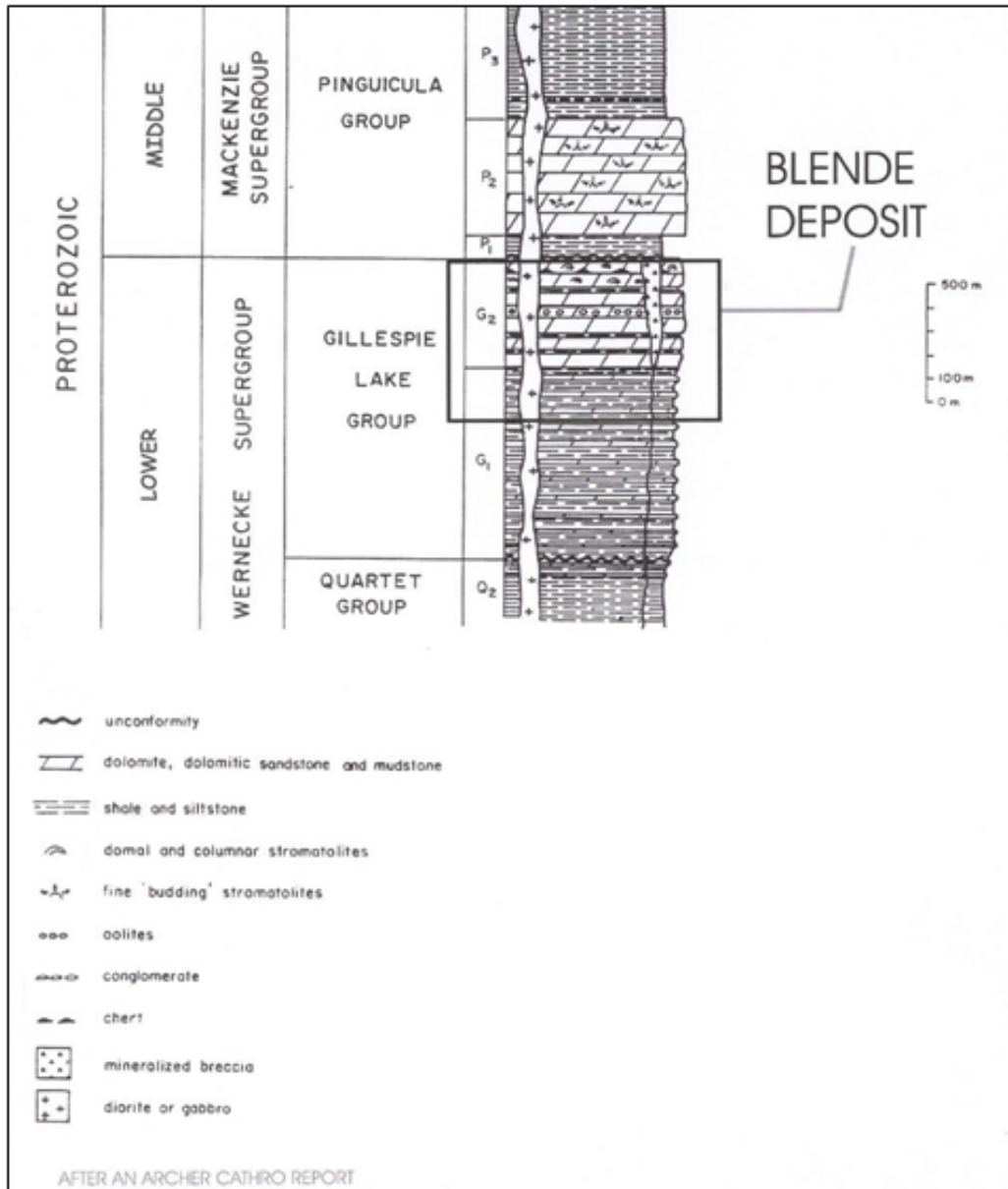


Figure 7-2 Stratigraphy of the Blende Deposit (Source: Cathro)

## **7.4 Intrusive rocks**

During the 2006 drill program numerous sills, plugs and dykes of brown weathering hornblende gabbro and diorite were intersected. These intrusive bodies intrude the Gillespie Lake Group dolostones hosting mineralization and were seen to displace Zn-Pb-Ag mineralization. The intrusive rocks are barren and have the net effect of diluting grade in mineralized areas.

## **7.5 Structure**

The Blende Property is marked by a number of major fault zones as well as folding related to regional mountain building events. These structures and the mineral occurrences are related in that some of the accompanying structures are the conduits for mineralization. Figure 7-3 shows the Blende Property scale geology and structure including the axis of the Blende Structural Zone associated with Zn-Pb-Ag mineralization.

Multiple deformation events have affected this area. The first event to have affected this area is the Racklan Orogeny (~1700 Ma.). This event most likely had a southeastern direction of shortening that resulted in structures oriented approximately southwest to northeasterly. The Racklan Orogeny occurred prior to the Laramide Orogeny (Mesozoic to early-Tertiary) which featured a northeastern direction of shortening. Structures related to this later deformation event are roughly oriented northwest-southeast, sub parallel to the dominant orientation of structures in the Blende Property. Evidence for an earlier orogeny is difficult to determine considering the strong overprint of the Laramide structures.

## **7.6 Local Geology**

Local geology summarized below has been paraphrased from a previous Technical Report by BJ Price Geological Consulting and Christopher S Gallagher, 2009, and is shown in Figure 7-1.

The Property geology was remapped near the mineralized showings and mapping coverage was also extended along strike of the known mineralization. A differential GPS was used to locate critical geological contacts whilst other contacts and stations were located using a standard GPS unit more accurately. Mapping data and GPS locations were stored in a database and downloaded to a GIS system using a specially prepared topographic base map. The Blende Property base map was obtained by flying an aerial survey in 2006 and having an orthophoto and contour map prepared. The old digital topographic data available from National Resources Canada has an error of at least 25m which makes accurate GPS locations; using the same projection, appear to be in the wrong spot with respect to the known topography. This problem was solved by using the new base map. The local geology on and around the Blende Property was examined in detail during 2006. Geological contacts were checked and lithologies were confirmed and a geological map was prepared by M. Bowerman, under the supervision of the writer. The revised geological map is shown in Figure 7-3 and reported in detail by Bowerman, 2006 and summarized in the Blende Property 2006 Assessment Report written by Sharp and Gallagher.

The following sections are summaries based on the Bowerman, 2006 and Sharp and Gallagher, 2006 reports.

## 7.6.1 Stratified Rocks - Paleo-Proterozoic

### Quartet Group

The Quartet Group is a recessive unit of grey to black mudstone that is rarely exposed on the Blende Property. Bedding is defined by thin silty to fine-sand laminations that are relatively planar. Cleavage is well developed in this Unit, although there is no evidence of other deformation exhibited in outcrop. Veining and mineralization are not reported at any of the outcrops examined although disseminated pyrite is rarely found.

The only exposures of the Quartet Group in the Blende Property are limited to the northeast and northwest portion of the Blende Property. The exposure in the northwest portion of the field area is suspect as Quartet Group, considering that the limited exposures found are nearly surrounded by Gillespie Lake Group rocks. It is common to see 20-30m wide intervals of grey mudstone within lower parts of the Gillespie Lake Group hence some of the previous mapping that assigned these rocks to the Quartet Group was corrected. The Quartet Group appears to be in fault contact with the Pinguicula Group in the Far-East Zone.

### Gillespie Lake Group

The morphology of the Gillespie Lake Group is quite varied within the Blende Property. Previous researchers have separated the Gillespie Group into 7 subdivisions (Delaney, 1981), some of which are clearly exposed in the Blende Property.

Above the East Zone the unconformity between the Pinguicula Group and the Gillespie Lake Group is clearly exposed. The uppermost unit of the Gillespie Lake Group is a thickly (>1m to massive) bedded dolostone to slightly silty dolostone that weathers reddish orange. Algal structures have a wide variety of forms, as stromatolites, wavy laminations, and oncoids. Usually, these algal structures are silicified and more resistant to weathering than the host dolostone. This section corresponds with the G7 unit of the Gillespie Lake Group described by Delaney (1981).

The Central Units of the Gillespie Lake Group display more internal structure, in the form of thinly (0.5-3cm) bedded dolomitic siltstone with occasional thick bedded (>1m) sections. The dolomite varies in silt content, which defines bedding and creates a wide range in appearance of this formation. The dolomitic siltstone weathers orange to tan and is fine grained. There are sections that display strong differential weathering and have a 'banded' appearance of light tan resistant layers and recessive orange layers or nodules. Stromatolitic sections with columnar stromatolites 3-15cm wide and 3-20cm in diameter are present occasionally. Distinctive, fining-upwards oolitic layers are found rarely. The ooids range in diameter from 0.5mm to 2mm and single oolitic layers can be up to 1.5m thick. Another distinctive feature is thin layers of conglomerate with tabular clasts of dolomitic siltstone. These unique sedimentary structures are not continuous or common enough to be considered marker horizons. The boundaries between these lithologies are not sharp and their interbedded nature and structural complexity creates challenges in determining the fine detail of the stratigraphic column. The mineralization of the Blende Property is hosted in veins and breccias in this part of the Gillespie Lake Group. In outcrop, veins filled by siderite, dolospar, and quartz are common. These veins are normally less than 1cm wide and occasionally zones of rubble and crackle brecciation are apparent in the more intensely veined areas. Cleavage is well developed in more siliciclastic layers but more often, irregular spaced, and oriented cleavage (possibly strong jointing) is the most common.



The lower part of the Gillespie Lake Group exposed at the Blende Property is dominated by dolomitic siltstone that is finely laminated and greenish-grey to brownish orange in colour. These dolomitic siltstones have a high siliciclastic component and are relatively devoid of sedimentary structures other than laminations or bedding. Cleavage is well developed in the Lower Gillespie Lake Group due to the higher siliciclastic component as compared to the upper Gillespie. A large section of Lower Gillespie Lake Group is exposed to the northwest of the Far-West Zone. The lower contact between the Quartet Group and the Gillespie Lake Group has not been observed in the field area.

## **7.6.2 Meso-Proterozoic**

### **Pinguicula Group**

**Upper Unit:** A massive grey dolostone forms the upper Unit of the Pinguicula. Distinctive coarse pink dolospar veinlets and pods are common throughout. This Unit forms resistant grey ridges within the Far East Zone of the Blende Property.

**Middle Unit:** The Middle Unit of the Pinguicula Group is a distinct package of green and maroon weathering mudstone. These mudstones are generally grey to green on a fresh surface and weather green to maroon, with the maroon layers usually being more carbonaceous. The majority of the mudstone is siliciclastic with occasional layers of slightly dolomitic mudstones. The majority of the Pinguicula exposed in the Blende Property is this Unit and a considerable section is found in the Far-East Zone.

**Lower Unit:** A distinctive layer of conglomerate marks the lower-most Unit of the Pinguicula Group. This conglomerate is defined by sub-rounded clasts that range in size from pebble to boulder with varying provenance, from black shale to intermediate igneous. The exposed thickness of the basal conglomerate ranges from 3m to 20m and quickly grades into brown-weathering, coarse grained sandstone. This lowermost Unit is exposed in the SE map area, above the East Zone and NE of the Central Zone.

## **7.6.3 Phanerozoic - Cambrian**

Lower Cambrian Unconformity overlain by Taiga Group and Bouvette Formation Taiga Group

Mapped 1.5km northwest of the West Zone, this unit is a medium to fine grained buff grey, resistant dolostone. The outcrop visited had dolospar veining which could be described as a weak zebra texture. The rock was commonly fractured and filled with white to pink dolospar. This Unit is known to rest unconformably on the Gillespie Lake Group but the contact in the field was obscured by talus.

### **Bouvette Formation**

Mapped 1km northwest of the West Zone, only the basal contact of this Unit was seen in the 2006 field work. The contact appears to be unconformable with the underlying Gillespie Lake Group but may also be tectonic. The outcrop observed was a white to tan, medium grained quartzite with local conglomerate. No bedding was visible to get strike and dip orientations from.

### **Intrusive Rocks**

Most intrusive rocks on the Blende Property belong to the Hart River Intrusive Suite. This Group of intrusive rocks vary from coarse to fine grained with compositions that range from diorite to gabbro. The intrusions range from small dykes and sills, less than 1m wide, to thick ones that are up to 500m wide. They often

have bleached, and talc altered halos developed in the adjacent dolostones but everywhere appear to post-date the Zn-Pb-Ag mineralization. The intrusive rocks commonly show some degree of chloritization. Most of the smaller sized intrusive bodies near or within the mineralized zones have an irregular shape ranging from sills to dykes to plugs. One very large sill lies to the immediate south of the claim group and appears related to similar bodies that lie in the southeast portion of the claims (see Figure 7-3). This may have been part of an extensive series of sills intruded into strata overlying the mineralized zones but is now mostly eroded. It is interesting to note the correlation between areas of significant Zn-Pb-Ag mineralization and the presence of numerous but small dykes and irregular mafic masses cutting into or near the mineralized strata. One small 10cm thick black mafic dike with very fine-grained chilled margins cut one hole in the east zone. A similar occurrence was noted off the Blende Property about 1.5km north of the East Zone.

#### 7.6.4 Structure

Most units in the field area do not show significant deformation at the outcrop scale. Near faults and in the hinges of major folds, there appears to be more parasitic folding, usually visible in more silty lithologies than carbonates. A foliation ( $S_1$ ), axial planar to the major antiform, is also documented in most outcrops; this foliation varies from an anastomosing disjunctive foliation in massive carbonate units (dolomitic siltstone) to a true continuous cleavage in more phyllosilicate rich layers and rocks (mudstones and graphitic rich layers). Development of  $S_1$  is also much more developed near major structures and in parasitic fold hinges.

The large-scale structure dominating the main corridor of mineralization is an anticline with a fold axis orientation of approximately  $120^\circ/10^\circ$  and an axial plane orientation of  $120^\circ/65^\circ$ . The folds are verging to the northeast so that the long limb of the asymmetrical folds is dipping to the southwest. This is exhibited by the dominance of southwest dipping strata in the field area. Parasitic folds have a similar orientation to the major fold, but localized drag folding related to faulting is variable in orientation.

Faulting throughout the field area is common with the majority of faults displaying a  $\sim 120^\circ$  strike and steep dip towards the southwest of  $60^\circ$ - $70^\circ$ . Drag folding into these faults is common and they suggest a reverse sense of motion (northeast side down). There are rare slickensides that suggest dominantly strike-slip motion on some of the exposed faults, but this may be a late phase of movement of unknown magnitude. The major anticline that strikes through the mineralized corridor also seems to have a close relationship with faulting. The faulting in the hinge zone of the anticline is most likely from progressive deformation of the fold with the transformation into a fault, a common structural association in the Cordilleran Fold and Thrust Belt (Bowerman, 2006).

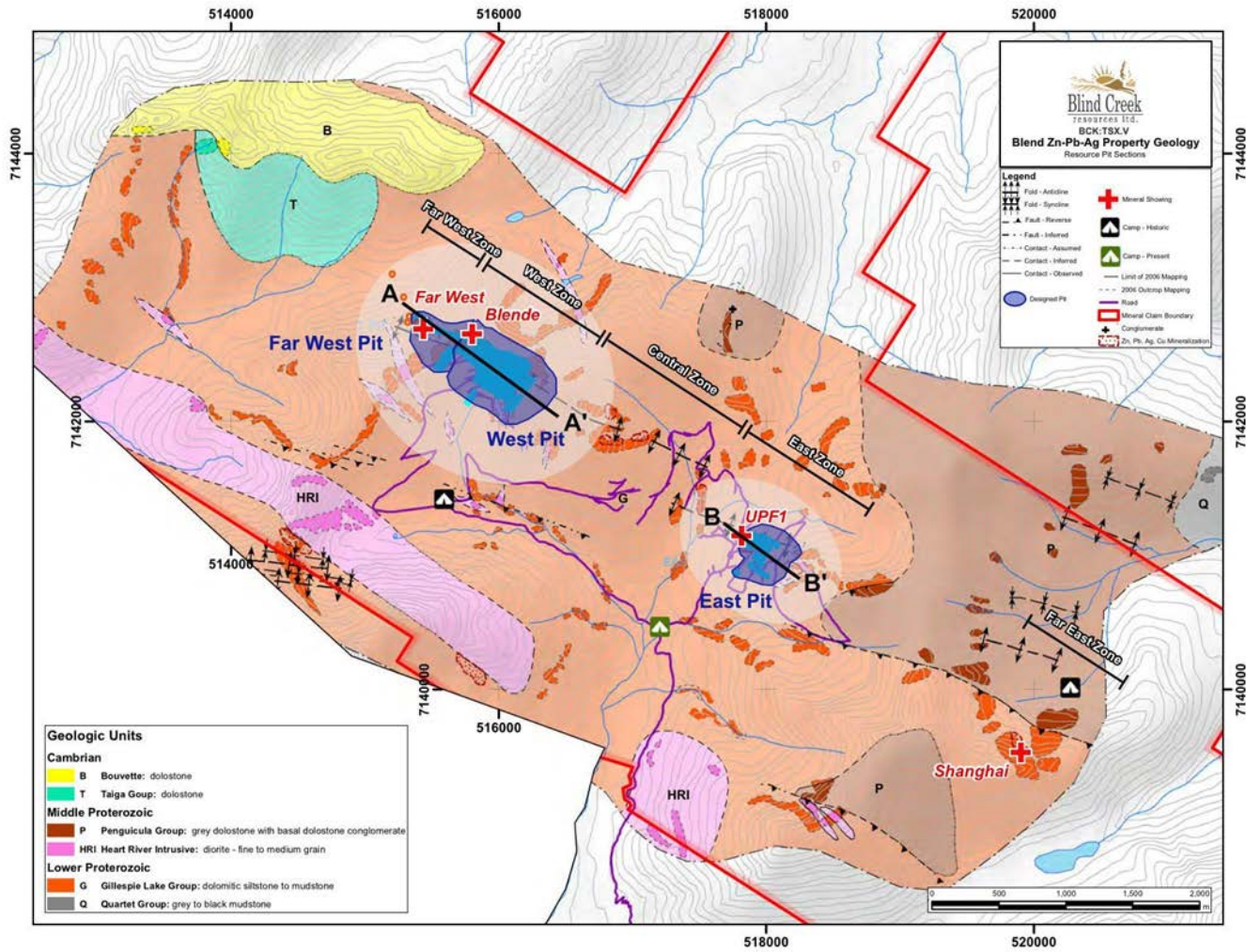


Figure 7-3 Local Geological Map of the Blende Deposit (Source: Blind Creek, 2018)

## 7.7 Mineralization

Zinc, lead, and silver mineralization occur in 5 main domains within the 3 main zones on the Blende Property. From west to east the mineralized domains are named: *Far West (Far West Zone), West Zone and West Brx (within the West Zone), East Central and Eastern North (within the East Zone)*.

It was deemed that insufficient data within the Central Zone and Far East Zone was reason to exclude these from the Resource Estimation but should be considered as exploration targets for future work. The principal minerals containing the Zn and Pb are sphalerite (ZnS) and galena (PbS) but weathering has also converted a significant amount of the sulphides to smithsonite (ZnCO<sub>3</sub>) and anglesite (PbCO<sub>3</sub>) requiring both sulphide and non-sulphide zinc and lead analyses to be carried out on all drill cores sent for assay or geochemical analysis.

High silver values are associated mainly with tetrahedrite but one occurrence of native silver was found in drill core from the East Zone. Typically, the highest silver assays come from the drill holes in the West zone. In 2006, drill hole B90-060 was re-sampled to check the high silver assay obtained in 1990 and is included in the 2006 analytical dataset. Chalcopyrite is present in drill core but is rare and in late vugs perhaps related to a separate fluid phase and not the principal Zn-Pb phase. Chalcopyrite grains and crystals up to 4cm diameter in small occurrences were occasionally found while prospecting within or near the mafic dykes and sills of the Hart River Intrusive Suite. These may be related to the magmatic event. Gangue minerals are calcite, talc, pyrite, quartz and dolospar within extensive dolomite containing interbedded siliciclastic and carbonaceous material. Axinite has been reported from the area.

### 7.7.1 Mineral Paragenesis (sequence of deposition)

Based upon examination of mineralized outcrops, drill core logging and petrographic examination by Company geologists working on the Blende Property the following mineral paragenesis was arrived:

1. Early pyrite deposition which was later fractured, brecciated and corroded then partly replaced by an early sphalerite ± galena;
2. Main stage deposition of sphalerite and galena ± pyrite;
3. Late-stage coarse grained galena and/or fine grained clusters of tetrahedrite associated with quartz-dolospar and a minor potassium feldspar component as vein filling cement;
4. Rarely a late phase of a Ag-Cu alloy (Gleeson, personal communication, July 25, 2006)
5. A very late phase of chalcopyrite crystals (3-6 mm) associated with fine quartz crystals (1-2 mm) was seen in white dolospar veins in core within small (1-2 cm) vugs.
6. Weathering and oxidation and formation of limonite, goethite smithsonite, hydrozincite and anglesite.

Polished thin sections show that early pyrite is commonly fractured and corroded and often partially replaced by sphalerite and galena. Galena, sphalerite and tetrahedrite appear to lack deformation features. Galena is a vein or void filling mineral and a breccia matrix cement or replacive mineral after dolomite and pyrite. Some galena and sphalerite show exsolution textures.

Extensive mineralogical work has been done by M. Moroskat as part of his M.Sc. thesis at the University of Alberta. One significant aspect of the Blende Mineralization that stands out is the apparent lack of deformation of the sulphides that were formed during the main stage of Zn-Pb deposition. The galena and sphalerite grew in open spaces and acts as cement to previously sheared and brecciated rocks but show little or no effects of strain (Moroskat, 2006).

### 7.7.2 Mineralized Zones

A 7km long mineralized trend is defined by a number of zones that occur along the axial surface trace of the Blende Antiform, with the two main loci of mineralization being the East and West Zones (Figure 7-3) with less well exposed mineralization along the Central Zone. The trend is bound to the east by the virtually unexplored area of the Far East Zone and to the west by the promising Far West Zone. Zn-Pb mineralization examined in the Far East Zone in 2006 exhibits a very similar character to that seen in the West and East zones of mineralization. It follows a SE trend of fracturing and contains fracture filling and vein style mineralization cutting across the bedding planes of the Gillespie Lake Group. The Far West Zone is a continuation of the West Zone and is primarily hosted in the sub-vertical WNW- striking Blende Structural Zone. The West Zone lies 2km to the east of a zinc geochemical anomaly found during the 2006 field program. This may indicate an extension of the mineralized trend in the westward direction.

Pre-mineralization tectonism folded the rocks into a broad SE plunging anticline which developed a strong axial plane fabric that controlled later shearing and brecciation within the thick bedded dolostones in the Gillespie Lake Group. Along with imparting a strong cleavage, folding, faulting, and shearing have produced parasitic small-scale folds and faults as well as shear zones and planes which are visible most commonly in the East Zone but are present in the West Zone as well. These extensively fractured, sheared, and brecciated rocks provided access for mineralizing fluids. Fe, Zn and Pb sulphide minerals filled voids, replaced breccia matrix, and occasionally replaced the host rock adjacent to and within the mineralized zones.

### 7.7.3 Mineralized Breccias

Breccias associated with mineralization were classified mainly on the shape of fragment vs. matrix and cement with an emphasis on non-genetic descriptions. Crackle to float breccia are the most common forms of breccia seen throughout the mineralized areas on the Blende Property but all breccias show large variations in fragment size, angularity, cement, and matrix composition, often over intervals as short as 0.5m. Classifying breccia types over 1m intervals in the drill core was often difficult due to this irregularity. The limits of crackle breccia were vague and in places large areas could be called “crackle breccia” in the strict sense of the definition. However, the fracturing and spar filling was very fine, sparse, and irregular enough that it is not a useful guide to mineralization.

Within the sulphide bearing portion of the breccia, the sulphide precipitated as cement as well as replacing some of the finer-grained granular detrital dolomite matrix. Local fragmentation of the host rock resulting from dissolution effects is also observed in drill core throughout the East and West zones but is overprinted by veining, tectonism, talc alteration and silicification, all of which tend to obscure the dissolution features. A lack of marker units hinders correlating bedded units across the mineralized areas which makes it difficult to estimate volume loss of the host strata. Therefore, it is difficult to document the importance of sulphide related dissolution processes in creating open space and conduits for mineralizing fluids.

#### 7.7.4 East Zone Breccias

Mineralization in the East Zone is more sheared than in the West zones. In the East Zone brecciation is related to tectonic deformation which produced fracturing and shearing along the axial plane of a major SE trending fold. These brecciated rocks have a complex history of carbonate veining followed by dissolution, shearing and more brecciation. Host rocks are all upper Gillespie Lake Group dolostones ranging from competent thick-bedded dolostones to thin bedded dolostone containing numerous argillaceous beds. Shearing and small-scale folding is concentrated in these argillaceous units which led to further brecciation of the more competent layers into fragments floating in a sheared argillaceous matrix or interlayered with other carbonate fragments. Zn-Pb-Ag mineralization replaced the breccia matrix and open spaces within these brecciated structures forming numerous irregular pods and lenses varying from low to high grade Zn+Pb+Ag values. The mineralization strikes along the axial plane cleavage and follows the dip of the cleavage at 65° dip to the SW.

#### 7.7.5 West Zone Breccias

More widespread mineralization in the West Zone occurs in the upper part of the Gillespie Lake Group where a thick bedded, shallow water sequence of dolostones contains more brecciation but less shearing and small scale folding than in the more argillaceous sections of the Gillespie Lake Group. The West Zone mineralization occurs at the apex of a broad SW plunging open anticlinal fold with a well-developed axial planar cleavage, very similar to the East Zone setting. Mineralized fluids migrated upward along fault structures and axial plane cleavage into the broader, open fracture system in the overlying thick bedded carbonate sequence. The greater span of open space within the brecciated and fractured dolostones here led to more pervasive Zn-Pb mineralization than in the East Zone where it is controlled by a more restricted area of foliation and cleavage containing lensoidal breccia intervals.

A separate mineralized brecciated structure in the West Zone is the steeply dipping, SE striking, "Discovery" shear that forms the north-east side of the West Zone. This zone outcrops at surface and has been traced to a depth of approximately 250m by drilling and contains discontinuous Zn-Pb-Ag mineralization within the sheared and brecciated matrix.

#### 7.7.6 Far-West-Zone Breccias

Copper mineralization, consisting of chalcopyrite, malachite, and azurite, exposed at the surface of the Far West Zone has been tested with the drilling, as well as western extension of the West Zone mineralization. Breccias, hosted in dolomitic siltstone of the Gillespie Lake Group, are mineralized with sphalerite and galena; local areas of chalcopyrite and pyrite up to 5% are also noted. Mineralization appears to decrease to the west. A fault, interpreted from soft gouge, is intersected in all holes deep enough to do so, and in all cases, it acts as a boundary for mineralization. No mineralization has been found below the fault, although whether the fault pre-or postdates mineralization is unknown. Diorite intrusive of the Hart River Intrusive suite is intersected in most holes, and generally has alteration along the contacts with wall rock.

## **7.8 Rock Alteration**

There is a lack of alteration features that can be definitively associated with the Zn-Pb-Ag sulphide depositional system at the Blende Property. The sulphide minerals and their weathered-oxidized equivalents are the best guide to economic mineralization.

The most common alteration visible in drill core and outcrop is one or more of the following: talc, bleaching or silicification. Talc alteration and bleaching is developed around the margins of some of the Hart River dykes and sills. The larger the intrusive mass the greater the halo of alteration. Bleaching extends from 1 to 50m and talc alteration extends from 1 to 75m away from the intrusive contact into the Gillespie Lake Group dolostone. Talc alteration grades from trace to intense and ranges from a few specks to dense waxy blue green talc. Pyrite and low-grade Zn-Pb values are found in talc altered zones around intrusives, but no mineralization has been noted within the intrusive bodies. This suggests that the intrusives postdate the sulphide mineralizing system. Silicification is erratic and widespread in the Gillespie Lake Group and occurs in the form of dense, fine grained, black silica replacement of fine grained grey dolostone. Silicification appears unrelated to sulphide content and is likely a diagenetic process. Bleaching is distinct next to many Hart River Intrusive Suite rocks and past workers have attributed it to a contact related de-dolomitization process within the adjacent dolostone.

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## **8 Deposit Types**

### **8.1 Mineral Deposit Types**

The mineral deposit types in the region of the Blende Deposit were described in the 2004 NI 43-101, and the 2005 and 2007 NI 43-101 reports on the Blende Property by R.J. Sharp. Although initially the Blende Deposit was originally identified as a Mississippi Valley type (MVT) deposit, current thinking lies more along the lines of shear or fault-hosted breccias and veins or Irish type carbonate hosted deposits (Moroskat, Gleeson, Sharp, Simonetti and Gallagher, 2015). The fluid inclusion temperatures for main stage mineralization at 285°C (Robinson and Godwin, 1995) are too high for the deposit to fall into the conventional MVT class and the deposits may be structurally controlled replacements or veins.

Other mineral deposit types present in the general Mayo-Wind River-Mackenzie Mountains area are:

- Keno Hill Ag-Pb-Zn Mines
- Gold placer deposits (Keno Hill area)
- Volcanogenic massive sulphide deposits (Hart River, Marg)
- Tungsten lode and placer deposits (Potato Hills, Dublin Gulch)
- Breccia hosted cop
- per-cobalt deposits (Fairchild Lake area)
- Iron ore - copper-Gold deposits (Upper Hart River)
- Sedimentary Iron deposits (Crest)
- Disseminated gold deposits (McQuesten area, Rau Property)



## 9 Exploration

- 2006 - All work on the Blende Property was carried out under the supervision of R.J. Sharp, P. Geol. NQ diamond drilling totaling 5,550.4m in 23 holes, was drilled between June 18, 2006 and September 15, 2006. The drill core was logged by geologists from Eagle Plains: co-author C. Gallagher, M.Sc., M. Moroskat, M. Bowerman and R. Sharp. Mineralized drill intersections were split and crushed on site in a portable sample preparation lab operated by Eco Tech Laboratory Ltd of Kamloops, BC (Eco Tech) . Sample pulps were shipped to Eco Tech in Kamloops, B.C. for analysis. A geological mapping program was carried out over the Blende Property during August 2006 with rock sampling and prospecting associated with it. In August, a soil geochemistry survey was run over parts of the Blende Property that were not previously sampled. To establish better mapping control an air photo survey was flown in August and a contour base map prepared over the central part of the claims. A tent camp was constructed on the claim group to provide living and working facilities for the crew. The network of existing roads was maintained and upgraded to allow access to drill site in the East and West zones. Work also included a sub-meter DGPS survey to locate as many historic drill hole collars as possible. Total cost of the 2006 exploration program was \$1,714,081.71.
- 2007 - All work on the Blende Property was carried out under the supervision of co-author Chris Gallagher, M. Sc. NQ diamond drilling totaling 3,410.9m in 15 holes, was drilled between June 15, 2007 and July 14, 2007. The drill core was logged by geologists from Eagle Plains: M. Moroskat, and Emily Vanderstaal. Mineralized drill intersections were split on site and shipped to the Eco Tech for sample preparation and analysis in Kamloops, B.C... The program was conducted from a base camp constructed in 2006. Total cost of the 2007 exploration program was \$1,285,000.00.
- 2008 - All work on the Blende Property was carried out under the supervision of Jo Van Randen
- B. Sc. NQ diamond drilling totaling 1047.3m in 7 holes, was drilled between August 4, 2008 and August 20, 2008. The drill core was logged by Jo Van Randen a geologist contracted by Eagle Plains. Mineralized drill intersections were sawn on site and shipped to Eco Tech in Kamloops, BC for analysis. The work program was conducted from a base camp constructed in 2006. Total cost of the 2008 exploration program was \$627,086.05.

For a thorough review of all aspects of past exploration on the Blende Property, including geochemistry, geophysics, and diamond drilling, please refer to the 2005 and 2007 NI 43-101 reports on the Blende Property by R.J. Sharp. Assessment Reports were also filed for 2006, 2007 and 2008 work by various authors.

## **9.1 Geochemistry**

Rock samples were collected as part of the geological mapping and prospecting traverses. Sample locations and geochemical results are reported in detail in the 2006, 2007 and 2008 Assessment Reports on the Blende Property. Elevated Pb, Zn or Cu values were obtained from select samples collected from the Far East showing as well as the East and the Central zones. The elevated base metal values correspond with visible mineralization noted in the specimens and confirm the presence of mineralization in these areas. It should be noted that these samples were grab samples taken for prospecting purposes and are only meant to be a guide to mineralization and are not used for valuation purposes.

## 10 Drilling

Total drilling done on the Blende Property from 1988 to the end of 2008 is 132 holes totaling 25,195.62m. For a review of the pre-2006 drilling refer to the NI 43-101 Technical Report on the Blende Property prepared in 2007 by R.J. Sharp for Eagle Plains. The 2006 Assessment Report for the Blende Property written by Sharp and Gallagher contains detailed technical information pertaining to the 2006 drill program, including logs, strip logs and geologic sections.

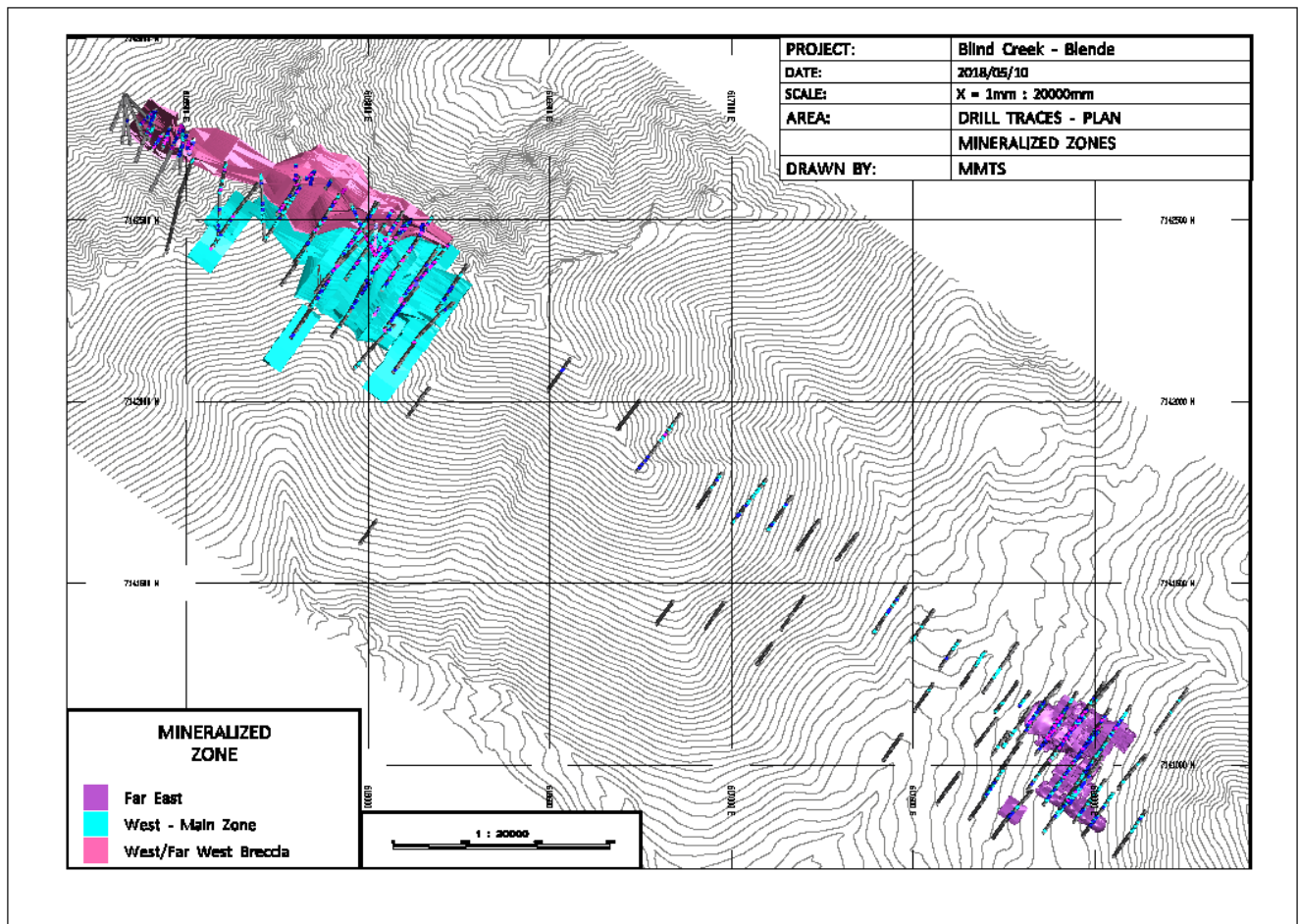


Figure 10-1 Plan Map showing Drill Holes with Mineralized Zones within the Blende Property (Source: Blind Creek, 2018)

### 10.1 Drill Hole Surveys

The 2006 - 2008 collar locations were surveyed with a Trimble XRS Pro differentially corrected GPS (“DGPS”) receiver with sub-meter accuracy. The dip and azimuth of the hole at the collar was measured using a Brunton compass, while subsurface azimuth and inclination were surveyed at least once per hole, with a down hole fluxgate magnetometer/inclinometer instrument rented from Icefield Tools Inc. from Whitehorse, Yukon. Historic (pre-2006) collar locations were also surveyed with the DGPS and updated in the digital database. Note that the drill hole azimuths recorded on the drill logs use a local grid north that lies 35° west of true north.

## **10.2 2006 Program**

Interpretation of the 2006 diamond drilling program is discussed in detail in the 2006 Assessment Report on the Blende Property written by Sharp and Gallagher. Diamond drilling confirmed the grades established by the historic drilling in the East Zone and in two places on the West Zone. A closer spaced drill pattern is required to further assess the West Zone and provide enough data to reinterpret the resources. The main concern is the continuity of mineralization along strike between each drill section. The down dip continuity of mineralization should also be systematically tested by the next phase of drilling in the West Zone.

## **10.3 2007 Program**

The 2007 drill program was successful in intersecting significant Pb – Zn +/-Ag mineralization in terms of grade (> 1.0% Pb + Zn) and thickness (> 3.0m) at all target zones. The program's success was in part due to a better understanding of the structural controls on mineralization, gained from the 2006 program. Data obtained from the 2007 drill program is consistent with previous data; mineralization is controlled in steeply SW dipping structural fabrics (S<sub>1</sub> disjunctive foliation and brittle shear zones such as the Blende Structural Zone).

## **10.4 2008 Program**

The 2008 program consisted of seven holes totaling 1,047.3m. Added to the historic drilling of 17,598m in 87 drill holes, the total amount of drilling done on the Blende Property is 132 drill holes totaling 25,195.6m. Diamond drilling has confirmed the grades established by the historic drilling in the East Zone and in 3 places on the West Zone.

## **10.5 Recovery**

Core recoveries are generally greater than 90%, although recovery was less in altered, mineralized and broken ground. The drillers were contractually obliged to maximize core recovery.

## 11 Sample Preparation, Analyses and Security

### 11.1 Sampling Method and Approach

#### 11.1.1 Core Treatment

Diamond drill core was taken to the Blende Camp and systematically logged and sampled for analysis. All drill logs for the 2006 work are included in the 2006 Assessment Report on the Blende Property written by Sharp and Gallagher. The logging was done on a Palm Pilot and downloaded to an Access database. Each log contains drill collar location and orientation data followed by a summary of geology and mineralization features seen in each hole. Core logging information presented in the log is: lithology, mineralization, breccia, vein interval, vein point, structure, shear zone, alteration, and geochemistry/assay information. Additional geological notes on the drill core were also recorded in field notes and transferred to the database section. A geological summary of each drill hole was also written by the logger at the completion of the logging of each drill hole and was stored in a database.

All diamond drill core was logged by a geologist who chose mineralized intervals for assay samples. A sample interval of 1m was chosen for the sample length, based on the marker blocks in the drill core boxes. A visual estimate was made by the geologist for each sample interval which could later be used as a reference to check the analytical results. The sample interval of NQ core was split in half in the drill camp, either by a Longyear core splitter or was sawn with a diamond saw. The split sample was stored in a labeled plastic bag and the other half was placed back in the core box for permanent storage. The bagged sample was then sent to the analytical lab (Eco Tech) for analysis. All samples were shipped in sealed plastic buckets equipped with security seal lids to prevent tampering.

Much of the drill core was photographed and cataloged in the Eagle Plains database. No systematic Rock Quality Determinations (RQD) measurements were taken.

Sampling of the diamond drill core followed a rigorous protocol. The marker blocks were checked and recovered core lengths were measured. The geologist logging the core selected the intervals to be sampled based on a visual estimate of mineralization, either visible sulphides or oxide mineralization visible in the core. A 1.0m sample interval was chosen based on the meterage blocks. In cases where the core splitter may bias the sample where the mineral distribution within the core was significantly inhomogeneous, a splitting line was scribed on the core by the geologist to guide the sampler. Sample assay tags were stapled into the core box along with the duplicate sent to the lab with the split sample. Core splitters used a Longyear core splitter or else sawed the core. The sample fraction was placed in a numbered plastic bag and the assay tag was placed in it. The other half of the core was returned to the core box for permanent storage on the Blende Property.

Eagle Plains completed limited geochemical sampling at the Far West Zone, Far East Zone, and in the main cirque area south of the Central Zone in 2006. All samples were collected by Bootleg employees, a wholly owned subsidiary of Eagles Plains, or by sub-contractors. Soil lines were run along topographic contours at 25m spacing between samples and along ridges at various locations through the Blende Property. Soil pits were dug using mattocks and soil was collected from depths averaging 10-20cm. In areas of relatively thin soil cover, it is believed that the soil samples accurately reflect the underlying lithologies. In areas of thick till and areas with poor or no soil development, soil sampling results may not accurately reflect values from underlying lithologies. Survey control for soil sample lines was established using hand-held GPS units.

Rock samples were collected as part of reconnaissance prospecting and mapping traverses, with more detailed grab and chip sampling in areas identified as “highly prospective” based on the presence of quartz veining accompanied by visible Zn-Pb mineralization. Additional indicators of prospective areas are those areas having a favorable structural setting or showing favorable results from historical work such as containing soil and rock geochemical anomalies located by Eagle Plains.

Complete lists of 2006 -2008 sample locations and analytical results are included in the 2006 Assessment Report for the Blende Property.

### **11.2 Check Assays and Metallurgical Testing Samples**

MMTS was unable to locate information from the 1990-1991 data pertaining to sampling practices, QAQC, etc, that was applied to the work programs prior to Eagle Plains optioning of the Blende Property. A small check assay study was completed to accept this data for resource estimation at the primarily Inferred classification level. To accept the historical data for resource estimation at higher levels, a more significant check assay study will be required.

Twenty-seven quarter core samples from the 1990 and 1991 drilling campaigns were collected from site by Robert Morris, Principal Geologist from MMTS, in September 2017 for the purpose of metallurgical testing and check assaying. These samples were spread across drill holes from the Oxide, Transition and Sulphide zones, in both the West and East zones. Further details are found in Section 12 of this Technical Report.

### **11.3 Sample Preparation, Analyses and Security**

Historical samples were prepared by standard methods (Sharp, 2006). According to Sharp, most of these samples were collected by Archer Cathro personnel and prepared and analyzed by Chemex Laboratories in North Vancouver, British Columbia (now ALS Chemex Ltd). For a summary of the historical work on the Blende Property see the Technical Report written by Transpolar Geological Consultants Inc, which is filed in the SEDAR Company records.

MMTS was unable to locate information from the historical data pertaining to sampling practices, QAQC, etc, that was applied to the work programs prior to Eagle Plains optioning of the Blende Property. However, MMTS believes the previous work is of sufficient quality based on the technical reputation of the previous operators and has been included for the purposes of the inferred resource estimation.

The following descriptions pertain to data collected from 2006 onwards.

The sample interval of 1m of NQ core was split in half in the drill camp, either by a Longyear core splitter or was sawn with a diamond saw. The split sample was stored in a labeled plastic bag and the other half was placed back in the core box for permanent storage. The samples were shipped to the analytical lab (Eco Tech) for analysis in sealed plastic buckets equipped with security seal lids to prevent tampering.

The sections below give the sample preparation procedures and quality control information. All samples were analyzed by ICP-mass spectrometer for 30 elements. Analytical results were returned on an assay certificate and data results stored in the Eagle Plains database. Analytical results and assay certificates are included in the 2006 Assessment Report on the Blende Property, written by Sharp and Gallagher. Any

analysis greater than 10,000 ppm Pb, Zn or Cu, flagged that sample for assay. The Eagle Plains database was updated with the assay value which would take precedent over the ICP result for the element in question. The assay value was used to calculate grade over widths in the valuation of the drilling results.

From 2006 to 2008, a total of 5316 core samples were analyzed by 30 element ICP-mass spectrometer. A total of 1,111 core samples were further analyzed by wet assay method (AA finish) and non-sulphide assay method (AA finish). A wet assay and non-sulphide assay analysis was done on any ICP sample that exceeded 1% Pb, 1% Zn or 30g/tonne Ag.

Below is a brief description of the analytical methods used by Eco Tech (now a member of the ALS group of labs).

### **11.3.1 Eco Tech Laboratory Ltd. - Multi-Element ICP Analysis**

A 0.5 gram sample is digested with 3ml of a 3:1:2 (HCl:HN03:H2O) which contains beryllium which acts as an internal standard for 90 minutes in a water bath at 95°C. The sample is then diluted to 10ml with water. The sample is analyzed on a Jarrell Ash ICP unit. Results are collated by computer and are printed along with accompanying quality control data (repeats and standards). Results are printed on a laser printer and are faxed and/or mailed to the client.

### **11.3.2 Eco Tech Laboratory Ltd. - Base Metal Assays (Ag, Cu, Pb, Zn)**

Samples are catalogued and dried. Rock samples are 2-stage crushed followed by pulverizing a 250 gram sub-sample. The sub-sample is rolled and homogenized and bagged in a pre-numbered bag. A suitable sample weight is digested with aqua regia. The sample is allowed to cool, bulked up to a suitable volume and analyzed by an atomic absorption instrument, to .01% detection limit.

Appropriate certified reference materials accompany the samples through the process providing accurate quality control. Result data is entered along with standards and repeat values and are faxed and/or mailed to the client.

### **11.3.3 Eco Tech Laboratory Ltd. - Lead & Zinc Non-Sulphide Assays**

A 0.5-gram sample is agitated in ammonium acetate for one hour. The sample is diluted with water and shaken. The resultant extract is analyzed for lead or zinc non sulphide by Atomic Absorption Spectrophotometer. Standard reference material is included in each batch.

### **11.4 Eco Tech Laboratory Ltd. - Copper Non-Sulphide Assays**

A 0.5-gram sample is agitated in 10% Sulphuric Acid for two hours. The resultant extract is analyzed for copper non sulphide by Atomic Absorption Spectrophotometer. Standard reference material is included in each batch.

### **11.5 1990-1991 Drill Program Check Assays**

Assay data for the 27 pairs of samples collected for metallurgical testing are compared to the original Ag,

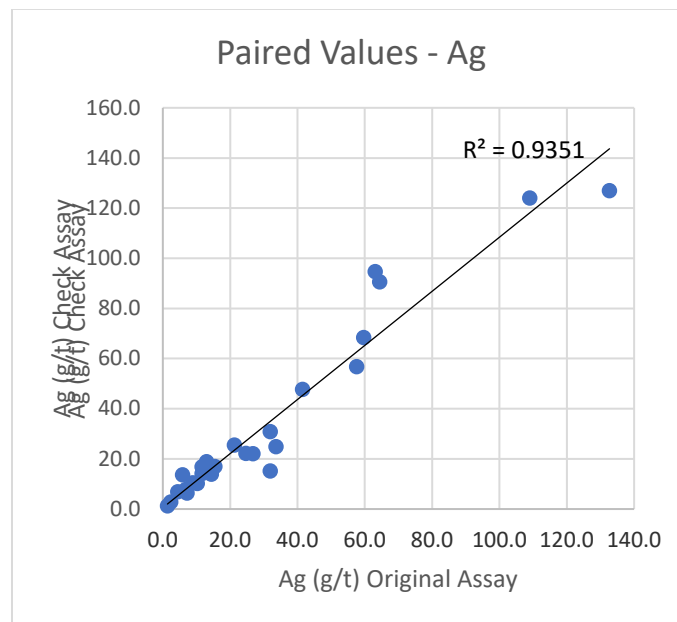
Pb and Zn values in the assay database. A summary of the half absolute relative differences between the new values as compared to the original values is given in Table 11-1 below and shows reasonable results for what would be considered field duplicates.

**Table 11-1 HARD Value Summary for Check Assays**

	Ag	Pb	Zn
Number of samples > 20% HARD	4	4	3
% samples > 20% HARD	14.8%	14.8%	11.1%

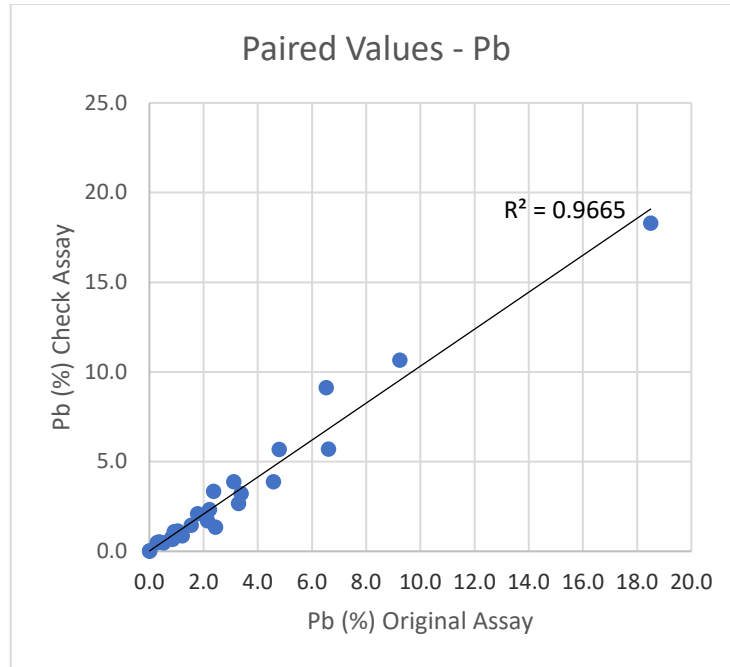
Of the 27 samples, just one is significantly different for all three elements considered, with the check assay values showing more than double the database values. This sample was from DH 90-04 in the Oxide West Zone, and even though the error is significant in value, because the newer assay values are all higher, not lower, it is of little consequence.

Scatter plots of the remaining 26 pairs are shown in Figure 11-1 through Figure 11-3 below and show acceptable correlation for core, or essentially, field duplicates.

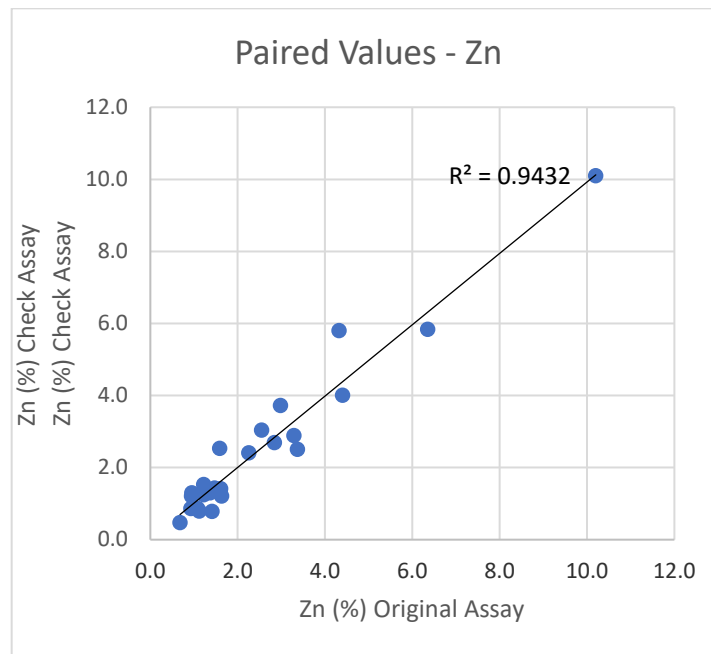


**Figure 11-1 Paired Values for 1990-1991 Check Assays, Ag (Source: Blind Creek, 2018)**





**Figure 11-2 Paired Values for 1990-1991 Check Assays, Pb (Source: MMTS, 2018)**



**Figure 11-3 Paired Values for 1990-1991 Check Assays, Zn (Source: Blind Creek, 2018)**

These check assays show reasonable correlation and therefore the 1990-1991 data can be accepted at this primarily inferred level of resource estimation. However, for future work at a higher level of confidence, a significant check assay program will be necessary in order to validate this data.

## 11.6 2006 -2008 QA/QC

Raw and final data underwent a final verification by a British Columbia or Alberta Certified Assayer who signs the Analytical Report before it is released to the client. Chief Assayer at Eco Tech was Jutta Jealouse.

### 11.6.1 Standard Samples

The insertion of standard samples into the 2006-2008 drilling program comprises approximately 5% of the total assays submitted, which is adequate. Six different standard reference materials were used in the drilling campaigns, 2 new ones each year. The standard material was prepared and certified by WCM Minerals from Burnaby, British Columbia, Canada. All six standards include certified values for Zn, Pb, Ag, and Cu. Only Zn, Pb, and Ag were analyzed in this study as they are the main metals of interest. Certified values for these standards can be found in Table 11-2. It is of MMTS's opinion that the selections of standard reference materials are adequate for control samples.

**Table 11-2 Statistics for Standard Reference Material**

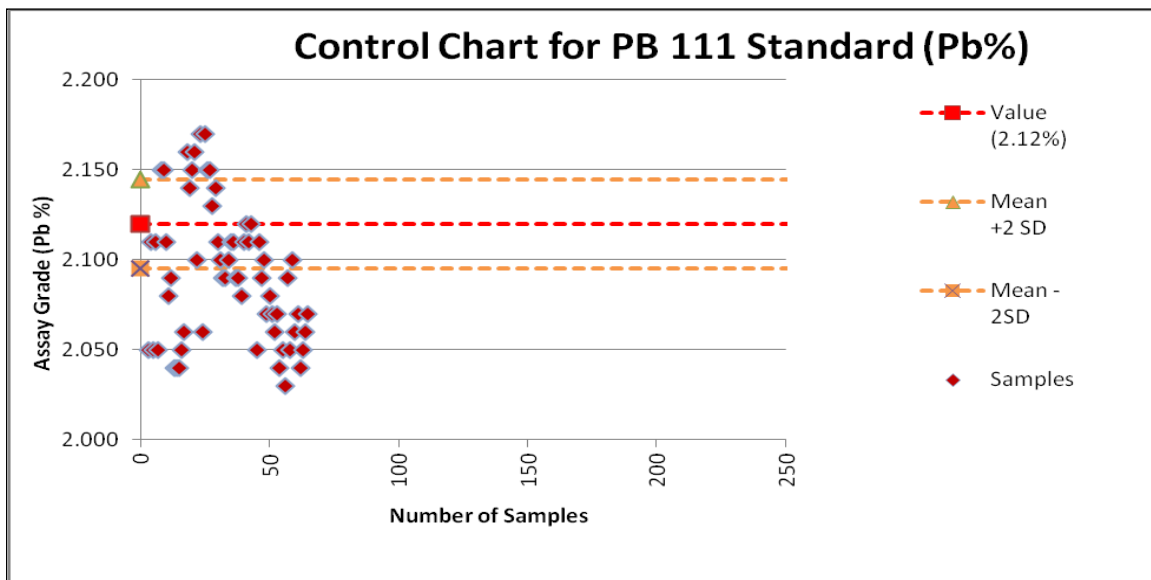
Value	Standard Reference Material						
		PB 111	PB 112	PB 115	PB 122	PB 129	PB 133
<b>Cu (%)</b>		0.69	0.85	0.53	0.78	0.28	0.29
<b>Pb (%)</b>		2.12	0.92	2.61	1.99	1.24	0.31
<b>Zn (%)</b>		0.45	1.27	1.65	2.42	2.00	1.43
<b>Ag (g/t)</b>		195	222	17	118	23	144

Process control charts are presented which show the sequential results for samples of a known material and are intended to indicate accuracy of analysis results within the sample stream. A summary of these results is given in Table 11-3. The concurrence of assay values not within the bounds of the  $\pm 2$  standard deviation bars indicate that in several cases, the assay results are not within the desired range. These results occur only for standard samples Pb 111 and Pb 112 which are the standards inserted into the 2006 assay streams. Note that in the 2006 assays the standard samples are mostly analyzed below the certified values which indicate either a problem with the composition of the certified material supplied, or a consistent reporting of assay results below actual elemental content due to an anomaly in the laboratory.

**Table 11-3 Summary of Process Control Chart Analysis**

Element Assay	Standards					
	2006		2007		2008	
	Pb 111	Pb 112	Pb 115	Pb 122	Pb 129	Pb 133
Pb	Low	High	Good	Good	Good	Good
Zn	Low	Low	Good	Good	Good	Good
Ag	Low	Low	Good	Good	Good	Good

Figure 11-4 to Figure 11-21 shows the control charts for the standard samples used. Error bars are centered on certified values and two standard deviations on either side.



**Figure 11-4 Standard PB 111 – Pb (Source: Blind Creek, 2018)**

Results of Standard PB 111 for Pb are random with a definite bias indicating assay values may be slightly undervalued with respect to true Pb values. One values plots below the chart at 1.00% Pb, which most likely is attributed to this assay not being re-run for appropriate detection limits.

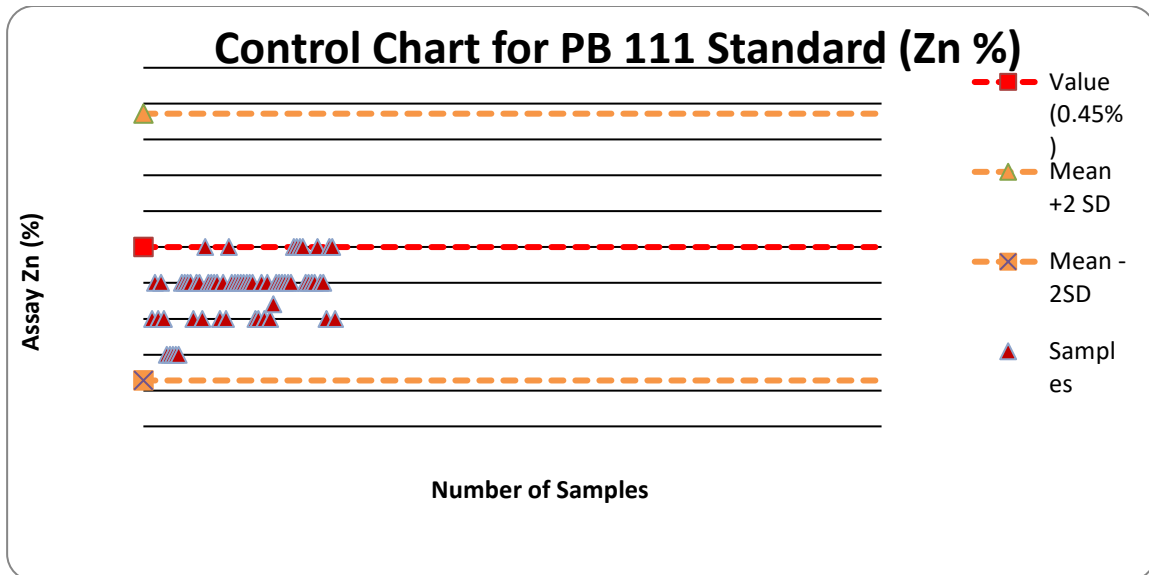


Figure 11-5 Standard PB 106 – Zn (Source: Blind Creek, 2018)

Results of Standard PB 106 for Zn display a definite bias indicating assay values may be slightly undervalued with respect to true Zn values. Also, the non-randomness of the results could potentially make this standard suspect with respect to Zn values.

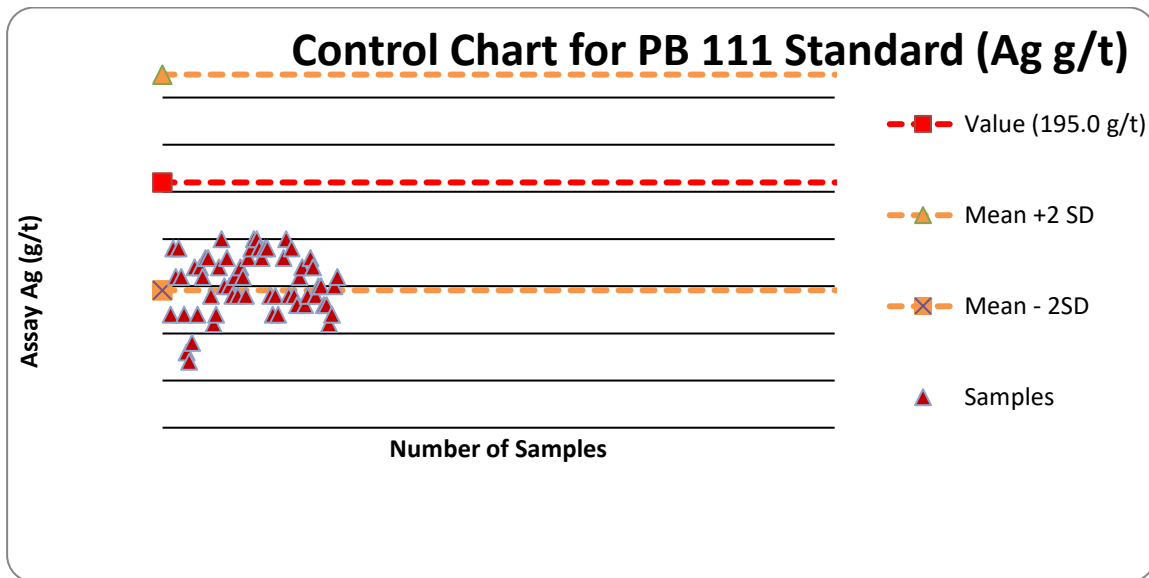


Figure 11-6 Standard PB 111 – Ag (Source: Blind Creek, 2018)

Results of Standard PB 111 for Ag display a definite bias indicating assay values may be slightly undervalued with respect to true Ag values. One value plots below the chart at 30g/t Ag, which most likely is attributed to this assay not being re-run for appropriate detection limits.

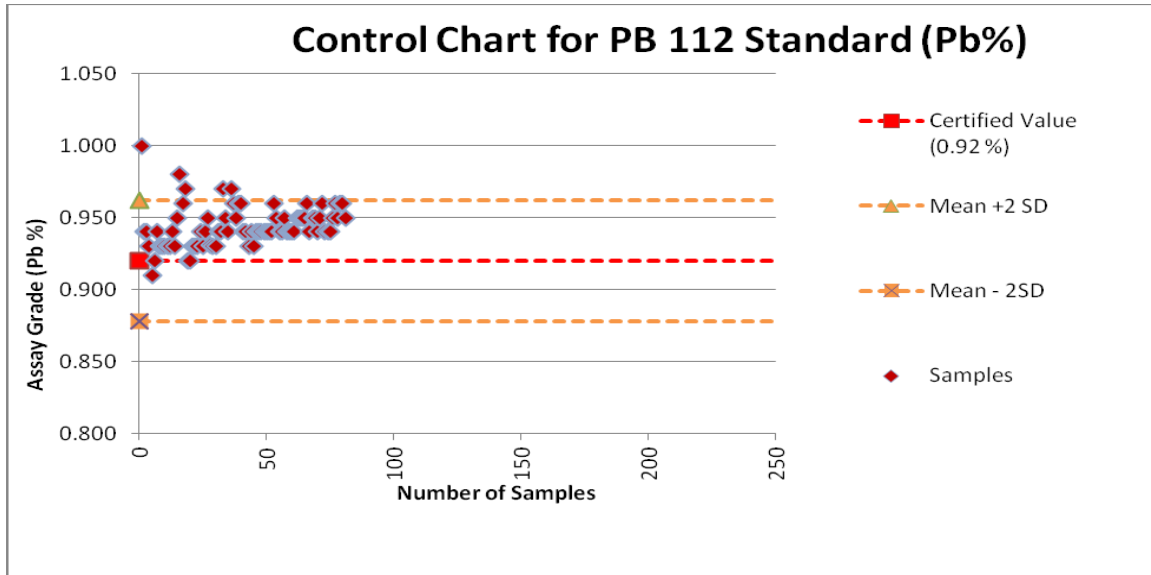


Figure 11-7 Standard PB 112 – Pb (Source: Blind Creek, 2018)

Results of Standard PB 112 for Pb are random with a definite bias indicating assay values may be slightly overvalued with respect to true Pb values.

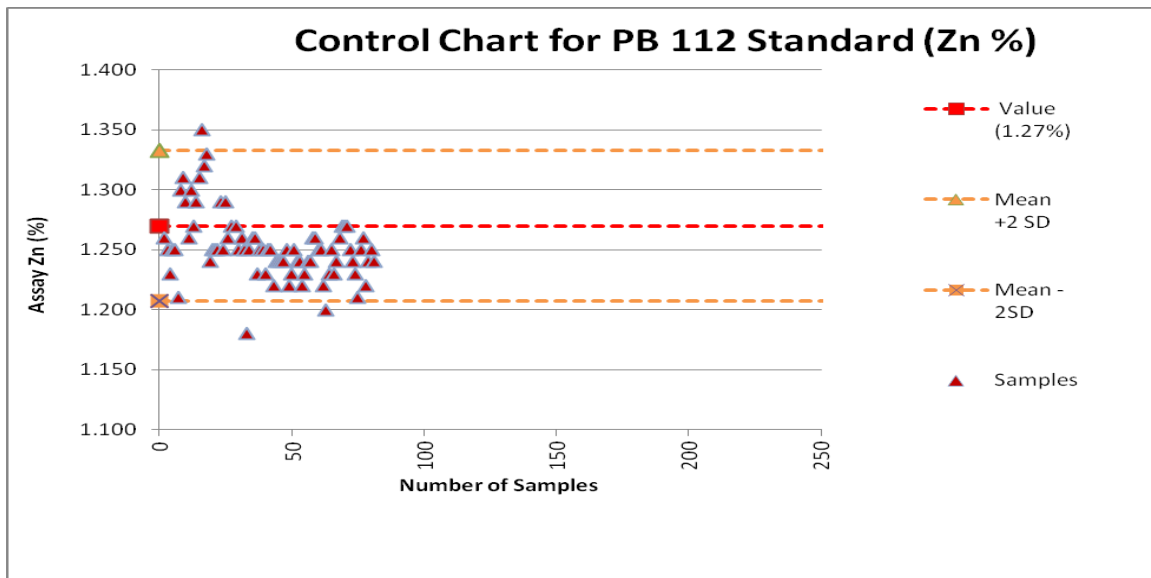


Figure 11-8 Standard PB 112 – Zn (Source: BLIND CREEK, 2018)

Results of Standard PB 112 for Zn are random with a definite bias indicating assay values may be slightly undervalued with respect to true Zn values. One value plots below the chart at 1.00% Zn, which is attributed to this assay not being re-run for appropriate detection limits.

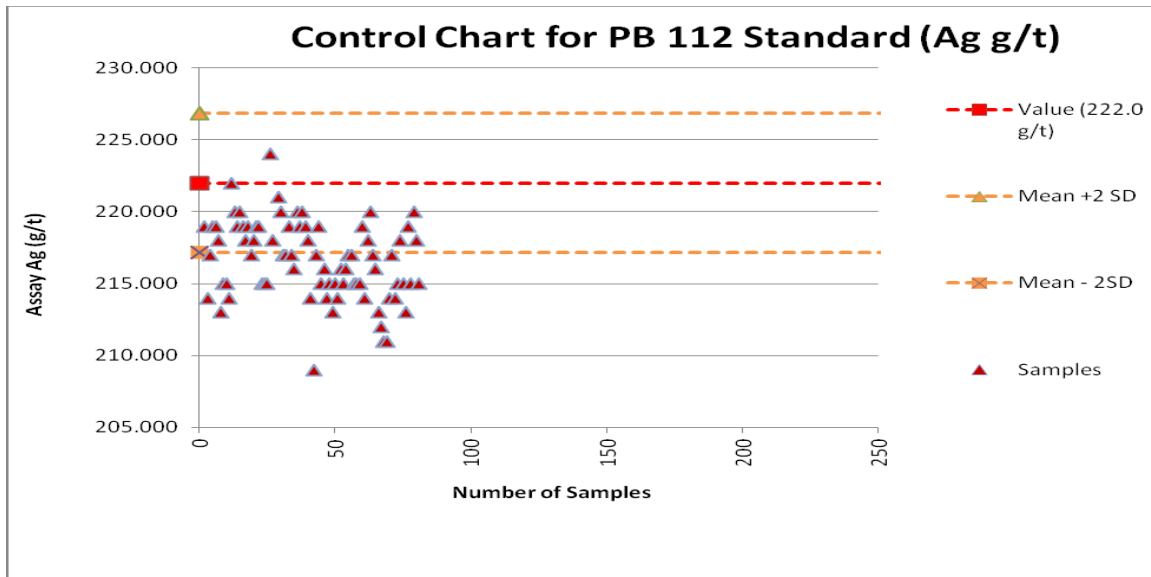


Figure 11-9 Standard PB 112 – Ag (Source: BLIND CREEK, 2018)

Results of Standard PB 112 for Ag are random with a definite bias indicating assay values may be slightly undervalued with respect to true Ag values. Two value plots below the chart at 30g/t, which is attributed to this assay not being re-run for appropriate detection limits.

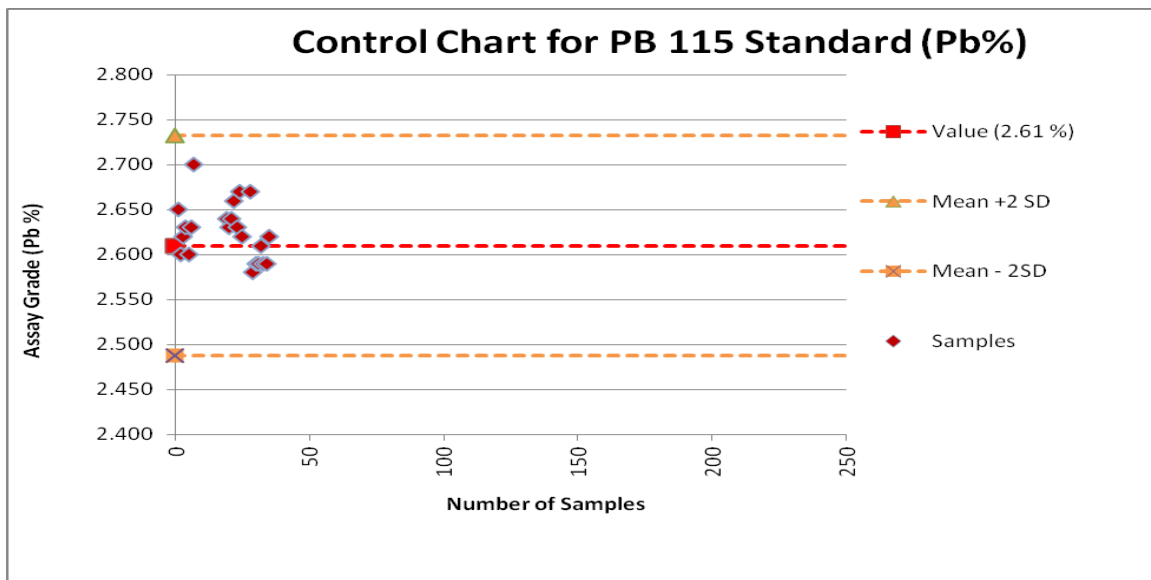


Figure 11-10 Standard PB 115 – Pb (Source: BLIND CREEK, 2018)

Results of Standard PB 115 for Pb are random with a bias indicating assay values may be slightly overvalued with respect to true Pb values.

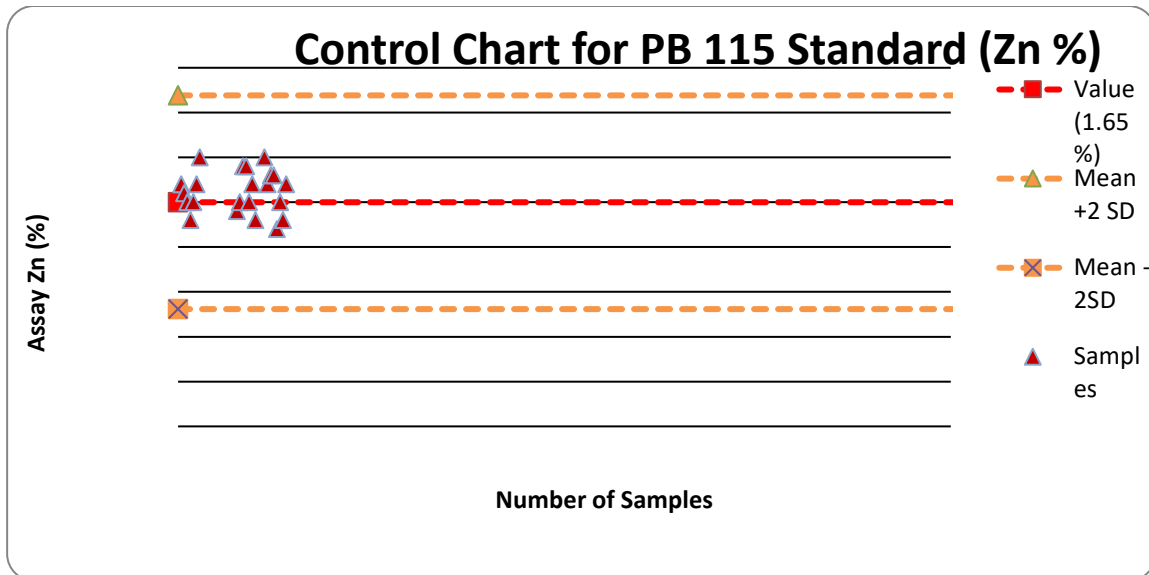


Figure 11-11 Standard PB 115 – Zn (Source: Blind Creek, 2018)

Results of Standard PB 115 for Zn are random with a nice distribution about the mean.

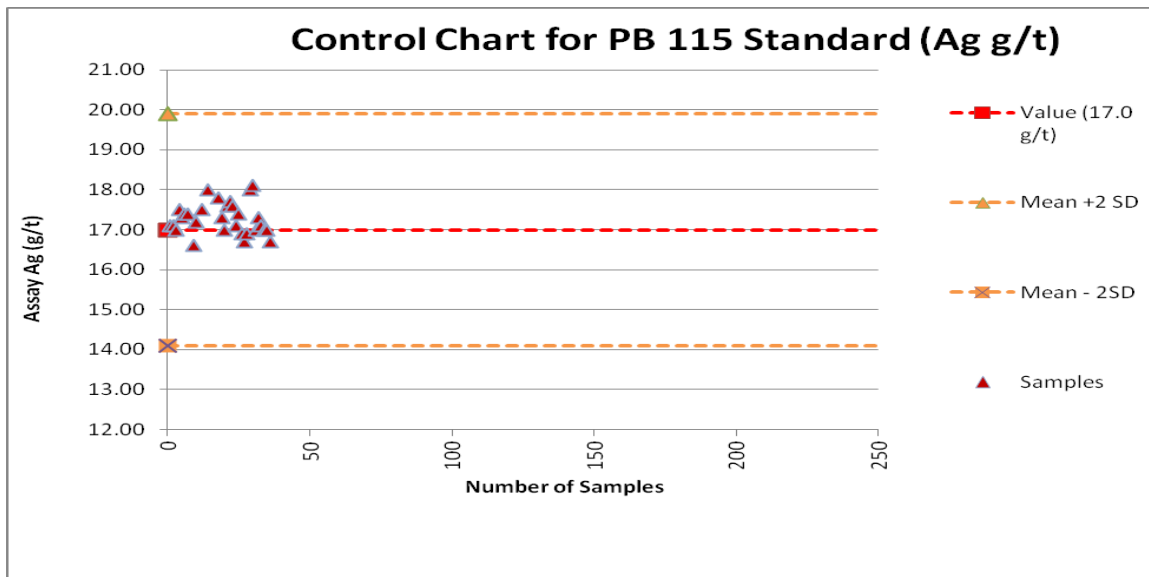


Figure 11-12 Standard PB 115 – Ag (Source: Blind Creek, 2018)

Results of Standard PB 115 for Ag are random with a slight bias indicating assay values may be slightly overvalued with respect to true Ag values.

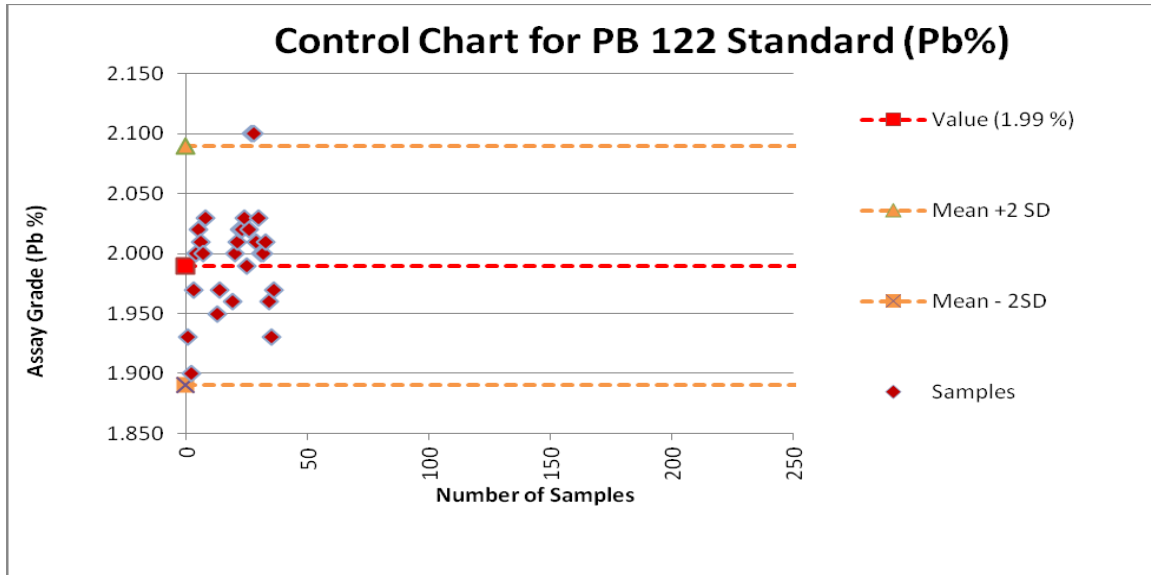


Figure 11-13 Standard PB 122 – Pb (Source: Blind Creek, 2018)

Results of Standard PB 122 for Pb are random with a uniform distribution about the standard mean indicating assay values are aligned with the respect to true Pb values.

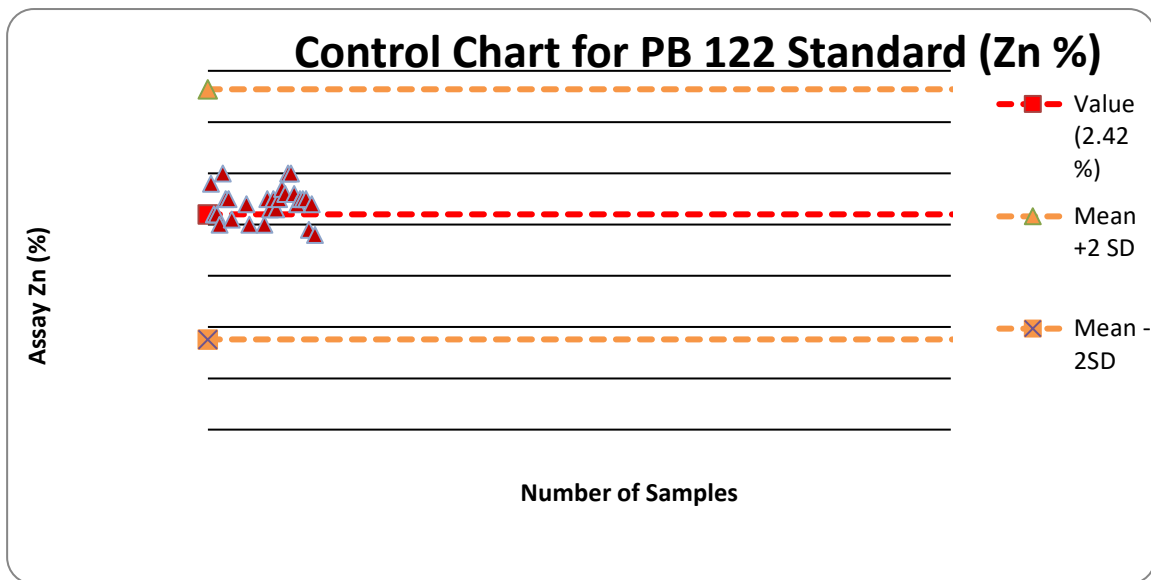


Figure 11-14 Standard PB 122 – Zn (Source: Blind Creek, 2018)

Results of Standard PB 122 for Pb are random with a slight bias indicating assay values may be slightly overvalued with respect to true Zn values.



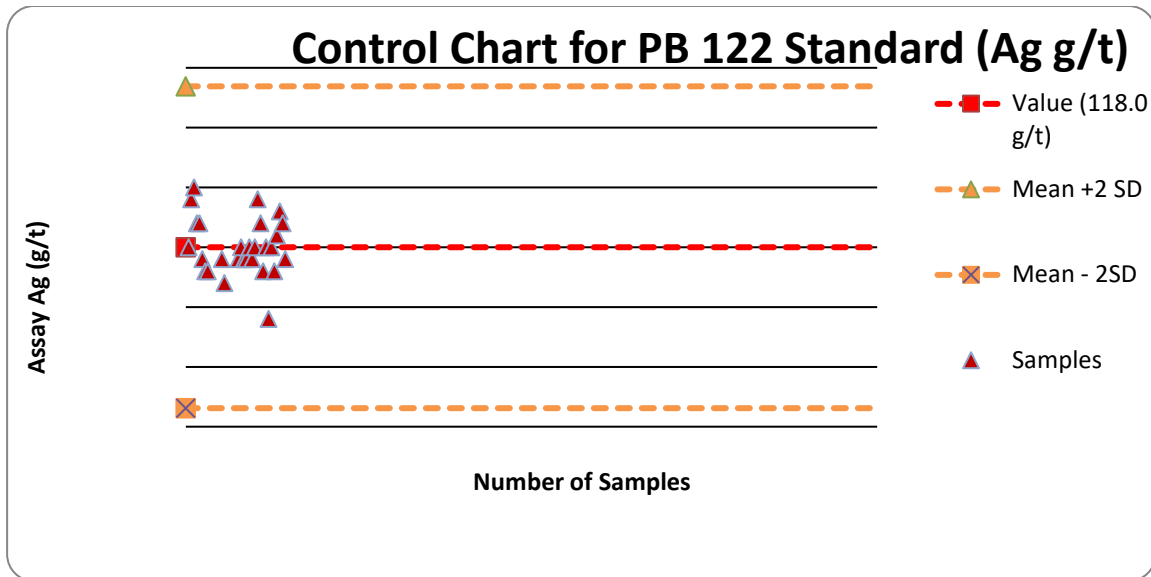


Figure 11-15 Standard PB 122 – Ag (Source: Blind Creek, 2018)

Results of Standard PB 122 for Ag are random with a good distribution about the certified standard mean value.

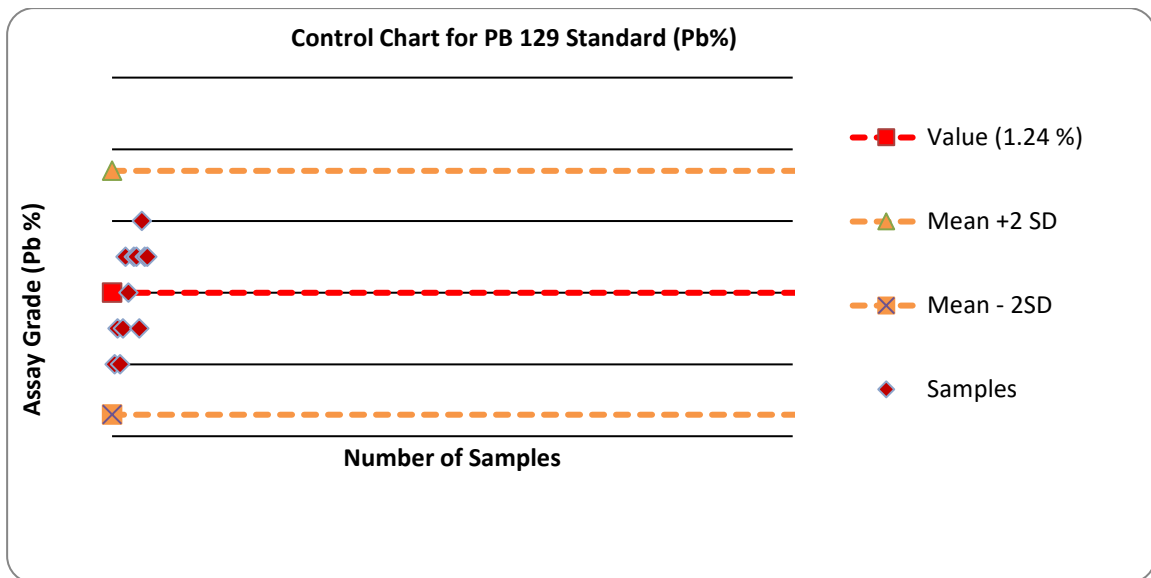


Figure 11-16 Standard PB 129 – Pb (Source: Blind Creek, 2018)

Results of Standard PB 129 for Pb are random with a good distribution about the certified standard mean value.

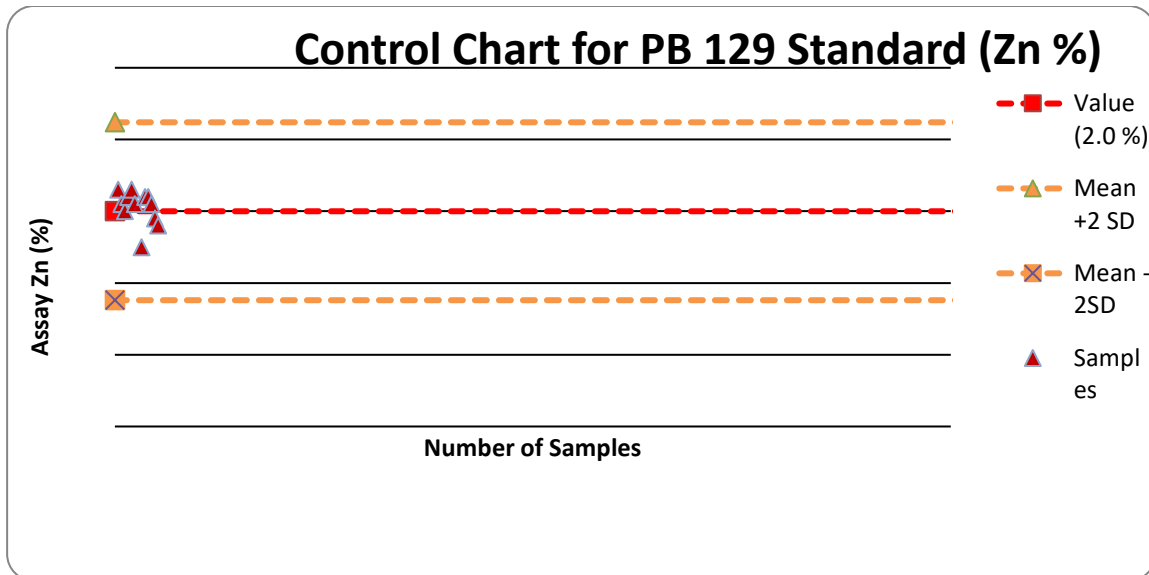


Figure 11-17 Standard PB 129 – Zn (Source: Blind Creek, 2018)

Results of Standard PB 129 for Zn are random with a good distribution about the certified standard mean value.

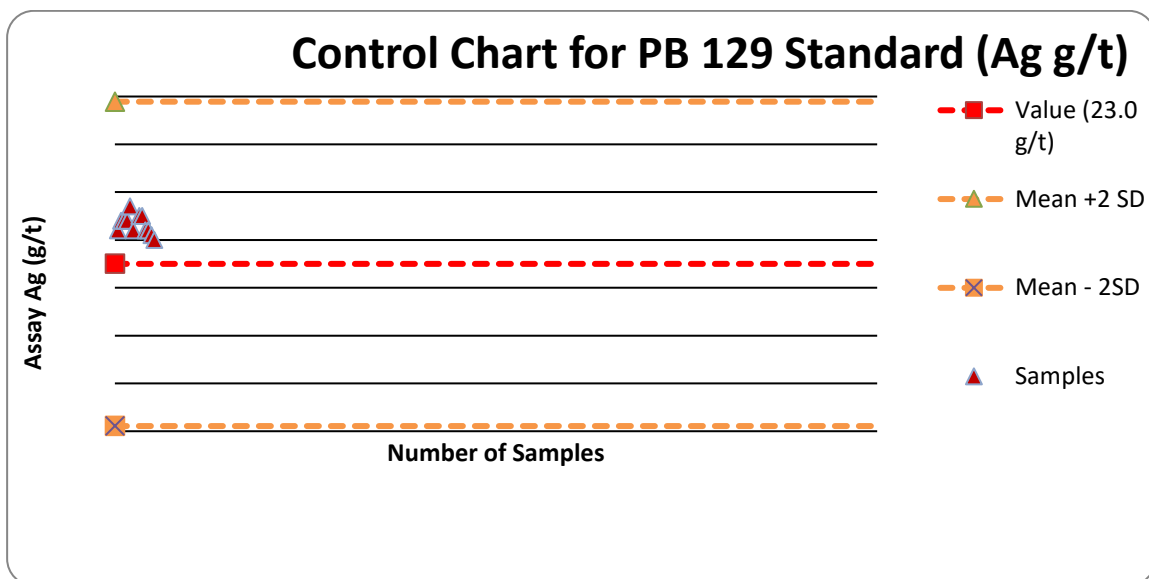


Figure 11-18 Standard PB 129 – Ag (Source: Blind Creek, 2018)

Results of Standard PB 129 for Ag are random with a bias above the certified standard mean indicating possible slightly overstated Ag values.

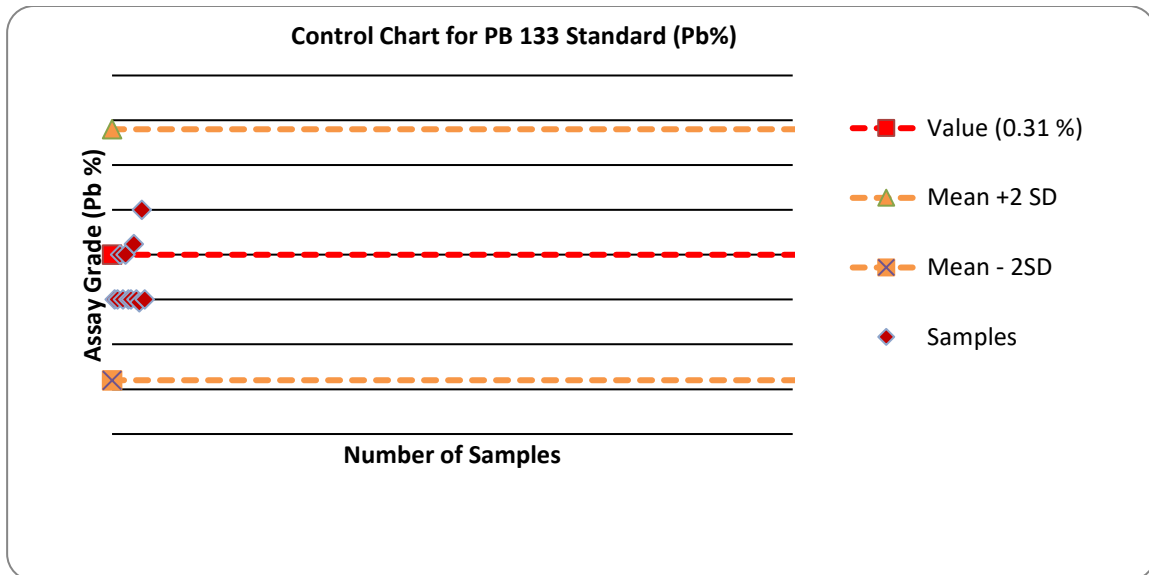


Figure 11-19 Standard PB 133 – Pb (Source: Blind Creek, 2018)

Results of Standard PB 133 for Pb are random with a good distribution about the certified standard mean value.

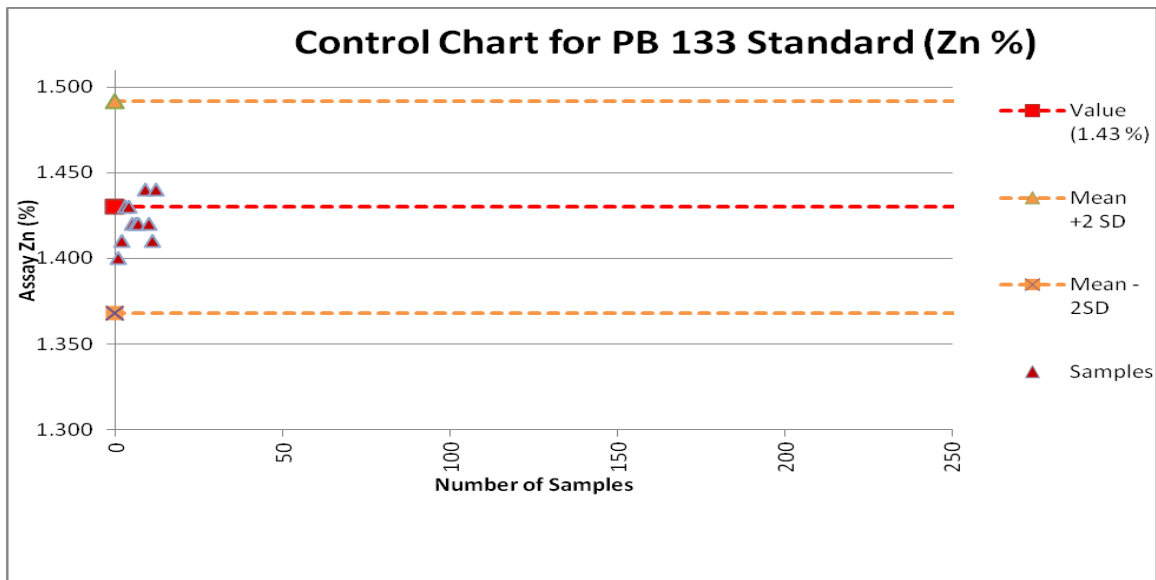


Figure 11-20 Standard PB 133 – Zn (Source: Blind Creek, 2018)

Results of Standard PB 133 for Zn are random with a fairly good distribution about the certified standard mean value, perhaps a slight bias on the low side of Zn values.

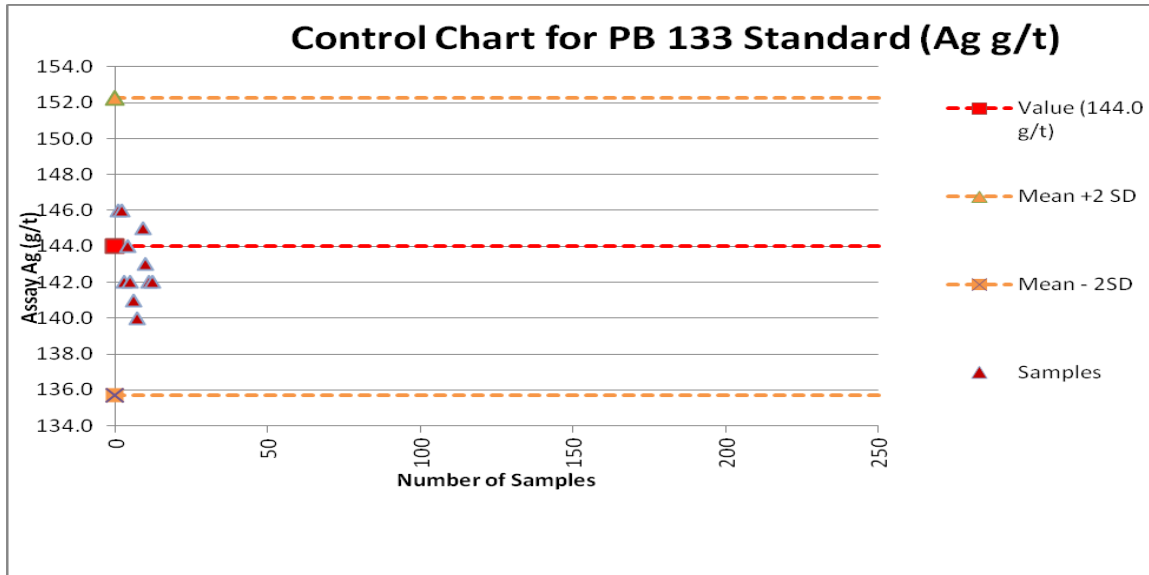


Figure 11-21 Standard PB 133 – Ag (Source: Blind Creek, 2018)

### 11.6.2 Field Duplicate Samples

No field duplicates from drill core were inserted into the 2006 to 2008 drilling program sample streams to monitor the labs precision. Coarse reject duplicate samples were inserted into only the 2006 sample stream at a rate of about 3%. These results are shown below in scatter plots of the paired assay values in Figure 11-22 to Figure 11-24.

Overall, the duplicate sample charts demonstrate reasonable accuracy with the lab as the original values and duplicate value have a nice fit about the 1:1 linear fit line. There are a couple of outliers which may be attributed to not re-analyzing the duplicate sample that had values above the limits of the initial assay run.

It is recommended for future work that Blind Creek apply a QAQC program that utilizes a 3-duplicate system: 5%-10% field duplicates, and 3% to 5% pulp duplicates. This will help demonstrate the mineralization variability at different sample size reduction stages.

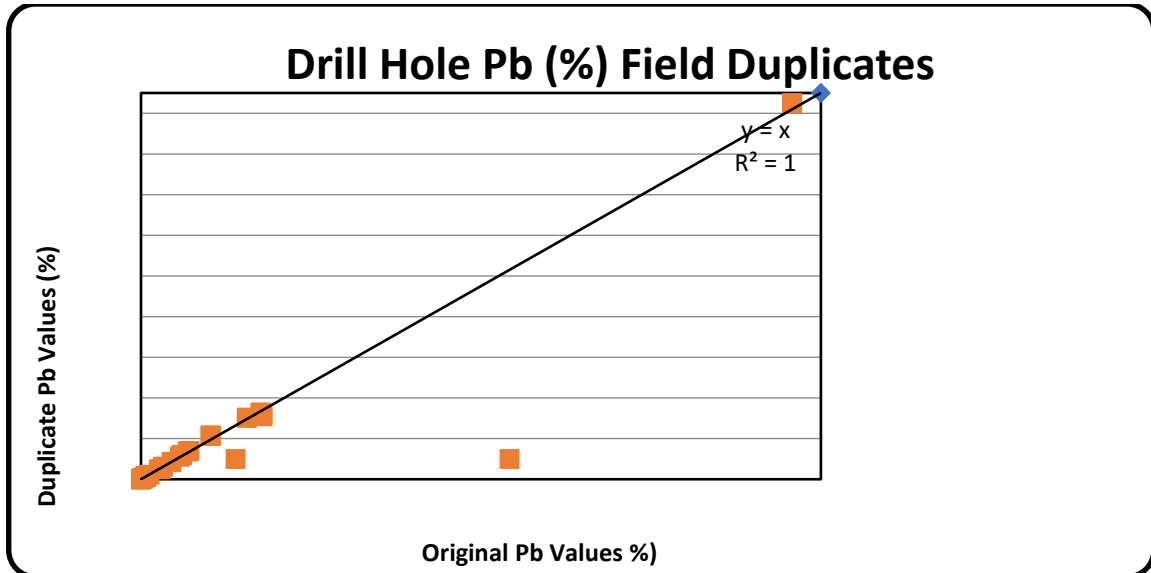


Figure 11-22 Field Duplicate – Pb Results (Source: Blind Creek, 2018)

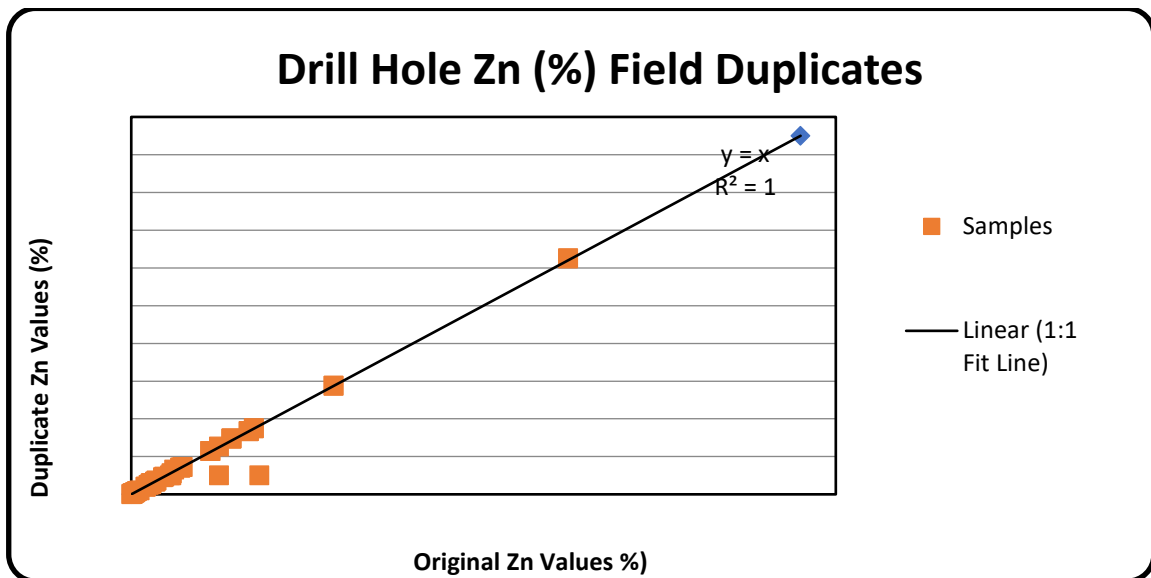


Figure 11-23 Field Duplicate – Zn Results (Source: Blind Creek, 2018)

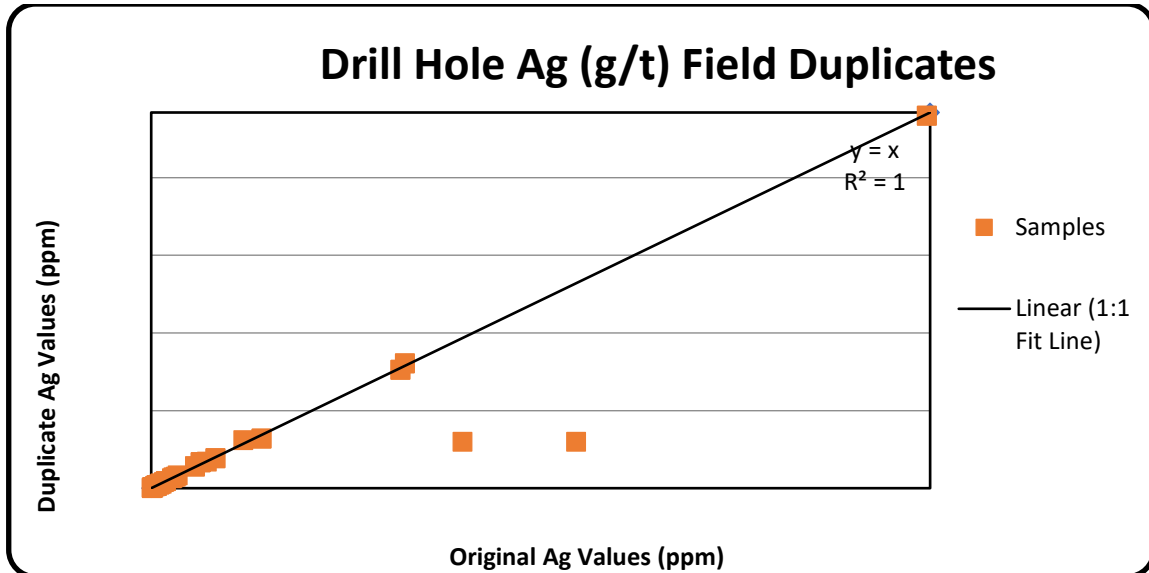


Figure 11-24 Field Duplicate – Ag Results (Source: Blind Creek, 2018)

### 11.6 Blank Samples

Blank samples were regularly inserted at a rate of 5%. This material was composed of a “granitic grit” material that had low detectable values of Pb, Zn, and Ag. These samples are inserted into the sample batch to monitor the labs “cleanliness” between sample preparations. If the blank sample returns anomalous values this would suggest sample contamination from a previous sample and would make the assay values suspect in a batch.

No data was provided as to the analytical values of the blank sample used so an arithmetic average was used: Pb – 30.0ppm; Zn – 60ppm; and Ag – 0.02g/t. The warning line for Pb and Zn was set at 2 times the arithmetic average and was set 5 times the arithmetic average for Ag.

Based on all three blank control charts in Figure 11-25 to 11-27, it appears there were no major contamination problems except for a few samples that plot above the warning line. The QP believes this will not influence the overall value of the sample database.

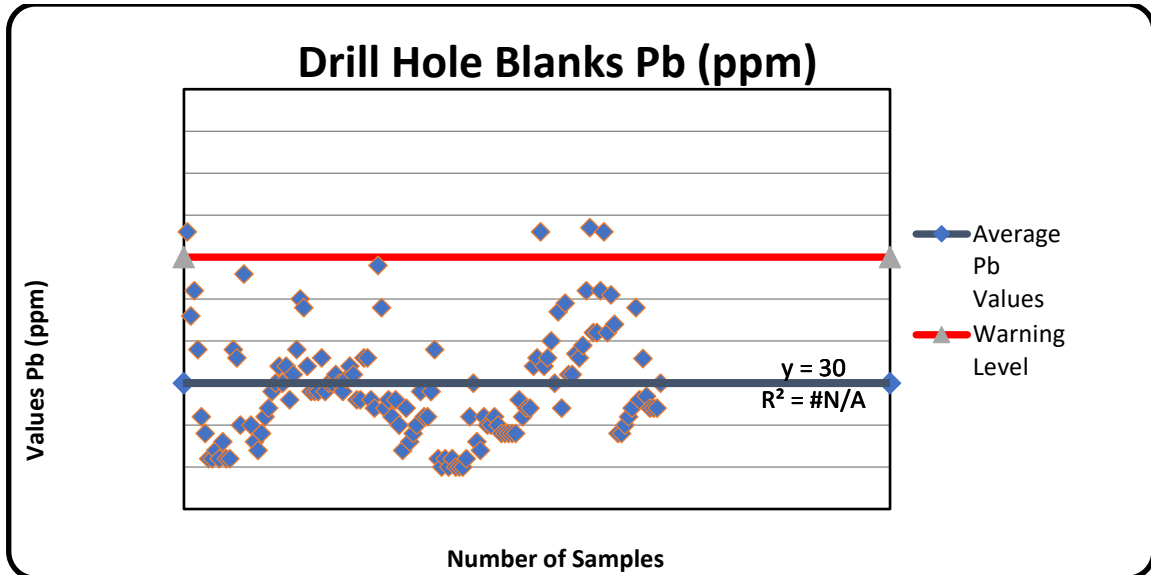


Figure 11-25 Blank Samples – Pb Results (Source: Blind Creek, 2018)

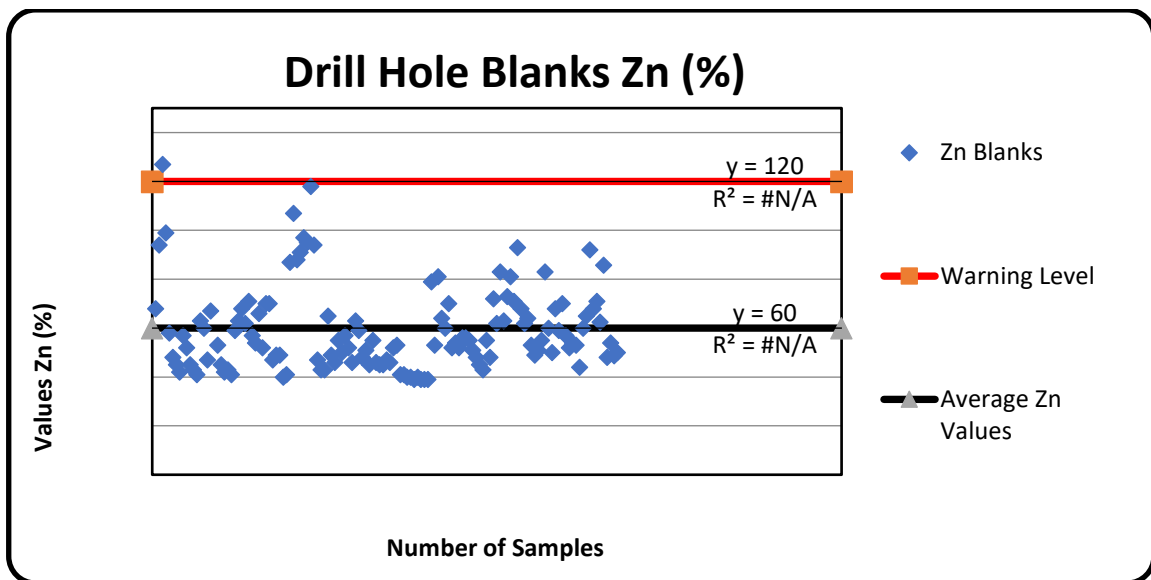


Figure 11-26 Blank Samples – Zn Results (Source: Blind Creek, 2018)

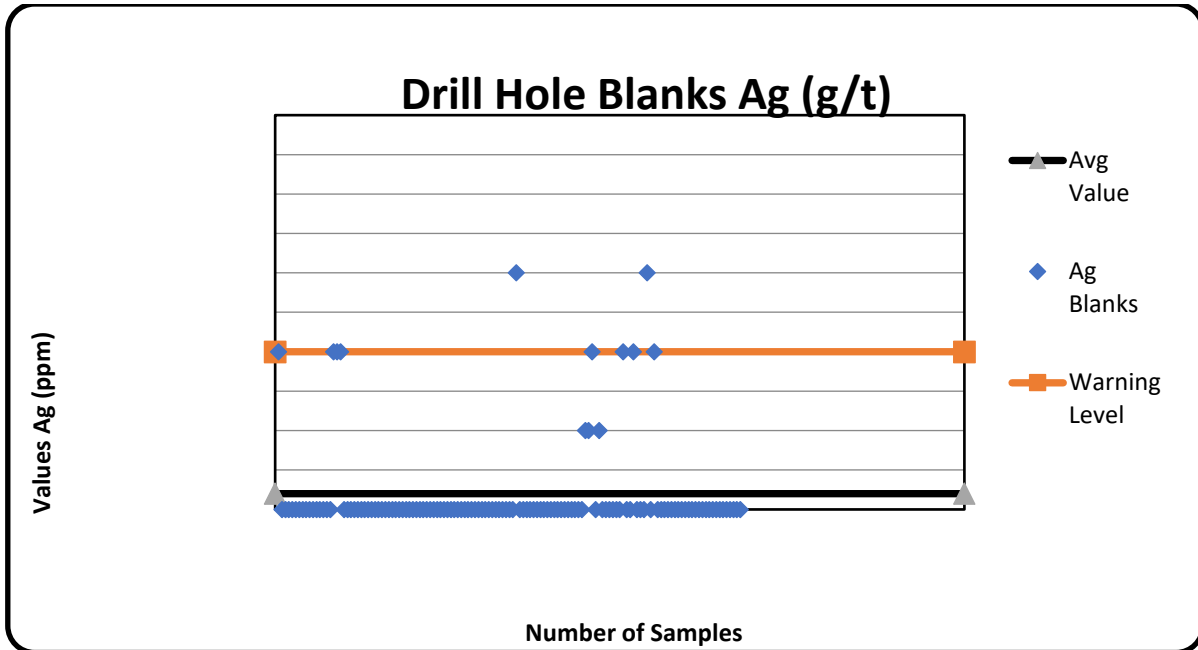


Figure 11-27 Blank Samples – Ag Results (Source: Blind Creek, 2018)

### 11.6.3 2006-2008 Summary Statement

In summary, the analysis of control samples for the 2006-2008 drilling campaigns gives reasonable results, but not ideal. This is primarily due to low accuracy for the 2006 standard samples, lack of field duplicates in all years, and no duplicates at all in 2007 and 2008. The 2006-2008 data can be accepted at this inferred level of resource estimation. However, for future work at a higher level of confidence, a significant check assay program may be necessary to validate this data.



## 12 Data Verification

For this Technical Report, the author has:

- Reviewed the report for compliance with NI 43-101.
- Reviewed the tables of drill results for 2006 to 2008.
- Reviewed the Technical Reports for 2005-2007 prepared by Sharp and filed on the Blind Creek websites or on SEDAR.

The 2006, 2007, and 2008 drill programs have provided verification of mineralization for three of the five zones described in the report (East Central, West Zone, and the Far West Zone). Time constraints and weather prohibited additional data collection.

### 12.1 Site Visit - 2012

The QP, Robert J. Morris conducted a site visit to the Blende Property on August 8, 2012, and again in September 9-11, 2017. The 2012 site visit was done to verify drill hole locations and to collect check samples from core on the Blende Property. Verification was done on core completed within the recent drill programs and verification of the pre-2006 drilling was unavailable. Also, according to the Company representative that accompanied MMTS to site there was a large ice dam a year earlier that broke and swept through the core storage area destroying approximately 40% of the core.

Time was limited on the site (approx. 2 hours) in 2012 and along with inclement weather only 4 random drill hole locations were verified, and four separate verification samples were collected from three separate holes. Four half-core samples were collected from the same intervals from the original database. Samples were sent to Inspectorate labs from Kamloops, British Columbia. Access to the site was via helicopter from Mayo, NWT. Table 12-1 shows the results of the sample verification. Although there are some differences in the results, the check analysis clearly demonstrates the presence of mineralization. It is the opinion of the QP that the database is sufficiently accurate to allow for initial resource estimation.

**Table 12-1 Sample Verification Results**

Blende Project Original Assays									Inspectorate 4-Acid			
Hole Number	Sample Number	Verif Sample No	From(m)	To(m)	(Pb+Zn) S (%)	ZnS (%)	PbS (%)	Ag_g_T	Zn+Pb (%)	Zn (%)	Pb (%)	Ag (g/t)
BE06100	BE06100-048	C11701	72.9	73.9	2.45	2.45	0	1	1.2047	1.2	0.0047	3.4
BE06100	BE06100-050	C11702	74.9	75.9	1.84	1.83	0.01	1	1.4804	1.47	0.0104	2.5
BE07120	BE07120-015	C11703	24.4	25.4	10.89	10.2	0.69	50.4	9.2118	8.45	0.7618	48.5
BE08127	BE08127-032	C11704	56.6	57.6	8.73695	6.85255	1.8844	68.7	8.94	5.77	3.17	45.7

For drill hole verification, 4 collar coordinates were given to the helicopter pilot who flew to the specific coordinates. All 4 drill collars were present and accurately flown to the correct hole locations. Drill hole locations for the 2006 to 2008 drill programs were located using a differential GPS and well-marked. The QP believes the collar locations for the Blende Property drill holes are accurately surveyed and the database is reliable.

The Blende Property assay database was verified in 2013 by looking at analyses from 1038 samples and cross referenced with values from nine separate assay certificates sent directly to MMTS from ALS labs in Kamloops (formerly Eco-Tech). There were 7 samples that had a variance of greater than 0.05 with an overall 0.67% error with the original database.

An additional 5% of assay values in the data base were checked against certificates from the 2006 to 2008 drill program in 2018 and no errors were found. It is the opinion of the QP that the assay database is sufficiently good to host resource estimation.

The QP verified the Blende Property land tenure using the Yukon Energy, Mines and Resources online Quartz Claims database.

## **12.2 Site Visit – September 2017**

### **12.2.1 Specific Gravity Sampling and Testing - 2017**

A total of 51 samples were collected for Specific Gravity (SG) testing during a site visit 9-11 September 2017. The samples represent NQ sized drill core gathered from stored core from the 1990 and 1991 drill programs. The samples were selected to cover a range in grade, to include both sulphide and oxide material, and to test both the east and west mineralized zones. Thirty-four samples were collected from the West Mineralized Zone and 17 from the East Zone. Sample selection was restricted to pieces of core that were competent and approximately 10-15cm long, though occasionally two to three smaller pieces of core were selected.

Typical assay intervals from the 1990-91 drill program were 3.0m, with shorter intervals of 1.0m. It was hoped that the 10-15cm long SG samples would represent the 3m assay interval, but it was found that the raw SG data was too variable to be valuable. A subsequent Pb-Zn assay program was undertaken on the SG samples so that the densities would represent actual assay values.



**Figure 12-1 Storage area for 1990-1991 drill core (Source: Blind Creek, 2018)**



**Figure 12-2** Typical competent drill core sampled for SG test work (Source: Blind Creek, 2018)

### **12.2.2 Specific Gravity (SG) Measurements - 2017**

The equipment used to measure SG of rock drill core on the Blende Property is:

- A balance scale with an integral weigh-below hook (Ohaus Explorer Pro Balance).
- A 20-litre bucket with a 17cm X 20cm slot cut through the rim and bucket face and approximately half filled with water.
- A board big enough to sit on the bucket, approximately 30cm X 30 cm, with a slot cut in the middle.
- A perforated pan, suspended from a hanging apparatus attached to the weigh below hook built into the base of the balance, to sit in the water without touching the sides of the pail.

The Explorer Pro Balance set up used for measuring SG is shown in Figure 12-3.



**Figure 12-3** Balance scale and water bucket setup for measuring specific gravity of core (Source: Blind Creek, 2018)

The selection of drill core to be measured for SG is based on the following criteria. Previously sampled, mineralized core has been chosen from a selection of holes distributed along the length of the deposit, with each piece measured to reflect the overall composition of the total sample. Representative oxide and sulphide core from each mineralized area has been chosen.

Specific Gravity of drill core is measured by first weighing the core in air on top of the balance ( $W_a$ ), followed by weighing the drill core in the pan, submerged in water ( $W_w$ ). The mass in air and mass in water are both recorded in an Excel database. The SG is calculated using the equation below.

$$SG = W_a / (W_a - W_w)$$

The samples have then been re-assayed to account for the change in sample size between the SG samples and the original assay sample. This data has been used to create a correlation between the (Pb+Zn) content and the SG. See Section 14 of this Technical Report for details.

**Table 12-2 The 2017 Specific Gravity (SG) database**

DHID	From	To	SG		DHID	From	To	SG
B90-004	45.9	47.76	2.73		B90-018	94.25	97.7	2.78
B90-004	53.64	56.64	2.81		B90-018	97.7	101	2.82
B90-004	56.64	59.64	2.82		B90-018	101	102.63	2.82
B90-004	59.64	62.64	2.9		B90-018	105.32	106.69	2.81
B90-004	107.45	110.45	2.84		B90-018	111	114.82	2.8
B90-004	110.45	113.45	2.88		B90-018	114.82	118.26	2.8
B90-004	113.45	116.45	2.8		B90-018	123	126	2.79
B90-004	116.45	119.45	2.89		B90-018	126	129	2.74
B90-016	77.4	80.05	2.82		B91-025	27.1	30.1	2.84
B90-016	80.05	84.93	2.84		B91-025	44.8	47.8	2.95
B90-005	70.56	73.66	2.81		B91-025	47.8	50.8	2.99
B90-016	84.93	88.1	2.8		B91-025	53.8	56.8	2.84
B90-016	88.1	91	2.78		B91-025	59.8	62.8	2.84
B90-005	85.65	88.9	3.04		B91-025	68.8	71.7	2.89
B90-005	122.94	125.94	2.82		B91-032	7.32	10.32	3.03
B90-005	125.94	126.96	2.8		B91-032	10.32	13.32	3.25
B90-017	75.9	78.15	2.84		B91-034	124	127	2.85
B90-017	78.15	81.1	2.79		B91-034	127	130	2.83
B90-017	81.1	84.32	2.81		B91-034	133	136	2.93
B90-018	10.57	14	2.79		B91-034	142	145	2.99
B90-018	14	17	2.82		B91-034	145	148	2.82
B90-018	26	29	2.71		B91-038	4.4	7.4	3.12
B90-018	29	32	2.82		B91-038	7.4	10.4	3.19
B90-018	41	44	2.84		B91-038	10.4	13.4	2.88
B90-018	44	47	2.82		B91-065	3.05	6.4	2.82
B90-018	91.36	94.25	2.77					

### **12.2.3 Metallurgical Sampling – 2017**

A total of 27 samples were collected for metallurgical testing during a site visit 9-11 September 2017. The samples represent NQ sized drill core gathered from stored core from the 1990 and 1991 drill programs. The samples were selected to cover a range in the degree of oxidation and to test both the East and West Mineralized zones. Seventeen samples were collected from the West Mineralized Zone and 10 from the East Zone. The degree of oxidation ranged from oxidized material which was considered >50% oxidized, to transitional material with oxidation levels from 15-50%, and sulphide samples with oxidation between 10-15%. The samples represent the entire remaining ½ core from the original samples, which varied from 1.02m to 4.88m in length.

## 13 Mineral Processing and Metallurgical Testing

### 13.1 Historic Data

#### 13.1.1 1991 - Bacon Donaldson Associates

The earliest historical metallurgical results made available for review on the Blende Project were from a test program undertaken by Bacon Donaldson and Associates (BDA) at their mineral testing facility that had been in Richmond BC. This work was performed on behalf of Billiton Metals Canada Inc. and reported in September 1991.

The test program was conducted on samples originating from drilling done in 1990. The resulting drill core assay rejects were blended and made into four metallurgical composites of varying metal grade and extent of sulphide mineral oxidation. The composites varied from less than 10%, to almost 50% oxidation of lead and zinc. The head grades of the four composites ranged from 1.7% to 3.4% total lead, with the higher grade Pb composites exhibiting a higher degree of lead oxidation. The total zinc varied from 1.9% to 2.9%. Silver head grades were between 17 g/t to 58 g/t and increased with increasing lead grade. The silver which is an important metal value to the project was stated to generally follow the lead in flotation.

The flotation flowsheet was developed on producing separate lead sulphide and lead oxide concentrate, along with a zinc concentrate. Early in the test program, it was determined that due to the high zinc content reporting to the lead concentrate it was most practical to produce a bulk sulphide lead – zinc concentrate, followed by depressing the zinc during lead cleaning to produce a separate product of primarily sphalerite. Bulk sulphide float tailing were then upgraded to produce a lead oxide concentrate. While attempts were made to also produce a zinc oxide concentrate it was concluded by BDA that upgrading was not achievable for the zinc oxide minerals into a saleable concentrate.

Among the study conclusions from BDA were:

- The production of saleable lead and zinc concentrates was achieved.
- Fine particle intergrowths were present between lead and zinc minerals, which benefited from finer grinding. A primary grind target was not categorically stated, although a reference was made that much of the lead lost in the bulk float was due to liberation issues. A significant portion of this stream could then be recovered in Pb oxide flotation. A suggested primary grind target was given as 65% passing 200 mesh (74 microns). The use of regrinding prior to cleaning of the bulk sulphide concentrate, and separately the lead oxide rougher concentrate was included in the proposed BDA flowsheet.
- Lead recovery was less sensitive to the degree of sample oxidation than zinc, since separate sulphide and oxide lead concentrates could be produced. Combined oxide and sulphide lead recovery was between 80% to 90% depending on feed grade and characteristics.
- Zinc recovery was susceptible to extent of sample oxidation. While sulfide zinc could approach 90% total recovery, the typical zinc recovery was less than 60% due to oxidation. A significant portion of the sulphide zinc occurs as inclusions within oxide zinc mineralization decreasing the overall recovery.
- Effective removal of iron through use of lime and cyanide was relevant for achieving reasonable grades of final concentrate.

### 13.1.2 2012 - Hazen Research

#### 13.1.2.1 Sample Origin and Characterization

In July 2012 Hazen Research Inc., of Golden CO, reported on a test program for the Blende project. The focus of the program was to evaluate a potential pyromet procedure for treating a bulk lead zinc concentrate to then fume off and recover the zinc separately. As part of the program the investigation undertook characterization of feed samples and the response to various gravity separation techniques, and flotation procedures.

The Hazen program was performed on composite samples generated from split diamond drill core generated during a 2008 drill program. Initially eight composite samples were blended from the core originating from two drill holes. Following head analyses, four of these composites were selected for conducting the study. Composites were selected to cover a grade range of the principal metals of interest including silver (Ag), lead (Pb) and zinc (Zn), as well as variability with respect to the sulfide oxidation. A summary of the selected composite origins and head assays are given in Table 13-1 below.

**Table 13-1 Composite Location and Head Analyses**

Comp. ID	Drill Hole #	Depth (m)	Zn %	Pb %	Cu %	Ag ppm	Fe %	Solids SG
Comp. 1	BE08126	26.5-43.8	0.83	2.91	0.005	52	2.71	2.98
Comp. 2	BE08126	88.0-103.3	5.88	5.93	0.015	147	2.25	3.08
Comp. 5	BE08126	209.5-232.0	2.22	2.53	0.013	24	5.13	3.00
Comp. 7	BE08128	27.4-39.6	3.61	4.76	0.65	76	2.35	2.97

The four composites show considerable variation in content of the principal metals of interest (Pb, Zn, Ag). Copper was noted in one composite (Comp. 7) at a significant concentration of 0.65%. The detailed analyses by Hazen also gave less than detectable amounts of gold (<0.2 ppm Au), platinum (<0.04 ppm Pt) and palladium (<0.04 ppm Pd) in all four of the composite samples.

Characterization studies included X-ray diffraction (XRD), which showed the major gangue mineral to be dolomite in all four composites with subordinate quartz. XRD indicated the presence of sulfides primarily comprised of galena, sphalerite, and pyrite in Comp. 2, 5, 7, but not noted in Comp. 1 (although lesser amounts were identified with microscopy). Chalcopyrite was present in trace amounts for Comp.7 matching up with the chemical analyses. A summary of the XRD is provided in Table 13-2.

**Table 13-2 Mineralization by XRD of 2012 Metallurgical Composites**

Comp. ID	Major	Sub-major	Minor
1	dolomite	Qtz.,	(trace Ga)
2	dolomite	Qtz., Ga., Sph.	Pyrite
5	dolomite	Qtz.	Pyr., Ga., Sph.
7	dolomite/Qtz.	Ga., Sph.	Pyr. (trace Chalco)

Note: Qtz. = Quartz, Ga.=Galena, Sph.=Sphalerite, Pyr.= Pyrite, Chalco=Chalcopyrite

XRD results was confirmed with optical microscopy that described all the composites as being comprised of primarily carbonates and siliceous gangue, along with corresponding oxides present for Comp. 2, 5 and



particularly for Comp. 1 where significant oxidation was noted. Sulfides in Comp. 2, 5, 7 generally consisted of abundant galena and sphalerite with less pyrite and traces of chalcopyrite (more in Comp. 7) as well as tetrahedrite-tennantite. Mild alteration occurred around the rims and cleavage planes of the galena, with fracture filling probably cerussite in the sphalerite. Pyrite alteration varied from minor to extensive with fracturing depending on the composite, also with fracture filling of galena, sphalerite, and the siliceous gangue.

For Comp. 2, 5, 7 the sulfides displayed a wide particle size range from a few microns up to ~1 mm. These occur primarily as irregular particles, forming coarse intergrowths (less frequently as discrete particles) with each other and in the gangue, or as minute particles finely disseminated through the gangue.

Further chemical speciation of the base metals, sulfides and carbon is presented in Table 13-3.

**Table 13-3 Composites Element Speciation**

Comp. ID	Oxide Zinc		Oxide Pb		Sulfur (%)		Carbon (%)	
	%	Portion of total Zn	%	Portion of total Pb	as total	as sulfate	as total	as Inorg
Comp. 1	0.361	44%	1.88	65%	0.12	<0.02	10.1	9.9
Comp. 2	0.528	9.0%	1.22	21%	4.73	0.92	7.6	7.4
Comp. 5	0.036	2.8%	0.268	11%	4.73	<0.02	7.5	7.3
Comp. 7	0.115	3.2%	0.302	6.3%	4.48	0.08	4.3	4.2

The chemical analysis supports the mineralogy indicating the majority of the lead, and nearly half the zinc present as oxides in Comp. 1, as well as only minor sulfur being present. Comp. 2 has the next highest extent of oxidation indicated, followed by Comp. 5 and Comp.7, both showing a minimal extent of sulfide oxidation. In all the composite samples only a minor portion of the carbon is indicated to be present as organic carbon.

**13.1.2.2 Process Summary**

Processing studies consisted of preliminary investigations into comminution, gravity, flotation and pyrometallurgical methods which are detailed in Hazen's report. The comminution results are presented in the following table for the Bond Ball Mill Work Index (BWi) and Abrasion Index (Ai) as determined by the Pennsylvania Crusher Method. The results are described by Hazen based on their data base as being below average for grindability and abrasiveness, except for Comp. 7 which is "borderline abrasive".

**Table 13-4 Ball Work Index and Abrasion**

Comp. ID	BWi kWh/t	Ai g
Comp. 1	11.7	0.0766
Comp. 2	11.2	0.0907
Comp. 5	13.6	0.1668
Comp. 7	14.1	0.3706

While considered to be of moderate hardness, the four composites show significant variation, with softer and less abrasive characteristics evident in the more highly oxidized samples.

Basic scoping level gravity studies were performed using a shaking table and separately by heavy liquid separation (HLS), primarily to investigate if the oxide base metals would respond favorably to gravity concentration at coarser particle size fractions. The HLS was done on material crushed to nominal 3/4" (19 mm) and then screened at 6 mesh (3.4 mm) to remove fines. The -6 mesh fines were then assayed to provide an overall balance. The selected media SG was 2.90, simulated by using tetrabromoethane (TBE). The results are summarized in the following table and do not include the screened -6 mesh fines.

**Table 13-5 HLS Response -3/4"+6 mesh material @ Media SG = 2.90**

Composite		Lead		Zinc	
ID	Product	% Pb	% Distr.	% Zn	% Distr.
Comp. 1	Float	41.6	92.3	11.6	82.7
	Sink	0.6	7.6	0.4	17.3
Comp. 2	Float	12.8	84.2	10.6	85.1
	Sink	0.7	15.8	0.6	14.9
Comp. 5	Float	4.9	73.1	6.1	71.2
	Sink	0.3	26.9	0.5	28.8
Comp. 7	Float	15.7	86.6	5.8	85.3
	Sink	1.4	13.4	0.6	14.7

If the screened fines are included with the sink concentrate product then the overall lead, zinc and silver HLS recovery is typically from 90% to 95%. One notable exception was the silver on Comp. 1, which only returned 58% recovery. Other miscellaneous sample intervals tested from the same drill holes as the four composites could exhibit higher metal losses to the float. The initial results suggest HLS is a promising pre-concentration procedure prior to flotation, but that further evaluation is required. Wilfrey® tabling was performed at several size fractions above 75 microns. The results are encouraging in that a partially cleaned concentrate assayed 356 g/t Ag, 24%Pb, accounting for 38% of the lead. Basic flotation of the corresponding minus 75-micron fines and gravity tailing was also investigated so that gravity coupled with other methods for upgrading lead and silver, particularly if associated with oxidized minerals can be further investigation, although the flowsheet is likely better served by direct flotation.

Conventional laboratory flotation testing was performed in a Denver D-12 flotation machine incorporating a number of procedures including variations to particle grind size, retention time and reagents. The majority of the flotation work focused on producing a bulk concentrate on which to investigate pyrometallurgical procedures that were specifically requested by the client. The bulk float response of the four composites is provided in Table 13-6.

**Table 13-6 2012 Composites - Bulk Flotation Response**

Comp	Wt.	Feed			Ro. Conc. Assay			Bulk Tailing			Recovery (%)		
		Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag (g/t)	Pb (%)	Zn (%)	Ag	Pb	Zn
1	7.0	52	2.9	0.8	567	36.3	1.6	7	0.4	0.2	86	88	38
2	21.7	147	5.9	5.9	666	25.1	20.7	7	1.5	1.2	96	82	83
5	18.5	24	2.5	2.2	110	11.9	12.0	<3	0.2	0.1	>88	93	96
7	21.1	76	4.8	3.6	381	26.0	10.9	7	0.4	0.1	94	94	96

Apart from the zinc in Comp. 1, the results show a reasonable bulk flotation recovery response for the three primary metals of interest. The weight of the un-cleaned concentrates ranged from 7% to 22% of the mass and to a grade range that might be considered for upgrading by other methods, including either differential flotation, or the pyrometallurgical procedures that were evaluated and discussed below.

Initial float scoping studies to separately clean the lead and associated silver from the zinc were performed on Comp. 1 and 5. Comp. 1 provided a lead concentrate grading 63%Pb, 1.9% zinc and 960 g/t silver, recovering approximately 82% of the silver and 79% of the lead to a final concentrate. For Comp. 5 the best results gave a lead concentrate grade of 38% Pb with 290 g/t Ag and 5.4% Zn. Lead recovery was approximately 75%. Comp. 5 resulted in less upgrading of the lead than Comp. 1 despite lower oxidation being evident. This is possibly due to a higher zinc content and more intimate association of the galena and sphalerite in Comp. 5. Further work will be required to optimize the differential and cleaning flotation procedures for the various types of mineralization indicated that should include the use of a sulphidizing agent.

At the request of the property owner fuming (roasting) tests were undertaken on bulk lead / zinc concentrates as a method for evaluation in base metal recovery. The procedure used a small rotating kiln at various temperatures for typically 60 minutes retention time. Carbon in the form of petroleum coke was added at various ratios to promote reduction of the lead and zinc oxides to better allow volatilization. The ratio of carbon to zinc was varied up to 4:1. Oxygen / aeration rates were varied and nitrogen was used at times to allow for reducing atmosphere during some stages of the roast.

Details are provided in Hazen’s report, and summarized in Table 13-7.

**Table 13-7 Comp. 1 & 5 - Hazen Research - Summary of Fuming Conditions and Results**

Test	Comp. No.	Temp °C	C:Zn Ratio	Ret. Time min	% Extraction	
					Zn	Pb
1	1	950	3:1	60	15.8	25.3
2	1	1000	3:1	60	12.1	21.6
3	1	1080	3:1	60	29.6	27.4
4	1	1000	2:1	60	2.9	27.2
5	1	1000	4:1	60	4.3	27.6
6	1	1000	3:1	45	<1	2.6
7	1	non-conclusive - insufficient sample				
8	5	1080	3:1	60	31.1	70.6
9	5	1400	note 1	60	77.9	92.6
10	5	1300	note 1	60	67.4	97.9
11	5	1000	4:1	60	99.8	99.9

Note 1. carbon provided by graphite boat,

The data indicates the series of initial studies performed at approximately 1000 °C resulted in fuming less than a third of the lead and zinc on Comp. 1. A second phase of testing on Comp. 5 incorporated higher temperatures (up to 1400 °C) that significantly improved extractions. While procedures were not fully optimized, aggressive conditions of 1400 °C, C:Zn ratio @ 4:1 and 1.7 sL/min air flow provided zinc and lead

extractions exceeding 99% based on the head versus the calcine analyses. However, as noted by Hazen there was poor accountability to the overall balance that might be explained by precipitation losses during scrubbing or adhesion losses to vessel walls.

The incorporation of an upgrade plant going to pyrometallurgical treatment at the Blende site would require significant capital investment and higher operating costs that ultimately will need to be justified with a more detailed economic study. Silver recovery would need to be accomplished separately, possibly by leaching. All of this would likely need to be supported by a larger resource base than is currently identified at Blende. Until such time a more conventional mineral processing approach of using flotation to produce separate lead and zinc concentrates for sale is envisioned for project advancement.

### **2017 Laboratory Study**

The most recent metallurgical study was performed in autumn 2017, under supervision and instruction from F. Wright Consulting Inc., at BV Minerals laboratories of Richmond, BC, which is a division of Bureau Veritas Commodities Canada Ltd.

#### **13.1.3 Sample Origin**

The 2017 study was performed on samples originating from half splits of archived drill core kept on site since being generated in 1990 and 1991. The metallurgical testing was conducted on five composite samples representing oxide, sulphide, and transition materials in the west zone, and for transition and sulphide materials in the east zone. A list of the source and sample identifications that make up these composites is provided in Table 13-8.

A total of 27 samples were collected for metallurgical testing during a site visit 9-11 September 2017. The samples represent NQ sized drill core gathered from stored core from the 1990 and 1991 drill programs. The samples were selected to cover a range in the degree of oxidation and to test both the east and west mineralized zones. Seventeen samples were collected from the west mineralized zone and ten from the east zone. The samples represent the entire remaining ½ core from the original samples, which varied from 1.02m to 4.88m in length.

**Table 13-8 2017 Metallurgical Samples**

<b>Comp. OX (oxidized material, west zone)</b>			
<b>DH #</b>	<b>From (m)</b>	<b>To (m)</b>	<b>Sample No.</b>
90-04	45.90	47.76	4454
90-04	53.64	56.64	4455
90-17	75.90	78.15	4456
90-18	10.57	14.00	4457
90-18	14.00	17.00	4458
90-18	111.00	114.82	4459
<b>Comp. TW (transition material, west zone)</b>			
90-18	114.82	118.26	4460
90-17	78.15	81.10	4461
90-16	77.40	80.05	4462
90-16	80.05	84.93	4463
90-17	81.10	84.32	4464
<b>Comp. TE (transition material, east zone)</b>			
91-32	10.32	13.32	4471
91-38	7.40	10.40	4472
91-38	10.40	13.40	4473
91-65	3.05	6.40	4474
91-32	7.32	10.32	4475
<b>Comp. SW (sulphides, west zone)</b>			
90-16	84.93	88.10	4465
90-18	26.00	29.00	4466
90-18	101.00	102.63	4467
90-04	107.45	110.45	4468
90-04	116.45	119.45	4469
90-05	125.94	126.96	4470
<b>Comp. SE (sulphides, east zone)</b>			
91-25	27.10	30.10	4476
91-25	53.80	56.80	4477
91-25	68.80	71.70	4478
91-34	142.00	145.00	4479
91-34	145.00	148.00	4480

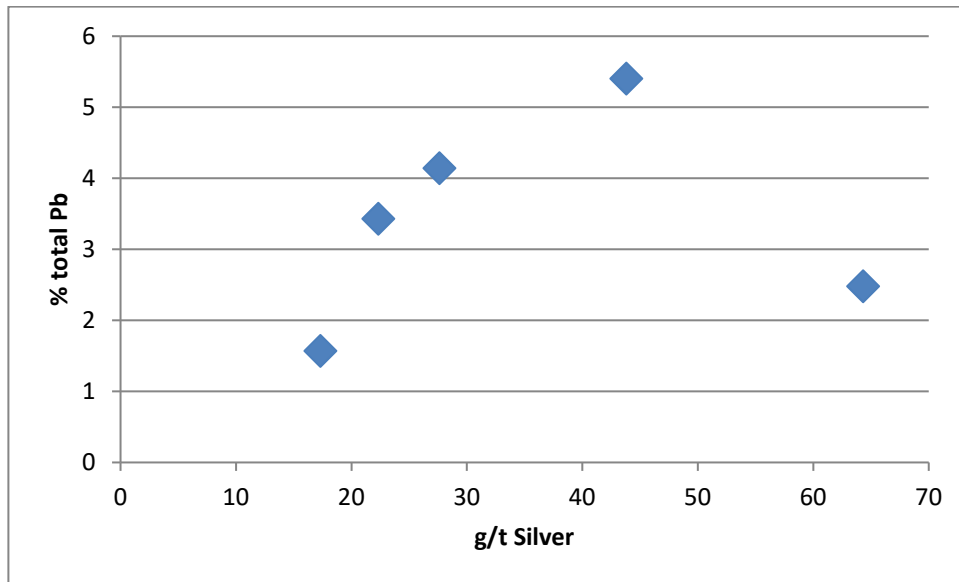
The samples were composited and assayed for principal elements of interest as well as by multi-element analyses. A summary of the results is presented in Table 13-9.

**Table 13-9 Head Analyses 2017 Metallurgical Composite Samples**

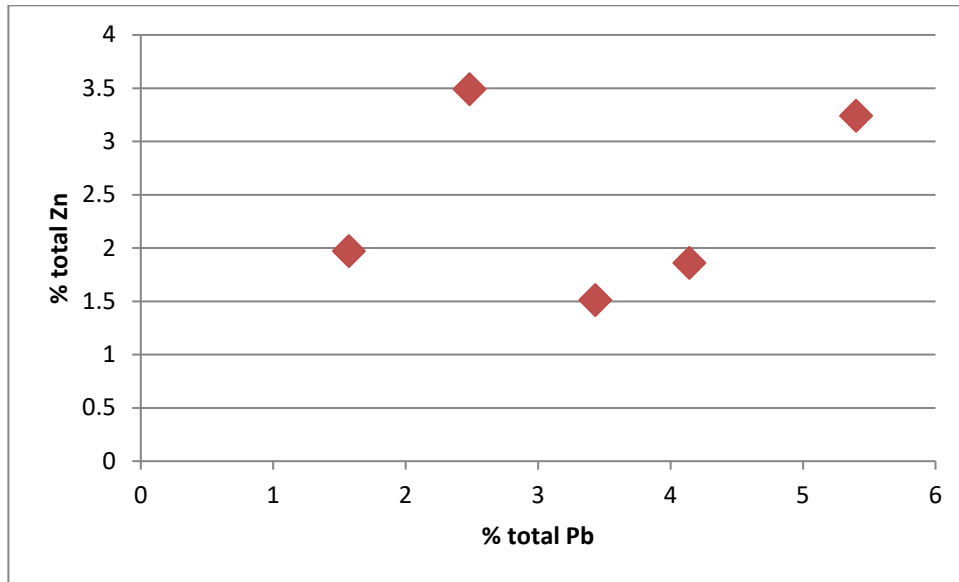
Items	Unit	Sample ID				
		Comp OX West	Comp TW West	Comp SW Sulphide	Comp TE East	Comp SE Sulphide
Au	g/t	0.04	0.03	0.03	0.05	0.03
Ag	ppm	43.8	22.3	27.6	64.3	17.3
Pb	%	5.40	3.43	4.14	2.48	1.57
Zn	%	3.24	1.51	1.86	3.49	1.97
Pb(OX)	%	3.94	1.41	1.33	1.27	0.59
Zn(OX)	%	2.33	0.33	0.21	0.33	0.07
Stot	%	1.3	1.56	1.89	9.29	2.82
S(2-)	%	0.1	0.26	0.32	6.37	1.07
Ctot	%	8.2	7.83	7.92	7.73	9.77
Corg	%	1.15	0.48	0.51	1.02	0.8

The results show that the composite samples ranged from 1.6% to 5.4% total lead, 1.5% to 3.5% total zinc, and 22 g/t to 64 g/t silver. In addition, there was a low copper content that varied between 35 ppm to 96 ppm in the composites. Potentially deleterious elements included arsenic at 96 to 220 ppm, antimony at 25 to 122 ppm, and mercury at 3 to 11 ppm.

Based on the limited number of composites for comparison there was some correlation of increasing silver grade with lead grade, with one outlier point as shown in Figure 13-1 below. Generally, there is a poor correlation shown between lead and zinc content as shown in Figure 13-2.



**Figure 13-1 Lead vs Silver Content 2017 Metallurgical Composites (Blind Creek, 2018)**



**Figure 13-2 Zinc vs Lead Content 2017 Metallurgical Composites (Blind Creek, 2018)**

Of significance to the process response is the extent of oxidation as measured by the ratio of total sulfur (S) to sulphide sulfur ( $S^{2-}$ ). A high extent of sulphide oxidation is particularly evident in the three West Zone composites (Comp. OX, TW, and SW), which were all well over 82% oxidized. For the two east zone composites the extent of oxidation was 32% oxidized for the transition zone composite (Comp. TE) and 62% oxidized for the sulphide zone composite (Comp. SE). The extent of oxidation appears considerably higher in the 2017 metallurgical composites than for the resource estimate as a whole. This is likely in part a consequence of exposure of the samples for over two decades in the core boxes on site. This fact needs to be accounted particularly in the flotation response as that generally becomes more challenged as extent of oxidation increases in the feed materials.

#### 13.1.4 Dense Media Separation

As a means of scoping evaluation for dense media separation (DMS) a heavy liquid separation (HLS) test was performed. The HLS was conducted on Comp TW using a particle size range of +6 mm (+1/4") to -25 mm (-1"). The heavy liquid used was Tetrabromoethane (TBE) with a media SG of 2.8. The float and sink products produced were assayed for lead and zinc and presented in Table 13-10.

**Table 13-10 HSL Results Comp. TW**

Test No.	Comp ID	Product	Weight (%)	Assay		Distribution	
				Pb (%)	Zn (%)	Pb (%)	Zn (%)
HLS 1	Transition, West Zone (TW)	TW Comp -1+1/4" Sink	26.1	8.02	2.90	64.1	56.7
		TW Comp -1/4" U/S	22.5	3.79	2.02	26.1	34.0
		<b>HLS Sink+Fines (-1/4")</b>	<b>48.5</b>	<b>6.06</b>	<b>2.49</b>	<b>90.2</b>	<b>90.7</b>
		TW Comp -1+1/4" Float	51.5	0.62	0.24	9.8	9.3
		<i>Total TW Comp -1+1/4"</i>	<i>77.5</i>	<i>3.11</i>	<i>1.13</i>	<i>73.9</i>	<i>66.0</i>
		<b>Calculated Head</b>	<b>100.0</b>	<b>3.26</b>	<b>1.33</b>	<b>100.0</b>	<b>100.0</b>
		Measured		3.43	1.51		

The results show when the minus ¼" screened fines are included with the sink product slightly over 90% of both the lead and zinc can be recovered at just under half the original feed mass. As a consequence, DMS was evaluated on the three West Zone Composites under similar conditions using ferrosilicon as a means of adjusting the specific gravity of the media. A similar particle size range of the feed and media SG as the HLS testing was used for the DMS study. The results are presented in Table 13-11.

**Table 13-11 DMS Results - West Zone Composites**

Test No.	Comp ID	Product	Weight (%)	Assay			Distribution		
				Pb (%)	Zn (%)	Stot (%)	Pb (%)	Zn (%)	Stot (%)
DMS 1	Oxide, West Zone (OX)	OX Comp -1+1/4" Sink	31.3	11.41	6.21	2.74	62.3	56.7	65.6
		OX Comp -1/4" (fines)	18.1	8.57	4.77	1.62	27.0	25.1	22.4
		<b>Fines +Sink</b>	<b>49.3</b>	<b>10.37</b>	<b>5.68</b>	<b>2.33</b>	<b>89.4</b>	<b>81.8</b>	<b>88.0</b>
		OX Comp -1+1/4" Float	50.7	1.20	1.23	0.31	10.6	18.2	12.0
		<i>Total OX Comp -1+1/4"</i>	<i>81.9</i>	<i>5.09</i>	<i>3.13</i>	<i>1.24</i>	<i>73.0</i>	<i>74.9</i>	<i>77.6</i>
		<b>Calculated Head</b>	<b>100.0</b>	<b>5.72</b>	<b>3.43</b>	<b>1.31</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
		Measured		5.40	3.24	1.30			
DMS 2	Sulphide, West Zone (SW)	SW Comp -1+1/4" Sink	36.6	6.34	3.10	3.00	61.9	65.9	67.6
		SW Comp -1/4" (Fines)	17.1	5.59	2.06	2.08	25.5	20.4	21.9
		<b>Fines +Sink</b>	<b>53.7</b>	<b>6.10</b>	<b>2.77</b>	<b>2.71</b>	<b>87.4</b>	<b>86.3</b>	<b>89.5</b>
		SW Comp -1+1/4" Float	46.3	1.02	0.51	0.37	12.6	13.7	10.5
		<i>Total SW Comp -1+1/4"</i>	<i>82.9</i>	<i>3.37</i>	<i>1.65</i>	<i>1.53</i>	<i>74.5</i>	<i>79.6</i>	<i>78.1</i>
		<b>Calculated Head</b>	<b>100.0</b>	<b>3.75</b>	<b>1.72</b>	<b>1.63</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
		Measured		4.14	1.86	1.89			
DMS 3	Transition, West Zone (TW)	TW Comp -1+1/4" Sink	25.2	7.92	3.89	3.85	63.7	63.4	61.3
		TW Comp -1/4" (Fines)	19.3	3.42	1.63	1.70	21.1	20.4	20.8
		<b>Fines +Sink</b>	<b>44.5</b>	<b>5.97</b>	<b>2.91</b>	<b>2.92</b>	<b>84.8</b>	<b>83.8</b>	<b>82.1</b>
		TW Comp -1+1/4" Float	55.5	0.86	0.45	0.51	15.2	16.2	17.9
		<i>Total TW Comp -1+1/4"</i>	<i>80.7</i>	<i>3.07</i>	<i>1.52</i>	<i>1.55</i>	<i>78.9</i>	<i>79.6</i>	<i>79.2</i>
		<b>Calculated Head</b>	<b>100.0</b>	<b>3.13</b>	<b>1.55</b>	<b>1.58</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
		Measured		3.43	1.51	1.56			

The results of the DMS show somewhat less metal recovery than HLS, ranging in the upper eighty percent range for lead, and in the lower to mid eighty percent range for zinc, when combined with the screened fines. The mass rejection remained roughly at half. The somewhat lower response with DMS might be attributed to a slight difference in media specific gravity because of using the ferrosilicon. Regardless, the DMS procedures appear to be a promising approach for further evaluation as pre-concentration prior to flotation.



### 13.1.5 Flotation

A series of differential flotation tests were performed on the composites beginning with kinetic flotation studies to establish separation response of galena and sphalerite, including some initial optimization for a primary grind target. The methods used standard procedures to first float lead sulphide minerals and depressing zinc sulphide in the Pb circuit, using zinc sulphate (ZnSO<sub>4</sub>) either alone, or in combination with small amounts of sodium cyanide (NaCN). The zinc was then reactivated for flotation with copper sulphate (CuSO<sub>4</sub>). Typically, a combination of 3418A and A241 was used as mineral collector for lead sulphide, and SIPX was used for zinc flotation. Lime was added as pH modifier. Lead rougher flotation was conducted at pH 9.1, while zinc rougher flotation was at pH 10.2. Optional procedures to scavenge oxide lead minerals were investigated following zinc flotation. The initial tests were performed on Comp. SE and then by altering the primary grind for Comp. TW. A summary of the results is presented in Table 13-12.

**Table 13-12 Rougher Flotation Results**

Test No.	Composite ID	Grind size P80, µm	Product ID	Mass, %	Assay, %		Distribution, %	
					Pb	Zn	Pb	Zn
F1	Comp SE (sulphide zone east)	85	Pb Rougher Concentrate	15.03	10.20	4.49	95.22	31.10
			Zn Rougher Concentrate	7.36	0.39	18.75	1.77	63.56
			Pb OX Rougher Concentrate	6.02	0.33	0.62	1.23	1.71
			<b>Total Ro Concentrate</b>	<b>28.41</b>	<b>5.56</b>	<b>7.37</b>	<b>98.22</b>	<b>96.37</b>
			Flotation Tailings	71.59	0.04	0.11	1.78	3.63
F2	Comp TW (transition zone west)	86	Pb Rougher Concentrate	16.98	18.00	3.16	87.31	32.84
			Zn Rougher Concentrate	8.53	1.44	9.82	3.52	51.26
			Pb OX Rougher Concentrate	9.00	1.17	0.56	3.00	3.09
			<b>Total Ro Concentrate</b>	<b>34.51</b>	<b>9.52</b>	<b>4.13</b>	<b>93.82</b>	<b>87.18</b>
			Flotation Tailings	65.49	0.33	0.32	6.18	12.82
F3	Comp TW (transition zone west)	56	Pb Rougher Concentrate	19.66	15.56	3.13	88.15	35.21
			Zn Rougher Concentrate	8.82	1.39	9.98	3.53	50.38
			Pb OX Rougher Concentrate	9.53	1.47	0.56	4.04	3.06
			<b>Total Ro Concentrate</b>	<b>38.01</b>	<b>8.74</b>	<b>4.08</b>	<b>95.71</b>	<b>88.66</b>
			Flotation Tailings	61.99	0.24	0.32	4.29	11.34
F4	Comp TW (transition zone west)	113	Pb Rougher Concentrate	18.35	15.34	3.23	86.35	36.78
			Zn Rougher Concentrate	6.99	1.46	10.70	3.14	46.44
			Pb OX Rougher Concentrate	8.11	1.76	0.63	4.39	3.15
			<b>Total Ro Concentrate</b>	<b>33.45</b>	<b>9.15</b>	<b>4.16</b>	<b>93.88</b>	<b>86.37</b>
			Flotation Tailings	66.55	0.30	0.33	6.12	13.63

The initial test (F1) on Comp. SE was encouraging providing a total rougher lead recovery of 98% and a total rougher zinc recovery of 96%. Altering the grind (tests F2-F4) on Comp. TW showed in the 80% passing (P<sub>80</sub>) particle size range of 56 to 113 µm, a finer grind only slightly benefited metal recovery and lead / zinc separation. Therefore, a coarser primary grind with regrind of the bulk lead concentrate would be worthy of investigation. This was reinforced by the fact that approximately 1/3 of the zinc reported to the lead rougher concentrate. The flotation kinetics at the various grind sizes also showed no significant differences as indicated in Figure 13-3 below.

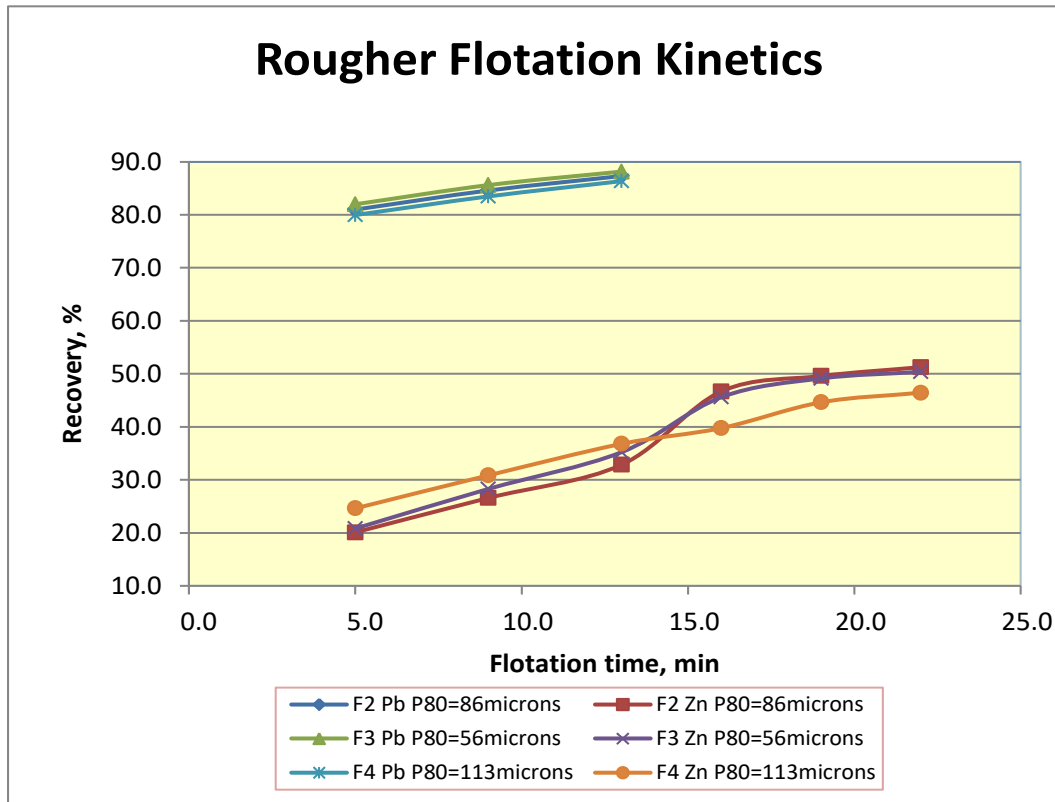


Figure 13-3 Comp. TW Rougher Flotation Response vs Grind (Blind Creek, 2018)

Following the rougher evaluation, the program undertook four scoping cleaner tests with three stages of cleaning for both the lead and zinc. The procedures used a similar reagent scheme as the rougher kinetic tests and incorporated regrind of the bulk rougher lead concentrate. A single test was performed on each of Comp. TW, SW and OX. A second test was performed on Comp. SW to evaluate a lower depressant dosage. Results outlining the critical aspects of lead and zinc response in the lead circuit are summarized in Table 13-13. The reported 3<sup>rd</sup> cleaner recoveries are for open cycle and do not include the cleaner tailing, a significant portion of which would be recycled in locked cycle or continuous procedures.

Table 13-13 Lead - Open Cycle Cleaner Flotation Results

Test No.	Comp. ID	Ro Conc regrind	Pb Ro Conc						3rd Cl Conc			
			Mass, %	Grade, %		Recovery, %		Mass, %	Grade, %		Recovery, %	
				Pb	Zn	Pb	Zn		Pb	Zn	Pb	Zn
F5	Comp TW	Yes	18.0	13.9	3.23	84.6	34.5	4.3	47.6	4.92	68.2	12.4
F6	Comp SW	Yes	15.8	21.1	8.86	83.8	71.7	4.6	50.0	7.51	57.8	17.7
F7	Comp SW	Yes	10.6	33.1	5.66	83.6	27.9	4.9	65.9	6.74	77.7	15.5
F8	Comp OX	Yes	9.7	28.4	4.4	49.5	12.4	3.1	55.6	4.0	31.2	3.6

The results for test F5 on Comp. TW gave a lead concentrate assaying 47.6% Pb and 385 ppm Ag in grade, providing for a respective Pb and Ag recovery of 68% and 73%. This indicates the silver values readily follow the lead mineralization. Zinc sulphide flotation resulted in a third cleaner zinc concentrate containing 45% Zn, with much of zinc is reporting to lead, highlighting the need for further work on this separation.

Test F6 and Test F7 were both performed on Comp. SW; with F6 using a lower dosage of zinc sulphate depressant, but augmenting it with sodium cyanide. The F6 results produced a lead concentrate containing 50% Pb and 823 ppm Ag, at Pb and Ag recovery of 58%. F7 improved on these results going back to the F5 procedure using additional zinc sulphate without NaCN. The F7 achieved a lead cleaner concentrate that graded at 66% Pb at 78% Pb recovery. Recovery can be improved by balancing the grade / recovery relationship for the final concentrate. Also for F7 the zinc concentrate grade was 47% Zn, with 57% recovery.

Test F8 was performed on Comp. OX, which is the oxidized composite from the west zone. The test used the same reagent recipe as F7. This composite feed assayed 5.4% total Pb with 3.94% Pb presented as oxide Pb. In the lead sulphide flotation stage a lead concentrate grading 55.6% Pb was achieved, albeit with a significantly lower Pb final open cycle lead recovery of 31.2%. Zinc sulphide flotation circuit resulted with a zinc concentrate assaying 45% Zn in grade at a zinc recovery of only 15% in the final open cycle concentrate. Total Pb and Zn rougher flotation recoveries were 62% and 36%, respectively. Final tailings assayed 2.59% Pb and 2.69% Zn. Attempts to scavenge further oxide lead in a final separate circuit were not successful and additional evaluation will be required.

### 13.2 Summary and Recommendations

All the metallurgical studies performed to date on the Blende Property are considered to be preliminary in nature. Both the historic and recent 2017 studies show that the Blende resource has a positive response to conventional DMS and differential froth flotation techniques depending on the extent of oxidation in the test samples.

Further testing should continue to optimize this approach, with further evaluation of the BDA procedure of an initial bulk Pb/Zn float, versus direct differential separation of lead and zinc. Initial procedures for scavenging oxide lead and associated silver values was more challenging and will require further modifications to the procedure. Test work moving forward should focus on using fresh representative drill core samples. Emphasis on the oxide versus sulphide content, along with grade / mineralization characteristics of the samples in matching the resource and proposed mine plan will be important considerations.

## **14 Mineral Resource Estimates**

### **14.1 Introduction**

The Mineral Resource Estimate (MRE) for the Blende Property Zn-Pb-Ag Deposit has been created by Sue Bird, P. Eng (APEGBC #25007) of MMTS in accordance with CIM Standards and guidelines (2014, 2019) and the Canadian Securities National Instrument 43-101. The Mineral Resource Estimate has been generated from drill hole sample assays and trench sampling. A geologic model has been created based on the spatial distribution of the zinc, lead and silver for 5 distinct Blende Deposits which are modelled as separate domains.

The mineral resources have been classified as Indicated or Inferred based on the drill hole spacing and number of composites available to inform a block in the model and according to CIM standards on Mineral Resources and Reserves (CIM, 2019).

### **14.2 Mineral Resource**

The Mineral Resource Estimate (MRE) for the Blende Deposit is summarized below in Table 14-1. The MRE has been summarized at varying Zinc Equivalent (ZnEq) cutoffs with the Base Case highlighted at 2% ZnEq (NSR=\$CDN39.35).

The highlighted cutoff is considered appropriate as the Base Case, based on costs and payables from comparable deposits, recoveries from current metallurgical testing as well as current and recent metal prices. The ZnEq equation used is supplied as a footnote to the tables, with details on price, recovery, payables, and cost parameters given in the Notes to the table and later in Section 14 within the discussion on the Lerchs-Grossman optimization used to constrain the Mineral Resource.

The MRE has been constrained by a pit shell to determine a shape for the “reasonable prospects of eventual economic extraction”. The constrained pit delineated resource is presented in Table 1-1 with the base case Zinc equivalent (ZnEqv) cutoff of 1.5% ZnEqv highlighted.

The effective date of the Mineral Resource Estimate is March 15, 2021. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. These mineral resource estimates include inferred mineral resources that are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves. It is reasonably expected that the majority of inferred mineral resources could be upgraded to Indicated. Mineral Resources were estimated using the 2019 CIM Best Practice Guidelines and are reported using the 2014 CIM Definition Standards.

The following factors, among others, could affect the Mineral Resource estimate: commodity price and exchange rate assumptions; pit slope angles; assumptions used in generating the LG pit shell, including metal recoveries, and mining and process cost assumptions. The QP is not aware of any environmental, permitting, legal, title, taxation, socioeconomic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate.

**Table 14-1 Mineral Resource Estimate for the Blende Project (Effective date: March 15, 2021)**

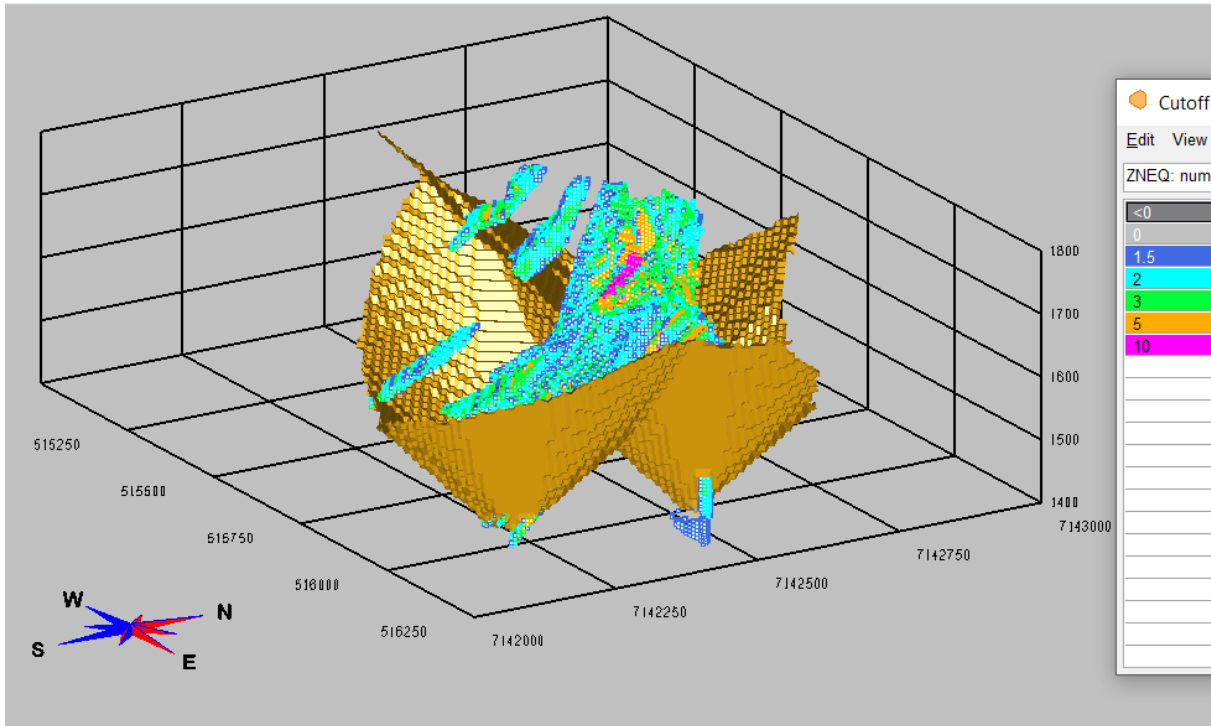
Class	Cutoff	In situ Tonnage	In situ Grades						In situ Metal Content		
			ZnEq1	Zn	Pb	Ag	NSR	OXRAT	Zn	Pb	Ag
		(ktonnes)	(%)	(%)	(%)	(gpt)	(\$CDN/t)		(Mlbs)	(Mlbs)	(koz)
Indicated	1.0	5,304	4.18	1.69	1.47	27.22	92.60	0.07	198	171	4,642
	1.5	4,643	4.60	1.82	1.63	30.32	101.85	0.08	187	167	4,526
	2.0	3,996	5.06	1.95	1.83	34.00	112.06	0.08	172	161	4,368
	2.5	3,351	5.60	2.08	2.07	38.72	124.04	0.08	153	153	4,172
	3.0	2,780	6.19	2.19	2.33	44.29	137.05	0.09	134	143	3,959
	3.5	2,284	6.83	2.30	2.63	50.60	151.26	0.09	116	132	3,715
	4.0	1,905	7.44	2.40	2.90	57.06	164.87	0.09	101	122	3,495
	5.0	1,375	8.59	2.56	3.41	69.92	190.18	0.10	78	103	3,090
Inferred	1.0	47,692	4.12	1.70	1.47	25.00	91.22	0.21	1,785	1,550	38,331
	1.5	42,243	4.49	1.83	1.62	27.48	99.41	0.21	1,706	1,505	37,320
	2.0	36,734	4.90	1.97	1.78	30.44	108.53	0.21	1,596	1,439	35,956
	2.5	31,833	5.31	2.10	1.94	33.58	117.58	0.21	1,473	1,362	34,368
	3.0	26,816	5.79	2.23	2.14	37.56	128.20	0.21	1,315	1,268	32,380
	3.5	22,423	6.29	2.35	2.36	41.86	139.23	0.21	1,160	1,166	30,177
	4.0	18,448	6.83	2.46	2.60	46.95	151.35	0.21	1,000	1,059	27,848
	5.0	12,559	7.95	2.66	3.11	57.80	176.03	0.21	736	862	23,339

**Notes to Table**

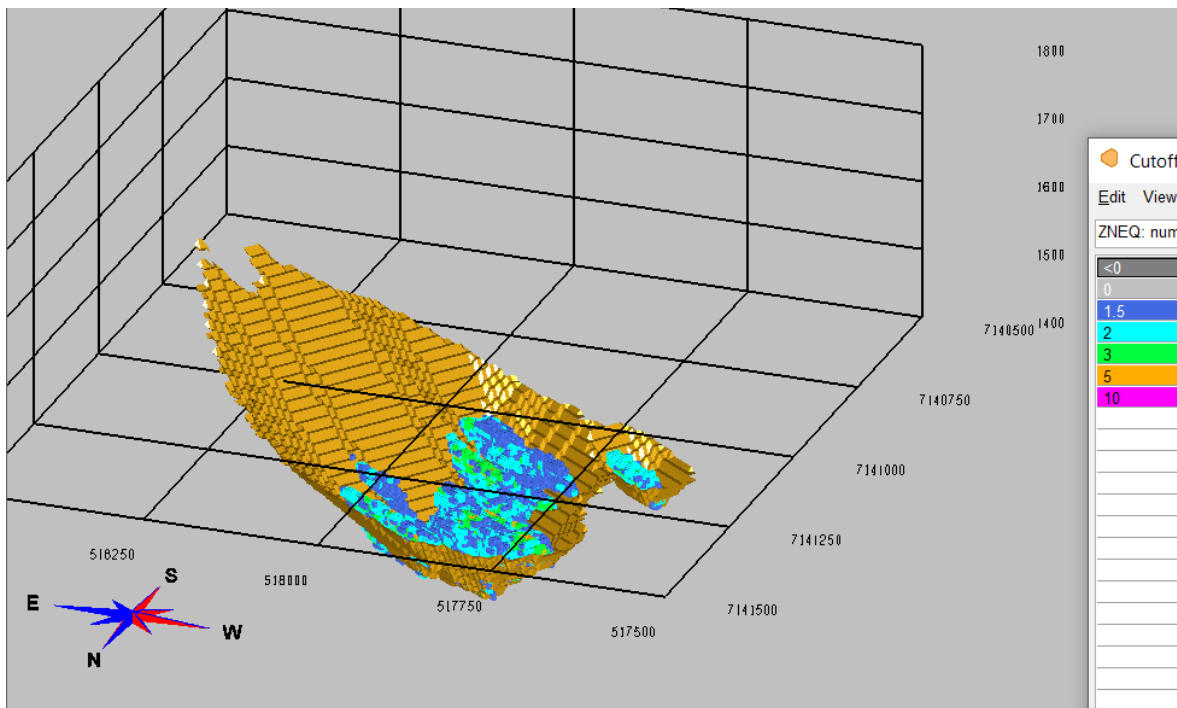
- The Mineral Resource Estimate has been prepared by Sue Bird, P.Eng., an independent Qualified Person.
- Resources are reported using the 2014 CIM Definition Standards and were estimated using the 2019 CIM Best Practices Guidelines.
- Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
- The Mineral Resource has been confined by a "reasonable prospects of eventual economic extraction" pit using the following assumptions: US \$1.3/lb zn, US \$1.0/lb Pb and US\$26/oz Ag at a currency exchange rate of 0.77 US\$ per \$CDN; Recoveries of 70% Zn, 85% Pb and 90% Ag, a 3% NSR royalty and Payable of 88% payable Zn, 83% payable Pb, 73% payable.
- The resulting ZnEq is:  

$$\text{ZnEq} = \text{Zn}\% + (\text{PB}\% * \$1.0 * 0.85 * 0.95) / (\text{ZN}\% * \$1.3 * 0.70 * 0.85) + \text{AGgpt} / 31.1034 * \$26 * 0.90 * 0.80 / (\text{ZN}\% * 1.3 * 0.70 * 0.85 * 22.0462)$$
- The specific gravity of the deposit has been determined by correlation with Zn and b grades.  $sg = (\text{ZN}\% + \text{PB}\%) * 0.015 + 2.8$
- Pit slope angles are assumed at 45°
- Numbers may not add due to rounding.

Perspective views of the Mineral Resource pits for the West/Far West zones and for the East Zone are illustrated in Figure 14-1 and Figure 14-2 respectively, with the modelled Indicated and Inferred blocks above a ZnEq of 1.5% shown.



**Figure 14-1 West and Far West Zones - View looking N30W showing Constraining Pit (grey) with ZnEq blocks above 1.5% Cutoff (Source: MMTS, 2021)**



**Figure 14-2 East Zone - View looking southeast showing Constraining Pit (grey) with ZnEq blocks above 1.5% Cutoff (Source: MMTS, 2021)**

### 14.3 Block Model

Table 14-2 shows the block model parameters for the Blende Mineral Resource Estimate. The model block size has been chosen based on a reasonable standard mining unit (SMU) for an open pit operation of this size and mineralization type.

**Table 14-2 Block Model Dimensions**

Blende Model dimensions			
	X (columns)	Y (rows)	Z (levels)
Origin (lower left)	517980	7140370	1950
Block Size (m)	6	6	6
Number of Blocks	130	647	161
Rotation	54 degrees counter-clockwise about the origin		
Composite Lengths	3m (down hole composites within domain solids)		

### 14.4 Domain Modelling

Geologic Domain boundaries used in the modelling are based on a combination of geologic controls and Implicit Modelling of grade shells. MineSight’s Implicit Modelling Tool (MSIM®) interpolates point data to generate a Radial Basis Function (RBF) which is output as a surface used for Domain modelling. The surface generation accounts for the deposit anisotropy based on the known geologic trends and variography of the composited drill hole data.

Grade shells at approximately 2% Zn and 5% Zn are used in the East Zone, with grade shells at 2% Zn and fault controls are used in the West and Far West zones. Using a lower cutoff than the cutoff used for the Base Case Resource Estimate is done to allow for dilution on the edges of the mineralization and internal dilution.

The block model is coded to allow up to 3 domains in a block coded as Domain Code, and Percent of Domain within the block. The final block grade is a weighted average of all domains within the block. Finally, the overburden percent of the block is given a zero grade and the grade and tonnage adjusted for overburden accordingly. Table 14-3 is a summary of the domain codes.

**Table 14-3 Domain Codes for Geologic Domains**

Domain	Domain Code
West Zone	1
West Breccia	3
East Zone – 2% Zn	5
East Zone – 5% Zn	6
All Zones – below 2% Zn	7

See Figure 14-3 for a plan view of the East and West Domains and the Sections Lines used in this Chapter of the Technical Report. Figure 14-4 and Figure 14-4 show sections at C-C' for the West Zone Domains and Section E-E' for the East Zones Domains. These sections illustrate the assay and model domain coding for each area.

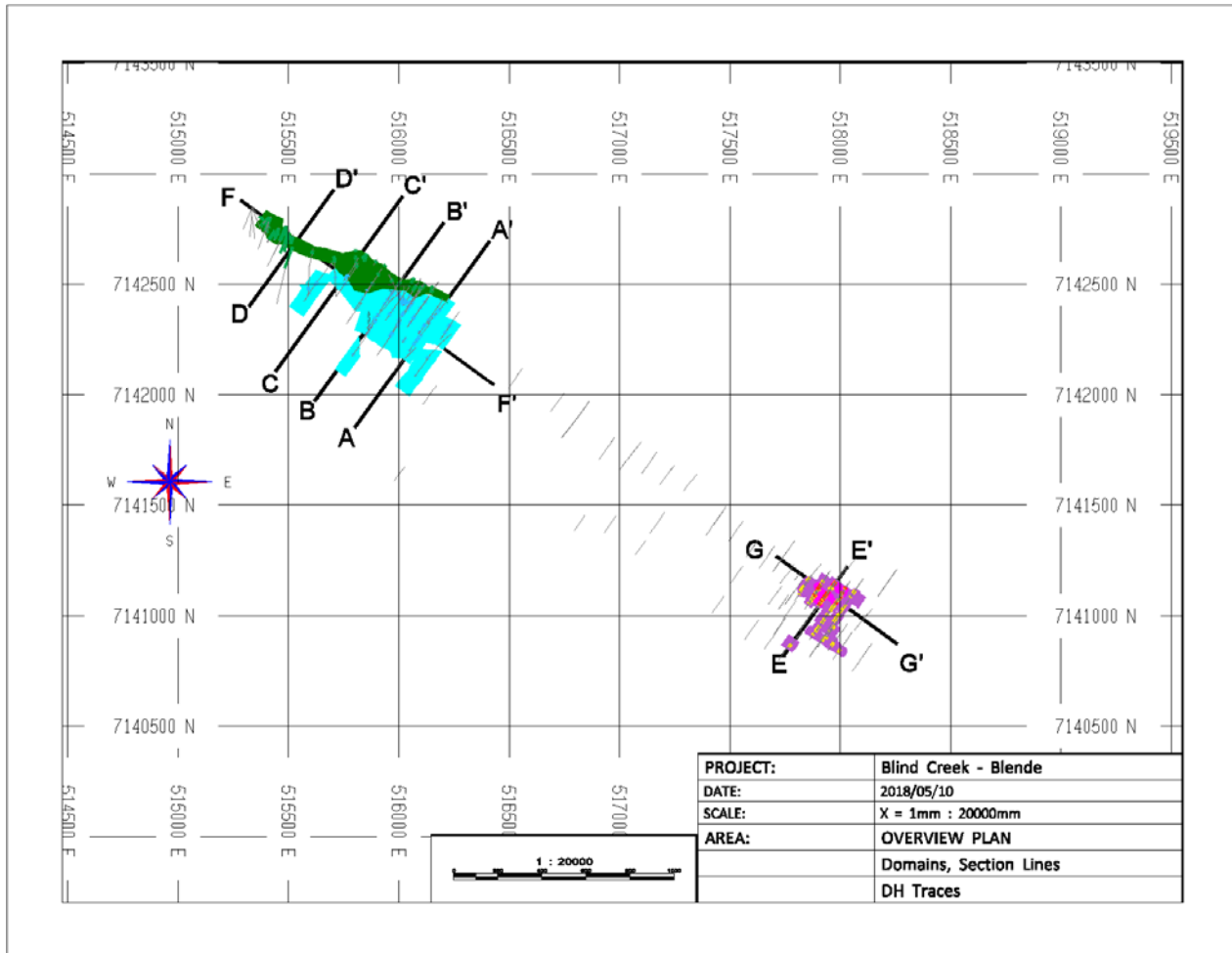


Figure 14-2 Plan Map of Domains showing Section Lines (Source: Blind Creek, 2018)



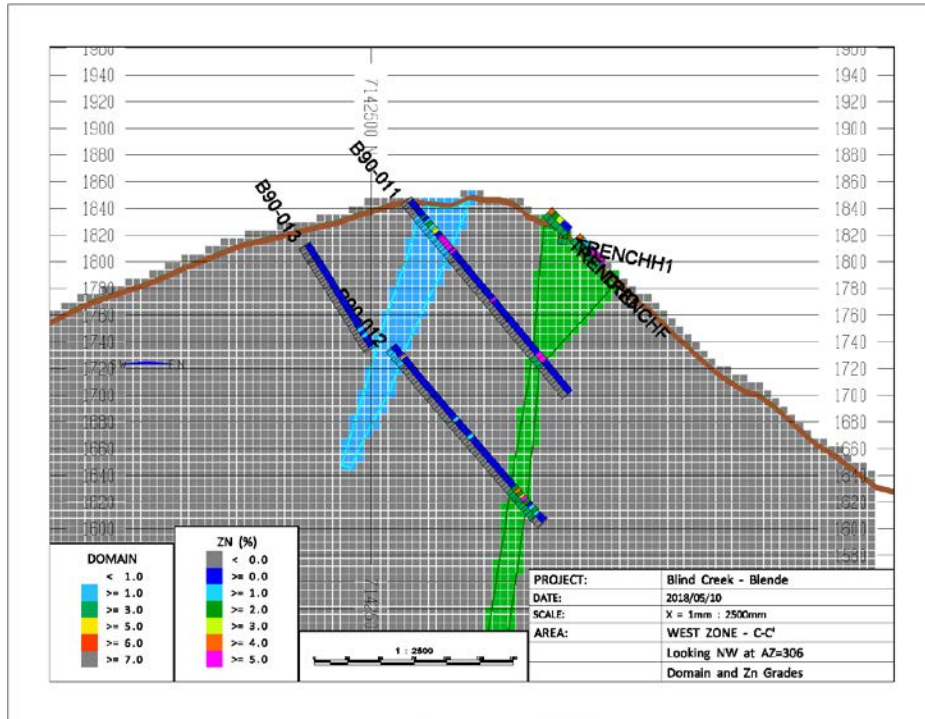


Figure 14-3 West and West Breccia Zones at Section C-C' - Domain coding of Assays and Model (Source: Blind Creek, 2018)

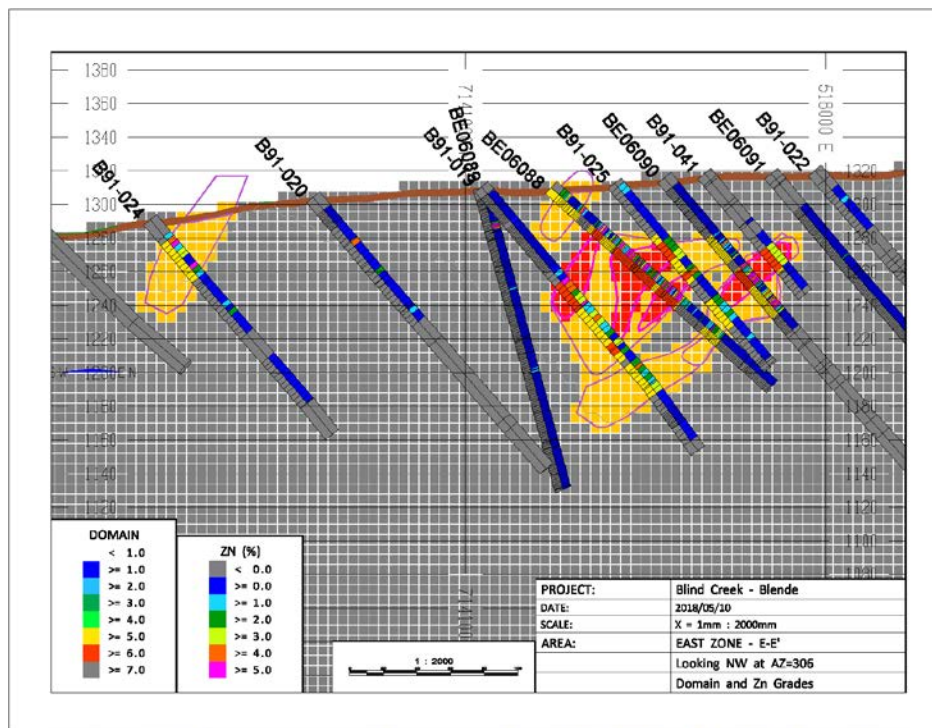


Figure 14-4 East Zone at Section E-E' showing Domain coding of Assays and Model (Source: Blind Creek, 2018)

## 14.5 Assay Data

A total of 119 diamond drill holes with assay data and 11 trenches with channel sampling were used in the Mineral Resource Estimate. An additional 13 holes drilled in 1991 in the periphery of the deposit were not used in the Resource.

Table 14-4 summarizes the statistics for each metal within each domain used during interpolation for the Mineral Resource calculations.

**Table 14-4 Summary Statistics by Domain - Assays**

Parameter	Zn (%)				Pb (%)				Ag (gpt)			
	1	3	5	6	1	3	5	6	1	3	5	6
# Samples	719	1157	686	169	719	1157	686	169	719	1157	686	169
# Missing	6	31	7	0	6	31	7	0	6	31	7	0
Min	0.006	0	0.008	0.005	0.004	0.002	0.002	0.006	0.1	0.1	0.1	0.1
Max	22.7	11.7	10.2	11.4	30.1	22.9	9.84	18.7	770	452.6	221	583
Wtd.mean	2.079	1.565	2.056	3.753	2.560	1.262	0.517	3.489	47.114	26.089	6.317	36.232
Weighted SD	2.54	1.91	1.75	2.16	3.65	2.14	0.98	3.26	77.49	46.49	10.46	48.13
Weighted CV	1.22	1.22	0.85	0.58	1.42	1.70	1.90	0.94	1.65	1.78	1.66	1.33

### 14.5.1 Trench vs. Diamond Drill Hole Assay Bias Check

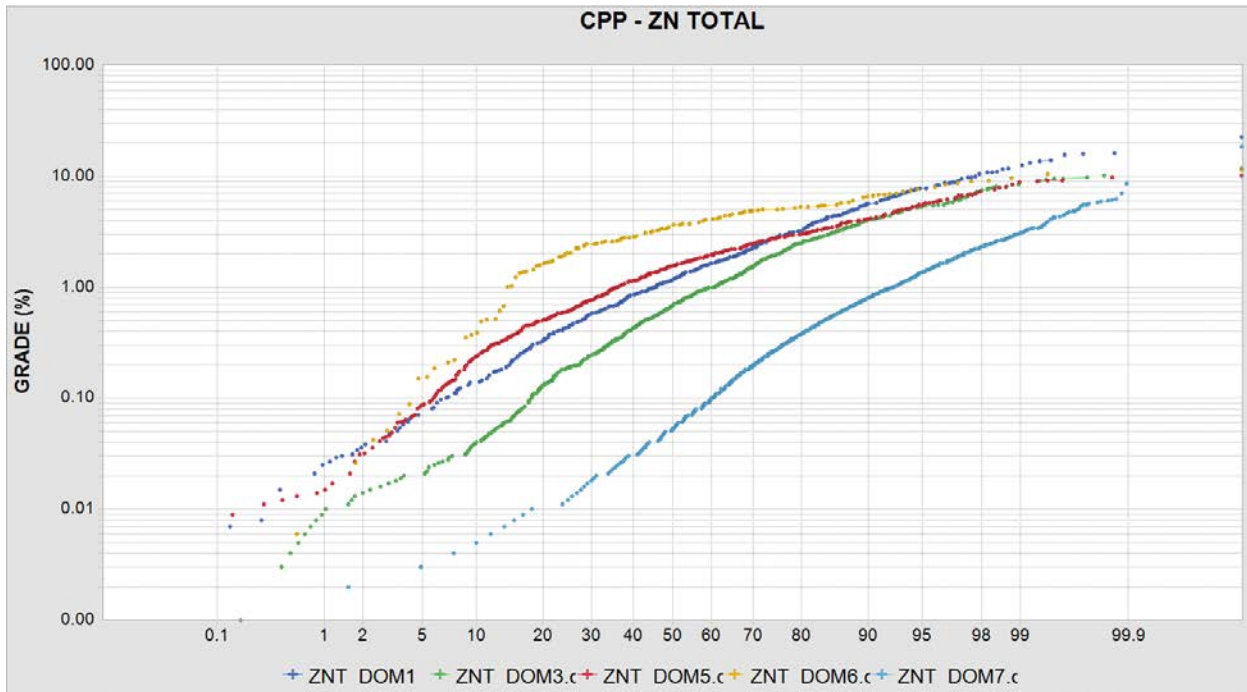
To determine any possible bias in the trench data collection and assaying, the trench assays are compared with adjacent diamond drill hole assay data where the two exist reasonably close. Table 14-6 summarizes this comparison. The Zn data compares well with only a 3% difference in grades for all samples compared. Pb and Ag report lower grades for the trench data.

**Table 14-5 Trench Assay Data compared to Diamond Drill Hole Assay Data**

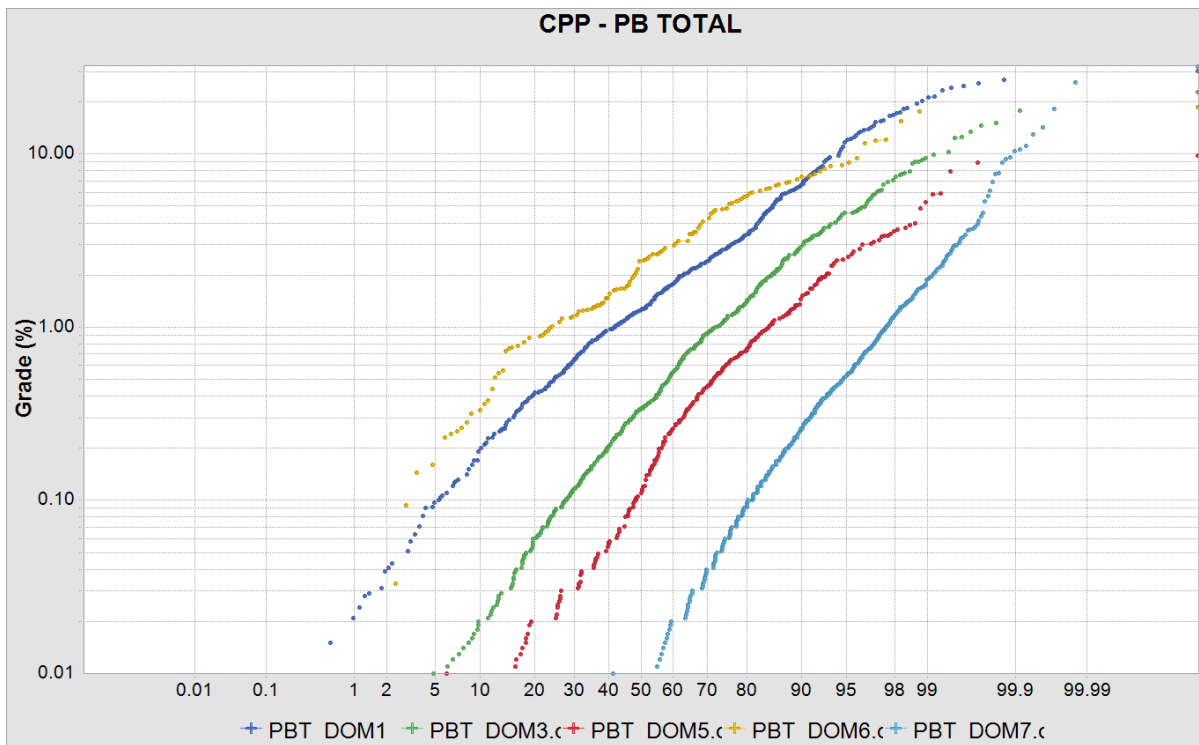
TRENCH	PARAMETER	ZN-ASY	ZN-TRENCH	PB-ASY	PB-TRENCH	AG-ASY	AG-TRENCH
A	Num Samples	21	13	21	13	21	13
	Min Grade	0.136	0.17	0.101	0.27	1.4	0.69
	Max Grade	3.33	2.77	6.65	4.62	52.3	78.17
	Wtd. Mean Grade	1.99	1.40	1.94	2.23	17.83	24.88
	Weighted CV	0.48	0.55	0.92	0.68	0.88	1.04
E	Num Samples	10	12	10	12	10	12
	Min Grade	0.96	1.99	0.38	0.24	8.23	7.54
	Max Grade	5.79	5.22	4.58	1.17	121.03	42.51
	Wtd. Mean Grade	2.84	4.14	1.66	0.75	35.36	25.98
	Weighted CV	0.53	0.32	0.61	0.46	0.79	0.34
F	Num Samples	3	22	3	22	3	22
	Min Grade	0.56	1.2	0.17	0.3	5.14	7.54
	Max Grade	5.55	8.22	4.99	4	168	77.49
	Wtd. Mean Grade	4.30	4.25	3.79	1.58	104.97	33.21
	Weighted CV	0.47	0.53	0.51	0.82	0.59	0.79
J	Num Samples	9	12	9	12	9	12
	Min Grade	0.13	0.46	0.03	1.06	1.03	19.89
	Max Grade	7.8	5.47	22.9	7.59	452.6	397.71
	Wtd. Mean Grade	3.27	2.98	5.84	3.72	138.29	131.51
	Weighted CV	0.89	0.63	1.21	0.65	1.13	0.92
ALL	Num Samples	43	59	43	59	43	59
	Min Grade	0.13	0.17	0.03	0.24	1.03	0.69
	Max Grade	7.80	8.22	22.90	7.59	452.60	397.71
	Wtd. Mean Grade	3.10	3.19	3.31	2.07	74.11	53.90
	Weighted CV	0.59	0.51	0.82	0.65	0.85	0.77

### 14.5.2 Cumulative Probability Plots (CPP) and Capping

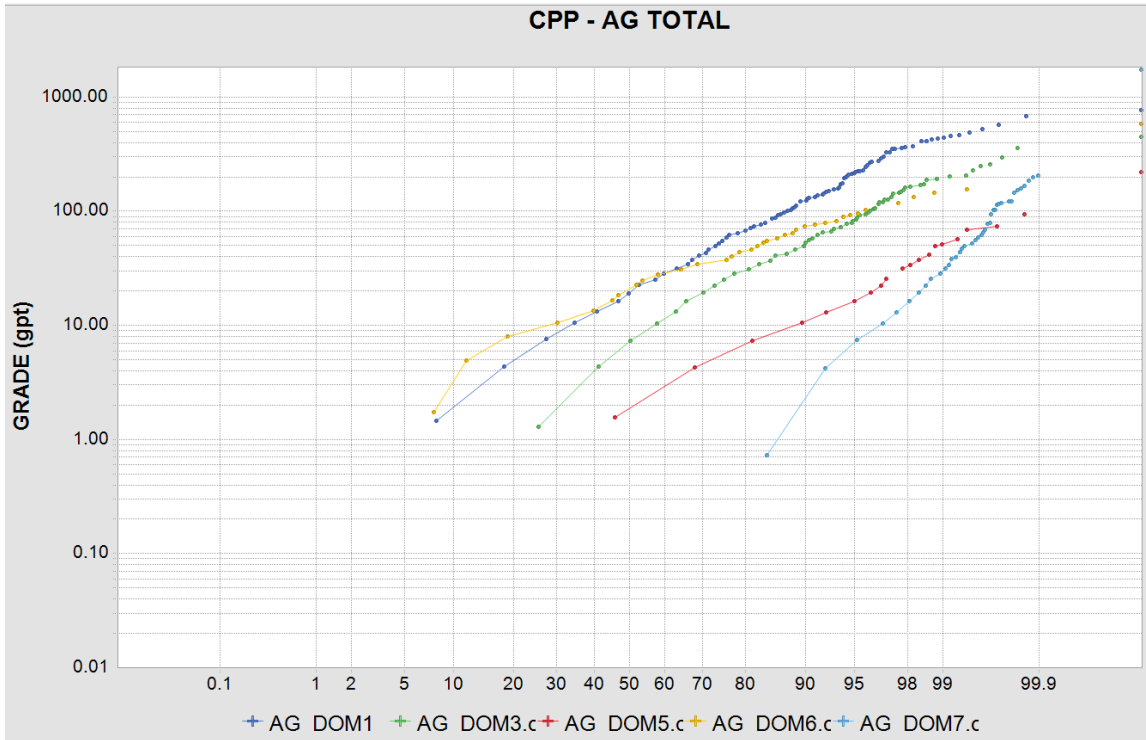
To assess the need for capping, cumulative probability plots (CPP) have been made for each area for the Domains. Figure 14-6 through Figure 14-8 illustrates the CPP plots for total Zn, Pb and Ag, respectively. Figure 14-9 and Figure 14-10 are the CPPS for the oxide component of Zn and Pb. In each case the lognormal distribution is examined for linearity, and a capping value is assigned based on outliers at the higher cutoffs. The resulting capping values are summarized in Table 14-7.



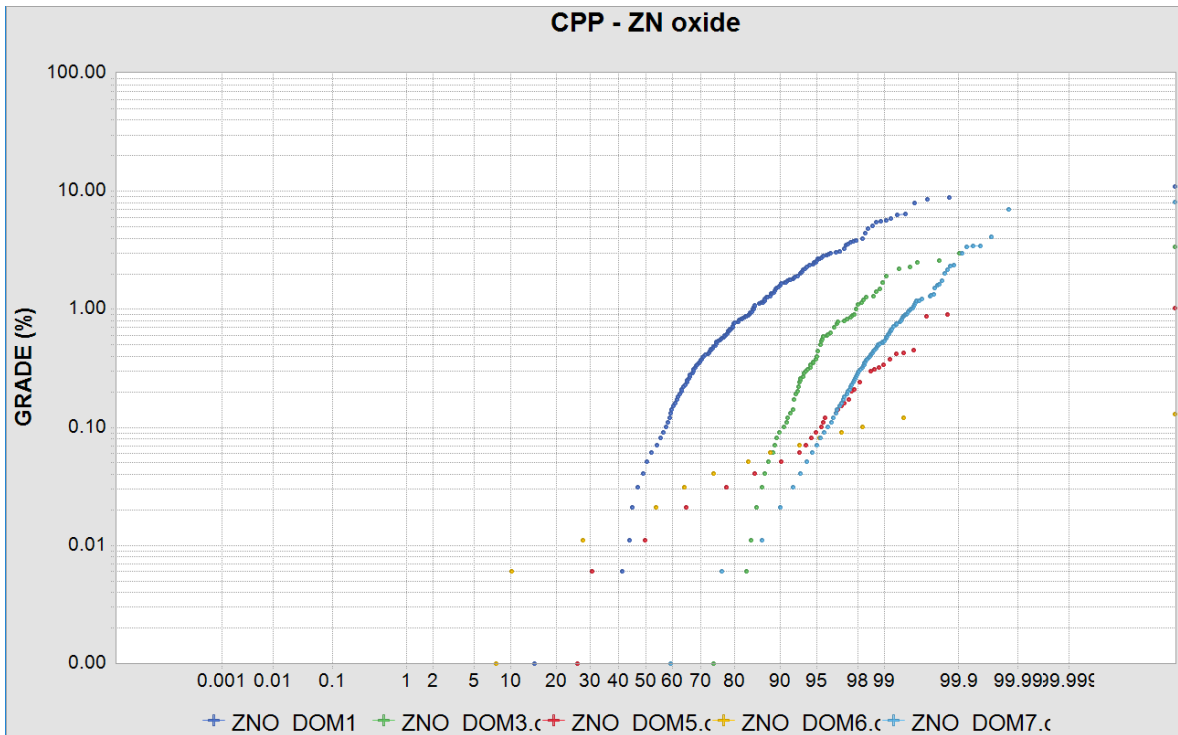
**Figure 14-5 CPP of Total Zn by Domain (Source: Blind Creek, 2018)**



**Figure 14-6 CPP of Total Pb by Domain (Source: Blind Creek, 2018)**



**Figure 14-7 CPP of Total Ag by Domain (Source: Blind Creek, 2018)**



**Figure 14-8 CPP of Total Zn - Oxide by Domain (Source: Blind Creek, 2018)**

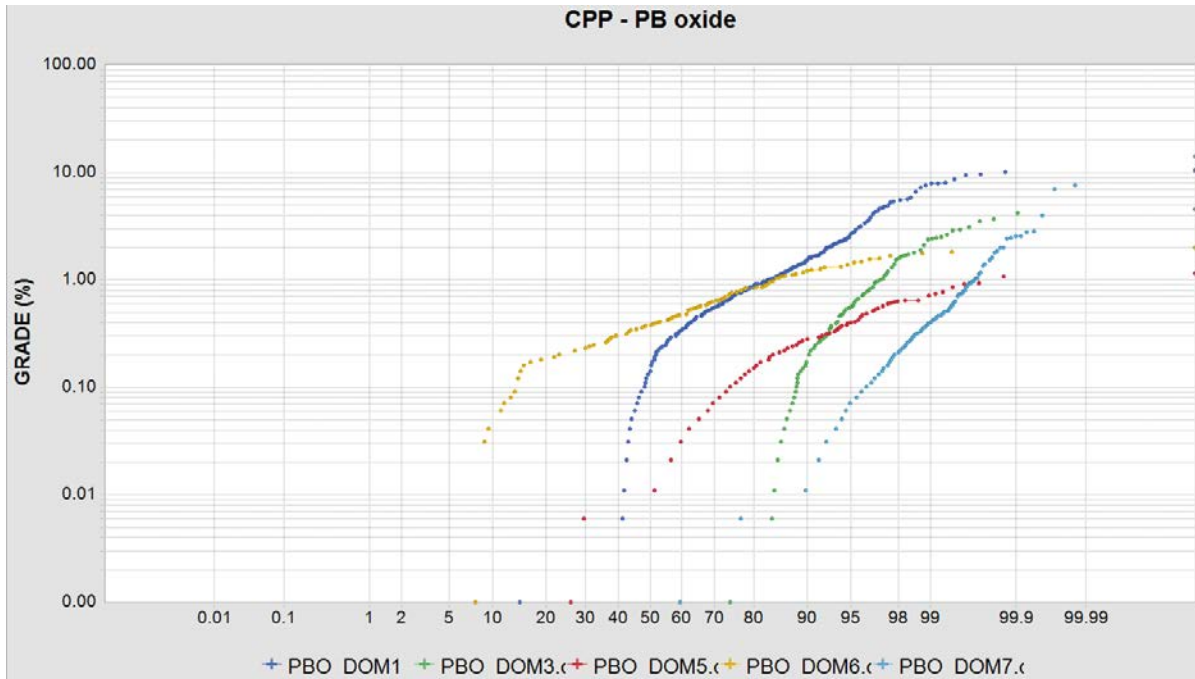


Figure 14-9 CPP of Total Pb - Oxide by Domain (Source: Blind Creek, 2018)

Table 14-6 Capping Values by Metal and Domain

Parameter	Capping Value by Domain				
	1	3	5	6	7
Pb - total %	30	16	999	20	15
Zn - total %	999	999	10	10	15
Ag (gpt)	1000	300	40	200	200
Pb - oxide %	10	999	999	999	10
Zn - oxide %	999	10	999	999	6

### 14.6 Composite Data

Assay data was composited to 3metres down the drill holes and honored the Domain boundaries. Composites that were less than 1.5 metre, typically at the end of the composite run were added to the previous composite. To ensure that compositing has been done correctly, the length weighted mean grades for the composites are compared to those of the original assay data. Table 14-7 summarizes the composite statistics and compares the grade values between assays and composites.

**Table 14-7 Summary of Composite Statistics and Comparison with Assays**

Parameter	Zn (%)				Pb (%)				Ag (gpt)			
	1	3	5	6	1	3	5	6	1	3	5	6
# Samples	489	604	353	85	489	604	353	85	489	604	353	85
# Missing	11	144	34	0	11	144	34	0	11	144	34	0
Min	0.02	0.005	0.018	0.39	0.011	0.004	0.006	0.16	0.34	0.1	0.34	2.06
Max	13.26	9.52	9.8	9.18	21.2	22.73	6.09	12.23	566.95	449.25	111.9	156.34
Wtd.mean	2.08	1.56	2.06	3.75	2.59	1.25	0.52	3.49	47.74	25.96	6.34	36.23
Weighted SD	2.20	1.73	1.50	1.75	3.17	1.96	0.84	2.57	67.76	43.27	8.31	31.23
Weighted CV	1.05	1.11	0.73	0.47	1.22	1.57	1.63	0.74	1.42	1.67	1.31	0.86
<b>Comparison with Assay Grades:</b>												
Wtd.mean - ASSAYS	2.08	1.57	2.06	3.75	2.56	1.26	0.52	3.49	47.11	26.09	6.32	36.23
DIFFERENCE (%)	0%	-1%	0%	0%	1%	-1%	0%	0%	1%	-1%	0%	0%

### 14.7 Variography

Variograms have been used to determine appropriate search distances and anisotropy during interpolation. The variogram parameters are also used in the calculations necessary for Volume- Variance corrections during Block Model Validation (see Section 14.9), and to determine the approximate drill hole spacing required for Classification to Measured and Indicated (see Section 14.10). Tables 14-8 through Table 14-10 summarize the variogram modelling parameters used by Domain, for Zn, Pb and Ag respectively. Figure 14-11 through Figure 14-13 provides illustration of the variography for each metal.

**Table 14-8 Variogram – Major – Zn**

Domain	Rotation (GSLIB-MS)		Axis	Total Range (ft)	Nugget	Sill1	Sill2	Range 1 (ft)	Range 2 (ft)
3	ROT	295	Major	120	0.4	0.4	0.2	40	120
	DIPN	5	Minor	100				20	100
	DIPE	-85	Vert	90				20	90
1,5,6	ROT	295	Major	160	0.35	0.4	0.25	40	160
	DIPN	10	Minor	70				20	70
	DIPE	55	Vert	100				35	100

**Table 14-9 Variogram – Major – Pb**

Domain	Rotation (GSLIB-MS)		Axis	Total Range (ft)	Nugget	Sill1	Sill2	Sill3	Range 1 (ft)	Range 2 (ft)	Range 3 (ft)
3	ROT	295	Major	180	0.4	0.3	0.3		50	180	
	DIPN	5	Minor	90					20	90	
	DIPE	-80	Vert	50					20	50	
1,5,6	ROT	295	Major	120	0.35	0.25	0.15	0.25	40	120	240
	DIPN	-10	Minor	70					30	70	200
	DIPE	55	Vert	50					10	50	80

**Table 14-10 Variogram – Major – Ag**

Domain	Rotation (GSLIB-MS)		Axis	Total Range (ft)	Nugget	Sill1	Sill2	Sill3	Range 1 (ft)	Range 2 (ft)	Range 3 (ft)
<b>3</b>	ROT	295	Major	80	0.4	0.3	0.3		20	80	
	DIPN	5	Minor	50					15	50	
	DIPE	-80	Vert	50					15	50	
<b>1,5,6</b>	ROT	295	Major	120	0.35	0.25	0.15	0.25	40	120	240
	DIPN	-10	Minor	70					30	70	200
	DIPE	55	Vert	50					10	50	80



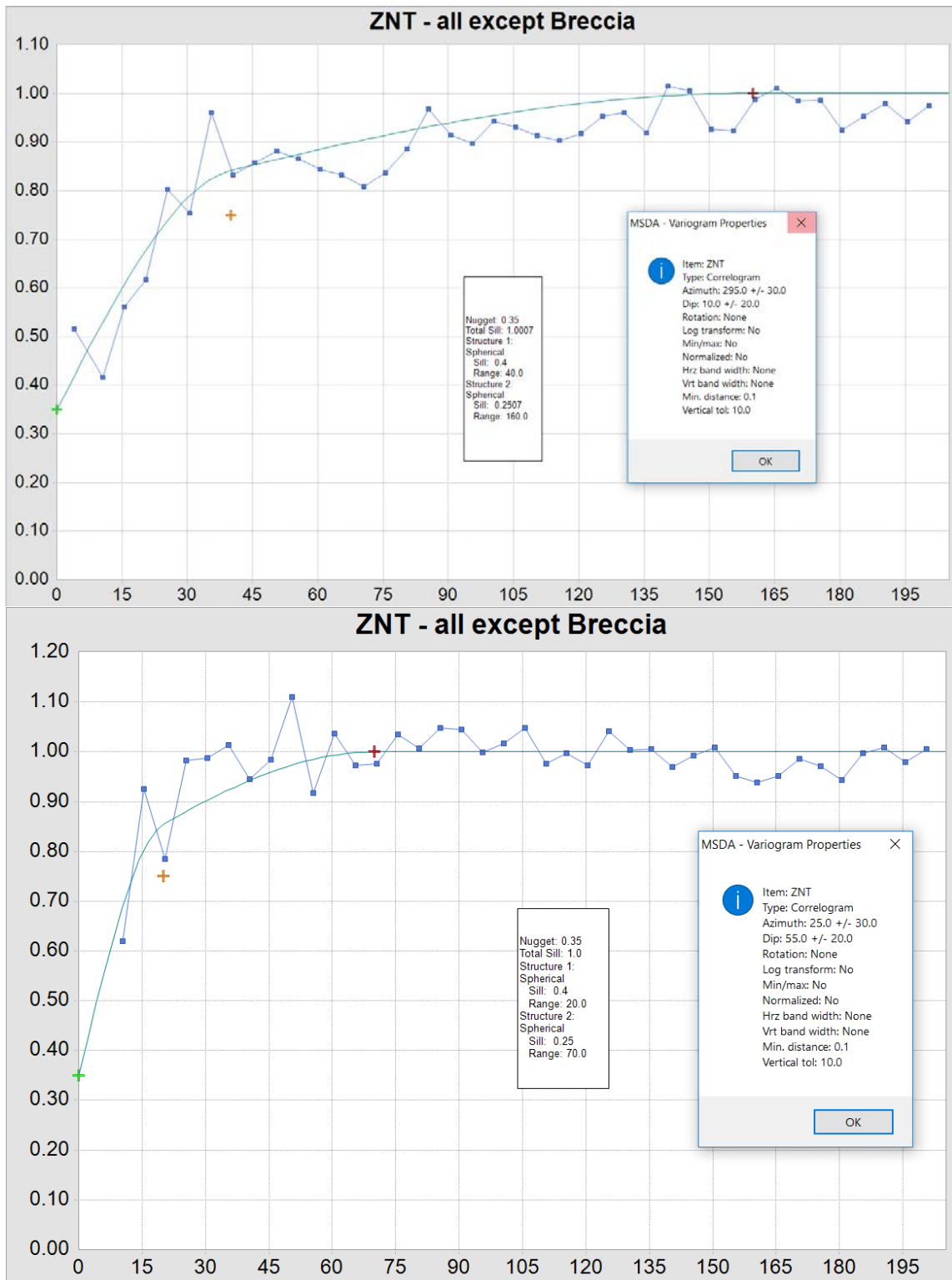


Figure 14-10 Variograms – Major and Minor Axes – Domain 1,5,6 - Zn (Source: Blind Creek, 2018)

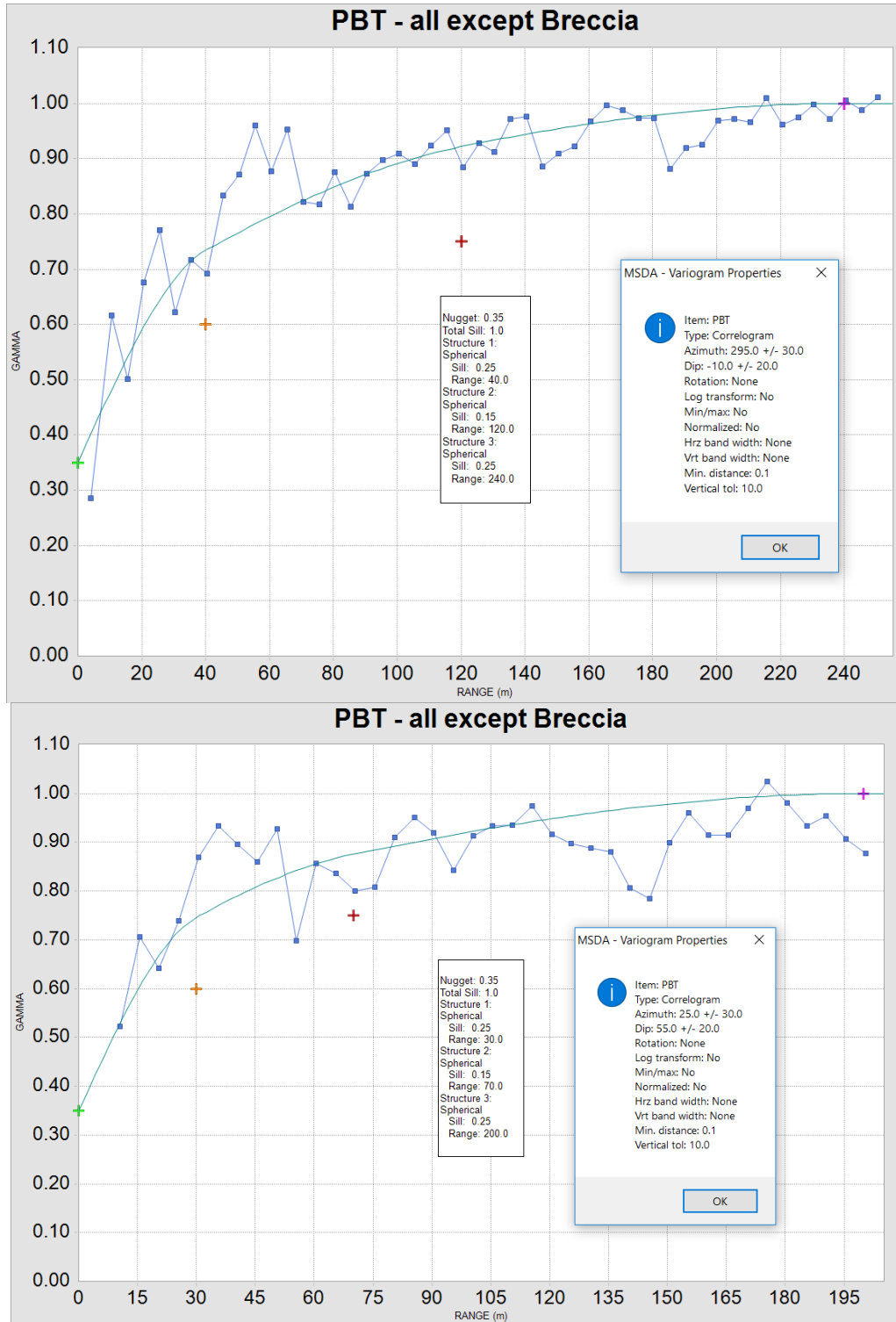


Figure 14-11 Variogram – Major and Minor Axes – Domain 1,5,6 – Pb (Source: Blind Creek, 2018)

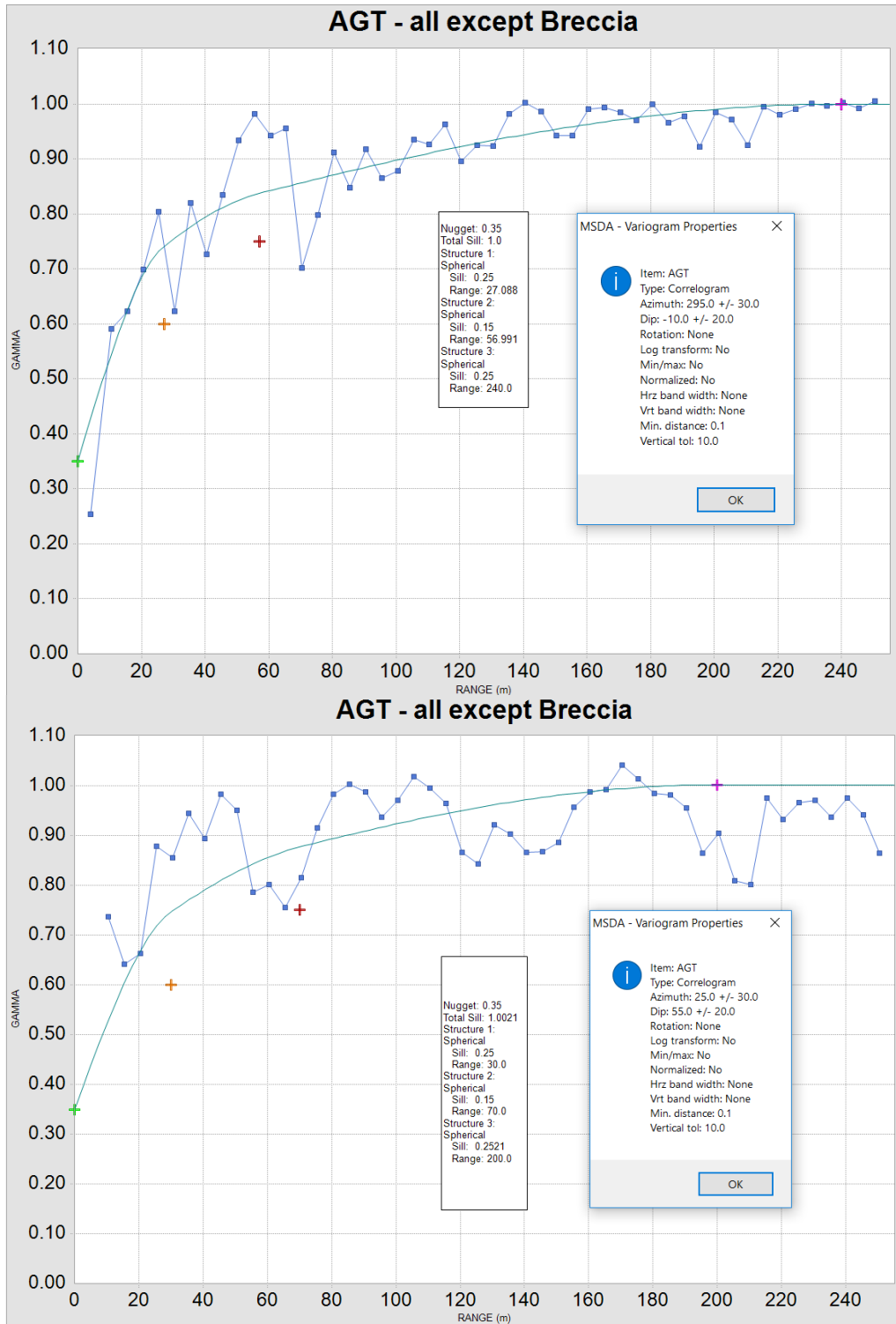


Figure 14-12 Variogram – Major and Minor Axes – Domain 1,5,6 – Ag (Source: Blind Creek, 2018)

### 14.8 Interpolation Parameters

Interpolation has been done using Ordinary Kriging (OK) to estimate the grades of Zn-total, Pb-total and Ag-total as well as Zn-sulphides and Pb-sulphides for all domains. The interpolation is done in 4 passes with each pass of greater distance to ensure that well informed blocks use only adjacent data. The maximum number of composites is 8 for all passes. The combination of a minimum requirement of 4 composites and a maximum of 2 composites per drill hole ensure that at least two drill holes are used for all block grade estimates for all passes except the final pass.

**Table 14-11 Summary of Composite Selection for each Interpolation Pass**

Parameters	Pass			
	1	2	3	4
Minimum Comps	4	4	4	2
Maximum Comps	8	8	8	8
Maximum/Hole	2	2	2	2
Maximum/Split Quadrant	2	2	2	2

Search parameters are based on the variography and are summarized in Table 14-13.

**Table 14-12 Summary of Search Parameters for each Interpolation Pass**

Metal	Domain	Rot	Distance for Each Interpolation Pass			
			Dist1	Dist 2	Dist3	Dist4
Zn	3	295	30	90	120	150
		0	20	75	100	125
		-85	20	67.5	90	112.5
	1,5,6,7	295	40	120	160	200
		10	17.5	52.5	70	87.5
		55	25	75	100	125
Pb	3	295	45	135	180	225
		0	20	67.5	90	112.5
		-80	12.5	37.5	50	62.5
	1,5,6,7	295	30	90	120	240
		-10	17.5	52.5	70	200
		55	10	37.5	50	80
Ag	3	295	20	60	80	100
		0	12.5	37.5	50	62.5
		-80	12.5	37.5	50	62.5
	1,5,6,7	295	30	90	120	240
		-10	17.5	52.5	70	200
		55	10	37.5	50	80

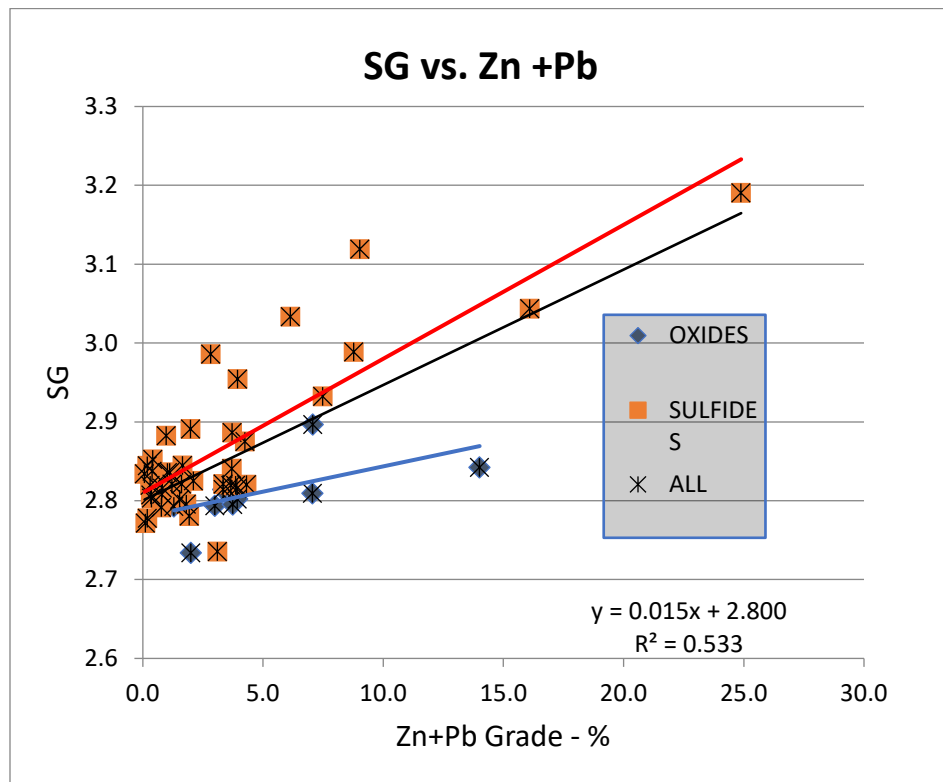
In addition to the above specifications for interpolation, the composites have had “outlier restriction” applied by Domain. This is based on CPPs of the composited data to determine if outliers exist. When applied, the distance that a composite at or above the outlier value is reduced to 4m-6m. For distances beyond this, the value at the outlier cutoff is used. A summary of the values and allowable distances is in the table below.

**Table 14-13 Summary of Outlier Restriction Values by Domain**

Parameter	Outlier Restriction Value by Domain				
	1	3	5	6	7
Pb - total , Pb-sulf (%)	11	11	12	12	4
Zn - total , Zn-sulf (%)	9	4.5	9	9	6
Ag - total (gpt)	n/a	n/a	n/a	n/a	n/a

### 14.9 Specific Gravity Values

Specific Gravity measurements were done in September of 2017 as discussed in Section 12 of this report. A total of 51 measurements of sg were made. Due to the difference in sample size between the sg samples and the original assay sample, all sg samples have also been re-assayed. The resulting relationship between Zn+Pb and sg is plotted in the figure below. A regression through the entire data set has the formula as shown in the graph. This formula is used to assign sg values to the blocks based on the final (Zn+Pb) block grade.



**Figure 14-13 Scatterplot of (Zn+Pb) Grade vs. Specific Gravity (sg) (Source: Blind Creek, 2018)**

#### 14.6 Mineral Resource Classification

Mineral Resource classification to Indicated and Inferred are based on the variography. For classification, an additional interpolation to the nearest two drill holes is done to obtain the average distance to the closest two drill holes. Blocks with at least two drill holes within the distance corresponding approximately to Range at 80% of the correlogram sill are considered Indicated.

Classification of extrapolated blocks to Indicated is limited to the West Zone. All other blocks that have been interpolated with a Zn grade but do not pass the above criteria are classified as Inferred.

#### 14.7 Reasonable Prospect of Eventual Economic Extraction Pit

The resource has been confined to a “reasonable prospect of eventual economic extraction” shape using Lerchs-Grossman pit optimizations to define a potentially economic open pit shell. The price, recovery and payable metal assumptions are summarized in the table below. Values used are based on comparable zinc projects and preliminary metallurgical testing. A blended sulfide/oxide mix is assumed. These values are used to calculate the Zn Equivalent grade, and in defining the “reasonable prospects for eventual economic extraction” pit shape.

**Table 14-14 Summary of Price Assumptions for Zn Eqv. And NSR Calculations**

Metal	Price	Recovery (%)	Payable (%) (including 3% royalty)
Zn	1.3 \$/lb	70	85
Pb	\$1.00 \$/lb	85	95
Ag	\$26 \$/troy oz	90	80

The resource pit shape was defined by Lerchs-Grossman pit for the 160% base case prices, and the following cost assumptions as summarized in the table below. A cutoff grade of 1.5% ZnEq is considered appropriate assuming the costs below. The Processing and G&A costs have been assumed based on a comparable Canadian project (Osisko, 2021).

**Table 14-15 Summary of LG Input Parameters**

Cost Item	\$CDN / tonne
Mining Cost – all material	1.50
Process	15.00
G&A	5.72
Surface Service	6.25
Tailing Construction	6.25
<b>Total</b>	<b>33.22</b>

Foreign Exchange Rate \$US:\$CDN = 0.77

The Zinc Equivalent (ZnEq) calculation uses the assumed prices, recoveries and payables resulting in the following equation:

$$\text{ZnEq} = \text{Zn}\% + (\text{PB}\% * \$1.0 * 0.85 * 0.95) / (\text{ZN}\% * \$1.3 * 0.70 * 0.85) + \text{AGgpt} / 31.1034 * \$26 * 0.90 * 0.80 / (\text{ZN}\% * 1.3 * 0.70 * 0.85 * 22.0462)$$

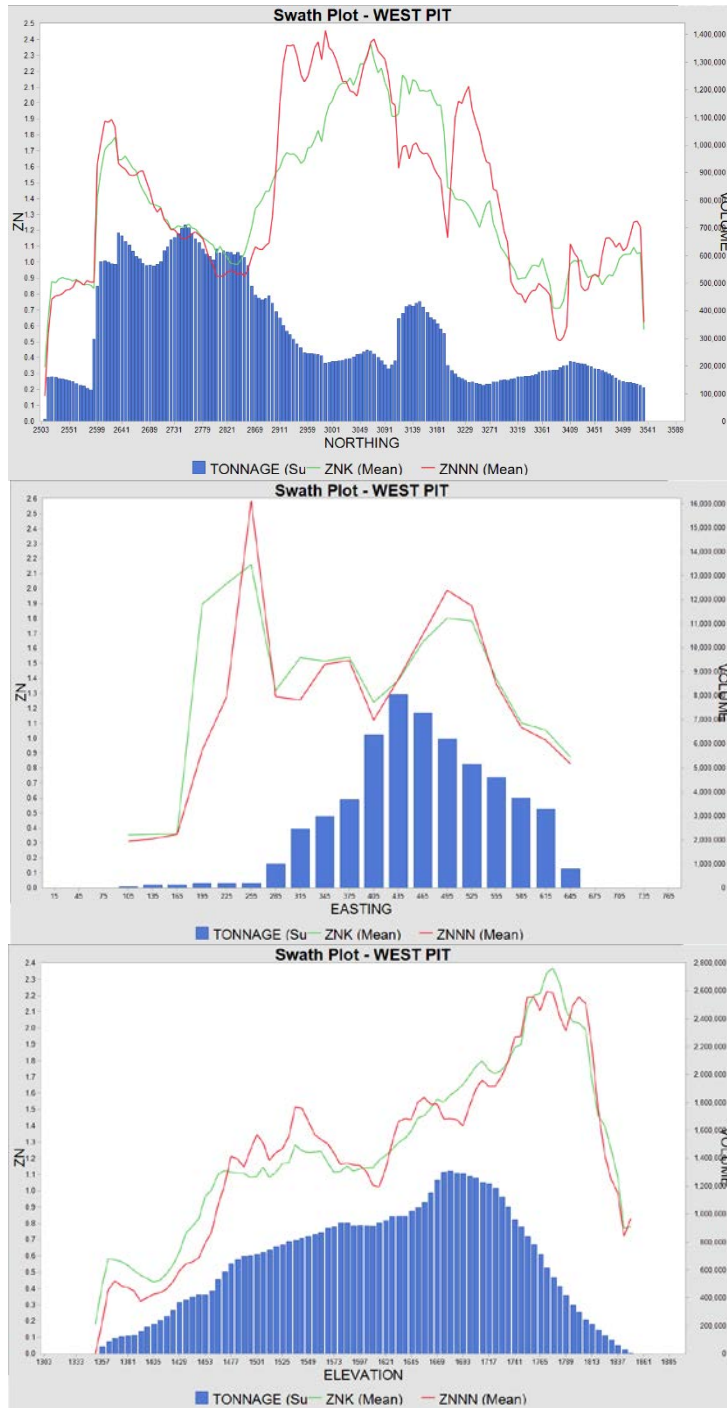
### 14.10 Model Validation

Comparison of the modelled grades to the de-clustered composite grades (Nearest Neighbor interpolation) is summarized in Table 14-15. The grades compare well for all domains.

**Table 14-16 Comparison of Modelled and De-Clustered Composite (NN) Grades**

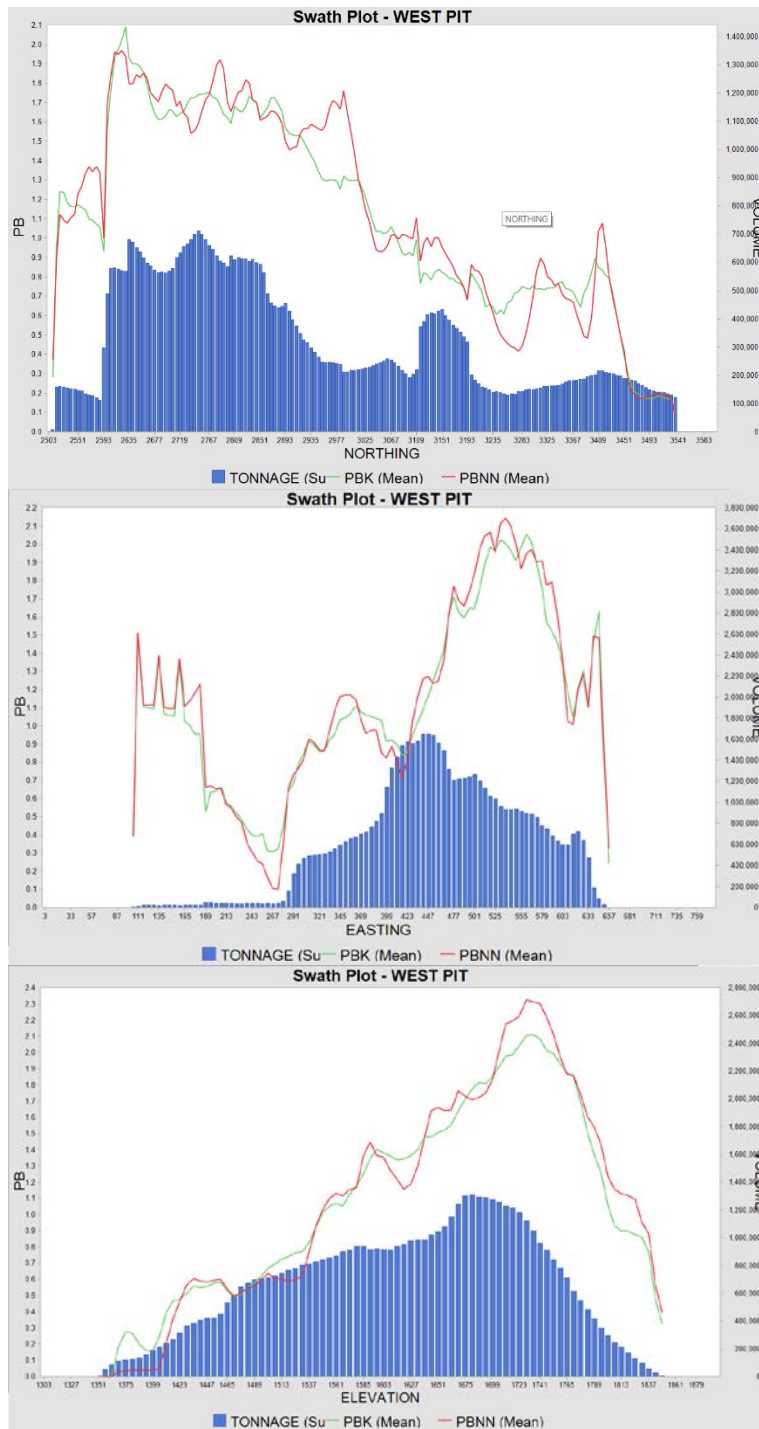
Model	Parameter	Domain 1,3,5,6		
		Zn	Pb	Ag
KRIGED	Num Samples	87869	87869	87869
	Num Missing Samples	260392	260392	260392
	Weighted mean	1.617	1.426	24.304
	Weighted CV	0.704	0.984	1.502
NN	Num Samples	88243	88243	88243
	Num Missing Samples	260018	260018	260018
	Weighted mean	1.687	1.465	24.436
	Weighted CV	0.963	1.281	1.552
<b>Difference</b>		-4.3%	-2.8%	-0.5%

Swath plots have also been used to compare the modelled grades to the de-clustered composite data. Swath plots in the Northing, Easting and Vertical direction are illustrated in Figure 14-15 through Figure 14-17 for Zn, Pb and Ag respectively. They plot illustrate reasonable correlation of grades throughout the model where sufficient data is present.

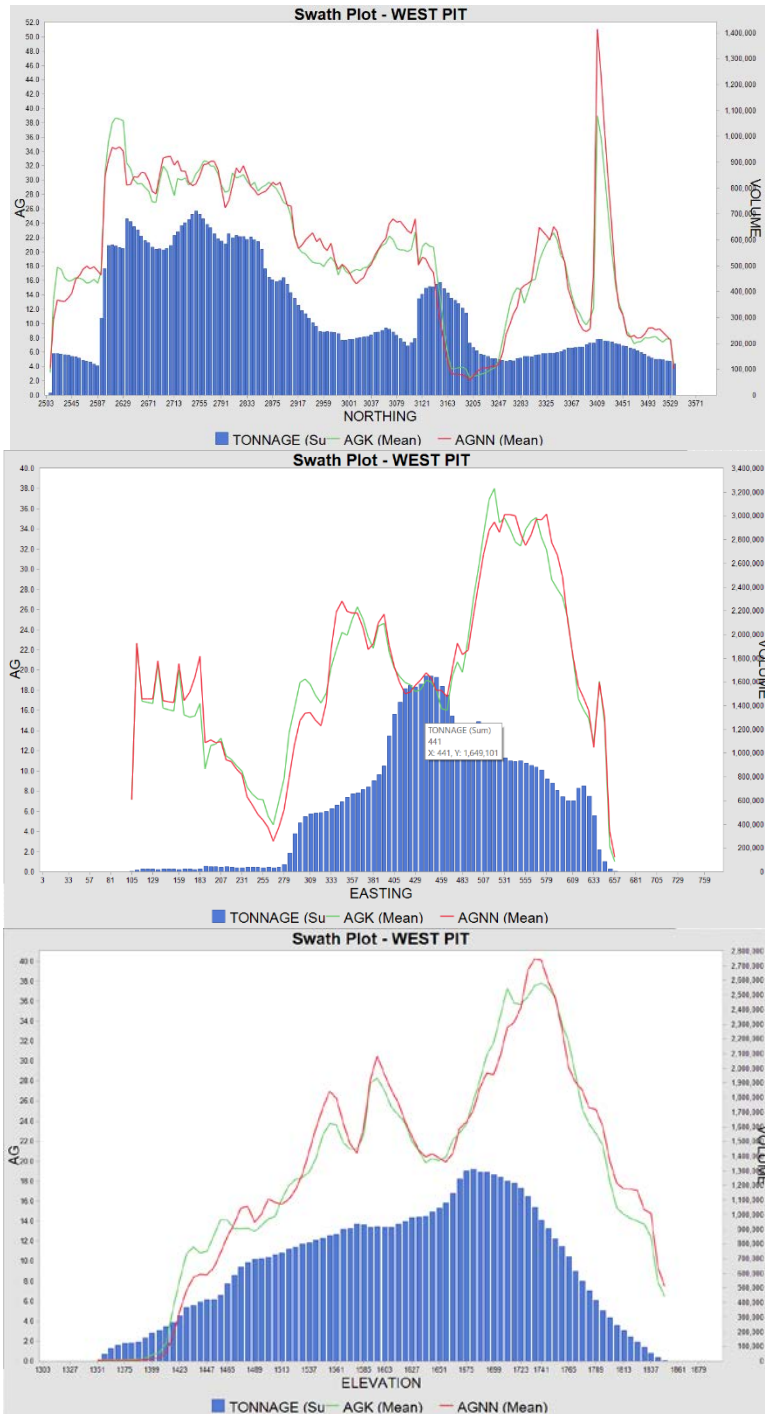


**Figure 14-14 Swath Plots – Zn – West Pit (Source: Blind Creek, 2018)**





**Figure 14-15 Swath Plots – Pb – West Pit (Source: Blind Creek, 2018)**



**Figure 14-16 Swath Plots – Ag – West Pit (Source: Blind Creek, 2018)**

Grade-tonnage curves have been created to ensure that the correct amount of smoothing has been applied to the modelled grades. Figure 14-18 through Figure 14-20 illustrates the Grade-tonnage curve comparisons for Zn, Pb and Ag, respectively. These illustrate, for Zn and Pb, that the modelled grades compare well to the de-clustered composite data which has been corrected for Volume-Variance affects (NNC curves). The Ag G-T curve indicates less smoothing than the Ag-NNC curve. The Volume-Variance correction applied is the indirect lognormal Correction (ILC). This is a theoretical correction factor based on the variography (block variance), mean grades and coefficient of variation (C.V.) to determine the corrected grade of each block.

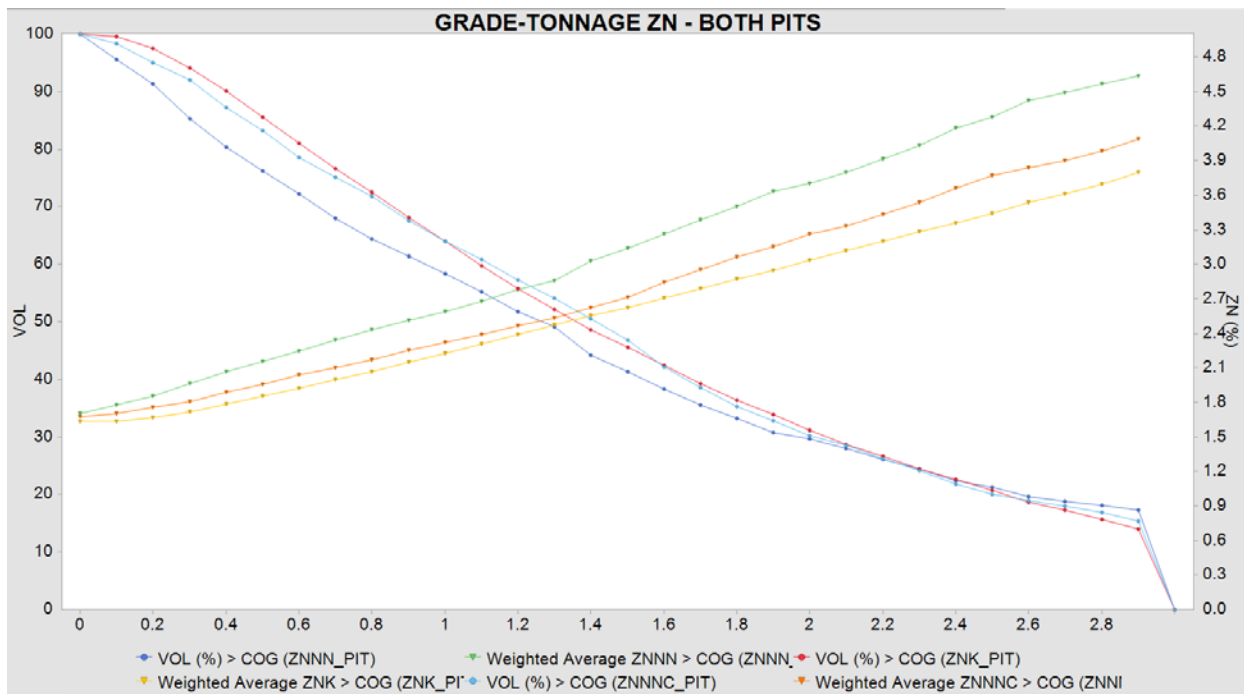


Figure 14-17 Grade-Tonnage Curves – Zn (Source: Blind Creek, 2018)

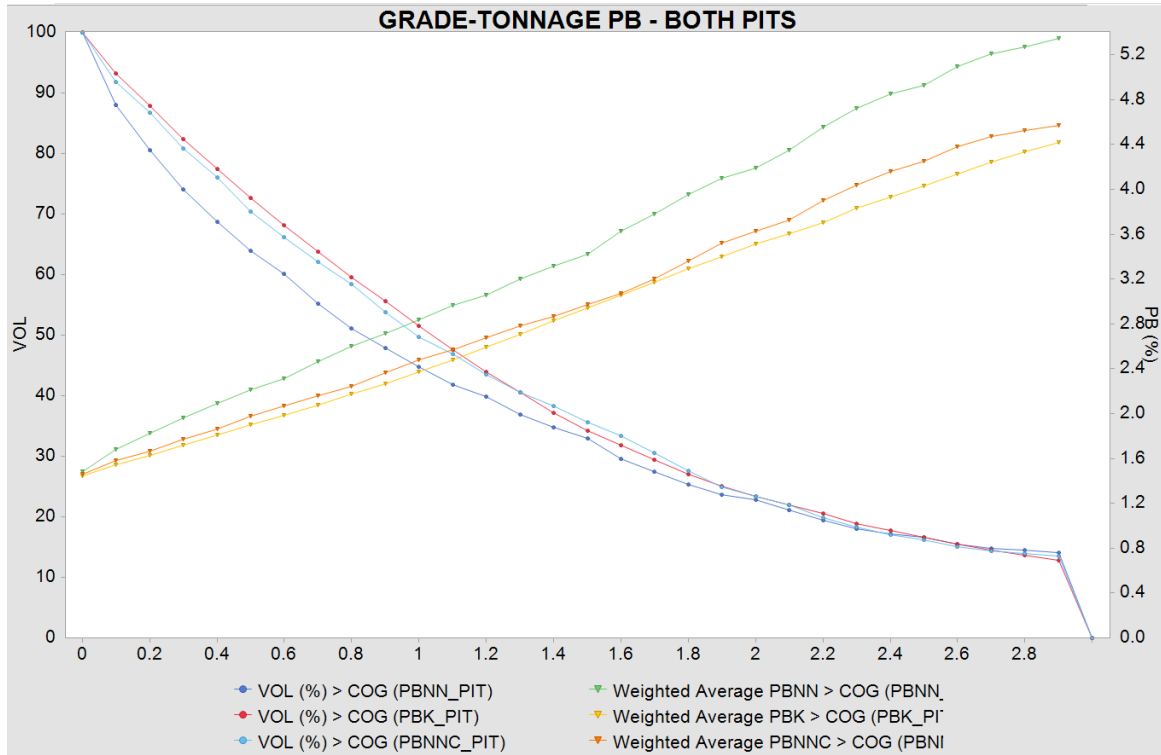


Figure 14-18 Grade-Tonnage Curves – Pb (Source: Blind Creek, 2018)

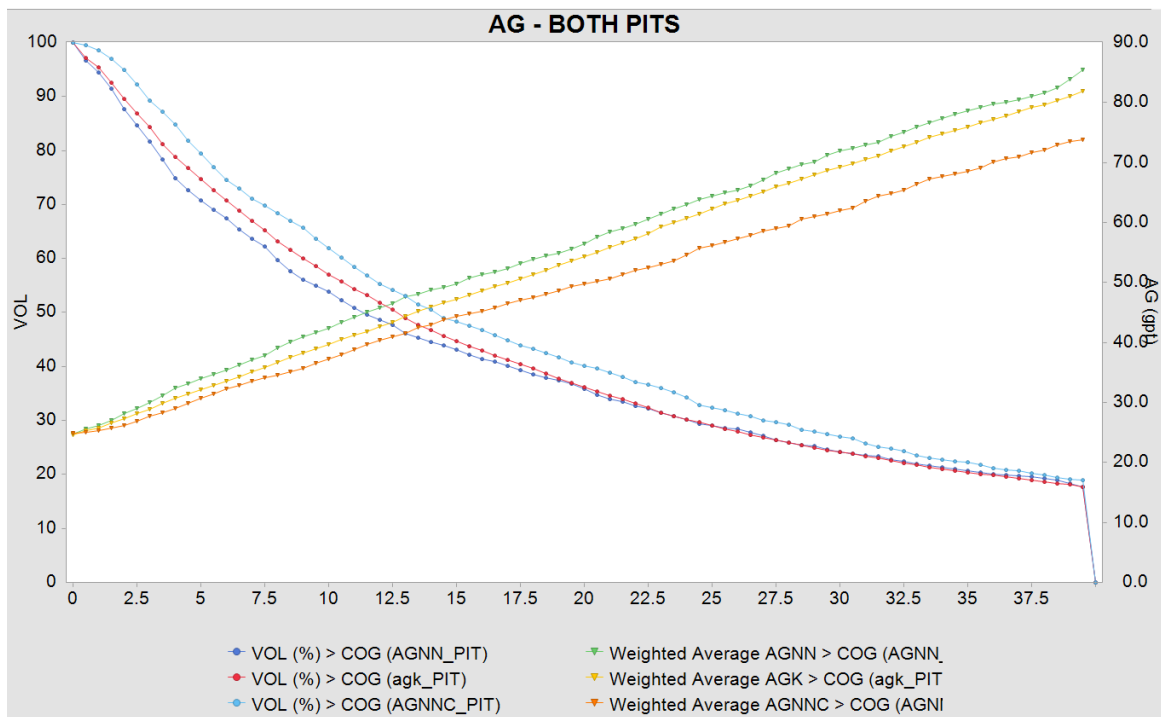


Figure 14-19 Grade-Tonnage Curves – Ag (Source: Blind Creek, 2018)

Visual validation of modelled grades to the assay data has been done by comparison of grades in section and plan. Figure 14-21 through Figure 14-26 illustrates the comparisons for Zn, Pb and Ag, respectively.

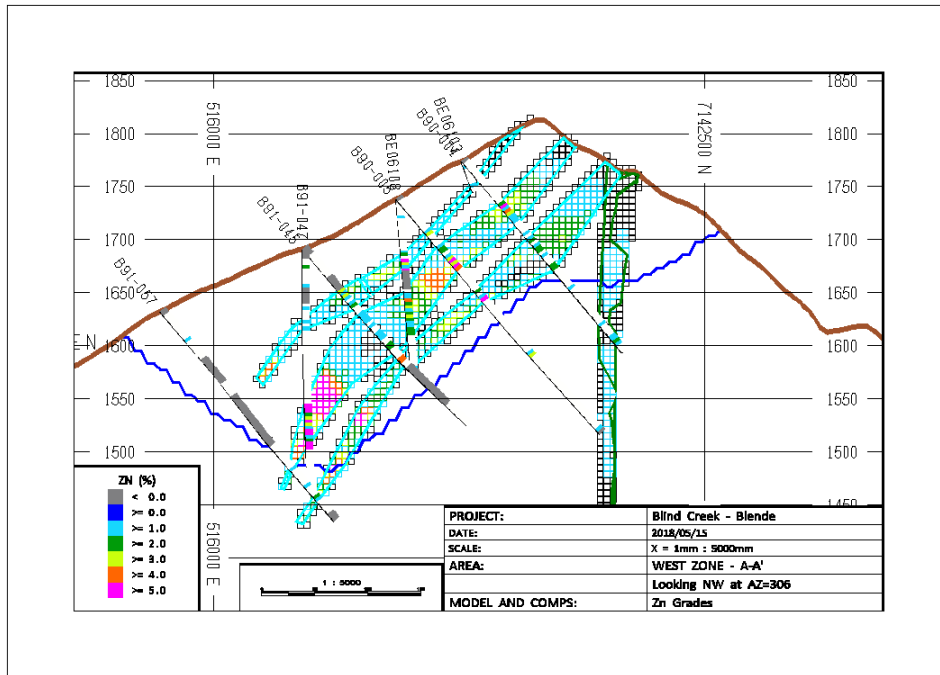


Figure 14-20 Comparison of Assay and Modelled Zn Grades – WEST ZONE - Section A-A' (Source: Blind Creek, 2018)

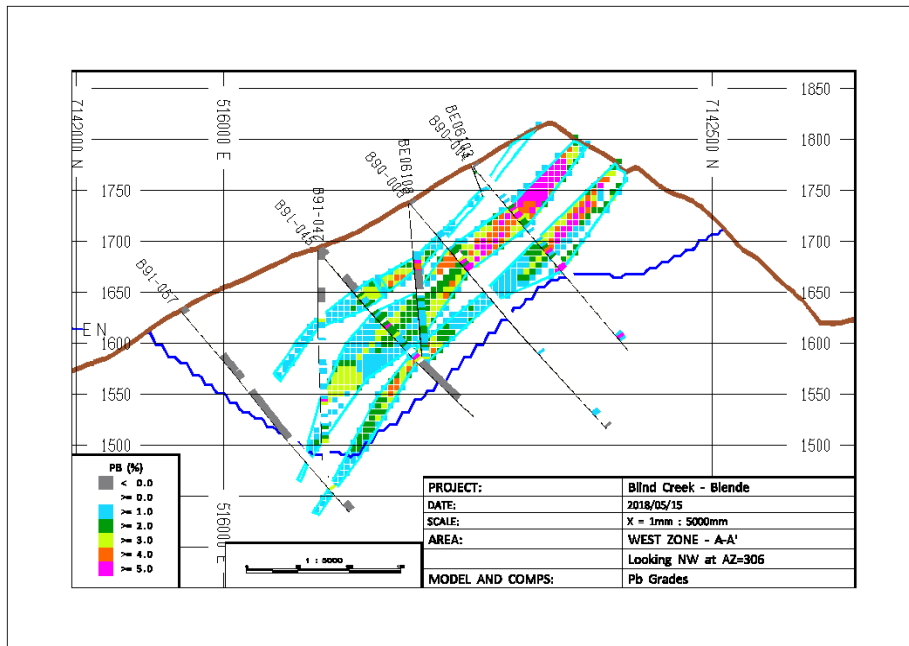


Figure 14-21 Comparison of Assay and Modelled Pb Grades – WEST ZONE - Section A-A' (Source: Blind Creek, 2018)

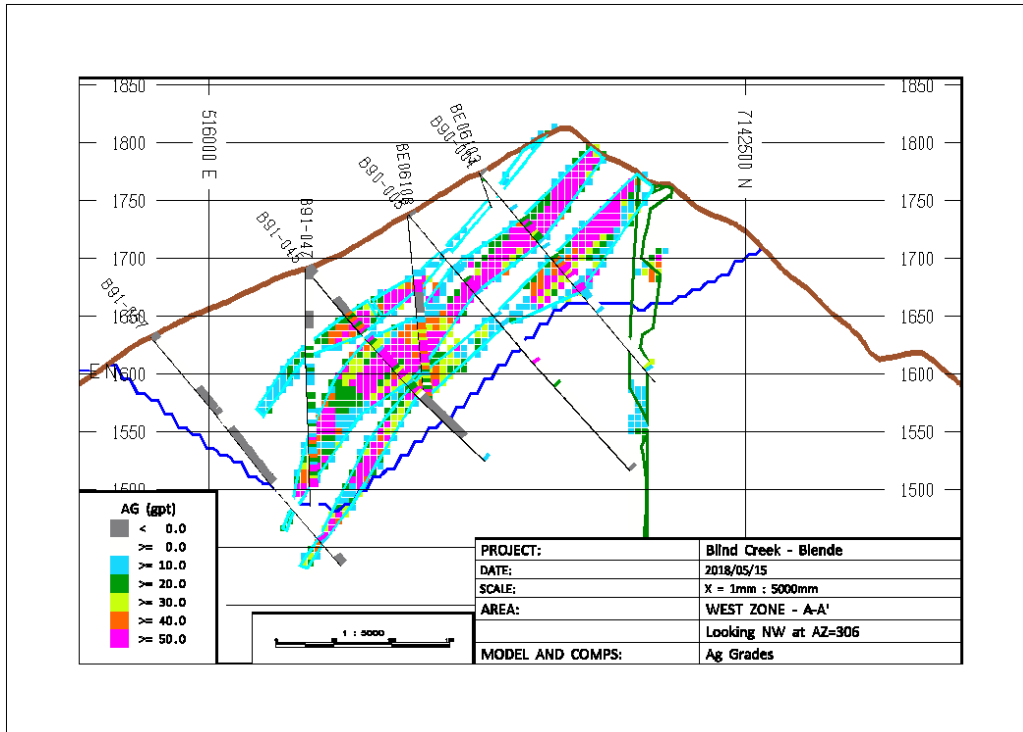


Figure 14-22 Comparison of Assay and Modelled Ag Grades – WEST ZONE - Section A-A' (Source: Blind Creek, 2018)

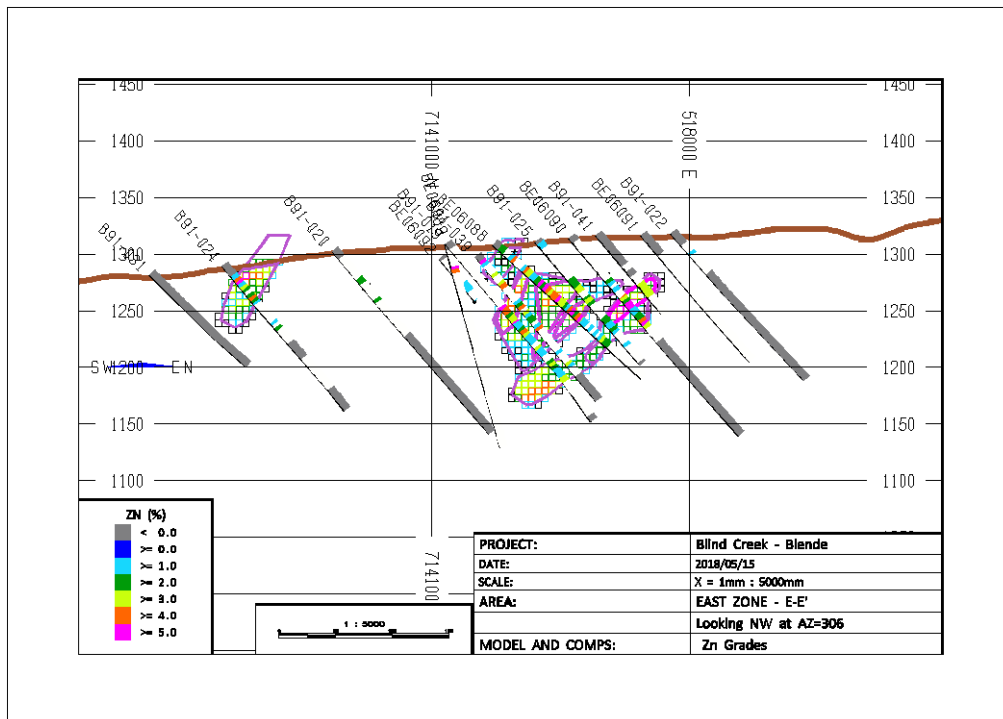


Figure 14-23 Comparison of Assay and Modelled Zn Grades – EAST ZONE - Section E-E' (Source: Blind Creek, 2018)

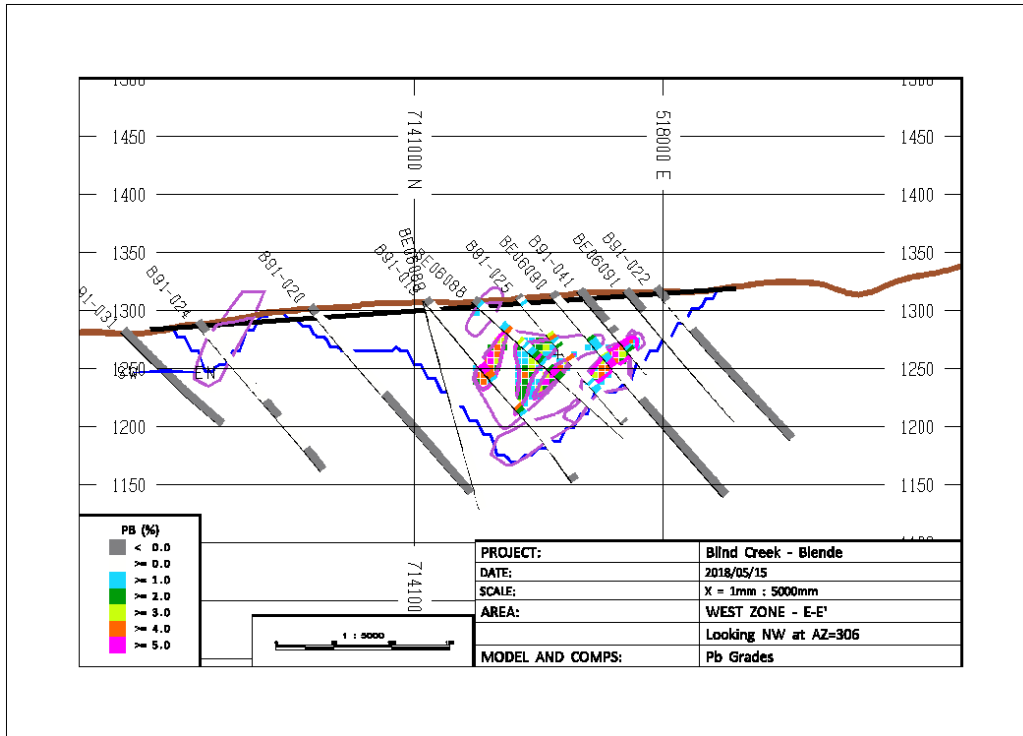


Figure 14-24 Comparison of Assay and Modelled Pb Grades – EAST ZONE - Section E-E' (Source: Blind Creek, 2018)

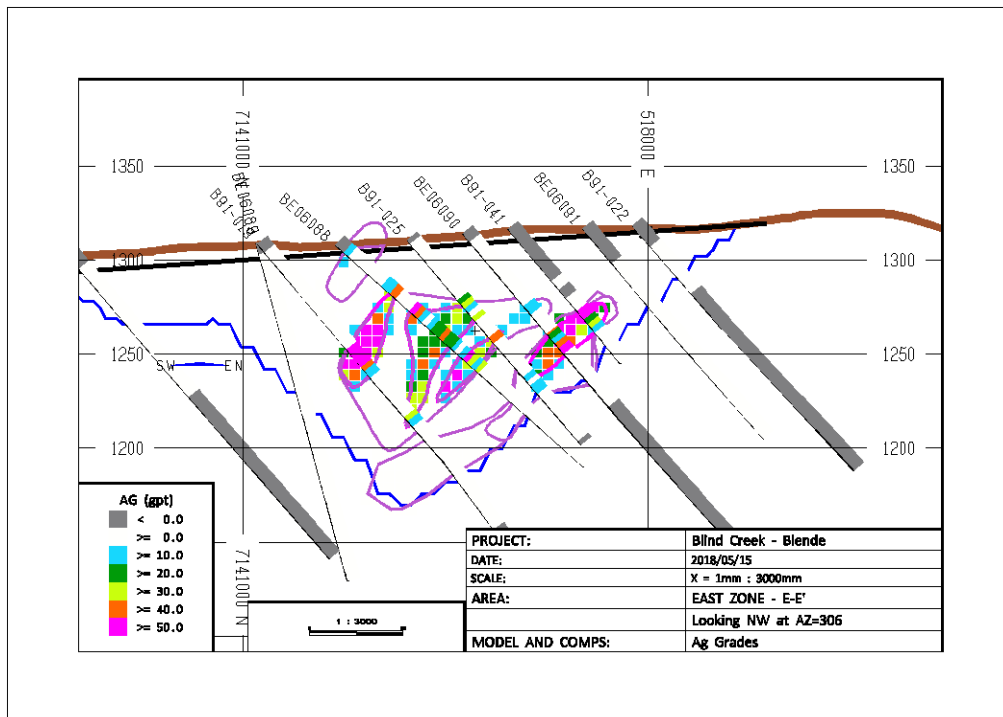


Figure 14-25 Comparison of Assay and Modelled Ag Grades – EAST ZONE - Section E-E' (Source: Blind Creek, 2018)

## **15 Mineral Reserve Estimates**

There are no reserves yet determined for this project.

## **16 Mining Method**

No mining method study has been completed.

## **17 Recovery Methods**

Preliminary metallurgy testing is summarized in Item 13.

## **18 Project Infrastructure**

Infrastructure has been reported in Item 5.

## **19 Market Studies and Contracts**

No marketing studies have been completed to date.



## 20 Environmental Studies, Permitting and Social or Community Impact

### 20.1 Environmental Considerations

In 1991 Archer Cathro and Billiton obtained approval of the Resource Management office through a Land Use Permit; however, work within the claim boundaries has to date been undertaken through the regulations of the Quartz Mining Act (1924) which require no extra permitting. Low impact activities, such as prospecting, line cutting, geochemical and geophysical surveys are generally permitted without delay.

Water quality surveys were initiated in 1990 and hydrometric monitoring in 1991. These studies have consistently shown that there are no water quality anomalies in the surface waters draining the Blende Property and heavy metal concentrations continue to be low or non-detectable. This is directly related to the carbonate rock which hosts all mineralization on the Blende Property and effectively buffers the pH of streams draining the area. Water quality and flow studies were started again in the fall of 2006 and are ongoing for the streams on the mineral claims. A minimum of two years data is required for evaluation of physical, chemical, and biological features for mine development purposes.

Because of the dominantly carbonate lithologies underlying the claim group and because most of the mineralization is not massive sulphides the potential for any appreciable acid drainage from normal exploration activities is therefore considered to be minimal.

### 20.2 First Nations

The following paragraphs outline the position of the First Nation of Nacho Nyak Dun, from their website <http://nndfn.com>.

The First Nation of Nacho Nyak Dun represents the most northerly community of the Northern Tutchone language and culture group. The NND First Nation resides in the community of Mayo, Yukon, and a town that had its beginnings during the boom years of the various silver mines in the area. Mayo was serviced by sternwheeler boats until the Klondike Highway/Silver Trail was built in the 1950's. The Nacho Nyak Dun has a number of members who claim Gwichin ancestry from the north and the Mackenzie people of Eastern Yukon.

The **Nacho Nyak Dun First Nation** in the Mayo area is closely affiliated with the adjoining Northern Tutchone First Nations of Pelly Selkirk and the Carmacks Little Salmon First Nation. These three First Nations form the Northern Tutchone Tribal Council, an organization which deals with matters and issues that affect them. The First Nation has been very active in the Land Claims movement since its beginnings in 1973. Members of the Nacho Nyak Dun First Nation were instrumental in helping to guide the Council of Yukon First Nations and its member First Nations to their 1993 Agreements.

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The NND FN today has a membership of 602. As a self-governing First Nation, the Nacho Nyak Dun can make laws on behalf of their citizens and their lands. Under the land claims agreement, the First Nation now owns 4,739.68 sq. km of settlement lands and has received in compensation \$14,554,654 for which a Trust has been established. The First Nation has been actively involved in affairs of the Mayo community, attempting to promote a better, healthier lifestyle for its future generations and a strong economy based on its rich natural resources. The Blende Property lies north and east of one of the large settlement land blocks. This block could contain additional zinc-lead-silver deposits. The Chief of the band is Chief Ed Champion, Box 220, Mayo, Yukon, M0B 1M0, Ph: (867) 996-2265, Fax: (867) 996-2107, e-mail: [main@nndfn.com](mailto:main@nndfn.com), website: [www.nndfn.com](http://www.nndfn.com).

### **20.3 Communities**

The Village of Mayo was established in 1903 and Incorporated in 1984. Mayo, Yukon is in the central part of Yukon Territory, which is in the Na Cho Nyak Dun traditional territory. The highway serving the region connects the communities of Stewart Crossing, Mayo, Keno City, and the mining ghost town of Elsa. The Village of Mayo offers services including two motels, eating facilities, post office, liquor store, propane and gas, grocery store, swimming pool, nursing station, RCMP, airport, and float plane services. There is also a lodge located at Halfway Lakes, 26km north of Mayo. Mayo's Mayor is Scott Bolton, E-mail: [mayo@northwestel.net](mailto:mayo@northwestel.net) Mailing Address P.O. Box 160, Mayo, Yukon, Y0B 1M0, Phone (867) 996-2317 Fax (867) 996-2907.

## **21 Capital and Operating Costs**

No work on capital or operating costs has been completed to date.

## **22 Economic Analysis**

No economic analyses have been completed to date.

## **23 Adjacent Properties**

The RAU Property, owned by ATAC, is located approximately 10km south of the Blende Property. The Rau Trend is defined to a length of 35km and contains the Ocelot Ag-Pb-Zn Deposit as well as the Tiger Gold Deposit and numerous gold anomalies.

A Preliminary Economic Assessment (PEA) completed on the Tiger Deposit in 2020 estimated approximately 454,000 ounces of gold produced at an average undiluted grade of 3.19 g/t gold for a Net Present Value (NPV)<sub>(5%)</sub> of \$118.2 million and an Internal Rate of Return (IRR) of 54.4% before tax. The Ocelot Discovery was made in 2009 with mineralization near surface. There have been 24 drill holes with 4,918m of drilling results. Numerous high-grade intercepts include 37.91 m of 188.07 g/t silver, 8.69% lead and 6.06% zinc in drill hole OC-11-11.

## **24 Other Relevant Data and Information**

The Federal Government guarantees a right of way to mineral lands and so application was made by Archer Cathro and Billiton for an access route through this area. A winter trail was then constructed from the Beaver River along Williams Creek for about 8km to the Blende Property. This was completed in November 1991 and the trail now establishes the easternmost boundary of the Mayo (Na Cho Nyak Dun) land claim. (Figure 7-2) This trail will assist in any future transportation of heavy equipment to and from the Blende Property and could be upgraded to a haulage road.

## **25 Interpretation and Conclusions**

### **25.1 Geology, Data and Exploration Conclusions**

Diamond drilling, geological mapping, prospecting, and geochemical surveying from 2006 to 2008, carried out on behalf of Blind Creek by Eagle Plains, tested the areas of known mineralization, and explored for extensions to them. Surface mapping and diamond drilling has advanced knowledge of controls on the distribution of mineralization along the Blende structural axis.

### **25.2 Metallurgical Conclusions**

All the metallurgical studies performed to date on the Blende Property are preliminary in nature. Both the historic and recent 2017 studies show that the Blende resource has a positive response to conventional DMS and differential froth flotation techniques depending on the extent of oxidation in the test samples.

### **25.3 Resource Conclusions**

Past exploration drilling has defined multiple zones of mineralization on the Blende Property (Far West Zone, West Zone, West Brx Zone, East Central and East North zones); sufficient to conclude these areas contain adequate continuity with respect to structure and mineralization to host a Mineral Resource.

## 26 Recommendations

### 26.1 Metallurgical Recommendations

Further testing should continue to optimize this approach, with further evaluation of the BDA procedure of an initial bulk Pb/Zn float, versus direct differential separation of lead and zinc. Initial procedures for scavenging oxide lead and associated silver values was more challenging and will require further modifications to the procedure. Test work moving forward should focus on using fresh representative drill core samples. Emphasis on the oxide versus sulphide content, along with grade / mineralization characteristics of the samples in matching the resource and proposed mine plan will be important considerations.

### 26.2 Exploration Recommendations

Additional geological investigation should include a program to laterally extend known mineralization and test the down dip extension of known mineralization. Also, a program of infill drilling is recommended to increasingly test continuity of mineralization between existing drill sections. This will aid in upgrading the confidence level of the Blende Mineral Resource. A suitable program of SG determination is also recommended on existing core and any new drilling on the Blende Property.

A proposed work program includes:

- Major infill drilling at the Far West Zone, West Zone-area, and East-area zones to increase confidence in the resource estimation. Program should also concentrate on obtaining a meaningful database of SG measurements.
- Exploration drilling in the Far East Zone to properly identify and delineate zones of mineralization.
- Although the Central Zone has seen limited drilling, it requires further geologic mapping, and needs to be put in the newly understood structural context, prior to any serious drill program.
- Additional geological mapping and reconnaissance contour soil sampling on the northwest, southeast and northern extensions of the claim group.

An Estimated Budget is shown below in Table 26-1.

**Table 26-1 Blende Project Estimated Budget**

Field Related Items Only	Approx. Totals
Drilling	\$1,200,000
Metallurgical Studies	\$250,000
Geochemistry	\$100,000
Geological	\$150,000
Miscellaneous	\$250,000
<b>TOTAL</b>	<b>\$1,950,000</b>

*Note: Although care has been taken in the preparation of these estimates, the authors do not guarantee that the above-described program can be completed for the estimated costs. Additional quotes and budgeting should be done when financing is in place prior to the start of the program, when quotes can be obtained for supplies and services.*

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