TECHNICAL REPORT AND PRELIMINARY ECONOMIC ASSESSMENT FOR COMBINED MILL AND HEAP LEACH PROCESSING AT THE NORTH BULLFROG PROJECT,

BULLFROG MINING DISTRICT,

NYE COUNTY, NEVADA

DATED: DECEMBER 15, 2017

EFFECTIVE DATE: OCTOBER 31, 2017

PREPARED FOR:

CORVUS GOLD INC.

BY

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Corvus Gold Inc.: Technical Report and Preliminary Economic Assessment for Combined Mill and Heap Leach Processing at the North Bullfrog Project, Bullfrog Mining District, Nye County, Nevada.

Technical Report Effective Date: October 31, 2017

Dated this 15th day of December 2017

(signed/sealed) *Scott E. Wilson*
Scott E. Wilson, SME-RM, CPG
Geologist

(signed) *Stephen B. Batman*
Stephen B. Batman, SME-RM
Mining Engineer

(signed) *Christopher L. Easton*
Christopher Easton, SME-RM
Consulting Metallurgist

AUTHOR CERTIFICATE

Scott E. Wilson

I, Scott E. Wilson, CPG, SME-RM, of Highlands Ranch, Colorado, as the lead author of the technical report entitled "Technical Report and Preliminary Economic Assessment for Combined Mill and Heap Leach Processing at the North Bullfrog Project, Bullfrog Mining District, Nye County, Nevada" (the "Technical Report") with an effective date of October 31, 2017, prepared for Corvus Gold, Inc. (the "Issuer"), do hereby certify:

1. I am currently employed as President by Metal Mining Consultants Inc., 9137 S. Ridgeline Blvd., Suite 140, Highlands Ranch, Colorado 80129.
2. I graduated with a Bachelor of Arts degree in Geology from the California State University, Sacramento in 1989.
3. I am a Certified Professional Geologist and member of the American Institute of Professional Geologists (CPG #10965) and a Registered Member (#4025107) of the Society for Mining, Metallurgy and Exploration, Inc.
4. I have been employed as both a geologist and a mining engineer continuously for a total of 28 years. My experience included resource estimation, mine planning, geological modeling, geostatistical evaluations, project development, and authorship of numerous technical reports and preliminary economic assessments of various projects throughout North America, South America and Europe. I have employed and mentored mining engineers and geologists continuously since 2003.
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I made personal inspections of the North Bullfrog Project on January 30 and 31, 2012, March 24, 2014, November 2 and 3, 2015 and most recently on June 6-8, 2017.
7. I am responsible for Sections 1 through 12, Section 14, and Sections 18 through 27 of the Technical Report.
8. I am independent of the Issuer as independence is described in Section 1.5 of NI 43-101.
9. Prior to being retained by the Issuer, I have not had prior involvement with the property that is the subject of the Technical Report.
10. I have read NI 43-101 and Form 43-101F1, and this Technical Report was prepared in compliance with NI 43-101.
11. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Dated: December 15, 2017

(signed/sealed) *Scott Wilson*

Scott E. Wilson, CPG, SME-RM

AUTHOR'S CERTIFICATE

Stephen Batman

I, Stephen B. Batman, Mining Engineer, SME of Arvada, Colorado, as an author of the technical report entitled "Technical Report and Preliminary Economic Assessment for Combined Mill and Heap Leach Processing at the North Bullfrog Project, Bullfrog Mining District, Nye County, Nevada" (the "Technical Report") with an effective date of October 31, 2017 prepared for Corvus Gold, Inc. (the "Issuer"), do hereby certify:

1. I am currently self-employed and reside at 12650 W 64th Avenue, Unit E, Arvada, Colorado 80004.
2. I graduated with a Bachelor of Science degree in Mining Engineering from the Colorado School of Mines, Golden, Colorado in 1985.
3. I am a Registered Member (#181580RM) of the Society for Mining, Metallurgy and Exploration, Inc.
4. I have been employed as either a miner or an engineer continuously for a total of 31 years. My experience included resource estimation, mine planning, pit optimizations and geostatistical evaluations of numerous technical reports and preliminary economic assessments of various projects throughout North America, South America and Africa. I have been involved in the evaluation and conceptual development of new and existing mining projects, managing studies to develop projects and managing due diligences for acquisitions. I have been involved with mine supervision in several large pits, mining equipment purchases, and construction projects.
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I made a personal inspection of the North Bullfrog Project on March 12, 2015.
7. I am responsible for sections 15, 16, and certain relevant portions of Sections 21 and 25 of the Technical Report.
8. I am independent of the Issuer as independence is described in Section 1.5 of NI 43-101.
9. I have not had prior involvement with the property that is the subject of the Technical Report.
10. I have read NI 43-101, and the portions of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
11. As of the effective date of this Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Dated: December 15, 2017

(signed) *Stephen B. Batman*
Stephen B. Batman, SME-RM

AUTHOR'S CERTIFICATE

Christopher Easton

I, Christopher L. Easton, Consulting Metallurgist, MMSA-QP, of Highlands Ranch, Colorado, as an author of the technical report entitled "Technical Report and Preliminary Economic Assessment for Combined Mill and Heap Leach Processing at the North Bullfrog Project, Bullfrog Mining District, Nye County, Nevada" (the "Technical Report") with an effective date of October 31, 2017 prepared for Corvus Gold, Inc. (the "Issuer"), do hereby certify:

1. I am a Consulting Metallurgist and President at Easton Process Consulting, Inc., and reside at 9532 S. Desert Willow Way, Highlands Ranch, CO 80129.
2. I am a graduate of the University of Wyoming with a degree in Chemical Engineering.
3. I am Qualified Person in good standing, of the Mining and Metallurgical Society of America (MMSA).
4. I have worked in the Mineral Processing Industry for a total of 29 years after attending the University of Wyoming. During this time, I have held positions as Plant Metallurgist, Lead Process Engineer, Plant Superintendent, Relieving Metallurgical Manager and Consulting Metallurgist. I have been a practicing consulting engineer since 2002.
5. 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, past relevant work experience and affiliation with a professional association (as defined in NI 43-101), I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I made a personal inspection of the North Bullfrog Project on April 22 and 23, 2017.
7. I am responsible for the preparation of Sections 13 and 17, and certain relevant portions of Sections 1 and 25, of the Technical Report.
8. I am independent of the Issuer as independence is described in Section 1.5 of NI 43-101.
9. I have not had prior involvement with the property that is the subject of the Technical Report.
10. I have read NI 43-101, and the portions of the Technical Report for which I am responsible have been prepared in compliance with NI 43-101.
11. As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the portions of the Technical Report for which I am responsible not misleading.

Dated December 15, 2017

(signed) *Christopher L. Easton*

CHRISTOPHER L. EASTON, MMSA-QP

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1 SUMMARY

This technical report entitled “Technical Report and Preliminary Economic Assessment for Combined Mill and Heap Leach Processing at the North Bullfrog Project, Bullfrog Mining District, Nye County, Nevada” (the “Technical Report”) summarizes technical information gathered from the drilling programs recommended and completed subsequent to the technical report dated June 16, 2015 (amended in May 18, 2016) (the “2015/2016 Report”) detailing the preliminary economic assessment (“PEA”) for the North Bullfrog Project (“NBP” or the “Project”). There are three mineral deposits which make up the Project: 1) Sierra Blanca; 2) Jolly Jane; and 3) Mayflower. Collectively these three deposits comprise NBP. Drilling has identified new mineralization which has added to the total identified Mineral Resources for the Sierra Blanca Deposit. In addition to the Sierra Blanca drilling, the stratigraphic interpretation has been refined and a new 3D stratigraphic model has been created. This refinement has increased confidence in the geological interpretation and has enabled a more robust grade estimation strategy for the property. There is increased confidence in the classification of Mineral Resources. Ambient Alkaline Oxidation has been added as a third processing option, in addition to combined heap-leaching and milling processes, to identify sulphide or otherwise un-oxidized mineralization that meets the reasonable prospects of eventual economic extraction. Mineral Resources estimations in this report are pit constrained. The YellowJacket Corridor, a structural zone of intense alteration, represents a subset of the mineralization at Sierra Blanca that has been estimated and identified as part of the Mineral Resources at North Bullfrog that could reasonably be expected to be extracted in an early phase of economic development of the property. The updated Mineral Resource estimation has not been applied to the PEA. Mineral Resources which were originally evaluated for the PEA, and assessed in determining the currency for the PEA for this Technical Report, lay within the boundaries of the pit constrained Mineral Resource estimations which were updated for thisTechnical Report.

In addition, subsequent to the 2015/2016 Report, Corvus acquired the Mother Lode Project (the “MLP”) from Goldcorp Inc. on June 6, 2017. This project has no Mineral Resources as defined by NI 43-101. Since September 2017 Corvus have been drilling mineralization (press releases October 11, October 25, November 7, 2017) that may be converted to Mineral Resources subsequent to geological modeling, metallurgical testing and sufficient drilling density. The MLP is located 10 kilometres southeast of NBP which means the two projects could potentially have shared infrastructure and resources. Corvus intends to evaluate the combination of infrastructure once Mineral Resources and technical information have been established at the MLP. As a result of the stage of the MLP and given there are no existing Mineral Resources on that property, MMC believes that there is no update to the PEA at this time as it will not add any value or change the outcome of the PEA described herein. MMC believes that a more prudent approach would be to evaluate the combined economic performance of NBP and the MLP once sufficient work on MLP has been completed.

The MLP does not form part of this Technical Report or the Mineral Resources or PEA contained herein.

Highlights of this Technical Report, including the PEA, are listed in Table 1.1 through Table 1.7. Table 1.1 presents a summary of the categorized Mineral Resources for the Project. Mineral Resources are reported according to the CIM Definition Standards of May 10, 2014 (“CIM”). The guidance and definitions of CIM are incorporated by reference in Canadian National Instrument 43-101, *Standards of Disclosure for Mineral Projects* within Canada (“NI 43-101”.) Mineral Resources are pit constrained in order to estimate the portion of NBP that demonstrates reasonable prospects of eventual economic extraction. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resources will be converted into Mineral Reserves.

1.1 NORTH BULLFROG RESOURCE ESTIMATE

The basis for the Mineral Resource estimates at the NBP are geologic models interpreted by Corvus geologists and constructed in Leapfrog® Software. Geostatistics and estimates of mineralization were prepared by MMC. The current mineralization update focused on updating the stratigraphic interpretations and extensions of mineralization around the YellowJacket corridor. Industry accepted grade estimation techniques were used to develop global mineralization block model. Table 1.8 lists the Measured, Indicated and Inferred Mineral Resources at various cut-off grades effective as of October 31, 2017.

Mineral Resources are not mineral reserves and do not demonstrate economic viability. There is no certainty that all or any part of the Mineral Resource will be converted to mineral reserves. Quantity and grade are estimates and are rounded to reflect the fact that the resource estimate is an approximation. The updated Mineral Resource estimate considers three potential processing methods; 1) mill processing of oxide and gravity-separable gold and silver, 2) heap leach processing of oxide gold and silver, and 3) mill processing of sulphide gold and silver. Mineralization within the YellowJacket vein, including the surrounding stockwork veining, associated with the YellowJacket structural corridor, is situated within a well-defined zone that holds together at higher cutoff grades within the resource constraining pit. Since this part of the mineral deposit contains the highest grades, it is reasonable to expect this part of the Sierra Blanca deposit would be economically extracted prior to economically extracting lower grade, heap-leachable mineralization. This portion of the mineral deposit is referred to as Phase I (Tables 1.1, 1.2 and 1.3.) The limits of the constraining pit were determined by assuming only mill mineralization and higher grade disseminated heap leach mineralization would be processed. Mineralization is reported at higher cutoff grades for this portion of the deposit. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.

Table 1.1 North Bullfrog Project Pit Constrained Mineral Resource Estimate Effective as of October 31, 2017, at the cut-off grades indicated below (Qualified Person: MMC, Scott Wilson, C.P.G.).

	Classification	Tonnes (k)	Au (g/t)	Ag (g/t)	Contained Au (000's)	Contained Ag (000's)
Phase I	Measured	10,415	1.08	7.59	362	2,540
	Indicated	24,557	0.69	3.70	542	5,459
	Inferred	5,908	0.31	0.74	59	140
Phase II	Measured	10,129	0.26	1.04	84	338
	Indicated	113,009	0.21	0.61	771	2,227
	Inferred	58,887	0.19	0.48	367	902
Totals	Measured	20,544	0.68	4.36	446	2,878
	Indicated	137,566	0.30	1.16	1,314	5,146
	Inferred	64,785	0.20	0.50	426	1,042

Phase I NBP Mineral Resources, Table 1.2 and 1.3, are estimated according to the following cutoff grades:

- Phase I Mill Resources Sierra Blanca (Oxide, Vein and Stockwork Mineralization) - >= 0.35 grams per tone ("g/t") gold ("gold" or "Au")
- Phase I Mill Resources Sierra Blanca (Sulphide Disseminated Mineralization) - >= 0.71 g/t Au
- Phase I Heap Leach Resources Sierra Blanca (Oxide Vein Mineralization) -(>= 0.15 and <0.35) g/t Au
- Phase I Heap Leach Resources Sierra Blanca(Oxide Disseminated Mineralization) - >= 0.15 g/t Au
- Phase I Heap Leach Resources Mayflower (Oxide Mineralization) - >= 0.10 g/t Au

Silver is assumed to be recovered as a byproduct of processing and is reported from model blocks that meet the gold cutoff grade criteria.

Table 1.2 Sierra Blanca Phase I Mineral Resources

	Milling			Heap Leach			Sulphides				
	>=0.35 g/t Au cut off			>=0.15 g/t Au cutoff			>=0.71 g/t cutoff				
Classification	Tonnes (Kt)	Au g/t	Ag g/t	Tonnes (Kt)	Au g/t	Ag g/t	Tonnes (Kt)	Au g/t	Ag g/t	Au Ounces (x1,000)	Ag Ounces (x1,000)
Measured	4,465	1.87	13.97	5,194	0.37	2.42	756	1.32	5.35	362	2,540
Indicated	4,445	1.80	13.40	13,736	0.34	1.63	1,137	1.56	5.83	464	2,850
Inferred	34	1.83	19.21	5,831	0.30	0.59	15	2.07	16.59	59	140

Table 1.3 Mayflower Phase I Resources (cut-off >=0.10 g/t Au)

Classification	Tonnes (kt)	Au g/t	Ag g/t	Contained Au (x1,000)	Contained Ag (x1,000)
Indicated	5,239	0.46	0.41	78	69
Inferred	28	0.21	0.24	0	0

Mineral Resources which meet the reasonable prospects of economic extraction in Tables 1.4 and 1.5 are reported at the breakeven cutoff grades for the mineralization and processing methods described. There is no assurance that any or all of the Mineral Resources will be converted to Mineral Reserves.

Phase II NBP Mineral Resources are estimated at the following cutoff grades:

- Phase II Mill Resources Sierra Blanca (Oxide, Vein and Stockwork Mineralization) - >= 0.35 g/t Au
- Phase II Mill Resources Sierra Blanca (Sulphide Disseminated Mineralization) - >= 0.71 g/t Au

- Phase II Heap Leach Resources Sierra Blanca (Oxide Vein Mineralization) - (>= 0.10 and <0.35) g/t Au
- Phase II Heap Leach Resources Sierra Blanca and Jolly Jane (Oxide Disseminated Mineralization) - >= 0.10 g/t Au

Phase II NBP Mineral Resources are pit constrained and are reported exclusive of Phase I Mineral Resources in Tables 1.2 and 1.3.

The effective date of the updated Mineral Resource estimate is October 31, 2017. The estimate is based on 767 holes comprising 141,286 metres ("metres" or "m") of length, 89,170 Au samples and 79,236 silver ("Ag" or "silver") samples, completed as of the effective date of this report.

Table 1.4 Sierra Blanca Phase II Resources

	Milling			Heap Leach			Sulphides				
	>=0.35 g/t Au cut off			>=0.15 g/t Au cutoff			>=0.71 g/t cutoff				
Classification	Tonnes (Kt)	Au g/t	Ag g/t	Tonnes (Kt)	Au g/t	Ag g/t	Tonnes (Kt)	Au g/t	Ag g/t	Au Ounces (x1,000)	Ag Ounces (x1,000)
Measured	397	0.78	4.07	9,331	0.19	0.85	401	1.24	2.48	84	338
Indicated	1,331	0.89	4.16	91,525	0.18	0.58	1,402	1.18	1.82	625	1,973
Inferred	6	0	5.18	50,939	0.19	0.46	61	1.53	2.04	314	760

Table 1.5 Jolly Jane

Classification	Tonnes (kt)	Au g/t	Ag g/t	Contained Au (x1,000)	Contained Ag (x1,000)
Indicated	18,751	0.24	0.42	146	254
Inferred	7,871	0.21	0.56	53	142

A summary of the current projected financial performance of NBP is listed in Table 1.6 and 1.7.

By definition, a PEA is preliminary in nature, and there is no certainty that the reported results will be realized. **The Mineral Resource estimate used for a PEA includes Inferred Mineral Resources which are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves, and there is no certainty that the PEA will be realized. The basis for the PEA is to demonstrate the economic viability of the NBP. The PEA results are only intended as an initial, first-pass review of the potential Project economics based on preliminary information.**

This Technical Report presents the results of all available technical data and information as of October 31, 2017. The author is not aware of any technical information gathered since the 2015/2016 Report that would change the outcome of the PEA, and the updated Mineral Resource estimation as of October 31, 2017.

Table 1.6 Highlights of the North Bullfrog Project PEA

Production		
Physicals	Heap Leach	Mill
Mine Life (years)	6	10
tonnes / day (nominal)	3,000	43,000
Gold Recovery (%)	87%	74%
Silver Recovery (%)	74%	6%
Total koz. Recovered (Au)(1)	379.9	811.8
Total koz. Recovered (Ag)(1)	2,280.9	203.9
Total koz. Recovered (Au eq.)(1)(2)	410.8	814.5
Project Financials		
Estimated Capital (US $)	258.7M	
Capital / Recovered Au eq oz (US $/oz)	206	
Estimated Total Cash Cost / Recovered Au Eq Oz. (US $)	635	
Cash Cost / Recovered Au eq oz(1)(2) (US $/oz)	620	

Net Present Value (NPV), 5% (US $)[3]	246M
Undiscounted Total Cash Flow (US $)[3] Rate of Return (DCF/ROR)[3]	338M 37.9%
Payback Period (years)[3]	2.2
(1) Includes Inferred Ounces (2) Au Price = $1,200/oz; Ag Price = $16.28/oz (3) After Tax and Royalty	

Table 1.7 Projected North Bullfrog Project Economic Performance (US $)

Item	Base Case
Gold Price Per Ounce	$1,200
Silver Price Per Ounce	$16.28
Pre-Tax Economics	
Net Cash Flow (US $Millions)	479
NPV @ 5% Discount Rate (US $Millions)	365
NPV @ 7.5% Discount Rate (US $Millions)	320
NPV @ 10% Discount Rate (US $Millions)	281
Internal Rate of Return	53%
Operating Costs Per Ounce of Gold Produced (life of mine)	$635
Total Costs Per Ounce of Gold Produced (includes all capital)	$841
Post-Tax Economics	
Net Cash Flow (US $Millions)	338
NPV @ 5% Discount Rate (US $Millions)	246
NPV @ 7.5% Discount Rate (US $Millions)	210
NPV @ 10% Discount Rate (US $Millions)	178
Internal Rate of Return	38%
Operating Costs Per Ounce of Gold Produced (life of mine)	$635
Total Costs Per Ounce of Gold Produced (includes all capital)	$841

1.2 PROPERTY DESCRIPTION AND OWNERSHIP

The NBP is located in the Bullfrog Hills of northwestern Nye County, Nevada (Figure 4.1).

Corvus' property covers approximately 7,223 hectares of patented and unpatented lode mining claims in Sections 20, 21, 25, 26, 27, 28, 29, 32, 33, 34, 35, and 36 of T10S, R46E; sections 1, 2, 11, 12, 13, and 14 of T11S, R46E; section 31 of T10S, R47E; and section 6, 9, 15, 16 and 17 of T11S, R47E, MDBM. The NBP is accessible as a two and one half hour (260 kilometre) drive north of Las Vegas Nevada along US Highway 95. US Highway 95 is the major transportation route between Las Vegas, Nevada, Reno, Nevada and Boise, Idaho. Las Vegas is serviced by a major international airport. The Project lies immediately to the west of the highway. Beatty, Nevada is the closest town to the Project with a population of about 1,100 and contains most basic services. Access around the Project is by a series of reasonably good gravel roads that extend to most of the important exploration areas.

Corvus controls the Project through a number of private land leases and unpatented federal load claims listed in Table 4.1, Table 4.3 and Table 4.4 of Section 4. Corvus owns and leases several patented lode mining claims and maintains a large contiguous block of federal unpatented lode mining claims. In 2014, Corvus purchased 162 hectares of surface lands in Sarcobatus Flats, approximately 26 kilometres north of the NBP, which includes 1,600 acre feet per year of water rights.

1.3 GEOLOGY AND MINERALIZATION

Gold mineralization in the NBP is primarily hosted in the middle Miocene Sierra Blanca Tuff. Gold mineralization is also hosted to a lesser extent in monolithic and heterolithic debris-flow deposits, as well as in felsic dikes and plugs. Two district-scale north striking normal faults are the dominant structural features in the Project area, but several smaller-scale faults between them are important controls for distribution of hydrothermal alteration and gold mineralization.

Two styles of precious metal epithermal mineralization are present at the NBP: 1) high-grade, structurally controlled fissure veins and associated stockwork zones; and 2) low-grade disseminated or replacement deposits within altered volcanic rocks. Historic drilling on the NBP, which was not NI 43-101 compliant, outlined areas of important mineralization. Drilling by International Tower Hill Mines Ltd. ("ITH"), a predecessor-in-interest of Corvus, was used to develop initial resource estimates, to better understand precious metal mineralization at Air Track Hill and as initial tests at the Sierra Blanca, Pioneer, Savage and YellowJacket targets.

1.3.1 METALLURGICAL TESTING

During 2012-2013, metallurgical testing was performed using composite samples developed from PQ core materials produced at Mayflower, Sierra Blanca, Savage Valley and Jolly Jane. Column leach testing on up to P80 -19 millimetres ("mm") indicated relatively high gold recoveries in the range of 80%, and confirmed the suitability of heap leach processing on disseminated mineralization. In 2014-2015, composite samples of PQ core materials were developed from YellowJacket vein and stockwork mineralization. Those tests indicate high solubility of contained gold in cyanide leach testing at P80 -150 microns, but reduced gold recoveries at heap leach size particles. These tests indicate that mill processing would be required on YellowJacket mineralization. Further testing of composite samples, using gravity concentration, intense cyanide leaching of gravity concentrate and cyanide leaching of the gravity tails, indicate gold recoveries in the range of 90% and silver recoveries in the range of 70%. During 2016 and 2017, flotation concentration and oxidation of sulphide mineralization was successfully demonstrated which allowed gold recoveries of +90% by cyanide leaching of filter cake products created from NBP sulphides.

1.3.2 CURRENT EXPLORATION AND DEVELOPMENT

Currently, there are no expenditures or development in progress at NBP and Corvus has focused its exploration program at the recently acquired MLP.

1.3.3 CONCLUSIONS

Corvus has invested considerable effort and investment in the advancement of the NBP through drilling, permitting, technical and metallurgical evaluations, internally and with the assistance of reputable consulting firms. This evaluation indicates performance through of a combination heap leaching and milling facility at the Project at the current metal price environment. The Project performance is most sensitive to gold price and gold recovery. Metallurgical data to this point indicates uncomplicated potential for economic extraction of metals.

The PEA suggest that this is a project that may be put into production for a total capital investment estimate of approximately US $258.7 million and with the initial capital being paid back within approximately 2.2 years of startup. Good potential exists for the discovery of additional mill and heap leach Mineral Resources at exploration target areas identified within the Project claim block.

MMC is of the opinion that the current Mineral Resource at North Bullfrog is sufficient to warrant continued planning and effort to explore, permit and develop the Project, and that it supports the conclusions and PEA detailed herein.

MMC believes there is sufficient data to support continued exploration, geologic modeling and continuing development of the Project.

1.3.4 RECOMMENDATIONS

The PEA results, for the combined mill and heap leach configuration, indicate the substantial financial impact on project performance of the higher grade vein and vein stockwork mineralization. Therefore it is recommended that future exploration should focus on the identification and development of the higher grade mineralization. In addition MMC recommends that Corvus define and execute programs to develop the required supporting technical information as a basis of a preliminary economic assessment of a combination of NBP with MLP. These recommended activities are:

- Resource definition drilling
- Metallurgical testing of gold bearing mineralization
- Continue environmental baseline characterization
- Evaluate the economic performance of MLP and NBP with combined infrastructure

The projected costs for the next phase of this program are outlined in Table 26.1.

The projected costs for the next phase of this program are outlined in Table 1.8.

Table 1.8 Proposed Budget to Support Recommended Program at NBP and MLP.

Activity	Amount

Exploration Drilling and Data Management	US$ 0.80 M
Baseline Data Collection	US$ 0.05 M
Metallurgical Testing	US$ 0.15 M
Resource Model, Geologic Model and PEA	US$ 0.35M
Total	US$ 1.35M

2 INTRODUCTION

2.1 GENERAL STATEMENT

The NBP is an advanced stage surface exploration project. NBP consists of a mix of patented and unpatented mining claims covering approximately 75 square kilometres. The Project is located approximately 10 kilometres north of the town of Beatty, Nevada. Mineralization at the Project is related to a large, low-sulphidation epithermal gold system hosted in volcanic and sedimentary rock units. Gold and silver were discovered in the Bullfrog district in 1904. Production records indicate that more than 110,000 ounces of gold and more than 800,000 ounces of silver were produced through 1921. Modern exploration at North Bullfrog began in 1974. In 2009, Corvus Gold Inc. ("Corvus" or the "Company") was formed as a spin out from International Tower Hill Mines Ltd. ("ITH"), when 100% percent of the Project was transferred to Corvus.

Corvus is a North American gold exploration and development company, focused on its near-term gold-silver mining project at North Bullfrog, Nevada. Corvus is listed on the TSX as "KOR". This Technical Report is being prepared to incorporate recent drilling geological and metallurgical data developed in 2015 and 2016 into an updated Mineral Resource estimate.

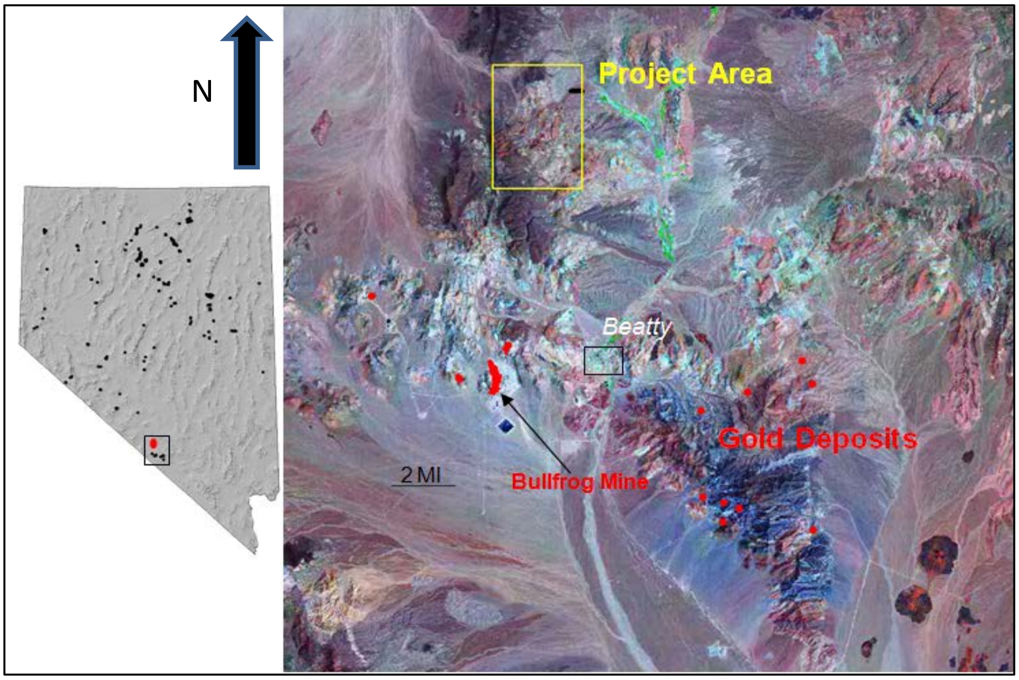
The independent authors of this Technical Report, Scott Wilson of Metal Mining Consultants ("MMC"), Steve Batman of Arvada Colorado ("SBBM") and Christopher Easton of Easton Process Consulting, Inc. ("EPC"), used various forms of digital data in the Technical Report including geologic models based on surface mapping and drilling, assay data, and metallurgical testing data developed by Corvus, MMC, SBBM and EPC.

The NBP is located in northwestern Nye County, Nevada, in the Northern Bullfrog Hills about 15 kilometres North of Beatty (Figure 2.1). The Project lies within the Walker Lane structural terrain about 12 kilometres North of the Bullfrog mine where Barrick Gold Corp. (and predecessor companies) produced about 2.3 million ounces of gold and 3.0 million ounces of silver from 1989 through 1999 (NBMG MI-2000, page 34). The NBP contains numerous epithermal low-sulphidation volcanic rock-hosted gold showings that had limited historic production.

Corvus controls the Project through a number of private land leases with various land owners (Table 4.1 and Figure 4.1) and through numerous federal unpatented lode mining claim holdings. In 2006, Redstar Gold Corp ("RGC") initially assembled 213 unpatented lode mining claims and 33 patented lode mining claims through six option agreements, which were the property subject to the original joint venture agreement between RGC and ITH called the North Bullfrog Project Joint Venture (the "NBPJV"). ITH leased an additional 11 patented lode mining claims in the Mayflower area, which became subject to the NBPJV agreement. ITH earned into the NBPJV when in August 2009 they negotiated an agreement to purchase RGC's interest in the joint venture property. ITH spun out Corvus on August 26, 2010 as the controlling entity of the North Bullfrog property. Corvus completed one additional option agreement on patented lode mining claims in the Jolly Jane area in March 2011, for a total of eight option agreements on private lands. Corvus also expanded the North Bullfrog property in early 2012 by staking a total of 511 federal unpatented lode mining claims. In late 2012, Corvus staked an additional 297 unpatented lode mining claims to the north and east (Figure 4.1), bringing the total unpatented lode mining claim holdings to 808. All of these claims are in good standing with the Bureau of Land Management (the "BLM") and Nye County.

On March 23, 2013, Corvus announced the purchase of surface rights on five patented lode mining claims from Mr. and Mrs. Gordon Millman to facilitate shorter overburden haul distances for development of the Mayflower deposit. The terms of the purchase as outlined in the Corvus press release (February 21, 2013) were, "…USD 160,000, payable at closing. The terms also included payment by Corvus Nevada of a fee of USD 0.02 per ton of overburden to be stored on the property, subject to payment for a minimum of 12 million short tons. The minimum tonnage fee (USD 240,000) had an interest rate of 4.2% per annum from closing, as evidenced by a promissory note due on the sooner of the beginning of production or December 31, 2015." The promissory note was paid off in December 2015.

Figure 2.1 Regional Location Maps of the NBP; Nevada Map Shows Productive Gold Deposits in Black and Location of Enlarged Area with False-Color Remote Sensing Image Backdrop Showing the Project Area in Yellow and the Productive Gold Deposits in Red



2.2 TERMS OF REFERENCE

Corvus requested that this Technical Report be prepared to support a revised Mineral Resource estimate to include drilling results to the North, Northwest and East of the YellowJacket Zone. No material changes in the NBP ownership or land position have occurred at North Bullfrog since publication of the 2015/2016 Report. This Technical Report includes metallurgical data produced on sulphide mineralization in the vicinity of YellowJacket and drilling data produced in 2015 and 2016 after publication of the 2015/2016 Report. This Technical Report also outlines the geology, exploration history, and potential of the Project based on possible exploitation of mineralized areas. Mr. Scott E. Wilson (MMC), Mr. Stephen Batman (SBBM) and Christopher Easton (EPC) were commissioned by Corvus to prepare this Technical Report.

Mr. Scott Wilson, (CPG #10965, SME 4025107RM), an independent Qualified Person, was the principal author responsible for the overall preparation of this Technical Report, and specifically for Sections 1 through 12, Section 14, Section 20 and Sections 23 through 27. Mr. Wilson visited the NBP site on January 30 and 31, 2013, March 24, 2014, November 2 and 3, 2014, and June 6 through 8, 2017. Mr. Wilson is independent of Corvus applying all of the tests in Section 1.5 of NI 43-101.

Mr. Stephen Batman, (SME 181580RM), was responsible for the preparation of Sections 15 and 16 as well as the relevant parts of Sections 1, 21 and 25. Mr. Batman visited the site on March 12, 2015. Mr. Batman is independent of Corvus applying all of the tests in Section 1.5 of NI 43-101.

Mr. Christopher Easton, Consulting Metallurgist and a member of the Mining and Metallurgical Society of America ("MMSA"), as an independent Qualified Person, was responsible for Section 13 and Section 17 as well as the relevant portions of Sections 1 and Sections 25. Mr. Easton visited the NBP site on April 22 and 23, 2017. Mr. Easton is independent of Corvus applying all of the tests in Section 1.5 of NI 43-101.

All dollar amounts in this document are United States dollars unless otherwise noted.

3 RELIANCE ON OTHER EXPERTS

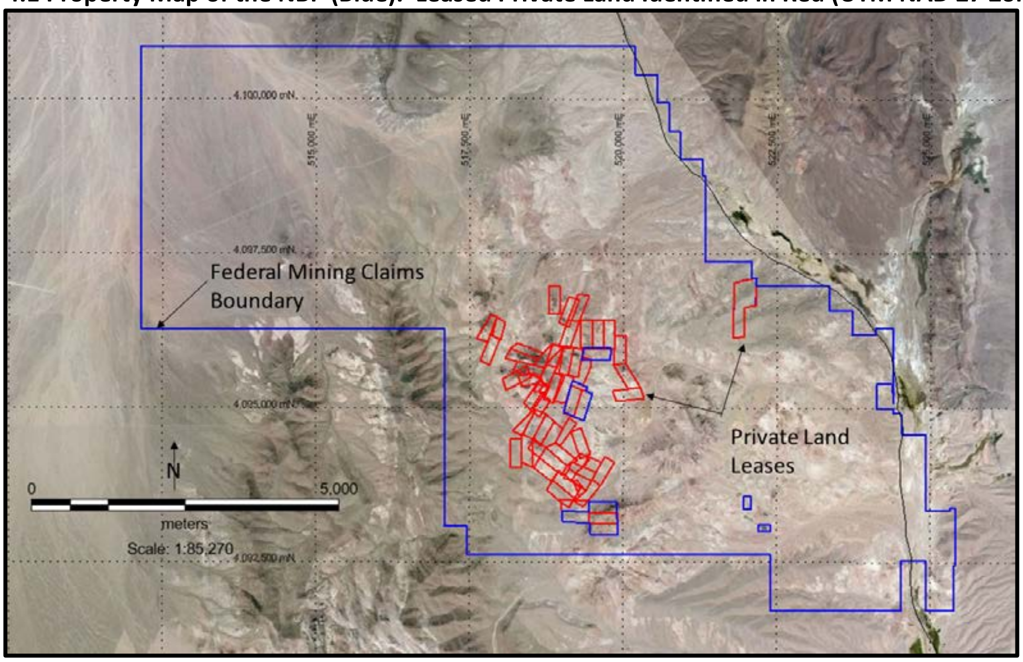
The opinions and conclusions presented in this Technical Report are based on information provided by Corvus and reflect technical information at the time of the preparation of this Technical Report. MMC has reviewed the available data and has concluded it to be an acceptable basis for the development of this Technical Report. No other experts were relied upon in the preparation of this report.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 AREA AND LOCATION

NBP is located in the Bullfrog Hills of northwestern Nye County, Nevada. A map of the NBP property is presented in Figure 4.1, which shows the boundary defined by unpatented lode mining claims in blue and private land patented claims in red. Location of the property is indicated by the coordinate grid on the map which is in the UTM NAD27, Zone 11 coordinate system. The Project covers about 7,223 hectares of patented and unpatented lode mining claims in Sections 20, 21, 25, 26, 27, 28, 29, 32, 33, 34, 35, and 36 of T10S, R46E; Sections 1, 2, 11, 12, 13, and 14 of T11S, R46E; Section 31 of T10S, R47E; and Sections 6,9,15,16 and 17 of T11S, R47E, Mount Diablo Base and Meridian ("MDBM"). A summarized list of the claims covered by the NBP is provided in Table 4.2 and Table 4.4 in this Section. Corvus has a total of nine option/lease agreements in place that give it control of 51 patented lode mining claims which are summarized in Table 4.1 below.

Figure 4.1 Property Map of the NBP (Blue). Leased Private Land Identified in Red (UTM NAD 27 Zone 11).



The claims and lease agreements give Corvus the right to explore the property and mine locatable minerals subject to required regulatory permits, which are described in Section 20. Corvus currently has permits for exploration of the public and private land from the BLM and Nevada Department of Environmental Protection ("NDEP")). The permits allow non-exclusive access to Corvus and its contractors, exploration drilling and sampling, geologic mapping, engineering characterization, baseline environmental data collection and new surface disturbance as defined by the permits. The leases and claims give Corvus the rights to conduct mining operations to extract the Mineral Resources subject to future permits described in Section 20.

4.2 REDSTAR OPTION/JOINT VENTURE/ITH PRUCHASE OF LAND

RGC originally staked 213 unpatented lode mining claims and optioned 21 patented lode mining claims from six private parties in 2006. ITH optioned the original NBP land package from RGC in 2006, creating the NBPJV. ITH added 11 patented lode mining claims (the Mayflower property) to the NBPJV in 2007 under the Greenspun lease agreement. RGC added 12 patented lode mining claims (the Connection and adjacent properties) to the NBPJV in 2008 under the lease agreement with Lunar Landing LLC. In August 2009 ITH purchased a 100% interest in the NBPJV from RGC by paying RGC CAD$250,000 and issuing 200,000 ITH common shares (News Release, August 4, 2009). These holdings were then transferred to Corvus during the spin out. Corvus completed one additional option agreement on two patented lode mining claims in the Jolly Jane area in March 2011. In May 2014, Corvus amended its existing lease agreement with Kolo Corp. to add the Yellowrose and Yellowrose No. 1 claims. In March 2015, Corvus added a second option agreement with Lunar Landing LLC, to lease the Sunflower, Sunflower No. 1 and Sunflower No. 2 claims for a total of nine option agreements on private land. Corvus has added an additional 808 federal unpatented lode mining claims which were staked in 2012, and added an additional 57 federal unpatented lode mining claims, which were staked in 2015. Table 4.1 summarizes the obligations of the nine leases which are part of Corvus' responsibilities on the Project and Table 4.2 lists the individual claim names and U.S Bureau of Land Management serial numbers for the nine lease obligations. The principal author has verified that all lease obligations have been met and are paid in full as of the date of this Technical Report.

All of these properties are held through Corvus Gold Nevada Inc ("CGN"), which was a wholly owned subsidiary of ITH and was transferred to Corvus in connection with the spinout on August 26, 2010.

Table 4.1 Summary of Lease Obligations That Are Part of the Corvus Spin out (All Funds USD).

Party	Area	Claims/Acres	Next Payment	Property Taxes	NSR	Signing Date	Term (yrs)	Term Extension	Option to Purchase Property	Option to Purchase Royalty	NSR Option Term
Gregory	North Pioneer	1/8.2	$3,600	na	2%	6/16/2006	10	yes	no	$1 M/%	na
Hall	Savage	3/45.7	$8,600	na	2%	5/22/2006	5	yes	no	$1 M/%	na
Kolo Corp	Jolly Jane & Yellowrose	4/81.7	$6,000	$258	3%	5/8/2006	10	yes	no	$0.85/%	na
Milliken	Pioneer	3/24.5	$5,400	na	2%	5/8/2006	10	yes	no	$1M/%	na
Pritchard	Pioneer	12/203.0	$20,000	na	4%	5/16/2006	10	yes	no	$1M/%	na
Lunar Landing LLC	Connection	12/195.0	$16,200	$207	4%	10/27/2008 Amended 5/28/2014	10	yes	$1 M	$1M/%	35 yrs
Lunar Landing LLC	Sunflower	3/59.2	$5,000	$180	4%	3/30/2015	4	7 yrs	$0.3 M	$0.5/%	35 yrs
Greenspun [1]	Mayflower	11/183.05	$10,000[1]	$214	4%	08/25/2107	10	3 yrs	$7.5 M	No	3 yrs
Sussman	Jolly Jane	2/37.4	$30,000	$113	2%	3/14/2011	10	10 yrs	Inclusive in Royalty Purchase	$1M/%	na
Total	-	**51/748.7**	**$104,800**	**$972**	-	-	-	-		-	-

[1] Plus 50,000 ITH shares and 25,000 Corvus shares

4.3 MAYFLOWER PROPERTY

ITH, through its Talon Gold Nevada Inc. subsidiary (now called "Corvus Gold Nevada Inc." ("CGN") and owned by Corvus, entered into a mining lease with an option to purchase with the Greenspun Group 183 acres of patented lode mining claims that cover much of the Mayflower prospect. The Mayflower lease requires Corvus to make payments and complete work programs as outlined in Table 4.3. During the term of the lease, any production from the Mayflower property is subject to a sliding scale royalty, also outlined in Table 4.3. Corvus has the right to purchase a 100% interest in the Mayflower property for $7.5 million plus a 0.5% NSR (if gold is less than $500) or 1.0% (if gold is above $500) at any time during the term of the lease (subject to escalation for inflation if the option is exercised after the 10th year of the lease). The annual property taxes to be paid by Corvus for the Mayflower property are $214. On February 11, 2015, the Mayflower mining lease with option to purchase was amended with the addition of an anti-dilution clause applying to the ITH shares and with an increase in the annual payment to include 25,000 Corvus shares. On November 22, 2017, the Mayflower lease was extended until 2027 with the original terms, an annual payment of $10,000 and 50,000 ITH shares and 25,000 Corvus shares.

On February 21, 2013, Corvus signed a purchase agreement, which was subsequently closed on March 27, 2013, for the surface rights to five patented lode mining claims owned by Mr. and Mrs. Gordon Millman and located east of the Mayflower deposit. This ground could be used for potential overburden storage at the Mayflower deposit as well as improving access to the Mayflower deposit in general. Corvus purchased the surface rights for $160,000. Additionally, Corvus agreed to pay the Millmans a fee of $0.02 per ton of any potential overburden storage subject to a minimum storage of 12 million short tons of material. The minimum storage fee of $240,000 bears interest at 4.2% per annum from the closing date and was due on December 31, 2015. The promissory note was paid off in December 2015.

4.4 OTHER PROPERTY CONSIDERATIONS

All of the unpatented lode mining claims are on U.S. public land administered by the BLM. These claims give Corvus the right to explore for and mine minerals, including gold and silver, subject to the necessary permits described in Section 20. The current exploration permits from BLM and NDEP allow Corvus surface access, maintenance of roads, drilling and sampling and a defined amount of accompanying surface disturbance. The unpatented lode mining claims require payment of yearly maintenance fees to the BLM and Nye County (recording fees) of an aggregate of $147,953 (estimated for 2015). Annual property taxes to be paid by Corvus for some of the properties subject to the original six RGC leases and subsequent leases are tabulated in Table 4.1.

Current exploration activities are covered by a Plan of Operations (NVN-83002) with the BLM. Two Plans of Operation are in place with the Nevada Department of Environmental Protection ("NDEP") (NDEP#0280 and #0290) that fulfill the State of Nevada permitting obligations on private and public lands, respectively. Reclamation bonds, related to environmental liabilities to which the NBP is subject, are in place to cover activities on the property. Corvus's reclamation liabilities are covered by surety bonds issued by Lexon Insurance Company in the amount of $341,341 for 103 acres of disturbance on public land with the BLM and $209,070 for 20.3 acres of disturbance on private land with NDEP. Additional permits and bonding will be required for the expanded exploration program outlined in the Recommendation Section of this Technical Report.

In December 2013, the Company completed the purchase of 160 hectare fee simple parcel of land 16 kilometres north of the NBP, which carries with it 1,600 acre feet of irrigation water rights within the Sarcobatus Flats water basin. Cost of the land was USD$1,000,000. The Company has registered the purchase of water rights with the Nevada State Engineer ("NSE") and will make application to the NSE to move the production point to NBP, and change the application to mining. The water right requires annual renewal and has currently been extended through June 11, 2018.

None of the authors knows of any other significant factors and risks that may affect access or title to the NBP, or the right or ability to perform work on the Project. To the extent knoiwn, the author knows of no other royalties, back-in rightd, payments or other agreements and encumberances to which the property is subject.

Table 4.4 summarizes the unpatented lode mining claims on U.S. public land at the NBP.

Table 4.2 Summary of Patented Claims in the Nine NBP Lease Agreements

Lease	Claim Name	U.S. Bureau of Land Management Serial Number
Gregory	Jim Dandy	448055
Hall	Gold Basin	330227
Hall	Savage	330227
Hall	Savage 2	330227
KoloCorp.	Black Jack	163170
Kolo Corp	ZuZu	261838
Kolo Corp	Sunflower	369130
Kolo Corp	Sunflower No.1	369130
Kolo Corp	Sunflower No. 2	369130
Milliken	Indiana 1	245488
Milliken	Indiana 2	245488
Milliken	Indiana 3	245488
Pritchard	Banker's Life	493623
Pritchard	Bimettalic 1	46204
Pritchard	Bimettalic 2	46204
Pritchard	Bimettalic 3	46205
Pritchard	Bluff	493623
Pritchard	Conservative	611953
Pritchard	KK1	504301
Pritchard	Mutual	493623
Pritchard	Penn Mutual	493623
Pritchard	Prudential	493623
Pritchard	Sunrise 1	114544
Pritchard	Sunrise 2	114544
Lunar Landing LLC	Dewey Bailey	269019
Lunar Landing LLC	Four Aces	269019
Lunar Landing LLC	Parson Haskins	269019
Lunar Landing LLC	Bull Con	269019
Lunar Landing LLC	Ugly	296019
Lunar Landing LLC	Hardtack	341527
Lunar Landing LLC	Connection Mine	342533
Lunar Landing LLC	Equity	342533
Lunar Landing LLC	Geraldine 3	342533
Lunar Landing LLC	Grey Eagle 2	342533
Lunar Landing LLC	Grey Eagle 4	342533
Lunar Landing LLC	Vinegarroan	342533
Lunar Landing LLC	Yellowrose	369130
Lunar Landing LLC	Yellowrose No. 1	369130
Greenspun	Mayflower Lode Mining Claim	2548
Greenspun	Mayflower No. 1 Lode Mining Claim	2548
Greenspun	Mayflower No. 2 Lode Mining Claim	2548
Greenspun	Mayflower No. 3 Lode Mining Claim	2548
Greenspun	Moonlight Lode Mining Claim	2640
Greenspun	Moonlight No. 1 Lode Mining Claim	2640
Greenspun	Moonlight No. 2 Lode Mining Claim	2640
Greenspun	Starlight No. 4 Lode Mining Claim	2640
Greenspun	Starlight No. 5 Lode Mining Claim	2640
Greenspun	Starlight No. 6 Lode Mining Claim	2640
Greenspun	Starlight No. 7 Lode Mining Claim	2640
Sussman	Jolly Jane	402672
Sussman	Valley View	402672

Table 4.3 Summary of the Original Terms for the Mayflower/Greenspun Group Lease

Term: 10 Years Beginning December 1, 2017
10 additional years with continual exploration and thereafter as commercial production continues
Lease Payments: Due on Each Anniversary Date of the Lease

$10,000
Work Commitments: Excess Expenditures in Any Year Can Be Carried Forward, or if under Spent the Unspent Portion Paid to Greenspun Group
Years 1-3 US$100,000 each year the lease is in effect Years 4-6 US$200,000 each year the lease is in effect Years 7-10 US$300,000 each year the lease is in effect
Retained Royalty: Production Sliding Scale Net Smelter Return Based on Price of Gold Each Quarter
2% if gold is less than US$300 per ounce 3% if gold is between US$300 and US$500 per ounce 4% if gold is more than US$500 per ounce
Advance Minimum Royalty Payments (if not in commercial production by the tenth anniversary, in order to extend lease for an additional three years)
Years 11-13 US$100,000 each year the lease is in effect and commercial production has not been achieved
Purchase Option:
During first 10 years property can be purchased for US$ 7.5 million plus an 0.5% NSR (if gold is less than US$ 500) or 1.0% (if gold is above US$ 500) After the tenth anniversary the US$ 7.5 million purchase price escalates by the Consumer Price Index, using the CPI immediately prior to the tenth anniversary as a base

Table 4.4 Summary of the Unpatented Lode Mining Claims on U.S. Public Land at the NBP

Land Holder	Claim Name	US Bureau of Land Management Serial Number
Corvus Gold Nevada Inc.	NB 1 – NB 149	922928 – 923076
Corvus Gold Nevada Inc.	NB 150	943108
Corvus Gold Nevada Inc.	NB-151A	1078379
Corvus Gold Nevada Inc.	NB 152 – NB 154	943110 – 943112
Corvus Gold Nevada Inc.	NB-155A	1078381
Corvus Gold Nevada Inc.	NB 156 – NB 161	943114 – 943119
Corvus Gold Nevada Inc.	NB 162 – NB 213	989863 – 989914
Corvus Gold Nevada Inc.	NB 214 – NB 510	1069332 – 1069628
Corvus Gold Nevada Inc.	NB 511	1078379
Corvus Gold Nevada Inc.	NB 512 – NB 808	1085130 – 1085426
Corvus Gold Nevada Inc.	NB 809 – NB865	1109343 – 1109399

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

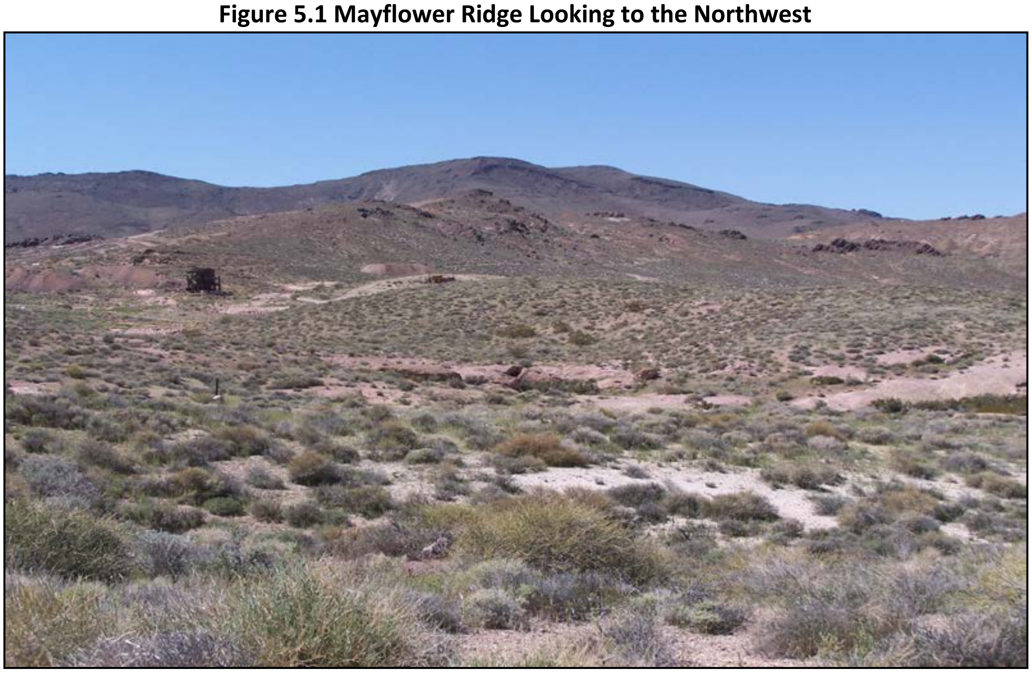
The NBP is accessible as a two and one half hour (209 kilometres, 130 mile) drive north of Las Vegas Nevada along US Highway 95. US Highway 95 is the major transportation route between Las Vegas, Nevada, Reno, Nevada and Boise, Idaho. Las Vegas is serviced by a major international airport. The Project lies immediately to the west of the US Highway 95. Beatty, Nevada is the closest town to the Project with a population of about 1,100 and contains most basic services. Access around the Project is by a series of reasonably good gravel and dirt roads that extend to most of the important exploration areas.

The NBP is in Western Nevada's high desert which receives about 15 centimetres ("cm") of precipitation per year, mostly as modest snow fall in the winter and thunderstorms in the summer. The average daily temperature varies from a low of 5 °C (40.8°F) in January to a high of 27 °C (80.8 °F) in July. Due to the mild climate at the NBP, the operating season is year-round, though occasional thunderstorms may prohibit drilling for periods of an hour or so due to safety concerns about lightning strikes.

The hills at the Project are covered with sparse low brush including creosote, four-wing saltbush, rabbit brush and Nevada ephedra. The Project is in the Basin and Range province, but the local topographic relief is only a few hundred feet. The elevation of the Project ranges from 1,100m (3,600 feet) to 1,500m (4,800 feet). Most of the Project is characterized by low hills separated by modest width valleys (Figure 5.1).

As described in Section 4, Corvus maintains sufficient surface rights to support mining operations; including potential waste disposal areas, tailings storage areas, heap leach pads and potential mill sites. Claim blocks are contiguous, power is readily accessible and Corvus has secured access rights to water. The towns of Beatty, Pahrump and Tonopah support an ample population for mining personnel.

Figure 5.1 Mayflower Ridge Looking to the Northwest



6 HISTORY

Gold was discovered at what was to become the original Bullfrog mine by Frank "Shorty" Harris and Ernest Cross on August 9, 1904 (Elliott, 1966). Two periods of mining activity account for the majority of production from the District. Lincoln (1923) reported 111,805 ounces of gold and 868,749 ounces of silver were produced between 1905 and 1921, after which there was little production until the 1980s. In early 1982 geologists from St. Joe Minerals Corporation became interested in the District. They conducted extensive exploration in the area of the Montgomery-Shoshone and Senator Stewart mines, resulting in the discovery of the Bullfrog deposit in mid-1986. Several company acquisitions resulted in Barrick Gold Corporation being the final owner of the mine. The Bullfrog mine produced gold and silver from three separate deposits including: 1) main Bullfrog (open pit and underground); 2) Montgomery-Shoshone (open pit); and 3) Bonanza Mountain (open pit). Between 1989 and 1999, the Bullfrog mine produced 2.31 thousand ounces ("Moz") of gold and 3.0 Moz of silver (NBMG MI-2000, page 34).

The early history of the NBP property is comingled with the greater Bullfrog Mining District. The Pioneer and Mayflower were the principal mines in the northern part of the district. The Pioneer mine was most active between 1909 and 1926 with about 15,000 feet of underground workings, all being developed within 330 feet of the surface. There are no accurate production figures, but limited records suggest that head grades were about one quarter ounce of gold per ton. The Mayflower mine was probably active during the same time, but again there are no reliable production records. Underground development at Sierra Blanca, Jolly Jane, Savage Valley and YellowJacket also attest to historic mining and production, probably during the same period.

Modern exploration started in the early 1970s and, as outlined in Table 6.1, consisted of a number of companies with focuses on different parts of the Project. These programs consisted of a variety of activities including surface mapping and sampling, underground mapping and sampling, and drilling.

Table 6.1 Summary of Companies That Explored NBP.

Company	Years of Activity	Principal Target
Cordex Exploration Co.	1974-1982	Connection, Pioneer
US Borax Incorporated	1982	Mayflower
Gexa/Galli Energy	1984-1991	Pioneer, Connection
CR Exploration	1984-1985	Mayflower
Western States	1987	West Mayflower
Sunshine/Bond Gold JV	1988-1994	Sierra Blanca, YellowJacket
Pathfinder Minerals	1991, 1992	Pioneer
Barrick Gold Corporation	1995-1996	Jolly Jane, Sierra Blanca, Mayflower

Through the Barrick program, approximately 249 rotary and reverse-circulation drillholes were drilled on the Project (see Section 10 for detailed description of these programs).

With the downturn in gold price at the start of the 21st Century, interest in the Project was essentially nonexistent. RGC became attracted to the North Bullfrog area in late 2005, and started staking unpatented lode mining claims and acquiring leases on patented lode mining claims. In March 2007, RGC granted ITH the right to earn an interest in the NBP and thereafter formed the NBPJV. In December 2007, ITH completed a lease of the Mayflower property, which was included in the NBPJV. Following the execution of the NBPJV option/joint venture agreement, ITH commenced active exploration on the NBP. In October 2008, RGC completed a lease of the Connection property, which was also included in the NBPJV. On August 4, 2009, ITH purchased RGC's interests in the property and continued the exploration program as sole owner/lessor. On August 26, 2010, ITH spun out Corvus as a separate public company in a transaction that resulted in Corvus owning CGN, through which all interest in the NBP was held, thus resulting in Corvus indirectly acquiring all of the interest in and responsibilities for the NBP property.

There are no known historic estimates for the Project.

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGICAL SETTING

The NBP lies within the Walker Lane structural province and the Southwestern Nevada Volcanic Field ("SWNVF"). The regional stratigraphy includes a basement of Late Proterozoic to Late Paleozoic metamorphic and sedimentary rocks, overlain by a thick pile of Miocene volcanic and lesser sedimentary rocks ranging in age from ~16-7.5 million years ago ("Ma"). The stratigraphy of the SWNVF is dominated by ash flow tuff sheets erupted from a cluster of nested calderas known as the Timber Mountain Calder Complex, which lies approximately ten kilometres east of the NBP. Stratigraphy of the SWNVF includes voluminous ash flow tuff sheets, smaller volume lava flows and intrusives and lesser sedimentary rocks. Many of the volcanic units exposed at the NBP are ash flow tuffs that originated from the caldera complex. However, some of the host rocks for the mineralization at NBP are locally derived and are currently known as the North Bullfrog Hills Volcanic Complex ("NBHVC"). The NBHVC rocks are slightly older than the main ash flow tuffs erupted from the Timber Mountain Caldera Complex.

Through-going right-lateral faults of the Walker Lane Belt are poorly exposed in the SWNVF. Despite the dominance of caldera volcanism in the region, little or no mineralization is associated with caldera ring fracture systems, but rather typically associated with extensional faulting. The Bullfrog Hills comprise a somewhat isolated structural domain within the Walker Lane Belt, where both pre-Tertiary and Miocene rocks have been subjected to large-scale, W to WNW directed, syn-volcanic extension (down-to-the-west faulting and east-tilting), accompanied by episodic magmatic-hydrothermal activity between ~16-9 Ma.

Extension was accommodated by the Bullfrog Hills Fault System ("BHFS"), a complex group of kinematically-linked faults that facilitate extension and block rotation. The BHFS consist of three basic fault types: 1) a generally east-west trending, district-scale, low-angle detachment fault known as either the Southern Bullfrog Hills Fault ("SBHF") (Eng et al. 1996) or the Fluorspar Canyon Fault; 2) NNW to NNE trending, moderately to steeply west-dipping, down-to-the-west normal faults (i.e. MP, Road, West Jolly Jane, and Donovan Mountain faults); and 3) steeply east-dipping, down-to-the-east, antithetic faults (i.e. Liberator, East Jolly Jane, and Quartzite faults). The large displacement NNE- to NNW-trending down-to-the-west faults are interpreted to have listric shapes similar to the MP fault, which hosts the Bullfrog Vein at the Bullfrog Mine. These faults are interpreted to sole into the SBHF detachment fault at depth. Steeply east-dipping, down-to-the-east faults occur in the hanging walls of the large displacement down-to-the-west faults and are interpreted to be truncated at depth by the down-to-the-west faults. Hydrothermal alteration and gold mineralization are commonly spatially associated with major splays of the BHFS.

Extensional faulting in the Bullfrog Hills created fault-bounded sedimentary basins which filled with basement debris, volcanic debris, and pyroclastic deposits. Multiple episodes of extension have been documented in the region. During younger periods of extension, many of the older faults in the hanging walls of large-displacement listric faults have experienced significant reactivation and subsequent rotation.

7.2 LOCAL AND PROPERTY GEOLOGY

7.2.1 STRATIGRAPHY

7.2.1.1 LOCAL STRATIGRAPHY

The stratigraphy of the Northern Bullfrog Hills ("NBH") was most recently described by Connors et al. (1998) who mapped the area between 1989 and 1991. Based on drilling and geochronology studies conducted by Corvus, the local stratigraphy has been refined enough to warrant the identification of the the NBH Volcanic Complex ("NBHVC") (see Table 7.1).

To the extent possible, the terminology of Connors et al. (1998) has been preserved in the unit assignment at NBP. New geochronology has shown that some units were incorrectly correlated and required new names. The most significant examples are the Sierra Blanca Tuff and the Pioneer Formation, which were previously included in the Crater Flat Group. Brief descriptions of the Paleozoic and Tertiary units present in the NBP area are given below. Figure 7.1 is a compiled geologic map of the NBP and surrounding areas. An explanation of the map units described in this Technical Report is presented in Figure 7.2.

Table 7.1 Overview of the stratigraphy of the North Bullfrog Hills.

Au min	Major Unit Name	Symbol	Formation	Lithodeme	Major Unit Description
	Quaternary Cover	Qc			Quaternary alluvium, colluvium, talus, and mine dumps.
	Gravels of Sober-up Gulch	Tgs	Gravels of Sober-up Gulch		Semi-consolidated cobble and boulder gravels.
	Pumiceous Sediments	Tps			Light colored tuffaceous sandstone, conglomerate with pumice clasts.
	Rainbow Mountain Sequence	Trl	Donovan Mountain Latite		Latite and quartz latite lava flows and flow breccias.
Mayflower		Trt	Tuffs and Lavas of Rainbow Mountain		Non-welded crystal-lithic rhyolite ash-flow tuff and aphanitic flow-banded rhyolite flows and domes with minor sedimentary interbeds.
Connection; Mayflower		Tdf	Rainbow Mountain Debris Flow Sequence		A sequence of intercalated heterolithic and monolithic debris flow breccias derived from local stratigraphy. Heterolithic sequences are poorly sorted, consisting of sand- to boulder-size clasts of volcanic and Pz sedimentary rocks. Monolithic breccias are interpreted as landslide megabreccia deposits shed off local fault scarps.
	Timber Mountain Group	Tma	Ammonia Tank Tuff		Moderate to densely welded crystal-rich rhyolite ash-flow tuff.
		Tmr	Rainier Mesa Tuff		Moderate to densely welded crystal-rich rhyolite ash-flow tuff.
		Tprr			Variably flow-banded rhyolite and rhyolite flow breccia
		Tprt			Light-colored, non-welded, locally bedded, crystal-lithic ask-flow tuff
	Paintbrush Group	Tp	Paintbrush Tuff		Aphanitic phenocryst-poor welded rhyolite ash-flow tuff.
	Crater Flat Group	Tcb	Bullfrog Tuff		Variably welded crystal-lithic rhyolite ash-flow tuffs. Probable equivalent of Bullfrog Member of the Crater Flat Group.
	Lithic Ridge Tuff	Tlr	Lithic Ridge Tuff		Variably welded, lithic-rich "dacitic" tuff.
	North Bullfrog Hills Volcanic Complex	Td	Savage Valley Dacite	North Bullfrog Intrusive Suite: rhyolite dikes, sills, flows and domes of ambiguous origin	Upper Member consists of intercalated lava flows, breccias and pyroclastics of dacitic composition. Probable stratigraphic correlation to Tr1g quartz latite unit in Southern Bullfrog Hills.
Sierra Blanca and YellowJacket					Lower Member consists of complex mixture of rhyolite lava flows, tuffs, breccias and sedimentary rocks covering post-Sierra Blanca erosional surface.
Sierra Blanca and YellowJacket		Tsb	Sierra Blanca Tuff		Large compound cooling unit of variably welded crystal-lithic rhyolite ash-flow tuff. Lies stratigraphically within the NBHVC, but likely sourced from an unknown older caldera related to the Timber Mountain caldera complex. May be correlative to Upper Tuff of Sawtooth Mountain.
Sierra Blanca and YellowJacket		Tpf	Pioneer Formation		Upper Epiclastic Member: mixed bedded to non-bedded heterogeneous epiclastics: poorly sorted silty, sandy, pebbly and cobbly sediments.
					"Green tuff" of Sierra Blanca; Heterogeneous non-welded to semi-welded, lithic-poor to lithic-rich crystal ash-flow tuffs with scattered

Au min	Major Unit Name	Symbol	Formation	Lithodeme	Major Unit Description
					intervals of bedded tuff and epiclastics. May be correlative to Lower Tuff of Sawtooth Mountain.
		Tnb			
		Tsf	Savage Formation		Sequence of intercalated lava flows, intrusives and epiclastic debris of dacitic to rhyolitic compostion.
		Tjj	Jolly Jane Formation		Heterogeneous sedimentary sequence consisting of mudstone, siltstone, sandstone and conglomerate accumulated in localized structural basins.
	Paleozoic Basement	PzC	Carrara Limestone		Micritic to and argillaceous carbonaceous limestone.
		PzZ	Zabriskie Quartzite		Massive quartzite.
		PzW	Wood Canyon Formation		Quartz-rich calcareous siltstone, sandstone, quartzite.

7.2.1.1.1 PALEOZOIC BASEMENT

7.2.1.1.1.1 WOOD CANYON FORMATION - PZW

The Wood Canyon Formation is Lower Cambrian in age and made up of shale, siltstone and sandstone with occasional beds of massive to finely laminated limestone. The minimum thickness is believed to be 350 metres (Connors, et al., 1998).

7.2.1.1.1.2 ZABRISKIE QUARTZITE - PZZ

The Zabriskie Quartzite is Lower Cambrian in age and generally consists of fine- to medium-grained ortho-quartzite with poorly preserved bedding. Its minimum thickness is believed to be around 370 metres (Connors, et al., 1998).

7.2.1.1.1.3 CARRARA FORMATION - PZC

The Carrara Formation is Middle to Lower Cambrian in age and is made up of thin to medium bedded limestone. The lower parts of the Carrara Formation contain cherty, argillaceous and silty limestone interbeds. The minimum thickness is around 280 metres (Connors, et al., 1998)

7.2.1.1.2 NORTH BULLFROG HILLS VOLCANIC COMPLEX

The North Bullfrog Hills Volcanic Complex is a name that has been given to a sequence of generally locally derived lavas and pyroclastic rocks. Some of these rocks were previously incorrectly correlated with the Crater Flat Group by Connors, et al. (1998). The subdivisions identified here are based primarily on stratigraphic data obtained from drilling that has helped clarify both the stratigraphic sequence and distribution of the different units.

7.2.1.1.2.1 JOLLY JANE FORMATION - TJJ

The Jolly Jane Formation consists of a basal Tertiary conglomerate, overlain by a heterogeneous sequence of sedimentary rocks including mudstone, siltstone and sandstone. The basal conglomerate is a time transgressive unit which characteristically contains abundant clasts of pre-Tertiary basement rocks. It is the litho-stratigraphic equivalent, but probably not the time-stratigraphic equivalent, to the Titus Canyon Formation of Connors et al. (1998).

The type locality for this unit is known from drilling in the Jolly Jane area. It consists of up to 50 metres of heterogeneous sediments. The sediments appear to have accumulated in isolated structural basins prior to and during the onset of volcanism. Conglomerate, sandstone, siltstone, shale and calcareous volcaniclastic sediments are typically siliceous and hematitic, and may be locally calcareous or carbonaceous. The thickness and composition of the Jolly Jane Formation is highly variable. It is interpreted to have been deposited on a Tertiary erosional unconformity of significant relief.

7.2.1.1.2.2 SAVAGE FORMATION - TSF

The Savage Formation consists of locally-sourced lava domes, flows, pyroclastics and associated intrusive rocks of generally dacitic composition. The Savage Formation is recognized in drillholes under south Savage Valley, Air Track Hill and Jolly Jane, where it overlies and intertongues with sediments of the Jolly Jane Formation. The Savage Formation may also include intercalated epiclastic intervals of re-worked dacite and locally carbonaceous sediments. The thickness of the Savage Formation varies greatly from 0-100 metres, possibly reflecting both fault-bounded basins and the areal distribution of individual domes, flows and associated pyroclastic or epiclastic aprons. The Savage Formation is correlative to the lower portion of the Trl unit as described in the Southern Bullfrog Hills by Eng et.al. (1996). The Savage Formation is locally mineralized in the Sierra Blanca and Jolly Jane areas.

7.2.1.1.2.3 NORTH BULLFROG INTRUSIVE SUITE - TNB

The North Bullfrog Intrusive Suite consists of plugs, domes, dikes, sills and flows of rhyolite to dacite composition that are recognized over much of the NBP. Rocks assigned to the intrusive suite have been found intruding Paleozoic sediments and volcanic units of the North Bullfrog Hills Volcanic Complex. A lithodeme classification has been created in order to deal with the ambiguity about the emplacement mechanism (intrusive or extrusive) and relative age of many of these bodies (Table 7.1). Plug or dome-like bodies of rhyolite are exposed at the south end of Savage Valley, the north flank of Sober-Up Peak, and at Jolly Jane. These apparent intrusive bodies are surrounded by pyroclastic rocks of the Savage or Pioneer Formations. Field relationships suggest that these bodies are intrusive into the pyroclastic rock of the Pioneer Formation. There does not appear to be a significant age difference between the Pioneer Formation and Tnb rhyolites, and for the most part they are geochemically indistinguishable.

There is one suite of rhyolite bodies that have no compositionally similar pyroclastic rocks. These rhyolites are relatively depleted in light rare earths such as cerium and lanthanum compared to the other rhyolites. They occur as intrusive plugs and flow-domes both above and below the Sierra Blanca Tuff in the Sierra Blanca area. These rhyolites are important mineralization host rocks, particularly in the northern parts of Sierra Blanca where they frequently host higher-grade gold mineralization. Their genetic association with the mineralization events in the North Bullfrog District has yet to be determined.

7.2.1.1.2.4 PIONEER FORMATION - TPF

The Pioneer Formation consists of a relatively monotonous sequence of lithic-lapilli tuffs. The tuffs show marked variations in clast size and composition ranging from coarse tuffaceous sedimentary breccias to sandy tuffaceous facies. The type locality for the Pioneer Formation is west of the Pioneer Mine. In the subsurface north of Sierra Blanca, the Pioneer Formation is mixed or interbedded with rhyolite bodies assigned to the North Bullfrog Intrusive Suite. The rhyolite bodies appear to be coeval lava flows intercalated with the pyroclastic deposits. Locally bedded epiclastic intervals have been observed throughout the unit. Near the upper contact, the lithic content increases significantly, grading into a coarse heterogeneous tuffaceous epiclastic sequence known as the Upper Epiclastic Member. The Upper Epiclastic Member forms a semi-continuous marker horizon below base of the Sierra Blanca Tuff.

The thickness of the Pioneer Formation varies from several hundred metres north of Sierra Blanca to just a few metres at the south end of Savage Valley. Divergence of compaction foliation directions between the Pioneer Formation and the Sierra Blanca Tuff at Sierra Blanca indicate that tilting and erosion of the Pioneer Formation took place prior to the eruption of the Sierra Blanca Tuff. The Pioneer Formation is widely mineralized but is generally lower grade than the overlying Sierra Blanca Tuff.

7.2.1.1.2.5 SIERRA BLANCA TUFF - TSB

The Sierra Blanca Tuff is a large cooling unit of rhyolitic ash flow tuff that occurs over much of the NBP. It is named for the exposures at Sierra Blanca and North Sierra Blanca ridges. This unit varies in thickness from 70 metres at Jolly Jane to 170 metres at North Sierra Blanca. The caldera source of the Sierra Blanca Tuff is unknown, but likely outside of the northern Bullfrog Hills. It may be the equivalent of the Upper Tuff of Sawtooth Mountain (Maldonado and Hausback, 1990) exposed in the southern Bullfrog Hills (see 7.2.1.2 Geochronology).

The Sierra Blanca Tuff has a distinct geochemical stratigraphy, but macroscopically is difficult to subdivide. There is a 5-15 metre thick distinctive shard-rich interval at the base of the unit in the Sierra Blanca area. The basal shard-rich interval is known as Tsb1, which serves as a marker for the bottom of the unit. Tsb1 commonly overlies an epiclastic interval assigned to the Upper Epiclastic Member of the Pioneer Formation. Above the shard-rich marker, the tuff is a relatively homogeneous densely welded crystal tuff with well-developed compaction foliation exhibited by flattened pumice fragments. Thickness variations are partly due to filling topography at the base, and an erosional unconformity at the top.

At Jolly Jane, there appears to be an interval of Savage Valley Dacite (lava flow or sill?) within the middle of the Sierra Blanca Tuff. While the Sierra Blanca Tuff appears to be a single cooling unit, there may have been enough time during the regional-scale eruptive cycle for a simultaneous local dacite eruption to have occurred. The result is a lense of Savage Valley Dacite within the Sierra Blanca Tuff.

The brittle nature of the densely welded Sierra Blanca tuff facilitated significant fracturing. The increased permeability from brittle fracturing likely played a significant role in focusing hydrothermal fluids through the Sierra Blanca Tuff. It is one of the more important hosts at NBP for both disseminated and vein style mineralization.

7.2.1.1.2.6 SAVAGE VALLEY DACITE - TD

The Savage Valley Dacite represents another sequence of locally-sourced volcanic rocks. The Lower Member is a rather heterogeneous and somewhat discontinuous sequence of rhyolitic flows, pyroclastics and epiclastic deposits, which grade upward into lavas of dacitic composition. The Lower Member locally includes a rhyolite flow breccia, which in some drillholes is of sufficient volume to be differentiated as a rhyolite flow of the North Bullfrog Intrusive Suite. The Upper Member is dominated by relatively homogenous fine porphyritic lava flows and lesser pyroclastic rocks of dacitic to andesitic composition. Where relatively unaltered the Savage Valley Dacite is strongly magnetic.

Two distinct compositions of dacite can be distinguished geochemically based on the zirconium/niobium ratio. These compositions are intercalated but no particular stratigraphic sequence has been defined. The temporal duration of the Savage Valley Dacite sequence is not clear. Locally the sequence appears to overlie the Sierra Blanca Tuff with relative conformity, but in other areas the dacite has been deposited on an attenuated thickness of Sierra Blanca Tuff or directly on the Pioneer Formation, indicating the removal of tens to hundreds of metres of Sierra Blanca stratigraphy. The Savage Valley Dacite is correlative to the Tr1g unit as described in the Southern Bullfrog Hills by Eng et.al. (1996). The Savage Valley Dacite is mineralized in the Jolly Jane and Sierra Blanca resource areas.

7.2.1.1.3 LITHIC RIDGE TUFF - TLR

The Lithic Ridge Tuff is a regional tuff unit that was only recently recognized unit at NBP. Previously thought to be the Tram Tuff of the Crater Flat Group, it occupies the appropriate regional stratigraphic position above the Savage Valley Dacite and below the Bullfrog Tuff. The Lithic Ridge Tuff consists of poorly to moderately welded, generally lithic-rich, crystal-bearing ash-flow tuff. Lithic content varies from <5 to 20%, and it is generally biotite-rich. It was originally described as “dacite tuff” and assigned to the Savage Valley Dacite. It has been differentiated in several drillholes in the YellowJacket area as overlying and locally interfingering with the Savage Valley Dacite.

7.2.1.1.4 CRATER FLAT GROUP - TC

The regionally extensive Crater Flat Group has been described in detail by Carr et al. (1986) and several members have been defined in the SWNVF. At the NBP, at least one these members, the Bullfrog Tuff, is exposed along the east sides of YellowJacket, Savage Valley, and Jolly Jane. The Bullfrog Tuff is moderately crystal rich, and generally densely welded, with the degree of welding decreasing in the middle-upper portions. An interval of bedded tuffaceous epiclastic rocks is locally present at the base of the Bullfrog Member. The Bullfrog Tuff has been dated at 13.25 Ma (Sawyer et al, 1994). The contact between the Bullfrog Tuff and underlying Lithic Ridge Tuff is well exposed along the east side of Savage Valley.

7.2.1.1.5 PAINTBRUSH GROUP - TP

In the Bullfrog Hills, the Paintbrush Group is comprised of Topopah Springs Tuff (12.8Ma) and the Tiva Canyon Tuff (12.7Ma) (Sawyer et al., 1994). The Paintbrush Group varies from 190 metres to >240 metres in thickness and has a number of locally developed facies defined by variations in welding and phenocryst content (Connors et al., 1998). The Paintbrush tuffs are typically reddish brown and are distinctly shard-rich and phenocryst-poor compared to other major ash flow sheets in the area.

Within the NBP, the Paintbrush Group exists primarily as large slide blocks (monolithic breccias) within the Rainbow Mountain Debris Flow Sequence. There is a large N-S-trending block of Paintbrush Group tuff on the east side of Jolly Jane that appears to be relatively intact suggesting it may be in place or has not moved very far. It is mapped as part of the debris flow sequence (Tdf_p). The Topopah Springs and Tiva Canyon subunits are not subdivided within the Project area. No significant mineralization has been found within the monolithic Paintbrush debris flow breccias to date. However, Paintbrush breccias are hydrothermally altered in a number of places at NBP and are considered potential host rocks.

7.2.1.1.6 TIMBER MOUNTAIN GROUP - TM

Regionally there are two large-volume ash flow sheets that make up the bulk of the Timber Mountain Group. These include the Ranier Mesa (Tmr) and Ammonia Tanks (Tma) Tuffs. The Timber Mountain tuffs are rather distinctive because of their large (2-3mm) and abundant (20%) phenocrysts of quartz and feldspar. The age of the Rainier Mesa tuff is 11.6Ma (Sawyer et al., 1994) and the age of the overlying Ammonia Tanks Tuff is 11.45Ma (Sawyer et al., 1994). The Timber Mountain Group also includes smaller volume rhyolitic tuffs and lava flows that are known as the Pre-Timber Mountain tuffs (Tprt) and lavas (Tprr) respectively.

In-situ bedrock exposures of the Timber Mountain Group are found only in the southern and eastern portions of the NBP area. Over much of the NBP, the Ranier Mesa and Ammonia Tanks tuffs occur only as large monolithic breccia bodies (slide blocks) within the Rainbow Mountain Debris Flow Sequence. Clasts of the Ranier Mesa and Ammonia Tanks tuffs are also a significant component of heterolithic portions of the Rainbow Mountain Debris Flow Sequence. The Timber Mountain

Group has been affected by the steam-heated alteration in the eastern part of the Project area and all sub-units have potential to host both disseminated and vein type mineralization at NBP.

7.2.1.1.7 RAINBOW MOUNTAIN SEQUENCE

The Rainbow Mountain Sequence consists of a complex group of sedimentary and volcanic deposits that record the onset of a major phase of tectonic activity in the area. The sequence includes in ascending order: sedimentary debris flow breccias, bedded volcaniclastic sediments, poorly-welded rhyolite tuffs and rhyolite lavas, and a cap of voluminous quartz latite lava flows. The sequence is generally subdivided into a lower debris flow sequence (Tdf), a middle tuff sequence (Trt) and an upper latite lava flow sequence (Trl). West of the Mayflower sediments and debris flow, breccias near the base of the Rainbow Mountain Sequence were tilted up to 30^{o} east before Rainbow Mountain Tuff (Trt2) was deposited. The Rainbow Mountain Tuff was subsequently tilted another 25^{o} east over most of the NBP. Connors et al. (1998) suggest that this period of intense activity began around 10.6Ma and ended before 9.4Ma.

7.2.1.1.7.1 RAINBOW MOUNTAIN DEBRIS FLOWS - TDF

The Rainbow Mountain Debris Flow Sequence is the most heterogeneous unit at NBP. It consists of intercalated sequences of heterolithic and monolithic sedimentary breccias and fluvial sediments representing Miocene alluvial fan deposits. Monolithic breccias of Miocene volcanic and Paleozoic sedimentary rocks are interpreted to be gravity slide blocks. Heterolithic sequences are locally bedded but generally poorly sorted, consisting of sand- to large boulder-size clasts of Miocene volcanic and Paleozoic sedimentary rocks. The debris flow breccia deposits are largely the result of the re-working of volcanic and basement sedimentary rocks via gravity sliding and alluvial fan development around fault-bounded basement structural highs. Relatively intact blocks of monolithic breccias are interpreted as landslide megabreccia deposits that were shed off local fault scarps. The volcanic debris is derived from many of the SWNVF units including the NBHVC, the Crater Flat Group, Paintbrush Group and Timber Mountain Group (Table 7.1, 7.2).

The debris flow sequence lies unconformably on an erosional surface (angular unconformity) cut on nearly all pre-Rainbow Mountain Sequence map units. The thickness of debris flow sequence exceeds 300 metres in the Mayflower area. Gold mineralization at Mayflower, Connection and Cat Hill is hosted in the Rainbow Mountain Debris Flow Sequence.

7.2.1.1.7.2 TUFFS AND LAVAS OF THE RAINBOW MOUNTAIN SEQUENCE – TRT AND TRR

Generally overlying and intercalating with the debris flow sequence are light-colored, poorly- to non-welded, pumiceous crystal- and lithic-rich tuffs. The Rainbow Mountain Tuff includes three separate units in ascending order: Trt, Trt2, and Trt3. The tuffs are intercalated with locally-sourced aphanitic flow-banded rhyolite plugs, domes and flows (Trr). The most volumetrically significant tuff sub-unit is known as Trt2, which overlies the debris flow sequence over much of the NBP. Trt2 is correlative to the Tr11 unit within the Rainbow Mountain Sequence in the southern Bullfrog Hills as described by Eng et.al. (1996). The thickness of Trt2 is up to 300 metres in the Mayflower-Pioneer area. The base of Trt2 is locally mineralized at Mayflower. Trt2 has been dated using Argon-argon (“Ar-Ar”) dating methods at 10.1 Ma (Connors et al, 1998).

7.2.1.1.7.3 DONOVAN MOUNTAIN LATITE - TL

The uppermost sub-unit of the Rainbow Mountain Sequence is the Donovan Mountain Latite. It consists of numerous lava flows and flow breccias of dark-colored latite and quartz latite. The latites are relatively unaltered, and occur primarily in the hanging wall (west) of the Donovan Mountain Fault. The unit is correlative to flows of similar composition that overlie the Rainbow Mountain Sequence in the southern Bullfrog Hills. Ar-Ar dates of between 10.0 and 10.7Ma are reported by Connors et al. (1998).

7.2.1.1.8 PUMICEOUS SEDIMENTS - TPS

Connors et al. (1998) describe the Pumiceous Sediments as “White, light-gray, greenish-gray, buff and orangish-buff, weakly indurated, tuffaceous sandstone and conglomerate, typically with fluvial bedding, with interbeds of reworked and air-fall tuff.” The beds may be well to moderately sorted, with abundant small pumice fragments and shards. It also contains abundant sub-rounded to angular grains of volcanic clasts. The unit intertongues with and overlies the Rainbow Mountain Debris Flow Sequence in the Eastern Steam-heated Zone. The thickness reflects varying paleo-topography, ranging from 0 to 40 metres.

7.2.1.1.9 GRAVELS OF SOBER UP GULCH - TGS

Gently dipping, ridge-forming terraces of older alluvial deposits are correlated to the Gravels of Sober-up Gulch. The unit consists of semi-consolidated, heterolithic boulder gravels of probable late Miocene age. The gravels unconformably overlie many of the older Miocene units throughout the NBH. Tgs is similar to Tdf, but contains abundant conspicuous boulders of Donovan Mountain Latite. Tgs typically forms a gently east-dipping (<5^{o}) pediment surface. The pediment surface has been deeply incised by Quaternary erosion, resulting in a series of gently-dipping terraces along the eastern side of the NBP. Such gravel terraces overlap and conceal steam-heated alteration at the Eastern Steam-heated Zone. The gravel unit is not known to be mineralized, but contains clasts of altered and mineralized rock.

7.2.1.1.10 QUATERNARY COVER - QC

Quaternary Cover includes unconsolidated Quaternary deposits including alluvium, colluvium, talus and mine dump material.

7.2.1.2 GEOCHRONOLOGY

Most of the major units at the NBP are separated by significant erosional unconformities, which together with pervasive alteration have confounded local and regional stratigraphic correlations. For this reason a series of samples were submitted for geochronological studies. Laser ablation inductively coupled plasma (“ICP”) analysis on zircons was used to determine the eruptive ages of the different volcanic units and Ar-Ar dating on adularia was used to date the vein mineralization.

7.2.1.2.1 ZIRCON DATING

Samples were submitted for analysis to two different laboratories; Apatite to Zircon, Inc. (“AtoZ”) and Victor Valencia. Duplicate samples were included to confirm the analytical precision of the dates (Table 7.2). In general the match between the labs is reasonable, however, in many instances the dates are substantially older with differences far exceeding the analytical precision (Table 7.2). The dates of Victor Valencia match the published Ar-Ar ages for the Rainbow Mountain Tuff (Trt2), the Paintbrush Tuff and the Bullfrog Tuff, while the AtoZ dates of the Rainbow Mountain (Trt2) and the Lithic Ridge tuffs are almost 1Ma older than the published ages. Similarly, the Apatite to Zircon age on the duplicate rhyolite from Sober-up Peak is also approximately 1Ma older than the Valencia date (Table 7.2). For this reason it appears that the oldest dates from A to Z may be too old.

Table 7.2 Summary of Zircon Dates from North Bullfrog Hills Volcanic Complex.

	Age (Ma)	2s	Locality	Description	Lab	Lab ID	Number of Dates
Trt2	10.5	0.1	Mayflower Mine	Rainbow Mountain Tuff	Valencia	115904	27
Trt2	11.4	0.2	Mayflower Mine	Rainbow Mountain Tuff	AtoZ	1335-003	26
Tp	12.7	0.2	Jolly Jane	Paintbrush Tuff	Valencia	115923	20
Tcb	13.3	0.2	Ladd Mountain	Crater Flat Tuff, Bullfrog Member	AtoZ	1335-001	25
Tcb	13.4	0.2	East Savage Valley	Crater Flat Tuff, Bullfrog Member	Valencia	115902	35
Tcb	13.5	0.2	Ladd Mountain	Crater Flat Tuff, Bullfrog Member	Valencia	115906	47
Tcb	13.5	0.2	Ladd Mountain	Crater Flat Tuff, Bullfrog Member	Valencia	115907	29
Tcb	13.5	0.2	Jolly Jane	Crater Flat Tuff, Bullfrog Member	Valencia	115924	34
Tct	13.7	0.2	East Savage Valley	Crater Flat Tuff, Tram Member	Valencia	115901	19
Tct	13.8	0.2	YellowJacket	Crater Flat Tuff, Tram member	Valencia	M610285A	13
Tct	14.3	0.2	YellowJacket	Crater Flat Tuff, Tram Member	AtoZ	1293-06	28
Td2	14.4	0.2	Jolly Jane	Savage Valley Dacite	AtoZ	1293-10	21
Td2	15.6	0.4	YellowJacket	Savage Valley Dacite	AtoZ	1293-01	8
Td1	14.2	0.3	Air Track Hill	Savage Valley Felsic Facies	Valencia	115908	33
Td1	14.8	0.2	YellowJacket	Savage Valley Felsic Facies	Valencia	115905	22
Td1	15	0.3	YellowJacket	Savage Valley Felsic Facies	AtoZ	1293-02	28
Trl	14.9	0.2	Sawtooth Mtn	Sawtooth Mtn Tuff, Upper Unit	AtoZ	1335-005	26
Tsb	14.4	0.2	YellowJacket	Sierra Blanca Tuff	Valencia	P346369	30
Tsb	14.5	0.2	East Jolly Jane	Sierra Blanca Tuff	AtoZ	1293-09	27
Tsb	14.7	0.3	Jolly Jane	Sierra Blanca Tuff	Valencia	115925	34
Tsb	15	0.2	YellowJacket	Sierra Blanca Tuff	AtoZ	1293-07	28
Tsb	15.1	0.2	Pioneer	Sierra Blanca Tuff	AtoZ	1335-002	29
Tpf	14.5	0.2	YellowJacket	Pioneer Formation	AtoZ	1293-05	27
Tpf	14.6	0.2	YellowJacket	Pioneer Formation	AtoZ	1293-08	28
Tnb	14.3	0.3	YellowJacket	Rhyolite - spherulitic	Valencia	NB171608	32
Tnb	14.5	0.2	YellowJacket	Rhyolite - flow banded	Valencia	P346202	20
Tnb	14.7	0.2	Radio Tower Hill	Rhyolite - flow banded	Valencia	115903	26

	Age (Ma)	2s	Locality	Description	Lab	Lab ID	Number of Dates
Tnb	14.7	0.2	YellowJacket	Rhyolite - spherulitic	Valencia	P346250	26
Tnb	14.8	0.2	YellowJacket	Rhyolite - flow banded	AtoZ	1293-04	28
Tnb	15.3	0.3	Gold Pit	Dacite Porphyry in Cambrian Basement	Valencia	P347979	28
Tnb	15.8	0.3	Jolly Jane	Pre-Pioneer Formation Dacite	AtoZ	1293-12	24
Tnb	15.9	0.3	Radio Tower Hill	Rhyolite - flow banded	AtoZ	1335-004	34
Tnb	16.1	0.3	Savage Valley	Pre-Pioneer Formation Dacite	AtoZ	1293-11	26
	1599.5	20.7	YellowJacket	Basement Xenocrysts in Dacite	AtoZ	1293-03	3

The zircon ages dates confirm the age difference between rocks of the NBHVC and the Bullfrog Tuff, and indicate that volcanism in the NBHVC extended from around 15Ma to 14Ma (Table 7.2). The zircon dates also appear to confirm the proposed correlation between the Sierra Blanca Tuff and the Upper Tuff of Sawtooth Mountain (Table 7.2).

It is important to note that, prior to obtaining the zircon data, the Sierra Blanca Tuff was correlated with the Bullfrog Tuff of the Crater Flat Group. This error in stratigraphic correlation had structural implications that have now been corrected.

7.2.1.2.2 AR-AR DATING

A suite of eight adularia samples from the vein mineralization at YellowJacket and Mayflower were submitted to the University of Alaska, Fairbanks for Ar-Ar dating (Benowitz and Layer, 2013). Only four of the samples returned statistically valid ages. These came from four different YellowJacket drillholes. These age dates tightly constrain the age of mineralization at YellowJacket to between 11.7-11.2Ma (Table 7.3). The new age dates for YellowJacket vein mineralization confirm an earlier 11.3Ma date published by Connors et al. (1998). Connors et al. (1998) also published adularia dates of 11.0Ma at the East Savage Vein (Figure 7.1) and two ages of 10.0Ma and 9.9Ma from the Mayflower Mine. The Mayflower deposit is the same age as the Bullfrog Vein deposit in the southern Bullfrog Hills.

In addition, two samples of Alunite were submitted to the University of Nevada, Las Vegas. One sample of alunite from YellowJacket drill core had too much atmospheric argon to be dated accurately. Another sample of coarse alunite collected from the Vinegaroon target area of the Eastern Steam-heated Zone returned a good quality age of 9.5Ma (Table 7.3). This age is similar to the adularia age-dates at the Mayflower and Bullfrog mines, and also similar to the 10.2 Ma age of alunite obtained from the Bailey's Hot Springs area in the southwest corner of the NBP (Weiss, et al., 1994). The alunite age dates highlight the potential for the discovery of new Bullfrog/Mayflower-age high-grade vein systems under the extensive 14 square kilometres Eastern Steam-heated Zone.

Table 7.3 Adularia and Alunite Ar-Ar Age Determinations. Adularia Samples Are All from the YellowJacket Zone. The Alunite Sample Is from the Eastern Steam-Heated Zone North of Alunite Hill.

HoleID	Sample	Mineral	Integrated Age (Ma)	Plateau Age (Ma)	Plateau Information	Isochron Age (Ma)	% Atmospheric ^{40}Ar	Lab
NB-12-127	M610395	Adularia	11.2 ± 0.1	11.2 ± 0.1	5 of 7 fractions 98.4% ^{39}Ar release MSWD = 1.09	__	15.8	University of Alaska Fairbanks
NB-12-139	M612038	Adularia	11.6 ± 0.1	11.6 ± 0.2	4 of 7 fractions 99.1% ^{39}Ar release MSWD = 2.43	__	13.5	University of Alaska Fairbanks
NB-12-126b	M610140	Adularia	15.5 ± 2.1	11.7 ± 0.4	4 of 7 fractions 51.3% ^{39}Ar release MSWD = 1.21	__	93	University of Alaska Fairbanks
NB-12-138	M611584	Adularia	11.7 ± 0.4	11.7 ± 0.4	6 of 7 fractions 97.6% ^{39}Ar release MSWD = 0.51	11.4 ± 0.4	42.7	University of Alaska Fairbanks
Alunite Hill	Alun SW107	Alunite	9.73 ± 0.5	9.52± 0.5	10 of 14 fractions 96% ^{39}Ar release	–	–	University of Nevada Las Vegas

7.2.1.3 REGIONAL CORRELATION

The geochronological studies together with the refined stratigraphy of the NBP provide important information on the geological setting of the district. The first and most important conclusion is that with an age of 15-14Ma the NBHVC correlates with some of the oldest volcanics in the SWNVF (Sawyer et al., 1994), as well as the Tr1 time-stratigraphic position of Eng et.al. (1996). These rocks have experienced several significant periods of tectonic reorganization in the Bullfrog Hills extensional domain. Sawyer et al. (1994) have identified a major period of extension between 13Ma and 12Ma culminating with the eruption of the Timber Mountain Group ash-flows between 11.6 and 11.45 Ma. These events are coincident with the age of YellowJacket vein mineralization. Connors, et al. (1998) postulate a second major period of extension occurred between 11.4Ma and 9.4Ma which resulted in major block rotation, rapid erosion and the deposition of the Rainbow Mountain Debris Flow Sequence between 10.6Ma and 10.0Ma. The 9.9Ma age of Mayflower mineralization and the 9.5Ma age of the Eastern Steam-heated Zone coincide with the waning of this tectonic activity. Extension appears to have ceased by 9.4Ma (Connors, et al., 1998).

7.2.2 STRUCTURE

Both pre-Tertiary and Miocene rocks have been subjected to large-scale, W- to WNW-directed, syn-volcanic and syn-mineral extension between 16-9.4 Ma. Such extension is largely exhibited by down-to the-northwest normal faulting and east-tilting of stratigraphy. It is important to recognize that this extension may not necessarily have been continuous, but may have comprised two separate periods of more intense extensional fault activity. Both major extension events described above have affected the rocks at the NBP. Figure 7.1 is a geologic map showing the mineralized target areas and the major structures at NBP.

Figure 7.1 Geologic map of the NBP showing target areas, resource outlines and property outline. See Figure 7.2 for Map Unit Explanation

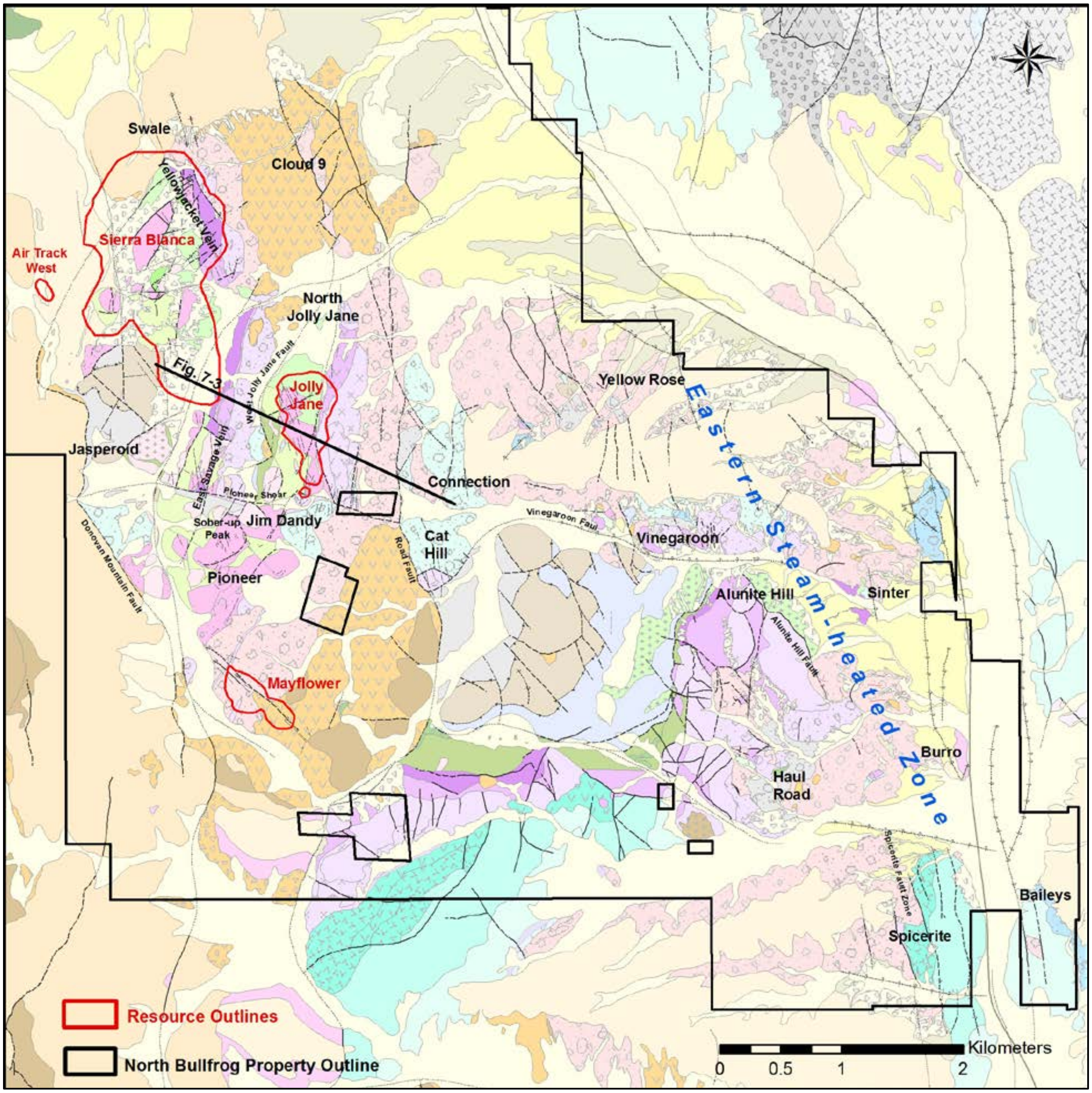


Figure 7.2 Map Units Legend (Figure 7.1)

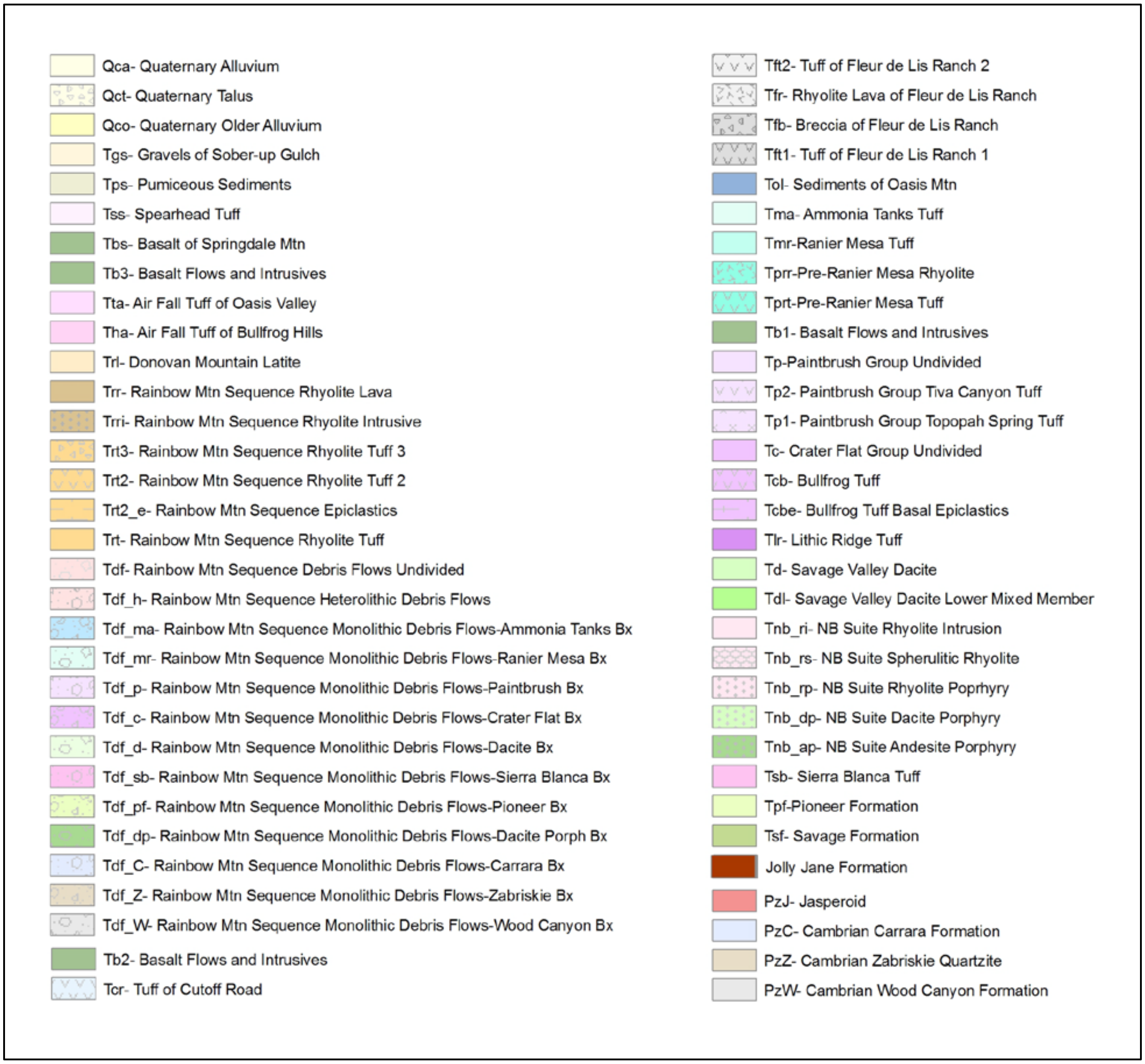
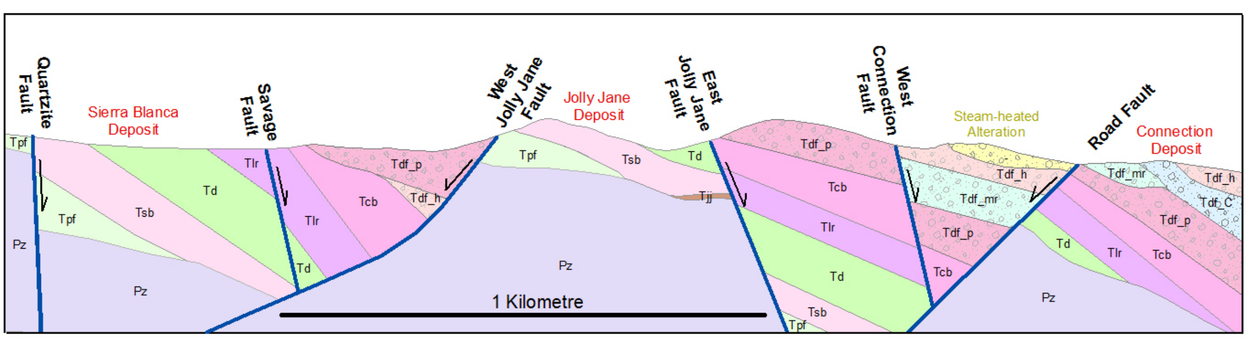


Figure 7.3 Geologic Cross Section from Savage Valley to Connection Illustrating the overall structural style of the NBP. Section Location is shown on Figure 7.1



Extension at NBP was accommodated by the Bullfrog Hills Fault System (BHFS). At NBP, the BHFS consist of two basic fault types: 1) NNW- to NNE-trending, moderately to steeply west-dipping, down-to-the-west normal faults (i.e. Road, West Jolly Jane, Donovan Mountain, and Spicerite faults); and 2) steeply east-dipping, down-to-the-east, antithetic faults (i.e. Liberator, East Jolly Jane, Quartzite and West Connection faults). The large displacement NNE- to NNW-trending down-to-the-west faults are interpreted to have listric shapes at depth similar to the MP fault, which hosts the Bullfrog Vein at the Bullfrog Mine. These faults are interpreted to sole into the Southern Bullfrog Hills Fault (detachment) at depth under the

NBP. Steeply east-dipping, down-to-the-east faults commonly occur in the hanging walls of the large displacement down-to-the-west faults, and are interpreted to be truncated at depth by the down-to-the-west faults.

Four major splays of the BHFS cross the NBP including: the Donovan Mountain Fault, the West Jolly Jane Fault, the Road Fault and the Spicerite fault (Figure 7.1). These are generally northerly striking, west-dipping, down-to-the-west, normal faults with apparent dip-slip displacements of ~600 to >1000 metres (Figure 7.3). The Road fault is considered the northern continuation of the Contact fault from the Bullfrog mine area. The Contact Fault comprises a mineral-bounding post-mineral structure that truncates the Montgomery-Shoshone deposit on the north side. The Contact fault also hosts low-grade mineralization under Rhyolite Valley in the southern Bullfrog Hills.

Some of the oldest faults at the NBP are probably represented by the Liberator, East Jolly Jane and Quartzite Faults which have major down-to-the-east movements. The Liberator and East Jolly Jane faults appear to truncate the eastern sides of the YellowJacket and Jolly Jane deposits respectively (Figure 7.1, 7.3). Evidence for an older age on these structures is the fact that the Bullfrog Tuff is only preserved on the downthrown side of these faults. The Bullfrog Tuff is in turn overlain by relatively flat-dipping debris flow sediments. It seems likely that these down-to-the-east faults developed during the 13-12Ma deformation event just after the deposition if the Bullfrog Tuff. At Jolly Jane, the Bullfrog Tuff is intensely altered in the hanging-wall of the East Jolly Jane Fault. At YellowJacket, the Liberator Fault was definitively mineralized at 11.6Ma. These observations suggest that these major faults were present during the older mineralization event at North Bullfrog and play an important role in the process of mineralization.

In the NBH, differential movement between the main strands of the BHFS was accommodated by cross faults, the most notable of which is the Pioneer Shear (Figure 7.1). The Pioneer shear is a poorly understood E-W-trending structural zone that facilitated the block rotation in the hanging-wall of the Road Fault. This rotation allowed a basin to form with the accumulation of several hundred metres of debris flow sediments in the Mayflower area prior to the eruption of the Rainbow Mountain Tuff (Trt2). The Vinegaroon Fault may represent the continuation of the Pioneer Shear to the east of the Road Fault (Figure 7.1)

Block rotation during the second major period of extension is well recorded just west of Mayflower. The debris flow sediments at the base of the Rainbow Mountain Sequence dip up to 55^o to the east. The overlying Trt2 tuff dips only 20-30^o. There was 25-30^o of block rotation in a relatively short amount of geologic time while the Mayflower basin was filling with debris flow sediments. Geopetal sedimentary structures in hydrothermal breccias at Mayflower have dips of less than five degrees, indicating that rotation had largely ceased by the time of mineralization at 10Ma.

With the exception of the Gravels of Sober-up Gulch, all of the stratigraphy at the NBP dips to the east at angles between 10^o and >60^o. The amount of tilting varies significantly from fault block to fault block indicating quite complex block rotation. The steepest dips observed are found in the hanging-wall of the Road Fault at the Pioneer Mine, where the Sierra Blanca Tuff compaction foliation is near vertical and locally over-turned. Similarly, in the hanging-wall of the West Jolly Jane Fault, the Lithic Ridge and Bullfrog tuffs dip 55-65^o to the east. These patterns suggest that the entire NBP area has been variably affected by block rotation caused largely by the large-displacement down-to the-west normal faults.

Within the NBH there are many faults with relatively minor displacements, the ages of which are difficult to constrain. The fault pattern at Sierra Blanca is an example of the small scale faulting that has affected the blocks between the larger faults (Figure 7.8, 7.9, 7.10 and 7.11). With the onset of major listric normal fault extension during the 11.4-10Ma event, any older faults riding in hanging-walls would be rotated to the east. This means that early east-dipping faults have rotated and steepened, and early west-dipping faults would have rotated and flattened. An example if this is the steeply west-dipping NE40 fault at Sierra Blanca. The NE40 fault exhibits apparent reverse motion at present, probably as a result of eastward rotation of what was a formerly east-dipping normal fault (Figure 7.10).

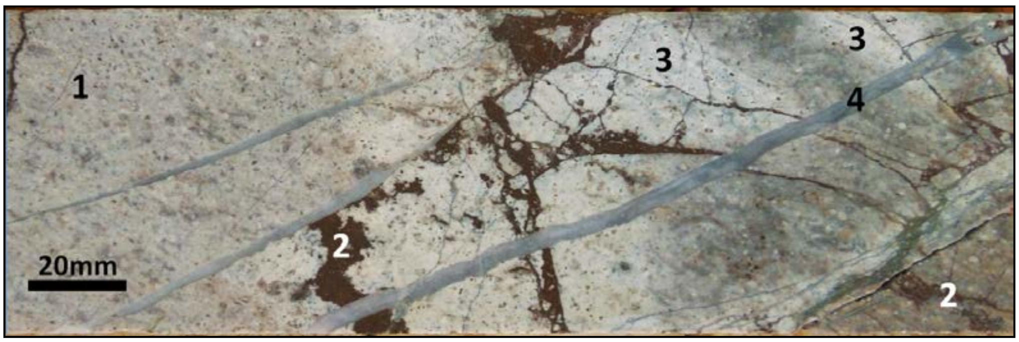
7.2.3 MINERALIZING EVENTS

All of the mineralizing events known to date at the NBP can be classified as low-sulphidation epithermal mineralization. Two general styles of mineralization are present at NBP: 1) pervasive alteration-style disseminated mineralization; and 2) structurally controlled vein, stockwork and proximal disseminated mineralization. There are at least three distinct periods of mineralization present at the NBP: 1) pre-11.6Ma alteration-style disseminated (Sierra Blanca and Jolly Jane), 2) 11.6-11.2Ma structurally-controlled vein and alteration-style (YellowJacket); and 3) 10Ma vein and structurally-controlled vein and alteration-style disseminated (Mayflower).

Based on cross-cutting relationships, the widespread quartz-adularia disseminated mineralization at Jolly Jane and Sierra Blanca predates the 11.6Ma YellowJacket vein mineralization by an unknown amount of time. There is no age date or cross cutting relationship that constrains the early disseminated mineralization, other than it is hosted in ~15-14Ma rocks and it predates the 11.6Ma YellowJacket Vein system. An essentially barren jasper (quartz-hematite) vein event overprints the quartz-adularia disseminated mineralization. The jasper vein event was subsequently overprinted by the development of the high-grade YellowJacket quartz vein and associated stockwork zone (Figure 7.4).

Early alteration-style disseminated mineralization and YellowJacket vein style mineralization will be discussed as "Older" mineralization. The 10Ma mineralization at Mayflower and Pioneer will be discussed as "Younger" mineralization. The large area of opal-kaolinite-alunite alteration at the Eastern Steam-heated Zone is temporally associated with the 10Ma Mayflower (and main Bullfrog) mineralization.

Figure 7.4 Cross-cutting relationships between older mineralization styles at Sierra Blanca. 1-Early pervasive quartz-adularia-pyrite alteration with gold related to sulphidation of iron; 2-barren Jasper Veins filling brittle fractures in adularized tuff; 3-white Illite-adularia overprint with increase in gold; 4-grey translucent stockwork veinlets with high-grade gold



7.2.3.1 OLDER MINERALIZATION STYLES

Based on overprinting relationships observed in core (Figure 7.4), it is apparent that multiple events have contributed to the gold endowment that developed before 11.2Ma, the youngest age date obtained in the YellowJacket Vein Zone.

7.2.3.1.1 PERVASIVE ALTERATION-STYLE MINERALIZATION

The most widespread mineralization at the NBP is associated with pervasive quartz-adularia alteration and pyritization of iron minerals in the volcanic host rocks. The grade of this alteration-mineralization reflects the intensity of quartz-adularia or illite-adularia alteration, as well as the original iron content of the host rocks. Gold grade in the Pioneer Formation and Sierra Blanca Tuff, which average 1% iron, is on the order of 200-400 parts per billion ("ppb") gold. In contrast, grades in the Savage Valley Dacite and other less felsic units, which average 2-5% iron, may reach several thousand ppb gold. Pervasive silicate alteration associated with the disseminated pyrite mineralization generally shows a progressive change from illite-smectite, to illite-adularia, and to quartz-adularia+illite as the degree of mineralization increases.

The distribution of pervasive alteration-style mineralization appears to reflect a combination of rock matrix permeability and structural permeability. Although both the Sierra Blanca Tuff and the Pioneer Formation are pervasively altered, it appears that the brittle nature of the densely-welded Sierra Blanca Tuff enhanced the permeability of that unit relative to the less welded tuffs of the Pioneer Formation. In contrast, alteration in the underlying Savage Formation and the overlying Savage Valley Dacite appear to be controlled almost exclusively by fault-related permeability.

Pervasive alteration-style mineralization has been observed locally in the Paleozoic siliciclastic sediments but they are not generally well-mineralized. One possible explanation is that in many cases the iron in these marine sediments already formed pyrite before the mineralization event began. Jasperoid is developed in the Carrara Formation limestone just below the Tertiary unconformity in many drillholes at both Jolly Jane and Savage Valley. The jasperoid is typically weakly anomalous in Au, but locally yields 200-400 ppb values. The jasperoid target area (Figure 7.1, see Section 9) consists of a small bedding-parallel replacement jasperoid body with anomalous gold at the surface. Historic drillhole RDH-767 intercepted gold values up to 1.1 g/t.

The normal silver to gold ratio of the alteration-style mineralization is approximately 1:1. However, in some instances it may be three or four times higher. This indicates that there is more than one alteration-style mineralization event.

7.2.3.1.2 STRUCTURALLY CONTROLLED MINERALIZATION

Structurally controlled mineralization consists of two distinct styles which may represent two periods of mineralization. The first is a structurally-controlled alteration-style mineralization and the second is quartz vein-style mineralization.

The onset of structurally-controlled mineralization is marked by the formation of a distinctive suite of essentially barren jasper (quartz-hematite) veins, which crosscut the older pervasive quartz-adularia disseminated mineralization (Figure 7.4). After the formation of the jasper veins, it appears that movement on major fault structures (e.g. Liberator, YellowJacket, NE20, NE30, NW10 faults) focused mineralizing fluids resulting in a second stage of more structurally-controlled sulphidation (Figure 7.4). This structurally-controlled mineralization can be distinguished from the earlier alteration-style event by a higher As/Au ratio, and is generally associated with a white to light brown illite or illite-adularia alteration overprint. In addition, this stage of mineralization appears to be higher grade than the earlier pervasive mineralization. Structurally-controlled alteration-style mineralization frequently yields grades >1 g/t, and sometimes >5 g/t if the fluids encounter the higher iron contents of dacitic lithologies. Structurally-controlled alteration-style mineralization is clearly crosscut by high-grade low sulphidation quartz veins.

Fault and fracture-controlled quartz vein mineralization is found at the YellowJacket deposit and along the crest of Sierra Blanca ridge (Figure 7.1). A variety of textures typical of low sulphidation epithermal veins have been observed in these areas. Bladed quartz pseudomorphs after calcite and milky chalcedonic quartz with distinct but fuzzy banding are found at YellowJacket and are widespread around the Sierra Blanca area. Veins with these textures may be barren or have only low-grade gold mineralization. Occasionally there are some intervals with beautifully banded crustiform textures that may run several grams of gold per tonne.

The most common and best mineralized quartz veins at YellowJacket are grey translucent stockwork veins with little distinctive internal structure (Figure 7.4). Fine particles of native gold can often be observed in this quartz. Occasionally there may be faint banding with gold, acanthite or pyrite along individual bands. Where the grey translucent quartz veins have formed in quartz-adularia-altered rocks, there is generally little wall rock alteration. However, illite alteration overprinting quartz-adularia is often observed in the general vicinity of grey translucent stockwork veining. The illite overprint can locally be quite intense creating selvages around structures and destroying all the feldspar in the rocks.

The primary minerals associated with the vein-style mineralization are gold, electrum, acanthite (Ag2S) and pyrite. Petrographic studies have also documented pyrargyrite (Ag3SbS3), stromeyerite (AgCuS), proustite (Ag3AsS3), chalcopyrite (CuFeS2) and covellite (CuS). Sphalerite has been observed as a late cavity infill. In general, the silver to gold ratio in the vein mineralization is greater than six to one and locally can be hundreds to one.

7.2.3.2 YOUNGER MINERALIZATION STYLES

The age of the younger 10Ma mineralization can be constrained by the fact that the mineralization is hosted in the Rainbow Mountain Debris Flow Sequence, which had not yet been deposited at 11.2Ma. Younger mineralization occurs as similar styles to older mineralization.

7.2.3.2.1 QUARTZ-ADULARIA ALTERATION

At Mayflower, the debris flow sediments and the Trt2 tuff have been affected by quartz-adularia alteration developed around a central zone of faulting. The quartz-adularia alteration is directly associated with disseminated gold mineralization. Although the deposit is completely oxidized at present, it appears that the original mineralizing process was sulphidation. This process is similar to, but younger than the quartz-adularia-pyrite mineralization at Sierra Blanca and Jolly Jane.

The distribution of quartz-adularia alteration appears to reflect a combination of structural and stratigraphic permeability. In the debris flow sediments, the alteration spreads out for tens of metres around the central structural zone, whereas in the Trt2 tuff the pervasive alteration is restricted to just a few metres around the structures. Quartz-adularia alteration was a very important ground preparation for later vein mineralization because it made the rock brittle, which facilitated fracturing and open space formation during later faulting. The intensity of quartz-adularia alteration decreases relatively quickly distal to the mineralizing structures, and grades into a smectite-dominated assemblage. Zeolite alteration is common in the Trt2 tuff outside of the quartz-adularia and smectite-dominated assemblages. The Mayflower deposit is almost completely oxidized so the sulphide mineralogy of the original alteration is not known. The concentrations of arsenic and other metals are quite low.

7.2.3.2.2 QUARTZ VEINING – SILIFICATION

At Mayflower, quartz veining is only known in the southeastern part of the deposit from the historical mine dumps around the Mayflower Shaft. The quartz can be white, pink and grey translucent. It is frequently banded and may have very fine acicular textures indicating replacement of earlier adularia. Bladed pseudomorphs of quartz after calcite have not been observed at Mayflower. Microscopic studies have found disseminated native gold in silicified fault breccia at Mayflower. Argentite was also observed in thin section from Mayflower.

7.2.3.2.3 CALCITE VEINING

Some of the gold at Mayflower is associated with grey manganiferous calcite veining. Occasionally this calcite can be banded but it is generally coarse-grained and either lines cavities or fills them completely. Observations from both macroscopic and microscopic studies at Mayflower show visible gold in the calcite bands rather than in the quartz. Gold grains are often found at the calcite-wallrock contact. In the David Adit at Mayflower, the only cavity infill phase is coarse euhedral calcite. Although the calcite is not always mineralized, historical sampling combined with underground observations shows that the highest grade areas have calcite cavity linings. In core holes that have intersected high-grade mineralization at both Mayflower and Pioneer, the high-grade material is typically quartz-free and rich in iron-oxide and clay, which probably represents the carbonate weathering residue. The gold-calcite association at Mayflower is very different from YellowJacket where calcite is generally not associated with high-grade mineralization. Another difference is the Ag:Au ratio: at Mayflower it is generally <0.5:1, and at YellowJacket it is generally >5:1.

7.2.3.2.4 STEAM-HEATED ALTERATION

Steam-heated alteration, characterized by low-temperature silica replacement, kaolinite-alunite alteration and alunite veining, is the result of wall rocks reacting with steam being generated by hot acidic waters at depth. Steam-heated alteration has been identified on the NBP in a number of different places, most notably on eastern part of the Project area, which is referred to as the “Eastern Steam-heated Zone”. Other locations of steam-heated alteration occur in several places along the Road Fault, particularly in the vicinity of the Connection and Cat Hill target areas (Figure 7.1).

In modern geothermal systems, steam-heated alteration typically develops above a groundwater table, which in turn lies above a boiling zone at depth. If the elevation of a paleo-groundwater table is known, then the depth to boiling can be estimated. As boiling is the dominant cause of gold precipitation in low-sulphidation epithermal systems, estimates can be made of the depth to the potentially productive boiling zone. Based on drilling in 2015 in the Spicerite target in the Eastern Steam-heated Zone, the target depth is >300 metres below the current topographic surface.

Anomalous gold has been detected in rocks affected by steam-heated alteration at or near the currently mapped paleo-groundwater water table at the following target areas: Alunite Hill, Vinegaroon, Cat Hill and Yellow Rose (Figure 7.1). There is a reasonably high probability that this alteration may be associated with a mineralized Bullfrog-Mayflower age (~10Ma) vein system at depth.

7.3 TARGET AREAS

Corvus and previous operators exploring in the northern Bullfrog Hills have defined targets in areas of historic mines or prospects, as well as targets associated with high level epithermal alteration. The target areas that are discussed in detail within Section 7 of this Technical Report include Jolly Jane, Sierra Blanca, YellowJacket, Air Track West, Mayflower, Pioneer and Connection (Figure 7.1).

Most of the targets associated with historic prospects in the western part of the district have been drilled to a significant extent. In 2007-2008, ITH/Redstar (NBPJV) drilled several holes at Air Track Hill and Mayflower, with two holes each at Sierra Blanca, Pioneer and Savage Valley. Between 2010 and 2017, Corvus has drilled numerous holes at Sierra Blanca, YellowJacket, Jolly Jane, Mayflower and Connection, leading to the Mineral Resource estimates presented in this document.

7.3.1 OLDER MINERALIZATION

7.3.1.1 JOLLY JANE

Jolly Jane is located in the middle of the NBP area, and virtually all of the geological elements common to the NBP are found there (Figure 7.1, Figure 7.5) The pseudo-stratabound nature of disseminated mineralization within the Sierra Blanca Tuff at Jolly Jane was recognized by Barrick Gold in 1996, but was not of sufficient grade to be pursued at that time. This style of mineralization was the main focus of Corvus’ drilling program in 2010-11, when twenty-seven holes totaling 4,128.5 metres (13,545 feet.) were drilled at Jolly Jane. In 2012 and 2013, 34 additional holes were drilled at Jolly Jane totaling 4,234 metres (13,891 feet). These included three PQ3 core holes for metallurgical samples, 29 infill reverse circulation drill (“RC”) holes on the ZuZu patented claim, and two step-out RC holes to the north of the Mineral Resource area (Figure 7.5). Eight surface rock chip/channel lines totaling 384 metres (1,260 feet.) have been sampled at 5 feet intervals to mimic drillholes. The results of the 2010-13 work, along with drill data from Barrick, are the basis for the Indicated and Inferred Mineral Resources presented in this document.

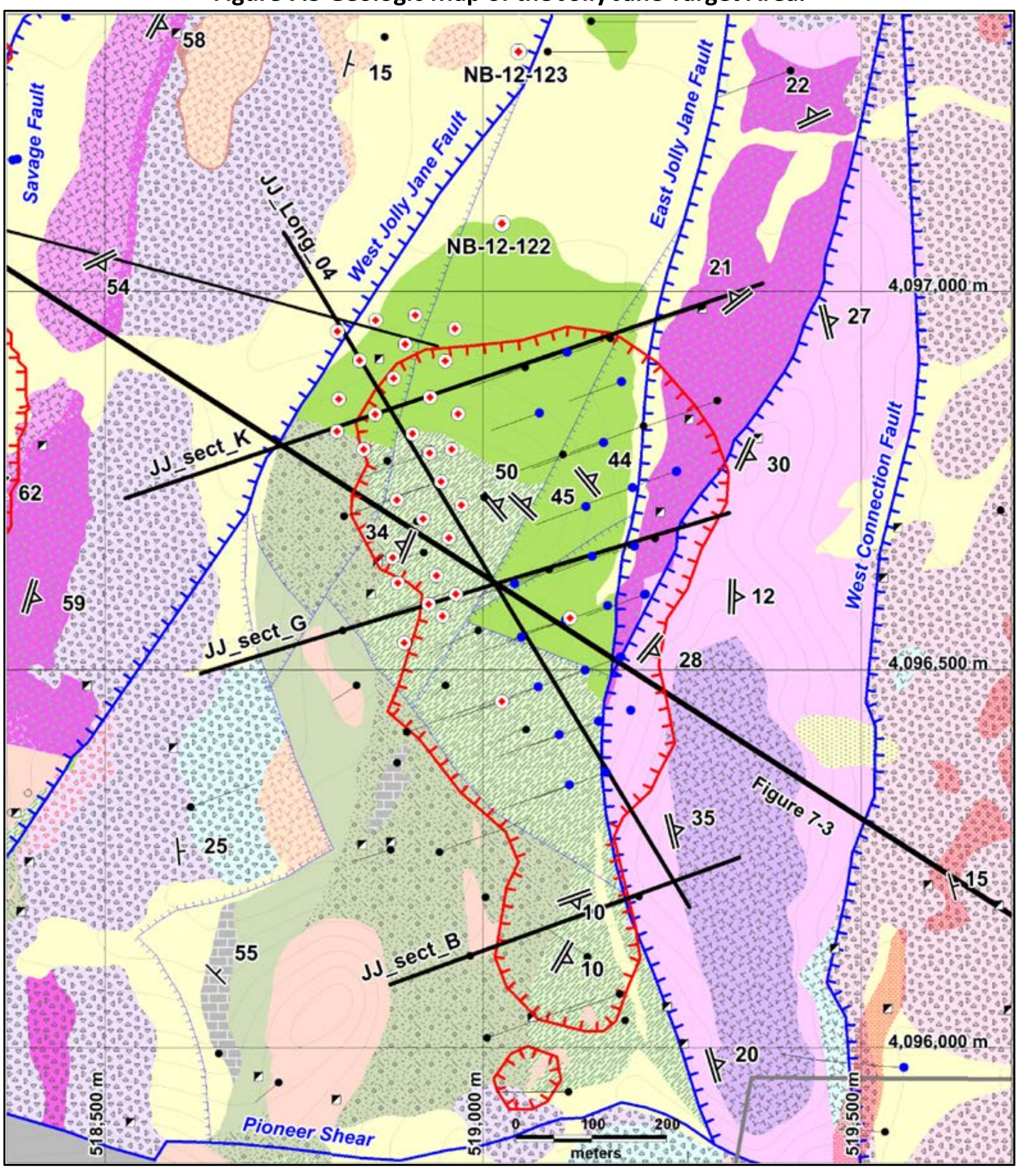
The stratigraphy of the Jolly Jane area includes the following major units in ascending stratigraphic order: 1) the basement Cambrian Carrara Formation; 2) the Jolly Jane Formation; 3) the Savage Formation; 4) the Pioneer Formation; 5) the rhyolite bodies of the North Bullfrog Intrusive Suite; 6) the Sierra Blanca Tuff; 7) the Savage Valley Dacite; 8) the Lithic Ridge Tuff, 9) the Bullfrog Tuff; and 10) the monolithic debris flow breccias of Paintbrush Tuff.

The Paleozoic Carrara Formation consists of primarily of calcareous shale, argillaceous limestone and micritic limestone. Jasperoid is common at or near the basement unconformity in many drillholes. It is not clear whether the jasperoid is 100% hydrothermal in nature, or in-part a cherty interval in the Carrara Formation near the unconformity. However, the jasperoid occurs in proximity to gold mineralization in the overlying Sierra Blanca Tuff throughout the deposit area. The jasperoid is typically anomalous in gold (0.020-0.100 parts per million ("ppm")), locally up to 0.372 ppm. The interpretation is that the jasperoid is a part of the mineralizing system, representing structurally controlled mineralization in the basement.

The Jolly Jane Formation was deposited unconformably on Cambrian basement, and includes a rather heterogeneous sequence of: 1) siliceous hematitic conglomerate, sandstone and siltstone; 2) calcareous and variably carbonaceous lithic-volcanoclastic sediments; and 3) locally intercalated monolithic debris flow breccias of the Carrara Fm. The conglomeratic intervals are largely Paleozoic-clast dominated, and generally occur directly along the basement unconformity, grading upward into finer pebbly sandstone and red siltstone. The volcanoclastic sedimentary rocks overlie and intercalate with the hematite-rich sediments, and are largely re-worked dacite. The thickness of the Jolly Jane unit varies dramatically from 0-50 metres between drillholes, and lithologic variations are also quite dramatic between drillholes. This variation is due in-part to original basement topography, as well as subsequent juxtaposition by pre-, syn-, and post-mineral faulting and tilting.

The Savage Formation consists of aphanitic to porphyritic dacites and associated dacitic pyroclastic and epiclastic rocks. It is interpreted as a dacitic flow-dome complex that pre-dates the Pioneer Formation. The basal flows of the Savage Formation intercalate with the underlying sedimentary rocks. The Savage Formation varies dramatically in thickness from >100 metres in the south end of Jolly Jane to zero in the northern portion of the Jolly Jane area.

Figure 7.5 Geologic Map of the Jolly Jane Target Area.



The Pioneer Formation is only a few tens of metres thick at Jolly Jane, and thickness can vary dramatically across some faults, suggesting that there was active tectonism between the eruptions of the Pioneer and Savage Formations (Figure

7.7). The preserved portion of the Pioneer Formation coincides with the uppermost intervals found at Sierra Blanca, suggesting that Jolly Jane was a topographic high area during that time.

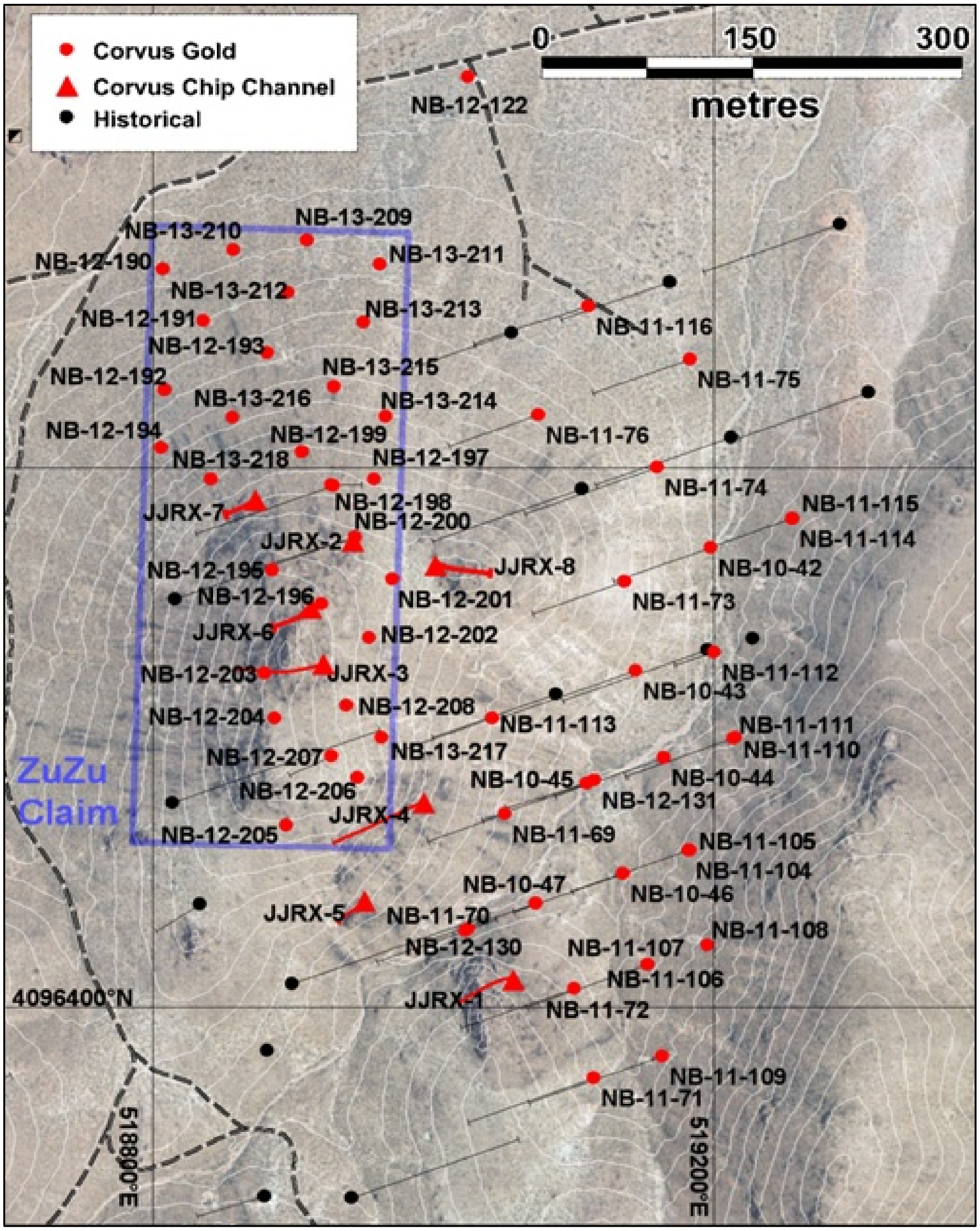
A number of flow-banded aphanitic rhyolite bodes are present in the Savage and Pioneer Formations at southern portion of Jolly Jane. The origin of these rhyolites is not clear, but they locally appear to cross cut these units. Zircon dating of similar aphanitic rhyolite at Sober-up Peak returned an age of 14.7Ma making it essentially contemporaneous with the Pioneer Formation (Sober-up Peak sample 115903, Table 7.2). Since the stratigraphic association is unclear, these rhyolites are generally assigned to the North Bullfrog Intrusive Suite.

The Sierra Blanca Tuff is the dominant host rock for mineralization at Jolly Jane. The Sierra Blanca Tuff is strongly quartz-adularia-altered everywhere it is recognized at Jolly Jane. The preserved thickness of the unit at Jolly Jane is approximately 70 metres, compared to a thickness of >160 metres at Sierra Blanca. This suggests that Jolly Jane area was somewhat of a paleo-topographic high when the Sierra Blanca Tuff was deposited.

The Savage Valley Dacite overlies and apparently intercalates with the Sierra Blanca Tuff at Jolly Jane. As at Sierra Blanca, the Savage Valley Dacite is a heterogeneous sequence of lava flows, pyroclastics and epiclastics of predominantly dacitic composition. There is likely an angular unconformity between the Sierra Blanca Tuff and the Savage Valley Dacite at Jolly Jane.

The Lithic Ridge and Bullfrog tuffs overlie the Savage Valley Dacite east of Jolly Jane, and are juxtaposed against the Savage Valley Dacite along the East Jolly Jane Fault (Figure 7.5). The Lithic Ridge Tuff was not recognized prior to late 2015 and was previously lumped into the Crater Flat Group. The Bullfrog Tuff is intensely quartz-adularia altered and was almost certainly present during the main mineralization event. Drilling to date has not identified any significant gold mineralization in the Lithic Ridge or Bullfrog tuffs at Jolly Jane.

Figure 7.6 Drillhole Locations for the Jolly Jane Target Area and Location of the Zuzu Patented Claim.



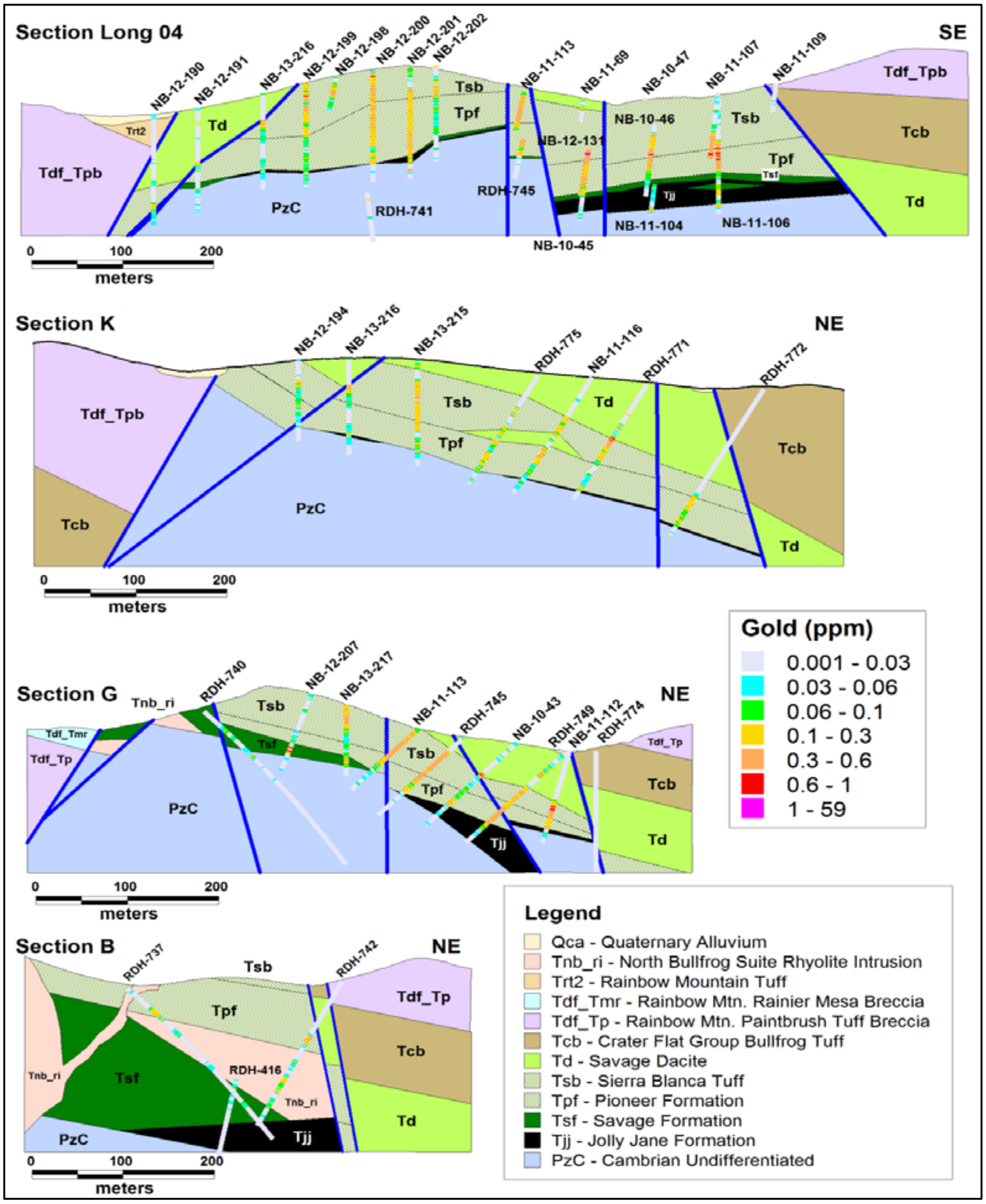
A large semi-tabular mass of Paintbrush Tuff and monolithic Paintbrush Tuff debris flow breccia caps the ridge just east of Jolly Jane (Figure 7.5). Relatively consistent compaction foliation in the welded tuff dips 20º to 30º to the east indicating a significant angular discordance to the underlying Bullfrog Tuff. It is possible that the entire section represents a major, relatively intact, slide block of Paintbrush Tuff overlying the Bullfrog Tuff. The Paintbrush breccias are not mineralized at Jolly Jane, but they do exhibit silicification and were likely present at the time of mineralization.

The geology of Jolly Jane is quite complex, mostly due to the existence of faults and erosional unconformities between each of the major stratigraphic units. The Jolly Jane gold deposit is preserved as a horst between the West Jolly Jane and the East Jolly Jane Faults (Figures 7.3 and 7.7). The horst block is cut by steeply dipping NE- and NNW-trending faults that appear to control deposition of the Jolly Jane Formation sediments (Figure 7.7, Sections Long 04 and G). At the north end, the structure is relatively simple with large coherent zones between faults (Figure 7.7, Section K). In contrast, the structure in the south becomes increasingly complex with large volumes of Savage Formation dacite and Tnb rhyolite intrusions present beneath the Sierra Blanca Tuff (Figure 7.7, Section B).

The ZuZu portion of the Jolly Jane Mineral Resource is named for the ZuZu patented claim (Figure 7.6). The ZuZu claim covers a ridge top where the pseudo-stratabound Jolly Jane disseminated zone crops-out. The Jolly Jane mineralized zone is truncated on the west side of the ZuZu claim by the West Jolly Jane Fault (Figure 7.5 and 7.7). The West Jolly Jane Fault exhibits 600 metres or more of down-to-the-west normal displacement, which essentially repeats the Jolly Jane stratigraphy and mineralization under the Savage Valley area to the west (Figure 7.3).

Corvus drilled five additional holes at North Jolly Jane in 2015-2017. These holes were designed to test for high-grade veins in the Sierra Blanca Tuff north of NB12-123 (Figure 7.5). All new holes at North Jolly encountered thick intervals of mineralized quartz-adularia-altered Sierra Blanca Tuff. High-grade quartz veins were not encountered. Both low-grade oxide and sulphide mineralization is present in the Sierra Blanca Tuff and Savage Valley Dacite north of Jolly Jane, but there is insufficient drill data to necessitate an update of the Jolly Jane Mineral Resource in this document.

Figure 7.7 Cross Sections through Jolly Jane Target Area. See Figure 7.5 for Section Locations. Drill traces are colored by Gold Assay Values.



7.3.1.2 SIERRA BLANCA

The greater Sierra Blanca area includes the Savage Valley, Sierra Blanca, North Sierra Blanca, YellowJacket, Air Track Hill and Air Track West areas (Figure 7.8). In 2010-11, Corvus drilled 44 holes totaling 12,785 metres (41,945 feet) in the Sierra Blanca area. In 2012, 16 additional holes totaling 3,548 metres (11,640 feet) were drilled in and around the Sierra Blanca area including 4 PQ3 holes for metallurgical samples, 6 HQ3 exploration holes and six step-out/infill RC holes. In 2013, Corvus drilled 87 holes totaling 19,000 metres (62,340 feet) including 35 HQ3 core holes, two PQ3 core holes for metallurgical samples and 50 RC holes. Fifteen channel sample lines totaling 1,070 metres (3,510 feet) were completed along new road cuts in 2013-14. In 2014, Corvus drilled 48 holes totaling 11,000 metres (36,100 feet) including 36 HQ3 core holes and 12 PQ3 holes for metallurgical testing. Between 2015 and 2017, Corvus drilled an additional 67 holes totaling 19,192 metres (62,965 feet) in the greater Sierra Blanca/YellowJacket resource area. The Sierra Blanca Mineral Resource is being updated in this document using this additional data.

7.3.1.2.1 SIERRA BLANCA GEOLOGY

7.3.1.2.1.1 STRATIGRAPHY

The stratigraphy of the Sierra Blanca-Savage Valley-YellowJacket-Air Track Hill and Air Track West area is similar to Jolly Jane including the following major units in ascending stratigraphic order: 1) early Paleozoic basement rocks including the Zabriskie Quartzite and Carrara Formation; 2) the Jolly Jane Formation; 3) the Savage Formation; 4) the Pioneer Formation; 5) the Sierra Blanca Tuff; 6) the Savage Valley Dacite; 7) the rhyolite bodies of the North Bullfrog Lithodeme; 8) the Crater Flat Group; 9) the monolithic and heterolithic debris flow breccias of the Rainbow Mountain Sequence; 10) the Trt2 tuff of the Rainbow Mountain Sequence; and 11) the Sober Up Gulch Gravels (Table 7.1).

The Zabriskie Quartzite ("PzZ") crops out along the southwest side of Savage Valley, and was penetrated in a few drillholes (Figure 7.9). The Zabriskie consists of light brown, pink or light grey, non-calcareous to weakly calcareous vitreous quartzite. The Carrara Formation ("PzC") overlies the Zabriskie and consists of primarily of carbonaceous calcareous shale, argillaceous limestone and micritic limestone, with lesser intervals of sandy limestone and calcareous sandstone. PzC is the primary bedrock unit encountered under Savage Valley. The stratigraphic transition zone from PzC to PzZ is present under the west side of Savage Valley. Jasperoid is locally developed in PzC in the Savage Valley drillholes. Jasperoid occurs in proximity to gold mineralization in the overlying units, and is locally anomalous in gold. The assumption is that the jasperoid is a part of the mineralizing system, representing structurally controlled alteration in the basement. The stratigraphy of the greater Sierra Blanca area is similar to Jolly Jane including the following major units in ascending stratigraphic order:

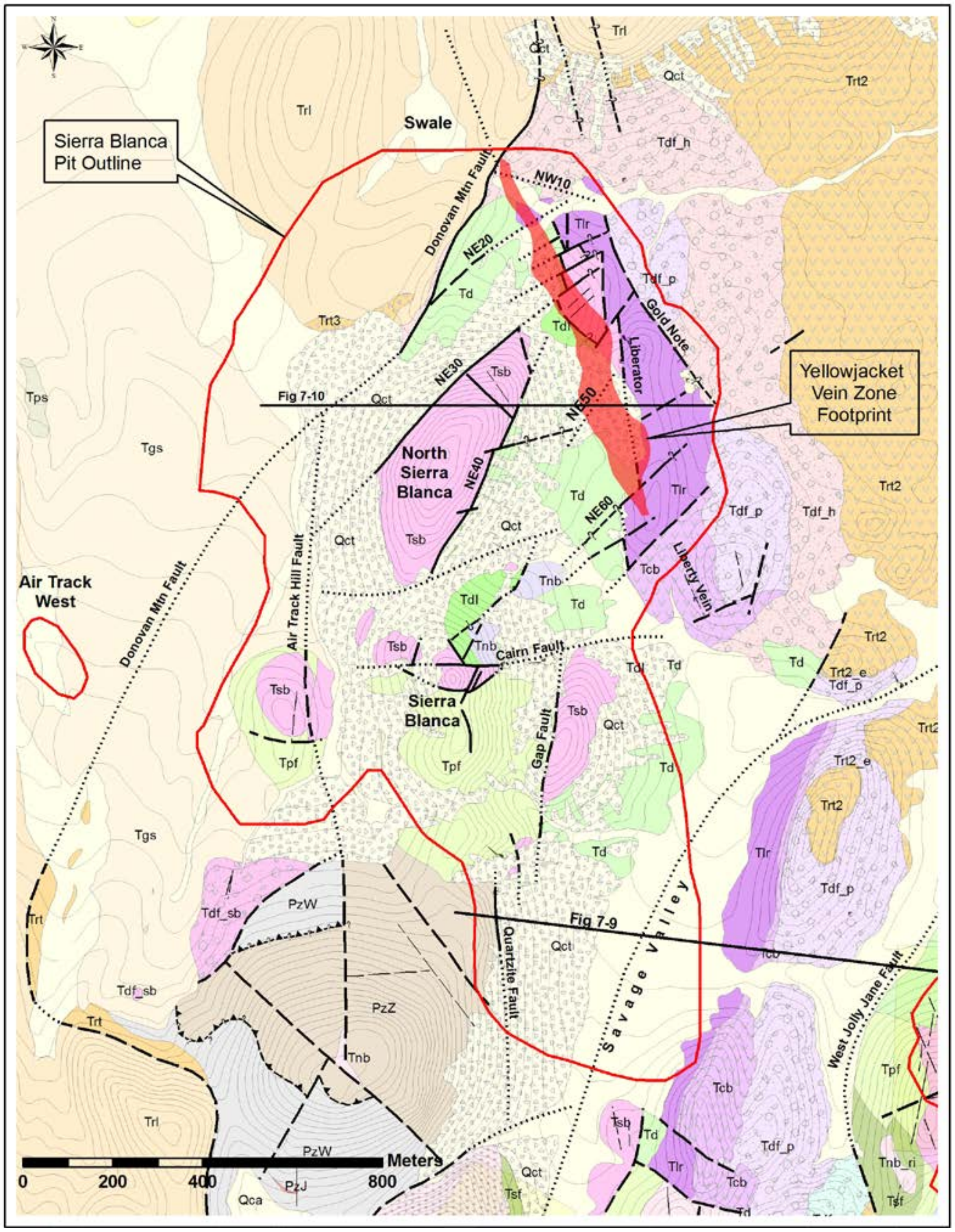
- Early Paleozoic basement rocks including the Zabriskie Quartzite and Carrara Formation
- Jolly Jane Formation
- Savage Formation
- Pioneer Formation
- Sierra Blanca Tuff
- Savage Valley Dacite
- Rhyolite bodies of the North Bullfrog Intrusive Suite
- Lithic Ridge Tuff
- Bullfrog Tuff
- Monolithic and heterolithic debris flow breccias of the Rainbow Mountain Sequence
- Trt2 tuff of the Rainbow Mountain Sequence
- Gravels of Sober Up Gulch

Figure 7.8 is a geologic map of the Sierra Blanca area updated in 2016.

The Zabriskie Quartzite (PzZ) crops out along the southwest side of Savage Valley, and was penetrated in a few Savage Valley drillholes (Figure 7.8). The Zabriskie consists of light brown, pink or light grey, non-calcareous to weakly calcareous vitreous quartzite. The Carrara Formation (PzC) overlies the Zabriskie and consists of primarily of carbonaceous calcareous shale, argillaceous limestone and micritic limestone, with lesser intervals of sandy limestone and calcareous sandstone. PzC is the primary bedrock unit encountered under Savage Valley. The stratigraphic transition zone from PzC to PzZ is present under the west side of Savage Valley. Jasperoid is locally developed in PzC in the Savage Valley drillholes. Jasperoid occurs in proximity to gold mineralization in the overlying units, and is locally anomalous in gold. The assumption is that the jasperoid is a part of the mineralizing system, representing structurally controlled alteration in the basement.

At Sierra Blanca, the Jolly Jane Formation includes a heterogeneous sequence of: 1) Paleozoic clast-dominated conglomeratic sediments; 2) calcareous and carbonaceous lithic-volcanoclastic sediments that appear to be largely re-worked dacite; and 3) rare monolithic debris flow breccias of the Carrara Formation. Basal Tertiary conglomerate is the common lithology at the basement unconformity, grading upward into volcanoclastic sediments. Under Savage Valley the sediments are typically intercalated with and overlain by dacitic tuffs and lavas of the Savage Formation. The thickness of the Jolly Jane Formation varies dramatically from 0-35 metres between drillholes. Thickness and lithologic variation are due in-part to original basement topography. Monolithic breccias of Carrara Formation are interpreted to occur as local gravity slide blocks in proximity to buried basement fault scarps. The Jolly Jane Formation is generally thinner at Sierra Blanca than at Jolly Jane. Gold mineralization is very rare in the Jolly Jane Formation under Savage Valley.

Figure 7.8 Geological Map of the Greater Sierra Blanca-YellowJacket Area



The Savage Formation at Sierra Blanca consists of dacitic tuffs, flows and intercalated dacitic sediments. The flows thicken to the south where they apparently connect with the Savage Plug: a rhyo-dacite porphyry body that is part of the North Bullfrog Intrusive Suite.

The Pioneer Formation is composed primarily of felsic pyroclastic rocks including pale green crystal-lithic tuff and lithic lapilli tuff with white rhyolite clasts. Near the upper contact, the lithic content increases significantly and grades into a coarse heterogeneous tuffaceous epiclastic sequence known as the Upper Epiclastic Member. The Pioneer Formation exhibits dramatic thickness variation in the Sierra Blanca area ranging in thickness from tens of metres in the south to over 250 metres in the north. The base of the unit has never been drilled in the YellowJacket area. The Pioneer Formation exhibits varying degrees of quartz-adularia alteration and hosts significant gold mineralization.

In the northern and central Sierra Blanca area, rhyolite bodies from the North Bullfrog Intrusive Suite occur stratigraphically within and above the Pioneer Formation. The rhyolites exhibit a variety of textures including spherulitic flow-banded bodies and thick intervals of monolithic rhyolite breccias. Rhyolite breccias may be intrusive or represent lava flows. Based on zircon age dating and geochemical similarities between the rhyolites and the Pioneer Formation, rhyolite volcanism is in part coeval with deposition of the Pioneer Formation. Rhyolite flows are also present within the Savage Valley Dacite stratigraphy above the Sierra Blanca Tuff. The various rhyolite bodies appear to represent both intrusive and extrusive phases of rhyolite volcanism contemporaneous with the Pioneer Formation, Sierra Blanca Tuff and Savage Valley Dacite.

The Sierra Blanca Tuff is the dominant host rock at Sierra Blanca. The unit varies in thickness from >160 metres in the north to 30 metres in the south. The Sierra Blanca Tuff represents a large single cooling unit which shows a high degree of compaction and welding. There is a 5-15 metre thick distinctive shard-rich interval at the base of the unit in the Sierra Blanca area. The shard-rich interval is known as Tsb1, which serves as a marker for the bottom of the unit. Tsb1 commonly overlies a coarse tuffaceous epiclastic interval assigned to the Upper Epiclastic Member of the Pioneer Formation. Above the shard-rich marker, the tuff is a relatively homogeneous, densely welded, crystal tuff with well-developed compaction foliation exhibited by flattened pumice fragments. The tuff is typically fractured and brecciated. The brittle nature of the densely-welded tuff was important in allowing fracture permeability, which facilitated the influx of hydrothermal fluids. The unit is ubiquitously altered to a mixture of fine-grained quartz and adularia throughout the Sierra Blanca area.

The Sierra Blanca Tuff is unconformably overlain by the Savage Valley Dacite. The Savage Valley Dacite is a heterogeneous stratigraphic sequence of domes, flows, pyroclastic and epiclastic rocks of dacitic to andesitic composition. Several eruptive cycles, probably from multiple local vent sources, are interpreted from based on geochemistry. There are dramatic lateral changes that make it difficult to correlate internal stratigraphy between drillholes. The Lower Member is a heterogeneous pyroclastic and epiclastic sequence of rhyolitic to dacitic composition. The Upper Member is a more uniform sequence of dacitic to andesitic lava flows and breccias. The Lower Member contains a discontinuous rhyolite flow breccia that is related to the North Bullfrog Intrusive Suite. In contrast to the pervasive alteration-style mineralization common in the Sierra Blanca Tuff and Pioneer Formation, alteration-style mineralization in the Savage Valley Dacite is typically more structurally-controlled. Structurally-controlled illite-adularia-pyrite mineralization can achieve gold grades exceeding 10 ppm in the more iron-rich Savage Valley Dacite.

The newly identified Lithic Ridge Tuff overlies the Savage Valley Dacite. The tuff is exposed along the east side of the Sierra Blanca resource area where it dips 35-65° to the east (Figure 7.8). The Lithic Ridge Tuff is a poorly to moderately welded crystal-lithic ash-flow tuff, which typically has abundant chloritized biotite phenocrysts and between 5-20% lithic clasts. It is generally more lithic-rich in the lower part, with sparse lithic clasts in the upper part. Lithic clasts of the underlying Savage Valley Dacite are common. The Lithic Ridge is highly altered, locally mineralized near the Liberator Fault, but not a significant volume host to gold mineralization.

The Bullfrog Tuff of the Crater Flat Group is locally exposed the eastern side of the Sierra Blanca resource area where it overlies and is in fault contact with the Lithic Ridge Tuff in Figure 7.8. No gold mineralization has been encountered to date in the Bullfrog Tuff with in the Sierra Blanca area. There is significant alteration in the tuff along the Liberty Vein structure. In 2015, two holes were drilled to test the Liberty Vein. These holes failed to identify any significant gold mineralization along the structure. East of Savage Valley where the tuff is essentially unaltered, the Bullfrog Tuff dips 40-65° to the east-southeast (Figures 7.8 and 7.9).

A significant interval of monolithic Paintbrush debris flow breccia unconformably overlies the Bullfrog Tuff along the eastern side of YellowJacket and Savage Valley. Rare bedding measurements indicate that this unit may dip 25-30° to the east. At YellowJacket, the Paintbrush breccia is overlain by, and intercalates with, heterolithic debris flow breccia. The Paintbrush breccia is not known to be mineralized at Sierra Blanca, but locally exhibits intense hydrothermal alteration and high level quartz veining. The age of the Paintbrush Tuff (12.8Ma) is contemporaneous with the onset of the 13-12Ma deformation event postulated by Sawyer et al. (1994). Therefore it is possible that these monolithic breccias could have been in place prior to the onset of the 11.45Ma deformation event postulated by Connors et al. (1998). In either case, it is possible that the Paintbrush breccias could have been in place during the 11.6-11.2Ma mineralization event at YellowJacket, and could be considered a favorable host. Heterolithic debris flow breccias overlie and intercalate with the Paintbrush breccias.

East of YellowJacket and Savage Valley, monolithic and heterolithic debris flow breccias are unconformably overlain by crystal-lithic rhyolite tuff identified as Trt2 of the Rainbow Mountain Sequence (Figure 7.1, 7.2 and 7.8). The base of the Trt2 tuff is marked by bedded epiclastic rocks that locally fills a significant erosional channel cut through the Paintbrush breccia into the Bullfrog Tuff. The lower contact of the tuff dips generally 15-20° to the east. Trt2 has yielded a zircon date of 10.5Ma (Table 7.2), which generally agrees the 10.1Ma age reported by Connors et al. (1998). Trt2 is relatively unaltered as it was deposited after the last known mineralization event affecting the Sierra Blanca area.

The last unit of importance at Sierra Blanca is the Gravels of Sober Up Gulch. These younger gravels fill the valley to the west of Air Track Hill. The gravel sequence is only known from percussion drilling in this area. The abundance of Donovan Mountain Latite clasts in these gravels suggests a correlation to the Gravels of Sober-up Gulch. The Gravels of Sober-up Gulch are known to contain minor concentrations of placer gold. The Air Track West deposit appears to be hosted in these gravels. The mineralization at Air Track West appears to be a large slide block of quartz-adularia-altered rhyolite within the gravel unit. An alternative interpretation is that these gravels have been mineralized by a younger event not previously known to exist at the NBP. A small Mineral Resource has been defined at Air Track West.

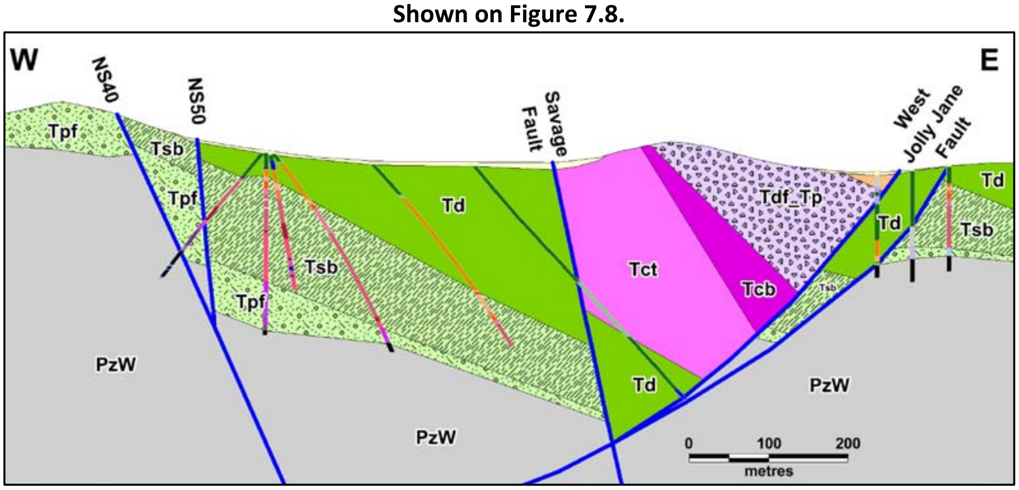
7.3.1.2.1.2 STRUCTURE

The structural setting of the Sierra Blanca area is similar to Jolly Jane, but the area is at least four times larger. The relative timing of the complex structural setting at Sierra Blanca is not completely understood. The Sierra Blanca area is effectively divided in two blocks by the E-W-trending, north-dipping, Cairn Fault, which separates Savage Valley from North Sierra Blanca (Figure 7.8). The Cairn Fault appears to consist of multiple echelon splays, comprising a down-to-the-north zone of displacement with both pre- and post-mineral movement. The Cairn is interpreted as an accommodation structure similar to the Pioneer Shear. The NW10 fault is a similar WNW-trending, down-to-the-north fault at the north end of the YellowJacket Vein Zone. The NW10 fault is mineralized but also interpreted to have post-mineral movement.

The structure of the Savage Valley block is relatively simple with a series of down-to-the-east faults on the western side of the valley and the Savage Fault on the eastern side (Figure 7.9). The stratigraphy dips steeply to the east between these faults probably reflecting rotation in the hanging-wall of the West Jolly Jane Fault.

The structure in the block north of the Cairn Fault is more complex, with an array of faults that all seem to dip to the west but have mixed apparent normal and reverse displacements (Figure 7.10). The dip of units in this block is quite variable but is generally 20-45° to the east-southeast.

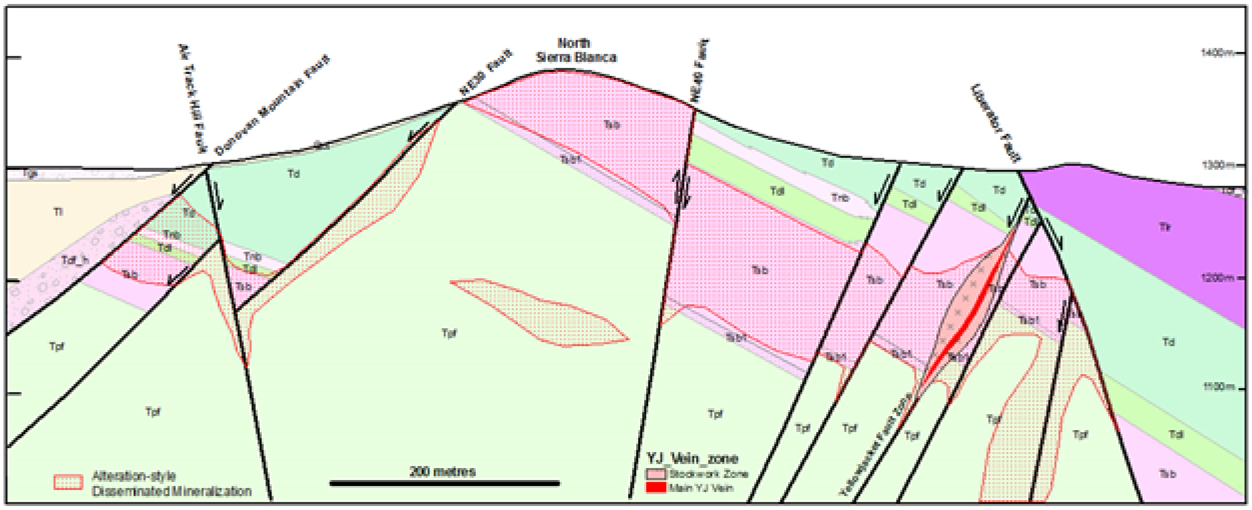
Figure 7.9 Geological Cross Section Looking North through Savage Valley Illustrating the style of faulting. Location Is Shown on Figure 7.8.



Significant down-to-the-west faults at Sierra Blanca include the Donovan Mountain, NE20, NE30 and YellowJacket faults. The largest fault is the Donovan Mountain Fault, which exhibits ~1 kilometre of down-to-the-west displacement. Most of this displacement appears to be post-mineral, placing unaltered Donovan Mountain Latite against altered/mineralized units as old as the Pioneer Formation. The Air Track Hill, NE30, NE20 and NW10 all appear to be truncated by substantial post-mineral movement of the Donovan Mountain Fault (Figure 7.8 and 7.10). The Gravels of Sober-up Gulch west of Sierra Blanca are confined to the hanging wall of the Donovan Mountain Fault.

Significant down-to-the-east faults include the Air Track Hill, NE40, Liberator, Gap and Quartzite faults. The largest down-to-the-east fault is the Liberator. The Liberator locally hosts both vein and alteration-style mineralization, but also exhibit significant post-mineral movement. Several of the down-to-the-west faults in the YellowJacket corridor, including the YellowJacket fault and vein zone, are apparently on the east by the Liberator Fault (Figure 7.10). The Liberator and YellowJacket faults are also cut by NE-trending cross faults (NE50, NE60 and other smaller faults), which appear to have the youngest fault movement in the area. The Liberator Fault is apparently truncated on the north by the NW10, and on the south by the Cairn Fault.

Figure 7.10 Simplified Geologic Cross Section through North Sierra Blanca-YellowJacket. Location of section is on Figure 7.8



7.3.1.2.2 SIERRA BLANCA MINERALIZATION

Mineralization at Sierra Blanca can be classified into the following styles:

- Disseminated gold associated with pervasive quartz-adularia replacement and sulphidation of iron (ubiquitous)
- Disseminated gold associated with fault controlled sulphidation (NW10, NE30, NE50, NE60, Liberator Faults)
- Gold associated with quartz veins and quartz stockwork veining (YellowJacket Vein Zone)

The metallurgical characteristics of these styles of mineralization have resulted in the differentiation of three metallurgical classes for the estimate the Sierra Blanca Mineral Resource: 1) disseminated oxide; 2) disseminated sulphide; and 3) quartz vein and stockwork mineralization.

7.3.1.2.2.1 PERVASIVE DISSEMINATED MINERALIZATION

The Pioneer Formation and Sierra Blanca Tuff are mineralized over virtually the entire Sierra Blanca area. The Sierra Blanca Tuff is moderate to strongly-altered to a fine-grained mixture of quartz and adularia that is associated with disseminated gold mineralization. Quartz-adularia alteration is not as widespread or as well developed in the underlying Pioneer Formation. The Pioneer Formation tuffs are more typically altered to a light green smectite-illite+chlorite assemblage, which also hosts low-grade disseminated gold mineralization. As the alteration intensity increases, the tuffs are progressively converted to smectite-illite, illite-adularia and finally to quartz-adularia. The specific controls on alteration development are difficult to constrain with wide-spaced drilling. However, it appears that alteration is controlled by a combination of structure and preferential permeable stratigraphy. There is a major fluid upwelling zone beneath North Sierra Blanca where intense quartz-adularia alteration extends through both Tpf and Tsb for more than 300 metres vertically beneath the ridge. This zone is evidenced by both a resistivity anomaly and confirmed alteration intensity in drillholes.

In the un-oxidized portions of the deposit, it appears that grade of mineralization is linked directly to the pyrite content, which in turn reflects the original iron content of the rock. Pyrite morphologies in disseminated mineralization include fine disseminated, biotite-replacement, lithic clast-replacement and veinlet infill, suggesting a complex history with multiple generations of pyrite growth. Although some grains show zoned gold and arsenic, no consistent pattern was observed in the grains studied (AMTEL Report 11/34, 2011). A gold deportment study carried out on the disseminated mineralization revealed that most of the gold is held in the lattice of the disseminated pyrite. When the pyrite is oxidized, the gold is readily recoverable with simple cyanide (AMTEL Report 11/34, 2011 & see Section 13).

7.3.1.2.2.2 FAULT-HOSTED MINERALIZATION

Fault-controlled alteration-style mineralization is characterized by the development of disseminated pyrite within fault zones and in wallrock immediately adjacent to faults. In places these zones may be over 10 metres wide. Many large faults, including the NE20, NE30, NE40, NE50, NE60, NW10, Air Track Hill, and the Liberator host this style of mineralization. It has also been encountered along many smaller unnamed faults, of which the full extent has not yet been evaluated. This mineralization appears to postdate the earlier pervasive alteration-style disseminated mineralization, and results in consistently higher grade (1-17g/t gold). It is commonly associated with a distinctive illite-pyrite or illite-adularia-pyrite alteration that is known to overprint earlier quartz-adularia disseminated mineralization. Where it is developed in the Sierra

Blanca Tuff, the alteration tends to result in a bleached white illite-adularia-pyrite assemblage (Figure 7.4). Where it is developed in the Savage Valley Dacite the alteration tends to be a brown illite-pyrite to illite-adularia-pyrite assemblage. Pyritization in the Savage Valley Dacite can lead to the development of very good gold grades due to the original 4-5% iron content. This is particularly notable along the Liberator Fault, where gold grades of up to 17g/t have been encountered in Savage Valley Dacite. This mineralization has a consistently higher Ag/Au ratio than earlier disseminated mineralization. The silver to gold ratio of this mineralization is generally less than one.

Metallurgical testing indicates that the gold in the oxidized parts of fault-controlled mineralization responds well to cyanide leaching.

7.3.1.2.2.3 QUARTZ VEIN MINERALIZATION

Quartz vein and stockwork mineralization primarily occurs in the YellowJacket corridor: a structural corridor that lies between the east-dipping Liberator Fault and the west-dipping YellowJacket Fault Zone (Figure 7.10). The YellowJacket Vein Zone lies within this structural corridor, and consists of a massive quartz vein (referred to herein as the YellowJacket Vein, formerly known as the Josh Vein) surrounded by hanging wall and footwall zones of quartz stockwork. The blind YellowJacket Vein Zone was discovered with drillhole NB-12-138, and was systematically drilled-out to the NNW in 2013-14 (Figure 7.11). The YellowJacket Vein Zone strikes north-northwest and dips between 65-75° west. The zone varies between 15-35 metres wide, and persists over a strike length ~850 metres. The main vein has proven continuity over 700 metres of strike length. The surface projection of the YellowJacket Vein Zone is shown on Figure 7.11, but it is not recognizable at the surface. High grades are distributed across the hanging wall, main vein and footwall stockwork. The continuity of the vein and stockwork zone along strike is remarkably consistent.

Other YellowJacket-style veins and stockwork zones have been penetrated by drilling within the corridor outside of the YellowJacket Vein Zone. These are generally small-volume veins or stockwork zones that locally carry high-grades. Most of these subsidiary vein zones appear to be controlled by NE-trending cross faults (i.e. NE50 and the Rhyolite Vein in the vicinity of the NE20). The NE faults are kinematically linked to the YellowJacket Vein structure and served as vein fluid conduits. Potential exists to expand NE-trending or other subsidiary vein zones with additional drilling.

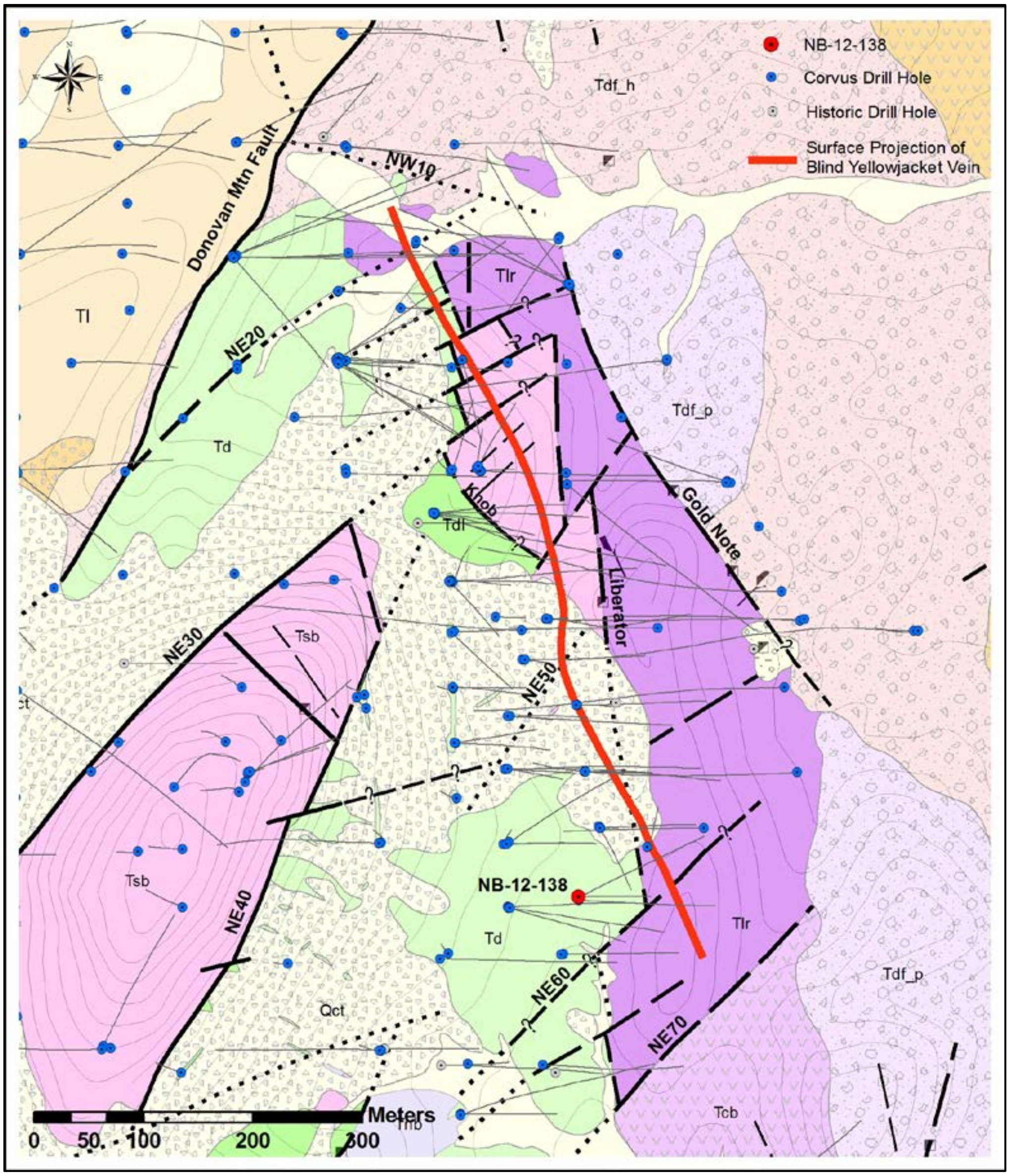
The high-grade quartz veins often exhibit crustiform banding and bladed quartz pseudomorphs after calcite typical of low-sulphidation epithermal veins. The quartz vein mineralogy is very simple and consists of native gold and electrum with varying amounts of acanthite and accessory silver sulphosalts. The high-grade of quartz stockwork zones is largely carried by 1-2 cm gray translucent quartz veinlets with only trace amounts of pyrite. Metallurgical testing has shown that the massive quartz vein and quartz stockwork mineralization is free milling.

Most of the major faults in the YellowJacket area appear to have been present and active during the formation of the vein mineralization. As a consequence, quartz vein splays and quartz stockwork zones are developed at NNW and NNE structural intersections across the structural corridor (i.e. NE50 intersection with YJ Vein Zone). In addition to the quartz vein and stockwork mineralization, the YellowJacket Zone also hosts both alteration-style disseminated and fault-controlled alteration-style disseminated mineralization. Disseminated mineralization has been modeled as oxide disseminated and sulphide disseminated. Oxide disseminated is amenable to heap leaching. Sulphide disseminated is amenable to flotation concentration and ambient air oxidation/recovery of gold from a sulphide concentrate.

7.3.1.2.2.4 GOLD AND TELLURIUM MINERALIZATION

Another poorly understood style of mineralization at Sierra Blanca consists of quartz-free mineralized gold zones with anomalous tellurium, most notably found in Air Track Hill drillholes NB-08-21 and NB-13-364. Unfortunately, everywhere it has been encountered this mineralization has been completely oxidized, so the original character is not known. The style of mineralization is amenable to heap leaching. Based on the core drilled through this interval in NB-13-364, the mineralization is most likely related to the occurrence of hairline pyrite veins in volcanic rocks.

Figure 7.11 Geologic Map of the YellowJacket area showing Major Faults and Drillholes related to the discovery of the high-grade vein system



7.3.1.3 AIR TRACK WEST

Air Track West is a block of mineralization located under alluvial cover to the west of Sierra Blanca (Figure 7.8). Air Track West was originally discovered by Sunshine Mining in 1991 when they found what appears to be detrital boulders of quartz-adularia-altered volcanic rock in the pediment area ~500 metres west of Air Track Hill. The boulders have yielded gold values up to 0.273 g/t. Sunshine Mining drilled the discovery hole GS-45 which yielded 17.8m (15.2-32 m) grading 1.81 g/t gold. Sunshine Mining did some additional drilling in the area and achieved additional low-grade intercepts. Corvus drilled one hole (NB-12-117) in 2012 and confirmed this mineralization with an intercept of 15.2m (10.7-25.9 m) grading 2.36 g/t gold. At present, the mineralization is interpreted to be a monolithic slide block of silicified North Bullfrog Intrusive Suite rhyolite within the Gravels of Sober-up Gulch. The mineralized block is interpreted to have slid westward from the Sierra Blanca area into the hanging-wall of the Donovan Mountain Fault (Figure 7.9).

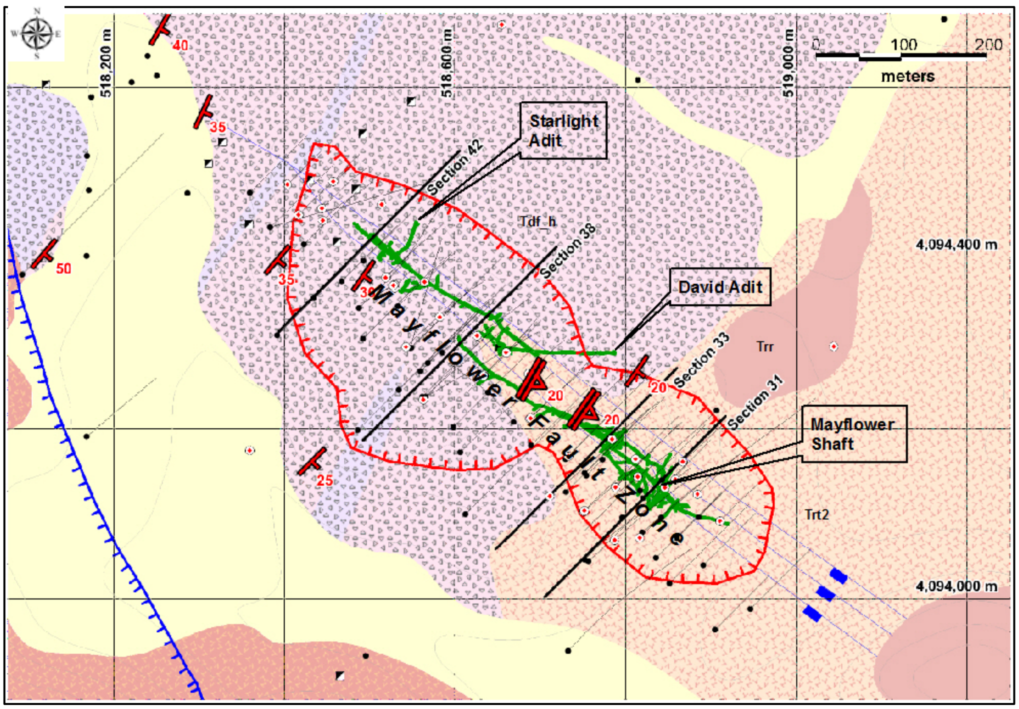
7.3.2 YOUNGER MINERALIZATION

Based on the combination of Ar-Ar dating and host rock ages, a number of deposits in the NBP area are believed to have formed after the deposition of the 10.5Ma Rainbow Mountain Tuff (Trt2). These include disseminated and structurally-controlled deposits at Mayflower, Pioneer, Connection and Cat Hill. The steam-heated alteration along the Road Fault and the Eastern Steam-heated Zone are also related to this younger period of mineralization. The timing of the mineralization at the Connection deposit is somewhat problematic as it could represent older mineralization that was transported to the present position via mass-wasting during the second active tectonic period between 11.4-10Ma.

7.3.2.1 MAYFLOWER

Historically, the Mayflower mine was developed on en echelon quartz-calcite veins and stockwork zones along the NW-striking, steeply SW-dipping Mayflower Fault Zone ("MFZ"). The MFZ consists of multiple SW-dipping fault splays with a complex network of fractures linking the main strands together. The mineralized zone is traceable for at least 900 metres along strike (Figure 7.1 and 7.12). The mineralized zone is characterized by wall rock quartz-adularia alteration that surrounds a steeply dipping zone of vein-filled breccias. Disseminated mineralization is hosted in heterolithic debris flow breccias. Vein and stockwork mineralization hosted along fault splays. Multiple narrow high-grade gold zones (shoots) have been identified, surrounded by lower grade mineralization.

Figure 7.12 Geologic Map of the Mayflower Prospect showing underground workings, drillholes and cross section locations



Based on the displacement of the base of Trt2 on Section 31, the total apparent vertical displacement across the MFZ is approximately 60 metres (Figure 7.13). Displacement on the various splays is generally less than 10 metres each. There may be a horizontal component of motion on the fault, but the actual movement vector cannot be determined with the present data. There appears to be three main fault splays within the MFZ in the southeastern part of the deposit. Two of these strands merge in the vicinity of the David Adit and only two strands remain in the northwestern end of the deposit (Figures 7.13). High-grade mineralization appears to be best developed in the fracture zones along and adjacent to the main fault splays. This suggests that dilation caused by differential movement between the faults was the main control on mineralization (Figure 7.13). The Mayflower inclined shaft was developed on the central Mayflower strand while the David Adit and Starlight workings were developed on the David Adit splay, which is footwall to the Mayflower splay. Overall, the zone appears to narrow with depth and has a steeper more planar hanging-wall than footwall (Figure 7.13).

The bulk of the mineralization occurs in debris flow sediments of the Rainbow Mountain Sequence, but mineralization locally extends upward into the overlying Rainbow Mountain Tuff (Trt2). The Trt2 tuff was apparently not as permeable as the debris flow breccias. Alteration pinches to only a few metres wide around faults in Trt2. Quartz-adularia alteration extends out into the debris flow sediments for several tens of metres around the main fault zone. Certain horizons appear being more permeable than others and therefore are altered for greater distances. There is a clear correlation between higher gold grades and arsenic, both of which are associated with potassium feldspar replacement (adularization) of the host lithology (Myers, 2008).

The initial development of the deposit was in the early 20th Century when an inclined shaft was opened and production came from four levels. The David adit was also driven to explore the northwest extension of the system. The Mayflower prospect was the focus of modern exploration and drilling by numerous companies starting in 1982 (Table 7.4). Drilling results have been collected for most of the drillholes. Original assay certificates are available for the Barrick drilling, and that data was used in the Mineral Resource estimation presented in Section 14.

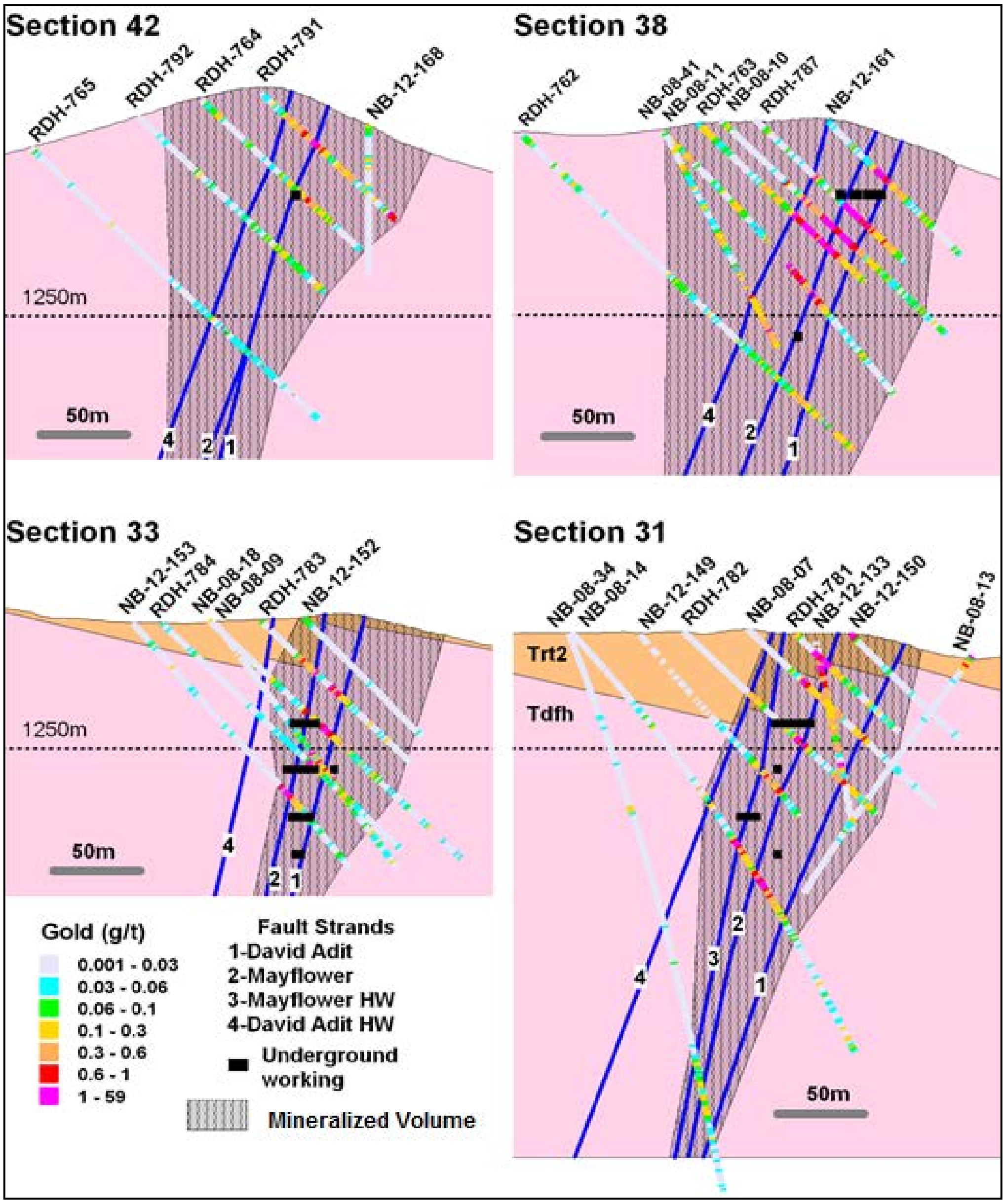
In the David adit, there is an alteration and mineralization sequence that indicates at least two periods of hydrothermal activity. An early quartz-adularia-pyrite low-grade gold event was followed by brittle fracturing and the development of high-grade gold mineralization along David adit splay. The zonation pattern that developed includes a central higher grade calcite-quartz zone that is surrounded by lower-grade quartz-adularia+pyrite zone with strongly anomalous arsenic. Outward from this core is a montmorillonite-rich zone with peripheral propylitic alteration. Additional gold mineralization likely occurs on dry or clay filled fractures, similar to the Pioneer Mine (Hunter, 2008). Late stage black manganiferous calcite occurs as veins and breccia fillings along the mineralized structures. This calcite is not known to be well-mineralized, but because of the intimate spatial relationship with the mineralized structure it is thought to be a late stage of the waning hydrothermal system (Hunter 2008). The entire Mayflower deposit is oxidized.

Historical records indicate that some stoping occurred on the 200, 300 and 400 levels with the bulk of the production coming from the 300 level (Spencer, 1919). Based on the 1919 map, it appears that approximately 17,000 tonnes of material had been extracted by that time, although no subsequent records are available. The David Adit was driven to explore the northwest extension of the system. The only stoping occurred in a shoot that was also exploited by the Starlight workings. There is no information on the volumes stoped in the Starlight Shoot. Both the Mayflower Mine and the David Adit were mapped and sampled by Cyprus Minerals Company in 1987. The David Adit is still accessible and has been mapped by Corvus geologists.

Table 7.4 Companies that drilled in the Mayflower Area

Company	Year in Which Drilling Occurred
U.S. Borax Incorporated	1982
CR Exploration	1984-1985
Western States Exploration	1987
Bond/Sunshine JV	1989 1 hole-180 metres
Sunshine Exploration Limited	1991 1 hole-220 metres
Barrick Gold Inc.	1995-1996 26 reverse circulation holes - 3,880 metres
International Tower Hill Mines Ltd.	2008 24 reverse circulation holes - 5,953 metres
Corvus Gold Nevada Inc.	2012 14 PQ3 core holes - 1,922 metres 2012 38 reverse circulation holes - 5,581 metres

Figure 7.13 Cross Sections Looking Northwest through the Mayflower deposit. See Figure 7.12 for cross section locations. The "Mineralized Volume" is the envelope that constrained the Mineral Inventory.



In 2012, Corvus drilled 52 additional holes totaling 7,503 metres (24,615 feet) in the Mayflower area including: 1) 14 PQ3 core holes totaling 1,922 metres (6,306 feet); 2) 26 in-fill/definition RC holes totaling 3,077 metres (10,095 feet); 3) seven condemnation RC holes totaling 1218 metres (3,500 feet); 4) four water monitor wells (RC) totaling 981 metres (3,220 feet); and 5) one water pilot RC hole totaling 305 metres (1,000 feet, Table 7.4). All RC holes were sampled as typical exploration holes. The PQ3 core holes have been used for additional metallurgical testing including bottle roll and column leach tests, as well as waste rock characterization testing. Data for both the core holes and in-fill RC holes have been incorporated into the current Mineral Resource estimation.

The Rainbow Mountain Debris Flow Sequence at Mayflower is dominated by poorly-sorted conglomeratic sedimentary breccias with minor channelized sandstone interbeds. The debris flow stratigraphy has an average dip of 34° to the east-southeast. The dip of the unit rapidly decreases from ~55° at the base to 25° in the middle and top where it is conformably overlain by the Rainbow Mountain Tuff (Trt2). The surface data indicate that the sediments were being deposited in an actively subsiding fault bounded basin controlled by the Road Fault to the east.

The clast assemblage in the debris flow sequence at Mayflower is very diverse and includes both basement and volcanic clasts. The clasts in individual debris flow intervals are commonly dominated by a specific lithology, suggesting that there were pulses of different clast sources being incorporated into the debris flow stratigraphy. Clasts up to four metres in diameter have been observed. In addition to the sedimentary components, a number of monolithic slide blocks are intercalated with the heterolithic sedimentary breccia. These are represented by monolithic breccia bodies of Paintbrush Tuff or Paleozoic units which have dimensions of >10 metres thick and >100 metres long.

7.3.2.2 PIONEER

The historic Pioneer workings are located immediately north of the Mayflower Mine (Figure 7.1). A series of underground workings were developed at Pioneer in the early 1900's, but little is known about the production or the nature of the mineralization extracted. Based on maps of historical underground workings, mineralization appears to occur along intersecting northeast and northwest striking faults. Alteration styles from the waste dumps include silicification, adularization, argillization, and minor quartz veining. Fault zones in the Pioneer area also host argillized dacite dikes, which are compositionally similar to the Savage Valley Dacite.

Much of the historic drilling as well as surface and underground sampling demonstrates that the bulk of the unmined mineralization is low-grade (<1 g/t Au). Most of the higher grade gold samples came from the upper levels of the Pioneer mine with grades over a few metres of 1-14 g/t Au. During 2007, the NBPJV drilled two holes to investigate the Pioneer mineralization. The first hole targeted the down dip extension of the mineralization. Anomalous gold was intersected across 130 metres, with a maximum value of 0.26 g/t Au in quartz-adularia-altered Sierra Blanca Tuff. A second hole was designed to drill across known higher grade mineralization. This hole encountered a total of eight metres of 2 g/t Au, including 17.6 g/t over 0.4 m, on either side of a 3.5 metre wide stope. The high-grade interval in the core hole is in a clay altered fault zone without visible quartz veining. Bladed pseudomorphs of quartz after calcite are found in outcrop at Pioneer, but apparently lack significant grade. No new drilling has been undertaken at the Pioneer since 2007, and no Mineral Resource has been established.

7.3.2.3 CONNECTION

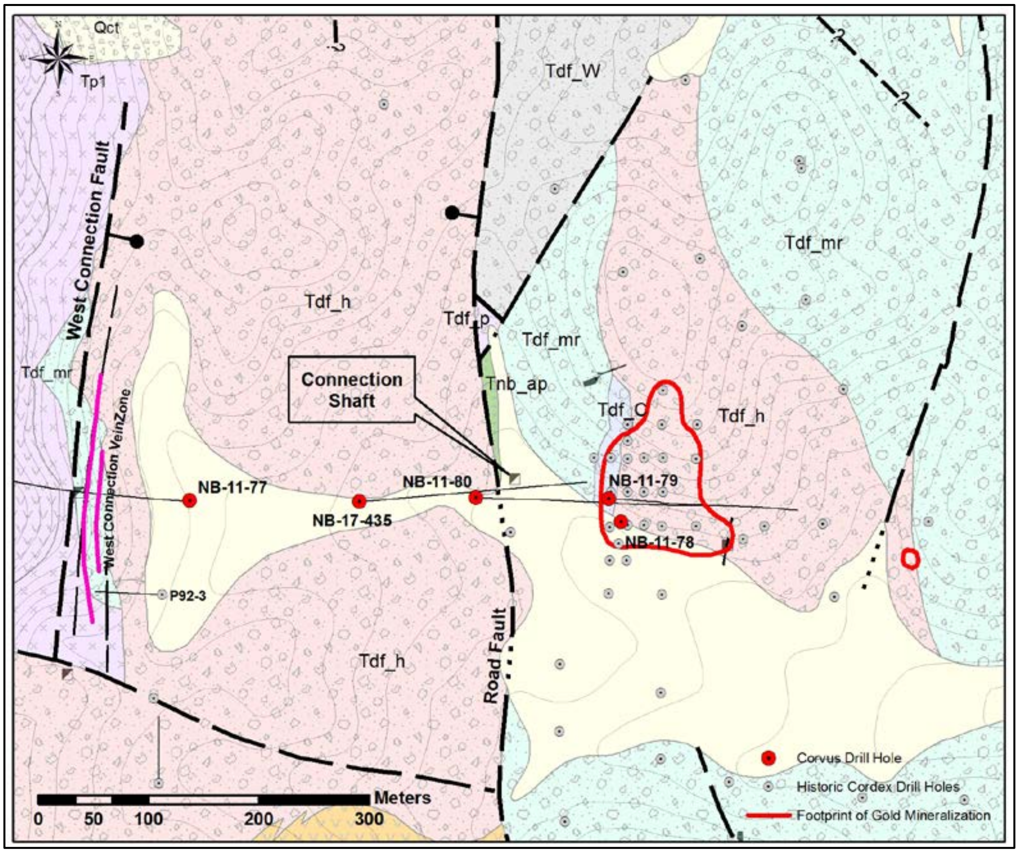
The historic Connection shaft and numerous prospect pits were developed at Connection in the early 1900's (Figure 7.14). Connection lies just east of and in the footwall of the Road Fault. Between 1974 and 1982, Cordex drilled a number of holes and delineated a small mineralized zone. Corvus drilled three holes totaling 607 metres (1990 feet) in 2010-11 with the objective of confirming the validity of the Cordex results. The mineralized zone at Connection is not included as a Mineral Resource in this document.

Five general lithologic units have been identified in the Connection drill area including: 1) probable rooted Bullfrog Tuff at depth; 2) a monolithic debris flow breccia unit consisting of Paintbrush Tuff (Tdf_p); 3) a monolithic debris flow unit consisting of quartz-biotite welded tuff which is likely Rainier Mesa Tuff (Tdf_mr); 4) a massive slide block of mixed Paleozoic lithologies (Tdf_C); and 5) a quartzite-clast-dominated heterolithic debris flow (Tdf_h) which caps Connection Hill. All of these local units lie within the Rainbow Mountain Debris Flow Sequence. The slide block of mixed Paleozoic lithologies has been lumped together into a single unit (Tdf_C). It contains carbonaceous calcareous shale and limestone of probable Carrara Formation (40-50% of total volume) and calcareous siltstone and quartz sandstone of probable Wood Canyon Formation (50-60% of total volume). There is no indication of a preferential host lithology as all Paleozoic lithologies appear to be mineralized. Some mineralization also occurs in overlying heterolithic debris flow breccias. The established stratigraphy, based largely on the 2010-11 drillholes, is generally consistent with what can be observed at Cat Hill to the south. The true thickness of each unit is unknown and is expected to be highly variable in such a debris flow environment. The slide block of Paleozoic rocks appears to pinch out to the north and south, and thickens dramatically at depth to the east of the resource, where it is dominated by Wood Canyon Formation lithologies.

Corvus drilled two holes within the historic mineralized area (NB-11-78 and NB-11-79). These holes encountered significant intervals of gold mineralization in the slide block of Paleozoic lithologies (Figure 7.14). There is no distinct correlation between gold and iron in the Paleozoic rocks, but it is clear that the average iron content in the Paleozoic lithologies is much higher than the surrounding volcanic lithologies. In drillhole NB-11-78, the monolithic breccias of Paintbrush Tuff are weakly mineralized with gold. A third hole (NB-11-80), drilled west of the Connection shaft, and had significant anomalous silver mineralization in the Paintbrush breccia. In addition, the Bullfrog Tuff beneath the debris flow sequence hosts quartz-adularia alteration and was found to contain low-grade gold mineralization in NB-11-80. In 2017, a follow-up hole (NB-17-435) was drilled to depth under the silver and gold mineralization in NB-11-80. No significant gold or silver mineralization was found at depth in NB-16-435. At this time there is insufficient data to interpret the structural setting of this mineralization, its relationship to the nearby Road Fault, or relationship to structures to the south or east.

Given that the host lithologies are part of the Rainbow Mountain Debris Flow Sequence, this mineralization is most likely part of the younger ~10Ma hydrothermal system. Given the style of mineralization in the Bullfrog Tuff at depth, the area may have also been affected by the older mineralizing event. It is possible that the PzC slide block was mineralized elsewhere and then transported to the present location by the debris flow process during later extensional deformation.

Figure 7.14 Geologic Map of the Connection Target Area



7.3.2.4 WEST CONNECTION VEIN

The West Connection vein zone lies ~500 metres west of the Connection area (Figure 7.14). The vein consists of a zone of high-level chalcedonic quartz and quartz-flooded breccia up to 50 feet wide, hosted within silicified monolithic debris flow breccias of the Paintbrush and Ranier Mesa Tuffs. The vein zone strikes N5E, dips 70-80° to the east, and persists along strike for ~250 metres. The vein zone has formed along one or more hanging wall splays of the West Connection Fault, which is antithetic to the Road Fault. The fault and vein geometry suggests that the vein fluids may have ascended from the Road fault at depth.

In 1992, Pathfinder Exploration drilled a shallow hole (P92-3), which encountered 6.1 metres of 0.243 g/t Au from 48.7 to 54.9 metres at the south end of the vein zone. This intercept has better gold grades than any of the surface rock sampling, indicating that the gold tenor may be increasing with depth. The vein zone has yielded surface trace element values up to 503 ppm As, 33 ppm Sb, and 2.74 ppm Hg.

Corvus drilled one hole (NB-11-77) in 2011. The hole did not encounter significant quartz veining, but it intersected a zone of anomalous gold (>0.1 ppm) gold between 94 to 107 metres, and several zones with anomalous arsenic and antimony. Significantly, well-crystalline hydrothermal kaolinite was found in a number of intervals in this hole, possibly linking this structure to the opalite alteration along the Road Fault. There has been no follow-up drilling in this area since 2011.

7.3.3 OTHER TARGET AREAS

The following target areas at NBP were drill-tested between 2015 and 2017.

7.3.3.1 LIBERTY VEIN

The Liberty Vein is located along two historic workings that lie along strike of the SSE projection of the YellowJacket Vein Zone (Figure 7.8). The workings contain a NNW-trending, steeply west-dipping quartz vein/replacement zone, hosted in strongly clay-altered Bullfrog Tuff. A NE-trending set of cross fractures is also present. The target concept was that the Liberty Vein is a high-level surface expression of the SSE extension of the YellowJacket Vein Zone. A fence of two angle holes (NB-15-427, 428) was drilled under the workings. The Bullfrog Tuff and underlying Lithic Ridge Tuff were not significantly mineralized, and no significant quartz veining was found in either hole. The Savage Valley Dacite in the bottom of NB-15-428 is weakly mineralized (up to 0.19 ppm). The Liberty Vein structure does not appear to be rooted by any significant gold mineralization. However, these holes failed to target the structure at a deep enough elevation to test for a vein zone in the Sierra Blanca Tuff.

7.3.3.2 SWALE

The Swale target area lies along strike of the NNW projection of the YellowJacket Vein Zone (Figure 7.1 and 7-8). All of Swale drillholes are collared in the Donovan Mountain Latite, and drilled through the Donovan Mountain Fault into mineralized NBHVC stratigraphy. The Donovan Mountain Latite thickens to the north and west as the Donovan Mountain Fault dips 25-35° to the northwest. Most of the holes drilled at Swale encountered 1+ g/t Au sulphide mineralization, much of which is too deep to support open pit mining. An extension of the YellowJacket Vein was not confirmed, however, hydrothermal alteration and sulphide mineralization in the Sierra Blanca Tuff, Pioneer Formation and underlying Tnb rhyolite indicate the mineralizing system is still strong in the northernmost drilling. Additional deep drilling (400+ metres below surface) will be required to continue to test the underground vein potential in this area.

7.3.3.3 CAT HILL

Cat Hill lies in the footwall of the Road Fault, just south of the Connection area (Figure 7.1). As at Connection, Cat Hill is underlain by heterolithic and monolithic debris flow breccias of the Rainbow Mountain Sequence. Alteration at Cat Hill is characterized by overlapping assemblages of both steam-heated alteration and silicified ribs with quartz veining exhibiting boiling textures (quartz pseudomorphs of bladed calcite). Fine vuggy, NE-trending silicified ribs with quartz replacing calcite coexist at the same elevation as an opal-kaolinite-alunite assemblage that locally exhibits alunite veinlets. Surface rock chip sampling yielded up to 1.4 g/t Au from quartz vein material. The current interpretation of the alteration at Cat Hill is that it suggests a fluctuating paleo-groundwater table, which has resulted in the juxtaposition of contrasting styles of hydrothermal alteration.

Five east-directed angle holes were drilled at Cat Hill between 2015 and 2017. Hole NB-15-284 encountered multiple 10-40 metre intercepts at >0.15 g/t Au, including two individual samples at >1 g/t Au. Two other holes also have significant low-grade oxide intercepts. Most of the mineralization encountered in the drilling at Cat Hill is oxidized. The Corvus drilling suggests that a small oxide resource can be developed at Cat Hill. Additional drilling will be required to establish an oxide resource.

7.3.3.4 CLOUD 9

The Cloud 9 target was generated in 2016 while additional mapping was being conducted along the West Jolly Jane Fault to the north of North Jolly Jane target area (Figure 7.1). An historic prospect and two small outcrops exhibiting banded manganiferous calcite and quartz veining were discovered along the West Jolly Jane Fault ~1.2 kilometres north of the northernmost drilling at North Jolly Jane. The hanging wall unit is Trt2 tuff, and the footwall unit is heterolithic debris flow breccia dominated by Paleozoic clasts. Rock chip sampling has not yielded any significant gold or trace element geochemistry in the area. One east-directed angle hole (NB-16-307) was drilled to test the fault for veining at shallow depth below the vein occurrence. No significant gold was encountered on the fault, but the footwall rocks were found to be relatively unaltered Wood Canyon Formation basement. The drillhole is significant in that it shows that pre-Tertiary basement stratigraphy has returned to near surface in the footwall block of the West Jolly Jane Fault. This implies that the Sierra Blanca Tuff may also return to near surface between North Jolly Jane and Cloud 9. The evidence suggests a new shallow oxide target in Sierra Blanca Tuff between North Jolly Jane and Cloud 9. Additional drilling is warranted in this area.

7.3.3.5 JIM DANDY

The Jim Dandy target is named for the Jim Dandy patented claim, which lies ~300 metres NNE of the Pioneer Mine (Figure 7.1). The Jim Dandy fault is NNE-trending, steeply west-dipping and has yielded anomalous Au in surface rock samples. Historic drillhole P92-9 in this area encountered 1+ g/t Au in the top of the hole along the trace of the Jim Dandy fault. Two east-directed angle holes (NB-17-439, 440) were drilled to test 160 metres of strike length along the Jim Dandy fault. Both holes encountered intensely altered rocks with quartz veins and/or stockwork zones. The Jim Dandy holes penetrated only narrow zones of anomalous gold (max. 0.42 ppm). No future work is recommended at Jim Dandy.

7.3.3.6 EAST SAVAGE VEIN

The East Savage Vein lies just east of the south end of Savage Valley (Figure 7.1). The East Savage Vein was identified by previous explorers at NBP, but had only one historic drillhole. The vein has yielded an adularia date of 11.0Ma (Connors et al., 1998), a similar age to the YellowJacket Vein. The East Savage Vein is NNE-trending, steeply west dipping, and cuts through Sierra Blanca Tuff, Pioneer Formation, and large Tnb rhyolite body. There is anomalous Au (max. 0.640 ppm) in surface rock samples. The vein zone persists along strike for nearly 500 metres. Two east-directed angle holes (NB-17-441, 442) were drilled to test nearly 250 metres of strike length. Both holes drilled thick intervals of intensely quartz-adularia-pyrite-altered Tnb rhyolite, and eventually into PzC basement. No significant quartz veins were encountered at depth, and only anomalous gold (max. 0.130 ppm) was found in the intensely altered rhyolite. No future work is recommended at the East Savage Vein.

7.3.3.7 SPICERITE

The Spicerite area is located within the Eastern Steam-heated Zone at the southeastern corner of the NBP (Figure 7.1). The area is named for the opal-kaolinite-alunite-altered rock, known locally as Spicerite, which was mined historically as lightweight aggregate used in the manufacture of white cinder blocks. The Spicerite area is underlain by (in ascending order): the Ranier Mesa Tuff, Pre-Ranier Mesa rhyolite flows and tuffs, and heterolithic to locally monolithic debris flow breccias. The stratigrpahy is cut by NNW-trending, moderate to steeply west-dipping, down-to-the-west normal faults. The most notable are the Spicerite No. 1 and No. 2 faults, which effectively define the Spicerite fault zone. All units exhibit opal-kaolinite-alunite alteration of variable intensity. The most intense steam-heated alteration occurs in the heterolithic debris flow breccias. The area has yielded an age date of 10.2Ma from alunite (Weiss, et al., 1994).

Corvus drilled one angled core hole (NB-15-429) and three angled RC holes (NB-15-263, 264 and 265) on an E-W fence across the Spicerite target area. No significant gold or other metal values were encountered. The holes tested across the main Spicerite fault zone to a depth of 300 metres below the surface. All holes bottomed in opal-kaolinite-alunite alteration. The stratigraphy encountered in the drilling shows that the Spicerite faults comprise a fault zone exhibiting ~700 metres of down-to-the-west displacement. The Spicerite fault zone is likely the deep structural conduit feeding the hydrothermal fluids contributing to the steam-heated alteration at Spicerite. Boiling textures were noted in small quartz veins in the core hole. The evidence suggests that there was a fluctuating paleo-groundwater table juxtaposing a localized high-level boiling zone with steam-heated alteration. Deeper drilling is required down-dip on the Spicerite fault zone to test for a gold-bearing vein system at depth below the steam-heated alteration.

7.3.3.8 ALUNITE HILL

Alunite Hill is located on the western side of the Eastern Steam-heated Zone, in an area of transition from steam-heated alteration to deeper illite and adularia alteration (Figure 7.1). Alunite Hill is named for the abundant hypogene alunite veining in strongly silicified Paintbrush Tuff. The primary structural feature is the NW-trending, moderate to steeply SW-dipping Alunite Hill Fault. The Alunite Hill Fault juxtaposes the Paintbrush and Bullfrog Tuffs in the hanging wall against a dacite porphyry intrusive body. The dacite porphyry is assigned to the North Bullfrog Intrusive Suite. The wall rocks of the Alunite Hill Fault exhibit both steam-heated and high-level non-steam-heated alteration. The fault hosts a discontinuous Au-Ag-bearing quartz vein that locally exhibits spectacular bladed quartz pseudomorphs after calcite. Rock sampling has yielded up to 0.746 ppm Au and 13 ppm Ag.

Corvus drilled three holes (NB-15-260, 261 and 262) on the Alunite Hill Fault. Holes 260 and 261 comprise a fence of two angle holes under the best developed portion of the vein at the surface. Both holes intercepted quartz stockwork veining on the fault, each having with 4-6 metres intervals of low-grade Au-Ag mineralization. The drilling indicates a much flatter SW-dip of ~35^{o} in contrasts to the 50-75^{o} dips measured at surface. The initial test of the Alunite Hill Fault was not successful in identifying high-grade gold. The fault still has potential for high-grade mineralization at depth and along strike. Additional drilling is warranted.

7.3.3.9 VINEGAROON

The Vinegaroon area is located just north of Alunite Hill in the hanging wall of the Vinegaroon Fault (Figure 7.1). The Vinegaroon Fault is major E-W-trending, moderate to steeply north-dipping, basement-bounding fault that juxtaposes Tertiary volcanic rocks and debris flow breccias against Paleozoic basement rocks. The Vinegaroon Fault projects eastward into the Eastern Steam-heated Zone from the Road Fault, and is truncated by the Road Fault on the west. Much of the Vinegaroon target area is in an alteration transition zone, exhibiting both quartz-adularia and steam-heated alteration assemblages. Numerous NNE- to NNW-trending high angle faults cut the debris flow breccias. Silicified ribs with anomalous gold occur along several of the faults. The interpretation is that hydrothermal fluids have ascended into these hanging wall faults from the Vinegaroon Fault at depth. Hypogene alunite, similar to that of Alunite Hill, is present in this area and has been dated by Corvus at 9.5 Ma (Table 4.3). Anomalous gold is also present associated with apparently stratabound quartz-adularia-pyrite alteration.

Corvus drilled seven holes (NB-15-286 through 292) testing a number of high-angle silicified structures, a stratabound quartz-adularia zone, and the Vinnegaroon Fault itself. The holes intersected several scattered narrow low-grade gold zones including 14 metres at 0.20 g/t Au and 1.45 g/t Ag (max. value 0.35 g/t Au), but no quartz veins. This initial wide-spaced drilling of the Vinegaroon area was unsuccessful in finding mineralization of sufficient continuity for resource definition, but the area exhibits significant alteration and gold mineralization. Additional drilling is warranted.

8 DEPOSIT TYPES

Gold mineralization in the district is best characterized as low-sulphidation epithermal with the precious metal mineralization associated both with sulphidation of iron in the host rocks and the precipitation in veins of quartz and/or carbonate controlled by boiling. Silica-adularia alteration is intimately associated with the disseminated mineralization and is an important form of ground preparation for later vein forming events. Epithermal deposits form at shallow depth, from the surface to as deep as 2 kilometres. Temperatures of formation range between 150 to 300 °C.

Mineralization at NBP is typical of other low-sulphidation type gold systems in and around the Walker Lane trend, such as: Bullfrog, Round Mountain, Rawhide, Aurora, Bodie and Comstock. These deposits commonly contain higher grade gold in vein mineralization surrounded by zones of lower grade disseminated mineralization which is the accepted exploration model at NBP.

9 EXPLORATION

The exploration potential of the NBP is significant and the Project has only begun to be explored. The blind discovery of the YellowJacket high-grade vein/stockwork deposit in 2012 and the identification of the extensive, largely untested Eastern Steam-heated Zone in 2014 indicate significant exploration potential for the discovery of new blind high-grade deposits. In general, the opportunities for expanding the NBP resources include: 1) possible continued expansion of the YellowJacket vein deposit at depth; 2) new discoveries of blind, high-grade YellowJacket-style vein systems adjacent to or within current disseminated resources; 3) new discoveries of either high-grade vein or disseminated mineralization under the Bullfrog-age Eastern Steam-heated Zone; and 4) expanding or identifying new disseminated mineralization at target areas outside of the existing Mineral Resource boundaries (Figure 9.1).

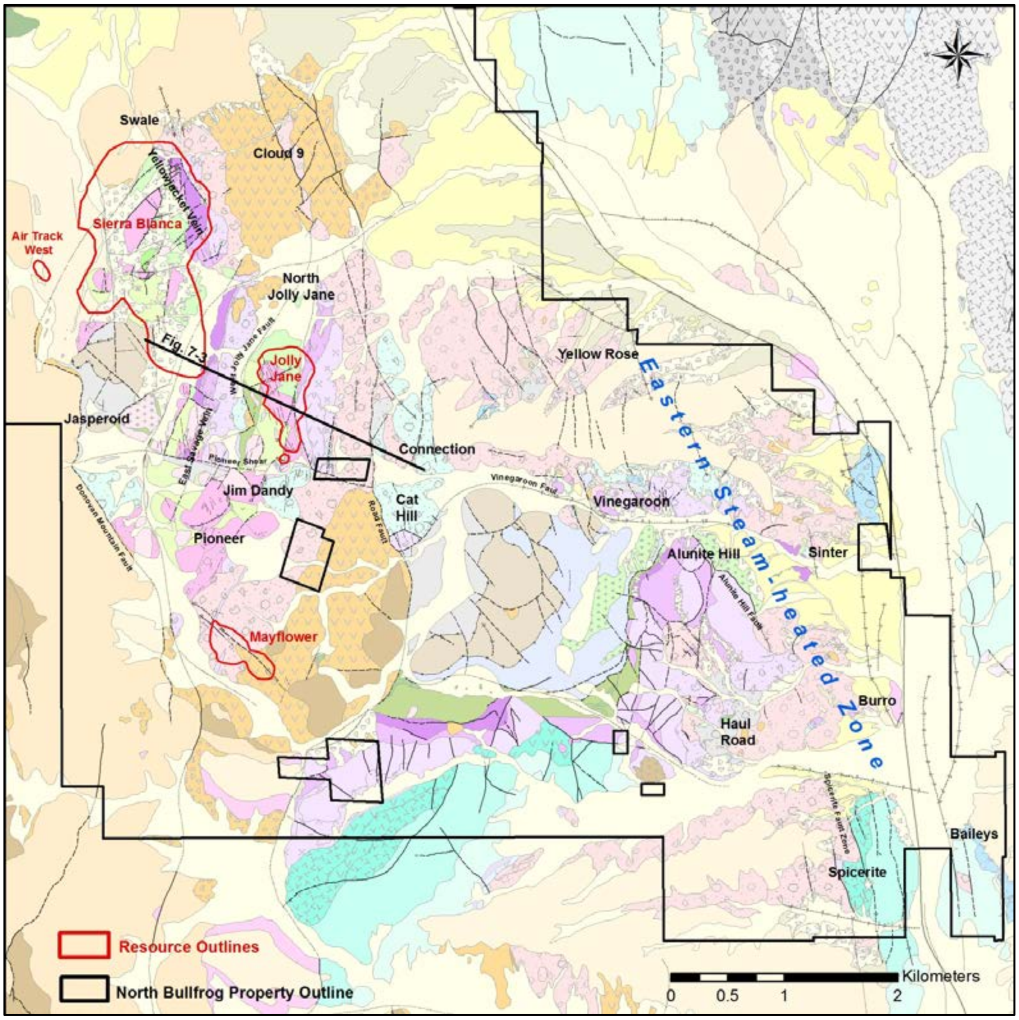
The YellowJacket Vein Zone has largely been closed off by drilling along strike, but remains open at depth on some sections. Potential for the discovery of additional blind YellowJacket-style high-grade veins exists around and within the disseminated resource areas. Much of the early resource definition drilling of the disseminated mineralization was vertical and was not effective at defining through-going, steeply dipping vein targets. Infill drilling of the low-grade oxide resources may discover new blind high-grade veins, particularly in the Sierra Blanca Tuff.

The Swale target lies along strike of the NNW projection of the YellowJacket Vein Zone (Figure 9.1). Several east-directed angle holes were drilled in the Swale area looking for the northern extension of the YellowJacket Vein. Most of the holes drilled at Swale encountered 1+ g/t Au sulphide mineralization, some of which is associated with quartz stockwork veining. Much of this sulphide mineralization appears to be too deep to support open pit mining. An extension of the YellowJacket Vein Zone was not confirmed, however, hydrothermal alteration and sulphide mineralization in the Sierra Blanca Tuff, Pioneer Formation and underlying Tnb rhyolite indicate the mineralizing system is still strong in the northernmost drilling at Swale. Additional deep drilling (400-600+ metres below surface) will be required to continue to test the underground vein potential along strike of the YellowJacket Vein Zone.

Cat Hill is just south of the Connection area, in the footwall of the Road Fault (Figure 9.1). Cat Hill is underlain by heterolithic and monolithic debris flow breccias of the Rainbow Mountain Sequence. Alteration at Cat Hill is characterized by overlapping assemblages of both steam-heated alteration and silicified ribs with quartz veining exhibiting boiling textures (quartz replacing bladed calcite). Surface rock chip sampling yielded up to 1.4 g/t Au from quartz vein material. Hole NB-15-284 encountered multiple 10-40 metre intercepts at >0.15 g/t Au, including two individual samples at >1 g/t Au. Two other holes also have significant low-grade oxide intercepts. Most of the mineralization encountered in the drilling at Cat Hill is oxidized. The Corvus drilling suggests that a small oxide resource can be developed at Cat Hill with future drilling.

The Road Fault is the northern continuation of the Contact Fault from the southern Bullfrog Hills. It is one of the largest displacement faults at NBP. It has gold mineralization in the immediate footwall at Cat Hill and Connection, and steam-heated alteration widely distributed in the hanging wall. The surface characteristics of the fault and its linear extent **suggests** the Road Fault was a significant structural conduit for hydrothermal fluids at some time in the history of the fault. It remains largely untested at depth along the entire strike length across the NBP.

Figure 9.1 NBP Exploration Target Location Map. Legend Can Be Found in Figure 7.2.



Recent drilling at the Cloud 9 target has shed new light on the structural and stratigraphic setting between Cloud 9 and North Jolly Jane (Figure 9.1). The presence of Wood Canyon Formation (currently interpreted as *in situ*) in the near surface drilling at Cloud 9 suggest the Sierra Blanca Tuff may also return to near surface between North Jolly Jane and Cloud 9. The Sierra Blanca Tuff is well-mineralized at North Jolly Jane, but mostly low-grade sulphide mineralization. If the North Jolly Jane mineralization in the Sierra Blanca Tuff returns to near surface towards Cloud 9, it can be expected to be oxidized. The evidence suggests a new blind shallow oxide target of similar style to the Jolly Jane Mineral Resource to the south. Additional drilling is warranted in this area.

The Jasperoid target is an occurrence of mineralized bedding-parallel jasperoid in limey beds of the Wood Canyon Formation, located southwest of Savage Valley (Figure 9.1). Barrick drillhole RDH-767 intersected 21 metres at 0.35 g/t in this area (including 1.52 metres at 1.1 g/t), and has never been followed up. The Wood Canyon Formation is the host unit at the Reward Deposit south of Beatty. Little attention has been given to the Wood Canyon Formation as an ore host at NBP.

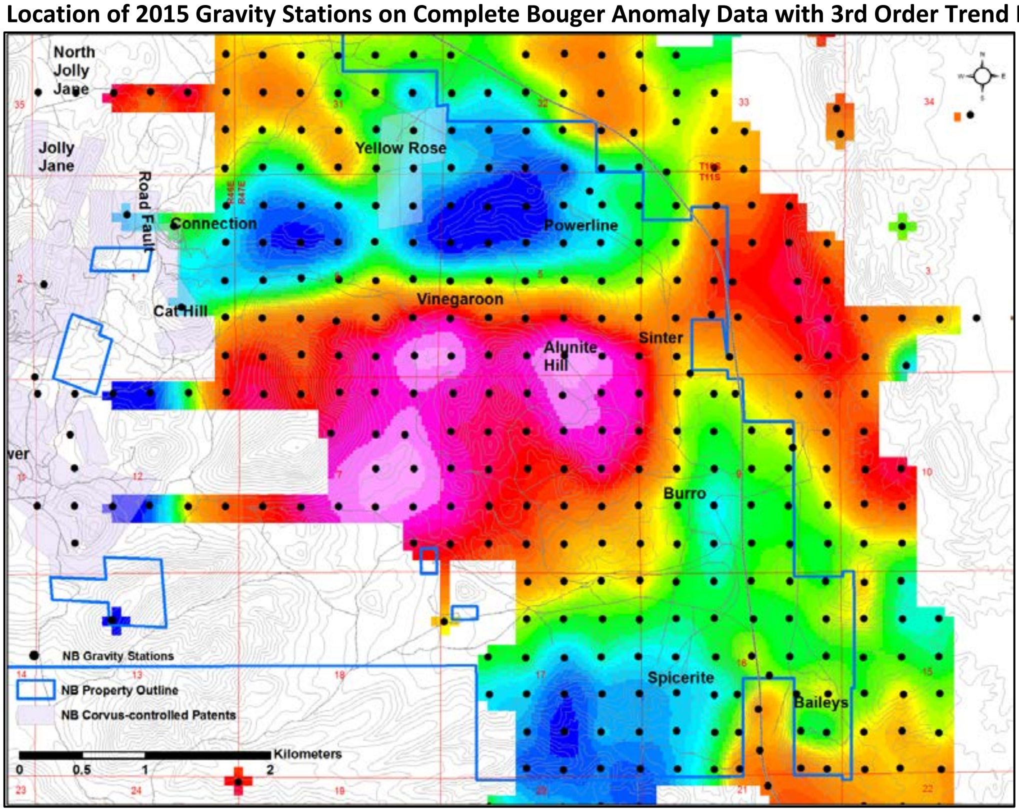
The Haul Road target, located along the D and H Mining haul road to the Gold Pit, was newly identified in 2016 (Figure 9.1). An irregular quartz vein exposed in a partially reclaimed historic prospect has yielded gold values up to 0.104 g/t (Figure 9.1). The vein is NE-trending, steeply NW-dipping, and hosted in monolithic debris flow breccia of Wood Canyon Formation lithologies. The exposed strike length is limited but the target is untested by drilling.

Geologic mapping, rock and soil sampling, age dating and a gravity survey was conducted on behalf of Corvus over the Eastern Steam-heated Zone (“ESHZ”) in 2014-15. In early 2015, a gravity survey was completed on behalf of Corvus in order to define possible structures beneath the extensive alteration zone which covers approximately 142 kilometres (Figure 9.2). Also in 2015, an extensive soil grid consisting of 3,672 samples was completed (Figure 9.3) on behalf of Corvus. The ESHZ is a broad area charactering by resistive low-temperature opal-chalcedonic silica accumulations (ribs and mounds) surrounded by recessive kaolinite-alunite alteration. Low-temperature residual silica accumulation is interpreted to define a paleo-groundwater table at the ESHZ. Residual silica forms erosional remnants of a flat tabular body at similar elevations across much of the ESHZ. The steam heated alteration and residual silica are largely barren of metals, as would be expected at this level of erosion over a productive vein system. The target concept at the ESHZ is to test for high-grade veins in a hypothetical boiling zone below the steam-heated alteration and paleo-groundwater table. The work that has developed this concept has defined a series of exploration targets within and around the ESHZ.

The Spicerite area is located at the southeastern corner of the NBP (Figure 9.1). The Spicerite area is underlain by (in ascending order): the Ranier Mesa Tuff, Pre-Ranier Mesa rhyolite flows and heterolithic to locally monolithic debris flow breccias. The stratigraphy is cut by at least three through-going NNW-trending, moderate to steeply west-dipping, down-to-the-west normal faults. The most notable of these faults is the Spicerite No. 1. A fourth NNW-trending through-going fault is down-to-the-east, and forms a graben in the hanging wall of the Spicerite No. 1 fault. The graben has been filled with largely non-steam-heated volcanic debris flow breccia, but also contains cobbles and boulders of steam-heated rocks. The evidence observed in the Spicerite area suggests a very dynamic period of faulting, hydrothermal alteration and erosion between 9.5-10.2 Ma. It is hypothesized that the graben fill may be concealing a primary vein target at depth. Corvus has drilled four angle holes on an E-W fence across the Spicerite target area. No significant gold or other metal values were encountered at the elevations reached by these holes (~300 metres below surface). All holes bottomed in low-temperature opal-kaolinite-alunite alteration. The stratigraphy encountered in the existing drilling demonstrates that the Spicerite No. 1 fault has ~700 metres of down-to-the-west displacement. This fault is likely the deep structural conduit feeding the hydrothermal fluids at Spicerite, and should be the primary target for future drilling. The Spicerite No. 1 fault requires deeper drilling down-dip below existing holes. This represents one of the best targets for a new Bullfrog-age vein system at depth under the ESHZ.

Alunite Hill is located on the western side of the ESHZ (Figure 9.1). The primary structural feature is the NW-trending, moderate to steeply SW-dipping Alunite Hill Fault. The wall rocks of the Alunite Hill Fault exhibit both steam-heated and high-level non-steam-heated alteration. On the surface, the fault hosts a discontinuous Au-Ag-bearing quartz vein that locally exhibits spectacular quartz after calcite boiling textures. Rock sampling has yielded up to 0.746 ppm Au and 13 ppm Ag from this vein. Corvus drilling encountered 4-6 metres of low-grade stockwork mineralization at shallow depth on the Alunite Hill Fault. The drilling also shows the fault flattens to ~35^{o} at relatively shallow depth. Additional drilling is recommended at depth and along strike to fully test the Alunite Hill Fault. It is possible that the Alunite Hill and Spicerite No. 1 faults are the same structure propagating at depth under the cover of the steam-heated debris flow sequence (Figure 9.1).

Figure 9.2 Location of 2015 Gravity Stations on Complete Bouger Anomaly Data with 3rd Order Trend Removed.



The Vinegaroon area is located just north of Alunite Hill in the hanging wall of the Vinegaroon Fault (Figure 9.1). The Vinegaroon Fault is major EW-trending, moderate to steeply north-dipping, basement-bounding fault that juxtaposes

Tertiary volcanic rocks and debris flow breccias against Paleozoic basement rocks. Much of the Vinegaroon target area lies within an alteration transition zone, exhibiting both quartz-adularia and steam-heated alteration assemblages. Numerous NNE- to NNW-trending high angle faults, often defined by silicified ribs, cut through the hanging wall rocks. These faults are apparently truncated at depth by the Vinegaroon Fault, which is hypothesized to be a primary structural target at depth. Hypogene alunite, similar to that of Alunite Hill, has been dated by Corvus at 9.5 Ma (Table 7.3). Anomalous gold is present is rock and soil sampling, apparently associated with NNW- and NNE-trending faults and local stratabound quartz-adularia alteration. Corvus drilling intersected a number of scattered low-grade gold zones including 14 metres at 0.20 g/t Au and 1.45 g/t Ag (max. value 0.35 g/t Au), but no quartz veins. This initial wide-spaced drilling at Vinegaroon was unsuccessful in finding mineralization of sufficient continuity for resource definition, but the area host significant alteration and gold mineralization, and warrants additional work in the future.

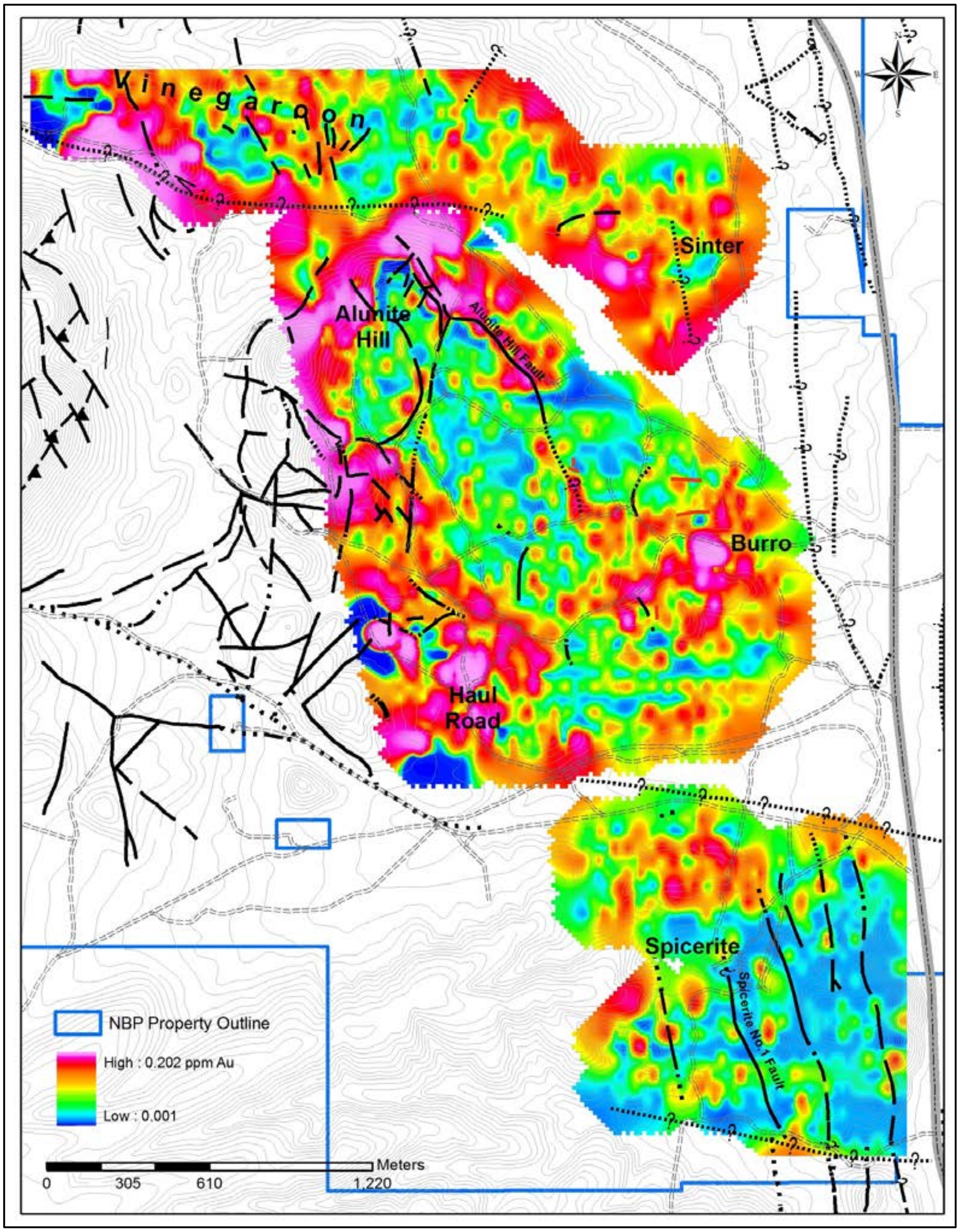
The Burro target area was defined primarily from a gold anomaly in soil sampling (Figure 9.3). There was reason to question the validity of this anomaly given that it lies in the middle of steam-heated alteration, which is generally barren of gold or other metals. Altered clasts of Paleozoic lithologies were noted and sampled in the anomalous area. Gold values up to 1.13 ppm were obtained from mineralized clasts weathering out of the generally recessive kaolinite-alunite-altered rocks. The conclusion is that false anomalies may be present in the Rainbow Mountain Debris Flow Sequence, which is the primary host unit in the ESHZ. Regardless of this conclusion, the Burro area exhibits strong alteration in the middle of the ESHZ, and has never been drilled. This is an ideal area for a fence of deep holes across the ESHZ to test for gold mineralization at depth below the steam-heated alteration.

The Sinter target area was named for outcrops of silicified sediments, which were originally thought to be sinter. The area hosts intense silicification in heterolithic debris flow breccias and sediments with no apparent structural control. The silicification at Sinter is interpreted to represent residual silica at a paleo-groundwater table. Similar to the Burro target, this is an ideal area for a fence of deep holes to test for gold mineralization at depth below the residual paleo-groundwater water table silica.

The Yellow Rose target area lies partially on patented claims near the northernmost exposed extent of the ESHZ (Figure 9.1). Shallow drilling in the surrounding area by Galli Exploration did not encounter any significant gold mineralization. The area is underlain by opaline silicification hosted in heterolithic and monolithic debris flow breccias. There is a series of NS to NNW-trending high angle structures that cut the debris flow breccias. There is anomalous gold in rock samples at the Yellow Rose adit. Gold values up to 0.230 ppm associated with illite-adularia-alteration are found in a prospect ~200 metres west of the adit. The Yellow Rose area exhibits both steam-heated and non-steam heated alteration assemblages at similar elevations, suggesting a fluctuating paleo-groundwater table and the potential for buried gold mineralization. A fence of deep drillholes has been proposed at Yellow Rose, but has yet to be drilled.

A minor amount of mapping and rock sampling has been done at the Baileys target east of US Highway 95 (Figure 9.1) on behalf of Corvus. Steam-heated alteration including resistive residual silica ribs and mounds, surrounded by recessive kaolinite-alunite alteration is hosted in both Ammonia Tanks Tuff and overlying debris flow breccias. As expected, there is no significant surface geochemistry found in the early rock sampling. Additional mapping is necessary before for targeting deep drilling at Baileys.

Figure 9.3 Image of Gridded Gold Values in Soils over the Eastern Steam heated Zone Target Areas



10 DRILLING

Between 1974 and 1996 approximately 249 rotary and reverse circulation holes totaling 33,775 metres were drilled on the Project by several different companies. RGC was able to obtain the assays and geological data for most of these holes and this data were acquired by ITH and then Corvus. Drilling by the NBPJV on many of the same targets encountered similar gold grades and thicknesses as the historic holes, suggesting that the earlier results are reliable. Additionally, much of the historic drilling was conducted by larger companies who mostly conducted sampling and assaying to industry standards at the time. Unfortunately, there is no quality control data available for these historic programs. Therefore, while it seems reasonable to put reliance on the older drillhole results they must be treated as historic and as guidelines to the location of mineralized areas.

The NBPJV drilled six core holes totaling 1,300 metres in 2007 and 35 reverse circulation holes in 2008 totaling 8,422 metres. All of the core holes were drilled at an angle to intersect the mineralized structures at nearly right angles. Sample intervals in core varied with rock and alteration type, and represent nearly true thicknesses. Most of the 2008 holes drilled at Air Track Hill and all of the Mayflower holes were angle drilled nearly perpendicular to the mineralized zones. Reverse circulation drilling above the water table was with a 5 ½ inch hammer bit and, where water became a problem, a 5 ¼ inch tricone bit was used. Samples were collected at 5 foot intervals starting from the top of each hole.

Corvus completed a 75 hole (17,820 metres, 58,465 feet) reverse circulation drilling program between October 2010 and June 2011 using Boart Longyear out of Elko, Nevada. Each five-foot sample was analyzed using a hand held XRF unit at the drill site. The XRF analysis was used to determine the arsenic content of the sample (a direct indicator of mineralization) and the probable stratigraphic correlation of the sample. The drill chips were cursorily logged for lithology and alteration at the drill site, and later logged in greater detail in an office setting using a binocular microscope. Magnetic susceptibility was also measured on the chips for each five foot interval. The geologic characteristics that were determined routinely on drill chips include: lithology and stratigraphic unit assignment, alteration style and intensity, vein type and percentage, color, sulphide type and percentage, and oxide type and relative intensity. The following five oxide classes were used to quantify the oxidation state of each sample:

Class 1: Total sulphide, no oxide present

Class 2: Mostly sulphide with minor oxide present

Class 3: Mixed oxide/sulphide in generally equal proportions

Class 4: Mostly oxide with minor fresh sulphide present

Class 5: Total oxide, no sulphide present

Oxide classes 5, 4 and 3 have consistently yielded favorable gold recoveries in bottle roll tests (Section 13). Model blocks assigned to classes 5, 4 and 3 comprise the oxide mineralization category. Oxide classes 2 and 1 have consistently yielded un-favorable gold recoveries in bottle roll tests. Model blocks assigned to oxide classes 2 and 1 comprise the sulphide mineralization category.

Between January 2012 and January 2013 additional geological information was collected, including 47 new reverse circulation holes totaling 7,128 metres (23,386 feet) and 18 core holes totaling 3,438 metres (11,279 feet). The 2012 reverse circulation ("RC") drilling included step-out holes in the Sierra Blanca, Jolly Jane and ATW areas; infill holes in the Mayflower and Jolly Jane Mineral Resource areas; and condemnation holes and water monitor wells around the Mayflower area. The 2012 core drilling included PQ3 holes for metallurgical studies in the Mayflower, Jolly Jane and Sierra Blanca Mineral Resource areas; and HQ3 exploration holes in the YellowJacket area. Holes NB12-117 through 143 were drilled by AK Drilling and holes NB12-144 through 176 were drilled by Boart Longyear. Logging protocols were the same as those employed in 2010-2011, with the exception of the addition of a hydrochloric acid fizz test log which is now done on all RC and core samples.

In 2013, Corvus drilled 87 holes at Sierra Blanca and YellowJacket totaling 19,000 metres (62,340 feet) including 35 HQ3 core holes, 2 PQ3 core holes for metallurgical samples and 50 RC holes. In addition, 13 channel sample profiles were completed along new roadcuts totaling 888 metres. The logging protocol was the same as that carried out in 2012. These new drill results formed the basis for a revised estimate of the Sierra Blanca Zone and first estimate of the YellowJacket Mineral Resource reported in April 2014.

In 2014, Corvus drilled 48 oriented core holes totaling 12,636 metres (41,456 feet). These included 36 HQ3 holes and 12 PQ3 holes for metallurgical samples. The 2014 program was focused on resource definition and metallurgical sampling of the YellowJacket Vein and Stockwork system. Two additional channel sample profiles were completed along new roadcuts totaling 181 metres (595 feet). The logging protocol was refined to improve the logging of vein types and abundances. Corvus uses the Reflex ACT II core orientation tool to orient all core holes, and surveys all holes to support the structural interpretation which is ongoing at this time. The YellowJacket vein mineralization is structurally-controlled and occurs in distinct quartz veins and stockwork zones, as opposed to the more typical disseminated mineralization at the NBP.

In mid-2015 through early 2017, Corvus has drilled 5 oriented core holes totaling 1,449 metres (4,754 feet). All 5 holes were drill with HQ3 diameter holes. These holes were drilled by First Drilling. Additionally, another 97 RC holes were drilled totaling 26,345 metres (86,434 feet). All of the RC holes were drilled by Boart Longyear. This program was focused on resource definition and expansions of the YellowJacket Vein Zone, as well as testing several new target areas. The logging protocol was the same as the refined procedures used in 2014. The 2015 through 2017 drill results have been incorporated into the revised estimates of mineralized volumes in the Sierra Blanca Disseminated and the YellowJacket Vein Zone reported in this document. A consistent theme in the 2015-2017 drilling was testing for west-dipping veins with east-directed angle holes, primarily targeting the Sierra Blanca Tuff and Tnb rhyolite.

Significant intercepts from the drilling between August 2015 and the end of April, 2017 are listed in Table 10.1 to illustrate the distribution of mineralization in the various target areas. These are representative examples of the drill sections through the mineral deposit. Drilling intercepts are not true widths. There are no known drilling, sampling or recovery factors identified that materially impact the accuracy and reliability of the results.

Table 10.1 Significant 2015-2017 Drill Intercepts

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
NB-15-425	47.54	57.3	9.76	0.79	1.96	Core	North Sierra Blanca
Including	47.54	51.65	4.11	1.3	2.74		
	63.1	67.42	3.51	0.51	1.48		
	121.31	127.41	6.1	0.13	0.4		
	130.45	215.4	84.95	0.21	0.51		
	221.68	253.9	32.22	0.21	0.47		
	295.55	306.02	10.47	0.15	0.53		
	319.43	334.99	15.56	0.25	0.37		
NB-15-426	103.02	168.55	65.53	0.52	1.36	Core	North Sierra Blanca
Including	154.84	158.53	3.69	1.31	1.52		
	192.31	203.48	11.17	0.18	0.74		
	207.36	231.58	24.22	0.28	1.61		
	234.94	253.9	18.96	0.15	0.48		
NB-15-260	128.02	134.11	6.9	0.19	1.705	RC	Alunite Hill Fault
	192.02	193.55	1.52	0.105	2.09		
Including	121.92	134.11	12.19		1.989		
	140.21	147.83	7.62		3.088		
	164.59	175.26	10.67		1.386		
NB-15-261	11.25	115.82	4.57	0.153	0.29	RC	Alunite Hill Fault
	121.92	124.97	3.04	0.171	0.475		
	129.54	131.06	1.52	0.103	0.59		
NB-15-262	No significant intercepts					RC	Alunite Hill Fault
NB-15-263	No significant intercepts					RC	Spicerite
NB-15-264	No significant intercepts					RC	Spicerite
NB-15-265	No significant intercepts					RC	Spicerite
NB-15-266	80.77	204.22	123.45	0.34	3.68	RC	YellowJacket
	100.58	102.1	1.52	1.06	11		

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
	169.16	175.26	6.1	1.87	9.62		
hole ended in mineralization							
NB-15-267	77.72	82.3	4.58	0.147	0.35	RC	YellowJacket
	99.06	108.2	9.14	0.346	1.02		
	112.78	323.08	210.31	0.472	1.41		
Including	173.74	184.4	10.66	3.471	3.59		
Including	210.31	211.84	1.52	1.01	1.37		
Including	225.55	227.08	1.52	1.09	2.76		
NB-15-268	39.62	48.77	9.15	0.27	0.45	RC	NW Sierra Blanca
	53.34	96.01	42.67	0.45	0.61		
Including	86.87	88.39	1.52	1.15	1.51		
	108.2	112.78	4.58	0.21	0.04		
NB-15-269	13.72	19.81	6.09	0.64	0.77	RC	NW Sierra Blanca
	54.86	62.48	7.62	0.37	1.1		
	92.96	112.78	19.82	1.28	1.8		
	167.64	172.21	4.57	0.23	0.5		
NB-15-270	45.72	54.86	9.14	0.35	0.58	RC	NW Sierra Blanca
	82.3	109.73	27.43	0.43	1.47		
Including	85.34	86.86	1.52	1.05	1.02		
	118.87	144.78	25.91	0.29	0.59		
NB-15-271	243.84	249.94	6.1	0.49	0.99	RC	YellowJacket
	291.08	359.66	68.58	0.37	0.8		
Including	306.32	307.85	1.52	1	1.59		
Including	310.9	312.42	1.52	1.23	1.7		
Including	321.56	324.61	3.05	1.25	1.88		
NB-15-272	121.92	123.44	1.52	0.24	13	RC	YellowJacket
	245.36	262.13	16.77	0.39	2.05		
	269.75	281.94	12.19	0.27	10.67		
Including	280.42	281.94	1.52	1.11	75		
	298.7	306.32	7.62	0.21	0.54		
	312.42	370.33	57.91	0.27	0.76		
NB-15-273	128.02	135.64	7.62	0.42	0.43	RC	Savage Valley
	144.78	175.26	30.48	0.39	0.83		
	205.74	217.93	12.19	0.12	1		
	26.22	281.94	45.72	0.19	1.54		
	286.51	368.81	82.3	0.4	10.68		
Including	358.14	361.19	3.05	2.05	178		
	377.95	284.05	6.1	0.13	0.8		
	hole ended in mineralization						
NB-15-274	181.36	268.22	86.86	0.36	0.7	RC	Savage Valley
	339.85	377.95	38.1	0.26	0.57		
	hole ended in mineralization						

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
NB-15-275	42.67	153.92	111.25	0.19	0.53	RC	Savage Valley
	175.26	202.69	27.43	0.21	0.86		
	265.18	289.56	24.38	0.17	0.49		
	298.7	307.85	9.15	0.15	0.33		
	312.42	327.66	15.24	0.15	0.36		
	350.52	379.48	28.96	0.13	1.2		
NB-15-276	149.35	158.5	9.15	0.15	2.79	RC	YellowJacket
	208.79	216.41	7.62	0.19	1.69		
	236.22	242.32	6.1	0.19	0.87		
NB-15-277	No significant intercepts					RC	YellowJacket
NB-15-278	298.7	300.23	1.52	0.37	1.21	RC	YellowJacket
	316.99	320.04	3.05	0.22	0.8		
	329.18	335.28	6.1	0.15	0.34		
NB-15-279	86.87	184.4	97.53	0.34	1.19	RC	NW Sierra Blanca
Including	102.11	103.63	1.52	1.12	2.57		
Including	123.44	124.97	1.52	1.18	0.96		
NB-15-280	85.34	86.87	1.52	0.44	0.2	RC	NW Sierra Blanca
	163.07	166.12	3.05	0.18	0.17		
	187.45	198.12	10.67	0.15	0.05		
NB-15-281	134.1	137.16	3.05	0.37	0.33	RC	NW Sierra Blanca
	160.02	163.07	3.05	0.13	0.31		
	167.64	175.26	7.62	0.13	0.48		
	205.74	228.98	23.24	0.28	0.53		
NB-15-282	64.01	163.07	99.06	0.64	4.08	RC	NW Sierra Blanca
Including	79.25	99.06	19.81	1.69	12.33		
Including	88.77	83.82	3.05	4.97	42		
	167.64	202.69	35.05	0.16	0.61		
NB-15-283	92.96	196.6	103.64	0.23	0.62	RC	Jolly Jane
	227.08	230.12	3.05	0.11	0.22		
	260.6	274.32	13.72	0.13	0.35		
NB-15-284	22.86	30.48	7.62	0.29	0.05	RC	Cat Hill
	70.1	80.77	10.67	0.25	0.05		
	86.87	91.44	4.57	0.18	0.08		
	103.63	143.26	39.63	0.22	0.11		
Including	114.3	115.82	1.52	1.12	0.12		
	179.83	207.26	27.43	0.27	0.71		
Including	185.92	187.45	1.52	1.33	1.25		
	231.65	237.74	6.09	0.15	0.22		
NB-15-285	30.48	47.24	16.76	0.23	0.04	RC	Cat Hill
	56.39	82.3	25.91	0.15	0.03		
	106.68	109.73	3.05	0.37	0.06		
NB-15-286	35.05	39.62	4.57	0.15	0.73	RC	Vinegarroon

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
	89.92	99.06	9.14	0.2	0.33		
	115.82	123.44	7.62	0.15	0.41		
	138.68	152.4	13.72	0.2	1.45		
	160.02	166.12	6.1	0.14	2.93		
NB-15-287	No significant intercepts					RC	Vinegarroon
NB-15-288	42.67	50.29	7.62	0.18	0.27	RC	Vinegarroon
	144.78	146.3	1.52	0.12	7		
NB-15-289	9.14	10.67	1.52	0.15	0.22	RC	Vinegarroon
	30.48	32	1.52	0.14	0.32		
	38.1	50.29	12.19	0.13	0.44		
NB-15-290	No significant intercepts					RC	Vinegarroon
NB-15-291	25.91	27.43	1.52	0.29		RC	Vinegarroon
	97.54	105.16	7.6	0.11			
	167.64	172.21	4.57	0.13			
NB-15-292	12.19	13.72	1.52	0.15	1.58	RC	Vinegarroon
	25.91	30.48	4.57	0.11	1.63		
NB-16-293	97.54	103.63	6.09	0.19	0.42	RC	NW Sierra Blanca
	143.26	208.79	65.53	0.21	0.79		
hole ended in mineralization							
NB-16-294	64.01	68.58	4.57	0.2	1.2	RC	NW Sierra Blanca
	102.11	213.36	111.25	0.23	1.31		
Including	121.92	132.59	10.67	0.63	3.13		
NB-16-295	74.68	161.54	86.86	0.53	1.21	RC	NW Sierra Blanca
Including	74.68	99.06	24.38	0.8	1.5		
Including	103.63	106.68	3.05	0.58	0.97		
Including	121.92	146.3	24.38	0.6	1.31		
	166.12	169.16	3.04	0.17	0.33		
	201.17	204.22	3.05	0.42	0.42		
NB-16-296	65.53	150.88	85.35	0.55	1.36	RC	NW Sierra Blanca
Including	73.15	106.68	33.53	0.82	2.08		
Including	120.4	124.97	4.57	0.71	1.09		
Including	131.06	132.59	1.53	0.58	1.69		
Including	141.73	143.26	1.53	0.5	0.6		
	156.97	163.07	6.1	0.13	0.31		
	205.74	208.79	3.05	0.22	0.45		
NB-16-297	99.06	208.79	109.73	0.35	1.62	RC	NW Sierra Blanca
Including	108.2	124.97	16.77	0.65	1.92		
Including	129.54	131.06	1.52	0.58	0.82		
Including	137.16	141.73	4.57	1.37	14.69		
Including	193.55	195.07	1.52	0.57	1.11		
NB-16-298	92.96	155.45	62.49	0.76	1.49	RC	NW Sierra Blanca
Including	121.92	144.78	22.86	1.69	2.64		

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
NB-16-299	102.11	164.59	62.48	0.39	1.02	RC	Swale
Including	109.73	121.92	12.19	0.55	0.99		
Including	155.45	161.54	6.09	0.58	0.97		
	175.26	184.4	9.14	0.17	1.41		
	224.03	230.12	6.09	0.15	0.58		
	237.74	257.56	19.82	0.19	1.24		
NB-16-300	153.92	254.51	100.59	0.78	2.03	RC	Swale
Including	158.5	188.98	30.48	0.68	2.82		
Including	205.74	208.79	3.05	0.65	2.41		
Including	213.36	220.98	7.62	0.79	2.04		
Including	225.55	231.65	6.1	0.88	2.05		
Including	236.22	254.51	18.29	1.76	2.37		
NB-16-301	124.97	135.64	10.67	0.25	0.46	RC	Savage Valley
	140.21	179.83	39.62	0.31	0.89		
Including	146.3	147.83	1.52	0.61	0.88		
Including	161.54	169.16	7.62	0.52	1.23		
	207.26	286.51	79.25	0.21	1.13		
	29566	361.19	65.53	0.21	1.07		
	367.28	408.43	41.15	0.33	9.22		
Including	379.48	381	1.52	0.6	20		
NB-16-302	121.92	137.16	15.24	0.16	0.51	RC	Savage Valley
	141.73	237.74	96.01	0.23	0.8		
	252.98	324.61	71.63	0.16	0.87		
	336.8	373.38	36.58	0.18	0.42		
	379.48	388.62	9.14	0.18	0.43		
NB-16-303	94.49	102.11	7.62	0.54	1.3	RC	Black Quartz Vein
	193.55	347.47	153.92	0.54	0.92		
Including	199.64	249.94	50.3	0.58	1.03		
Including	266.7	271.27	4.57	0.53	1.01		
Including	275.84	301.75	25.91	0.68	0.83		
Including	310.9	333.76	22.86	0.66	0.97		
hole ended in mineralization							
NB-16-304	211.84	274.32	62.48	0.3	1.09	RC	Swale
Including	213.36	219.46	6.1	0.68	2.37		
Including	259.08	260.6	1.52	0.62	1.46		
hole ended in mineralization							
NB-16-305	153.92	190.5	36.58	0.17	0.85	RC	Swale
	202.69	288.04	85.35	0.22	0.77		
hole ended in mineralization							
NB-16-306	475.49	495.3	19.81	0.24	0.47	RC	East Liberator
NB-16-307	No significant intercepts					RC	Cloud 9
NB-16-308	152.4	207.26	54.86	0.31	0.93	RC	Swale

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
	211.84	237.74	25.9	0.12	0.39		
	316.99	326.14	9.15	1.02	1.93		
Including	320.4	323.09	3.05	2.24	3.47		
NB-16-309	239.27	259.08	19.81	0.19	0.61	RC	Swale
	263.65	329.18	65.53	0.4	0.67		
Including	280.42	281.94	1.52	0.58	0.34		
Including	294.13	304.8	10.67	0.69	0.96		
Including	309.37	313.9	4.57	0.65	1.6		
	339.85	352.04	12.19	0.14	0.55		
	356.62	365.76	9.14	0.13	0.44		
NB-16-310	100.58	164.59	64.01	0.49	1.48	RC	Swale
Including	108.2	109.73	1.52	0.67	2.75		
Including	132.59	140.21	7.62	0.61	1.05		
Including	149.35	163.07	13.72	1.18	2.22		
	214.88	220.98	6.1	0.2	0.39		
	227.08	294.13	67.05	0.24	0.96		
Including	275.84	277.37	1.52	0.82	0.75		
Including	289.56	292.61	3.05	0.61	1.09		
hole ended in mineralization							
NB-16-311	No significant intercepts					RC	Swale
NB-16-312	137.16	240.79	103.63	0.24	0.68	RC	Swale
Including	138.68	143.26	4.58	1.08	1.87		
Including	152.4	153.92	1.52	0.53	1.03		
Including	227.08	228.6	1.52	0.58	1.21		
	266.7	335.28	68.58	0.31	0.71		
Including	272.8	278.89	6.09	1.2	1.28		
Including	323.09	324.61	1.52	0.55	1.22		
	339.85	358.14	18.29	0.16	0.41		
	364.24	371.86	7.62	0.17	0.36		
hole ended in mineralization							
NB-16-313	57.91	73.15	15.24	0.34	2.6	RC	YellowJacket
Including	57.91	59.44	1.52	1.88	12		
	80.77	99.06	18.29	0.2	1		
	108.2	256.03	147.83	0.29	1		
Including	143.26	144.78	1.52	5.22	2.9		
hole ended in mineralization							
NB-16-314	131.06	301.75	170.69	0.6	1.9	RC	YellowJacket
Including	132.59	138.68	6.09	2.8	4.7		
Including	227.08	237.74	10.66	2.41	9.7		
Including	252.98	286.51	33.53	0.86	1.9		
NB-16-315	228.6	323.09	94.5	0.36	0.87	RC	YellowJacket
Including	249.94	256.03	6.09	1.06	0.72		
Including	269.75	275.84	6.09	1.14	1.43		

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
	329.18	338.33	9.15	0.15	0.51		
NB-16-316	141.73	243.84	102.1	0.44	1.15	RC	Liberator
Including	198.12	201.17	3.05	0.88	1.2		
Including	228.6	231.65	3.05	0.94	2.12		
hole ended in mineralization							
NB-16-317	33.53	132.59	99.06	0.25	64	RC	Liberator
Including	115.82	121.92	6.1	0.5	0.71		
Including	124.97	128.02	3.05	0.54	1.07		
	160.02	190.5	30.48	0.25	0.85		
hole ended in mineralization							
NB-16-318	82.3	88.39	6.09	0.14	0.82	RC	Liberator
	146.3	213.36	67.06	0.44	0.88		
Including	158.5	170.69	12.19	0.59	0.95		
Including	175.26	195.07	19.81	0.58	0.78		
hole ended in mineralization							
NB-16-319	97.54	100.58	3.05	1.56	14.17	RC	Liberator
	106.68	117.35	10.7	0.15	1.01		
	132.59	164.59	32	0.25	0.79		
	169.16	181.36	12.2	0.13	0.58		
	188.98	220.98	32	0.16	0.34		
NB-16-320	76.2	184.4	108.2	0.57	0.87	RC	Liberator
	112.78	114.3	1.52	4.96	6.4		
	118.87	120.4	1.52	8.25	1.52		
	164.59	184.4	19.81	0.99	1.13		
hole ended in mineralization							
NB-16-321	103.63	156.97	53.34	0.34	0.76	RC	Liberator
	118.87	123.44	4.57	0.69	0.88		
	143.26	155.45	12.19	0.6	0.84		
NB-16-322	118.87	121.92	3.05	0.31	3.41	RC	Liberator
	134.11	175.26	41.15	0.46	0.85		
Including	134.11	135.64	1.52	0.91	1.14		
Including	152.4	166.12	13.72	0.74	0.86		
NB-16-323	70.1	135.64	65.54	0.64	1.11	RC	NW Sierra Blanca
Including	73.15	91.44	18.29	0.91	1.57		
Including	114.3	131.06	16.76	0.98	0.92		
NB-16-324	106.68	112.78	6.1	0.7	0.3	RC	NW Sierra Blanca
Including	108.2	111.25	3.05	1.17	0.38		
	147.83	195.07	47.24	0.16	0.32		
	225.55	242.32	16.77	0.18	0.42		
	248.41	252.98	4.57	0.12	0.56		
	262.13	291.08	28.95	0.24	1.06		
	318.52	332.23	13.71	0.18	0.88		

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
NB-16-325	120.4	228.6	108.2	0.41	0.81	RC	Swale
Including	14.21	144.78	4.57	0.61	0.87		
Including	152.4	153.92	1.52	0.51	1.06		
Including	179.83	185.93	6.1	0.69	0.79		
Including	192.02	211.84	19.82	0.73	1.35		
Including	216.41	219.46	3.05	0.57	0.74		
	233.17	239.27	6.1	0.12	0.41		
	251.46	300.23	48.77	0.18	0.61		
	307.85	316.99	9.14	0.16	0.48		
	333.76	402.34	68.58	0.21	1.32		
NB-16-326	114.3	243.84	129.54	0.37	0.69	RC	Swale
Including	14.26	149.35	6.09	0.61	0.96		
Including	153.92	156.97	3.05	0.58	0.99		
Including	163.07	166.12	3.05	0.53	0.67		
Including	175.26	190.5	15.24	0.59	0.85		
Including	231.65	237.74	6.09	0.71	0.94		
	263.65	313.94	50.29	0.22	0.83		
	324.61	353.57	28.96	0.14	0.34		
	409.96	432.82	22.86	0.12	0.32		
hole ended in mineralization							
NB-16-327	No significant intercepts						NW Sierra Blanca
NB-16-328	150.88	181.36	30.48	0.37	1.27	RC	NW Sierra Blanca
Including	172.21	176.78	4.57	0.7	1.66		
	202.69	259.08	56.39	0.37	2.68		
Including	210.31	214.88	4.57	0.64	1.53		
Including	236.22	239.27	3.05	0.93	5.65		
	271.27	284.99	13.72	0.12	0.39		
NB-17-329	85.34	176.78	91.44	0.52	1.54	RC	NW Sierra Blanca
Including	88.39	126.49	38.1	0.97	2.77		
	231.65	251.46	19.81	0.13	0.4		
	257.56	263.65	6.09	0.13	0.71		
hole ended in mineralization							
NB-17-330	62.48	65.53	3.05	0.14	0.31	RC	NW Sierra Blanca
	80.77	153.92	73.15	0.51	1.17		
Including	86.87	117.35	30.48	0.78	1.49		
Including	121.92	131.06	9.14	0.6	1.27		
	202.69	205.74	3.05	0.13	0.23		
	210.31	242.32	32.01	0.17	1.15		
NB-17-331	97.54	132.59	35.05	0.63	1.3	RC	NW Sierra Blanca
Including	99.06	123.44	24.38	0.81	1.6		
	146.3	152.4	6.1	0.33	0.13		
NB-17-332	47.24	184.4	137.16	0.45	1.15	RC	

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
Including	51.82	67.06	15.24	0.82	1.59		NW Sierra Blanca
Including	80.77	123.44	42.67	0.78	1.38		
	188.98	213.36	24.38	0.13	0.3		
hole ended in mineralization							
NB-17-333	88.39	190.5	102.11	0.38	0.93	RC	NW Sierra Blanca
Including	91.44	111.25	19.81	1.05	1.85		
NB-17-334	76.2	155.45	79.25	0.31	0.76	RC	NW Sierra Blanca
Including	76.2	80.77	4.57	0.56	0.85		
Including	124.98	138.68	13.71	0.6	1.35		
	167.64	172.21	4.57	0.12	0.36		
	176.78	214.88	38.1	0.25	1.14		
Including	192.02	196.6	4.57	0.97	4.01		
hole ended in mineralization							
NB-17-335	64.01	92.96	28.95	0.49	1.97	RC	NW Sierra Blanca
Including	67.06	79.25	12.19	0.78	2.34		
	99.06	160.02	60.96	0.31	6.28		
Including	132.59	135.64	3.05	1.04	7		
Including	140.21	141.73	1.52	1.01	18		
Including	147.83	149.35	1.52	0.76	59		
NB-17-336	42.67	48.77	6.1	0.26	0.37	RC	NW Sierra Blanca
	57.91	65.53	7.62	1.01	0.69		
Including	59.44	62.48	3.05	2.18	0.94		
	109.73	114.3	4.57	0.38	0.74		
	137.16	140.21	3.05	0.31	0.8		
	146.3	179.83	33.53	0.34	0.41		
Including	150.88	15.4	1.52	0.95	0.41		
Including	160.02	164.59	4.57	0.61	0.66		
NB-17-337	30.48	41.15	10.67	0.36	0.46	RC	NW Sierra Blanca
Including	38.1	39.62	1.52	1.21	1.34		
NB-17-338	45.72	70.1	24.38	0.71	1.33	RC	NW Sierra Blanca
Including	7.24	62.48	15.24	0.98	1.65		
	76.2	91.44	15.24	0.26	0.53		
NB-17-339	132.59	134.11	1.52	0.34	0.49	RC	NW Sierra Blanca
NB-17-340	65.53	68.58	3.05	0.58	0.45	RC	NW Sierra Blanca
Including	67.06	68.58	1.52	1.03	0.6		
	73.15	150.88	77.73	0.43	2.67		
Including	76.2	79.25	3.05	0.93	2.38		
Including	105.16	117.35	12.19	0.88	11.22		
Including	129.54	137.16	7.62	0.94	0.65		
NB-17-430	129.54	135.64	6.1	0.14	0.58	RC	Western
	164.59	182.88	18.29	0.17	0.35		
NB-17-431	44.2	265.18	220.98	0.21	0.94	RC	North Jolly Jane

HoleID and Orientation	From (m)	To (m)	Interval (m)	Gold (g/t)	Silver (g/t)	Type	Comments
	272.8	304.8	32	0.23	0.39		
hole ended in mineralization							
NB-17-432	53.44	65.53	12.19	0.75	2.2	RC	North Jolly Jane
	80.77	82.3	1.52	1.32	2.15		
	146.3	156.97	10.67	0.36	0.46		
Including	152.4	155.45	3.05	0.73	0.67		
	166.12	198.12	32	0.56	1.41		
Including	167.64	179.83	12.19	0.76	1.5		
Including	184.4	188.98	4.58	0.77	1.69		
	233.17	186.51	53.34	0.27	0.71		
hole ended in mineralization							
NB-17-433	131.06	234.7	103.64	0.33	1.1	RC	North Jolly Jane
Including	185.93	199.64	13.71	0.56	1.26		
Including	213.36	217.93	4.57	0.58	1.23		
Including	222.5	225.55	3.05	0.53	1.36		
	251.46	286.51	35.05	0.35	0.63		
Including	275.84	280.42	4.58	0.66	0.64		
hole ended in mineralization							
NB-17-434	62.48	65.53	3.05	0.39	1	RC	Jolly Jane
	70.1	89.92	19.82	0.38	0.97		
Including	73.15	79.25	6.1	0.59	1.18		
	193.55	220.98	27.43	0.14	0.42		

11 SAMPLE PREPARATION, ANALYSIS AND SECURITY

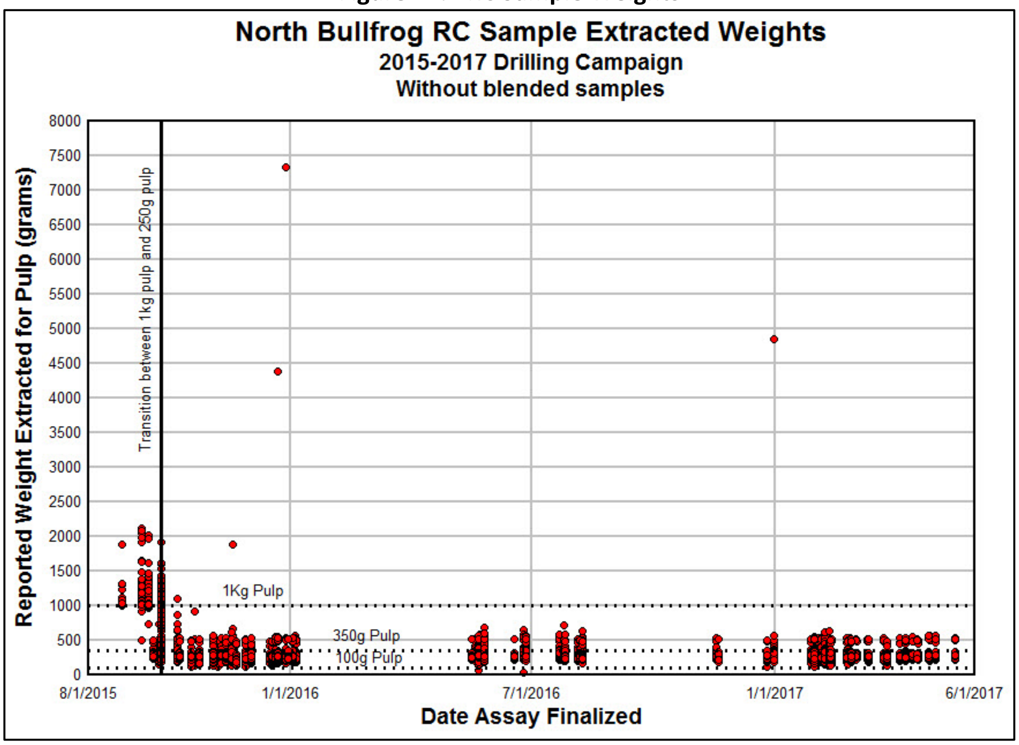
11.1 CORVUS 2017 QA/QC PROGRAM

The principal author has reviewed previous quality assurance and quality control ("QA/QC") programs for the Project contained in previous reports and finds the information sufficient to confirm the validity of earlier sampling and assaying programs. This section summarizes QA/QC data related to new assaying carried out between February 2015 and May 2017, which has been used for the revised Sierra Blanca Mineral Resource estimate.

11.1.1 RC DRILLING

97 RC drillholes were recorded from 2015 to 2017 totaling 26,345 metres. Standard procedures put in place during the 2010-2011 RC sampling program were followed. All samples were sent to ALS Minerals Laboratories ("ALS Minerals") in Reno, Nevada, which is an independent lab. Figure 11.1 shows the extracted weights for RC samples.

Figure 11.1 RC Sample Weights



11.1.2 CORE DRILLING

HQ3 and PQ3 core are drilled and extracted using triple-tube tooling to insure the best recovery through highly fractured intervals. Triple tube tooling also minimizes core separation and rotation within the extraction tube, which is imperative in preserving reliable orientation data. The entire length of each hole is sampled with continuous intervals based on careful logging of geological characteristics. In conjunction with the logging, sample intervals are marked in the core box and assigned unique sample numbers in a sequence that includes pre-selected QA/QC samples every tenth sample. Each hole starts with a blank QA/QC sample, and alternates between blanks and reference standard. Once a hole is logged and tagged for sampling, each box is photographed within a fabricated lighting and reference frame. The reference frame allows rectification of the image so that in future applications true lengths can be measured on the core using the photos. Once a hole, or a group of boxes in a hole, are photographed, the photos are reviewed for adequacy and the photo files renamed using hole number and box number.

11.1.3 ACCREDITED LABORATORIES

Assaying for the NBP has been performed by ALS Minerals primarily in Reno, Nevada and with some work performed in Vancouver, Britsh Columbia. Corvus has no business relationship with ALS Minerals beyond being a customer for analytical services. The Reno laboratory is Standards Council of Canada, Ottawa, Ontario Accredited Laboratory No. 660 and conforms with requirements of CAN-P-1579, CAN-P-4E (ISO/IEC 17025:2005). The North Vancouver, British Columbia laboratory is Standards Council of Canada, Accredited Laboratory No. 579 and conforms with requirements of CAN-P-1579, CAN-P-4E (ISO/IEC 17025:2005).

Check assaying has been performed by Inspectorate America Corporation, Sparks Nevada. Corvus has no business relationship with Inspectorate America Corporation beyond being a customer for analytical services. The Laboratory is Accredited Laboratory No. 720 and conforms to requirements of CAN-P-1579, CAN-P-4E (ISO/IEC 17025:2005).

11.1.4 TRANSPORT AND SECURITY

Prior to shipment, all rock and core samples were weighed, photographed and then placed in bags that are sealed with a security tag. RC samples are not weighed, but are accumulated in super sacks which are sealed with a security tag prior to shipment. Each drillhole is sent to ALS Minerals in Reno, Nevada as a separate shipment with a chain of custody document to certify that the seals were intact when the shipment was received.

11.1.5 DUPLICATES

Duplicates are used to monitor the precision of the assays that are incorporated into the mineralization estimate. Duplicates monitor three sources of variation—sampling, preparation and assaying. Field duplicates are used to document the precision associated with sampling, preparation duplicates are used to monitor the sample preparation process and pulp duplicates are used to monitor the assaying process. Corvus uses all three types of duplicates to monitor the precision of the gold and silver analyses. However, in general, field duplicates are only collected from RC holes.

11.1.5.1 PREPARATION DUPLICATES

Sample preparation duplicates are created by crushing the sample and then splitting it in half. The two halves are then processed as separate samples. As a general rule the ratio of prep duplicates to samples is 1:20 but usually five prep duplicates are created for each drillhole. The selection of which samples to duplicate is made by the logging geologist based on their interpretation of lithologies and degree of mineralization.

Figure 11.2 and Figure 11.3 show that, in general, the preparation duplicates reproduce very well for both gold (coefficient of variation 27%) and silver (coefficient of variation 18%).

Figure 11.2 Preparation Duplicate Gold Assays from Sierra Blanca

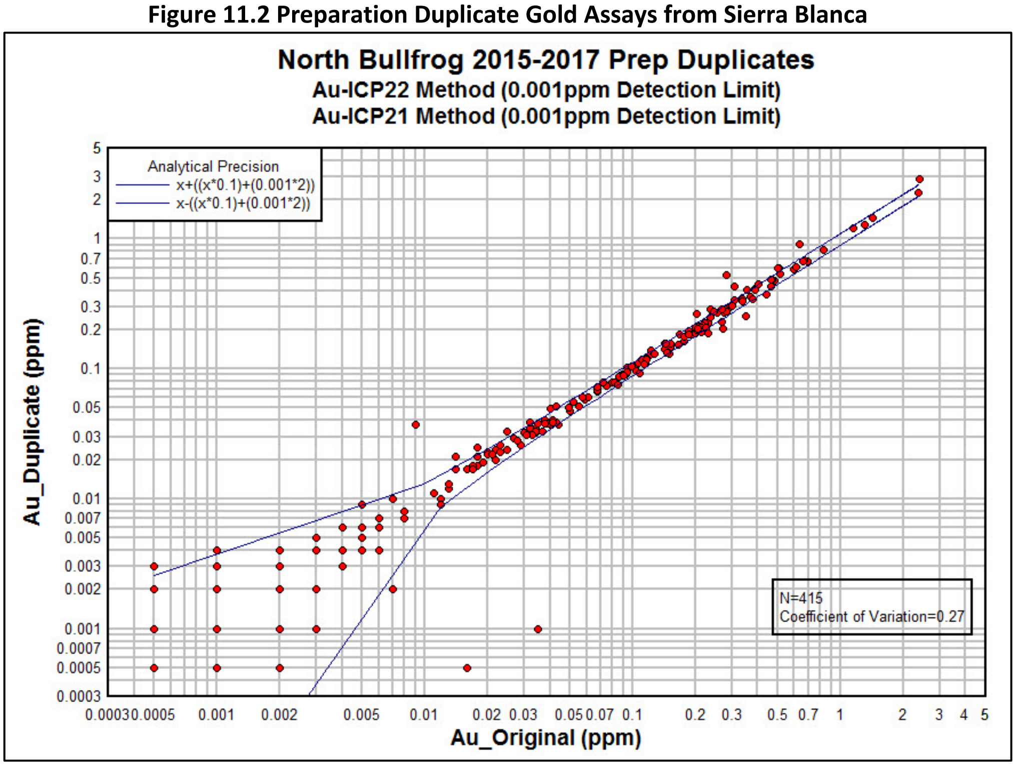
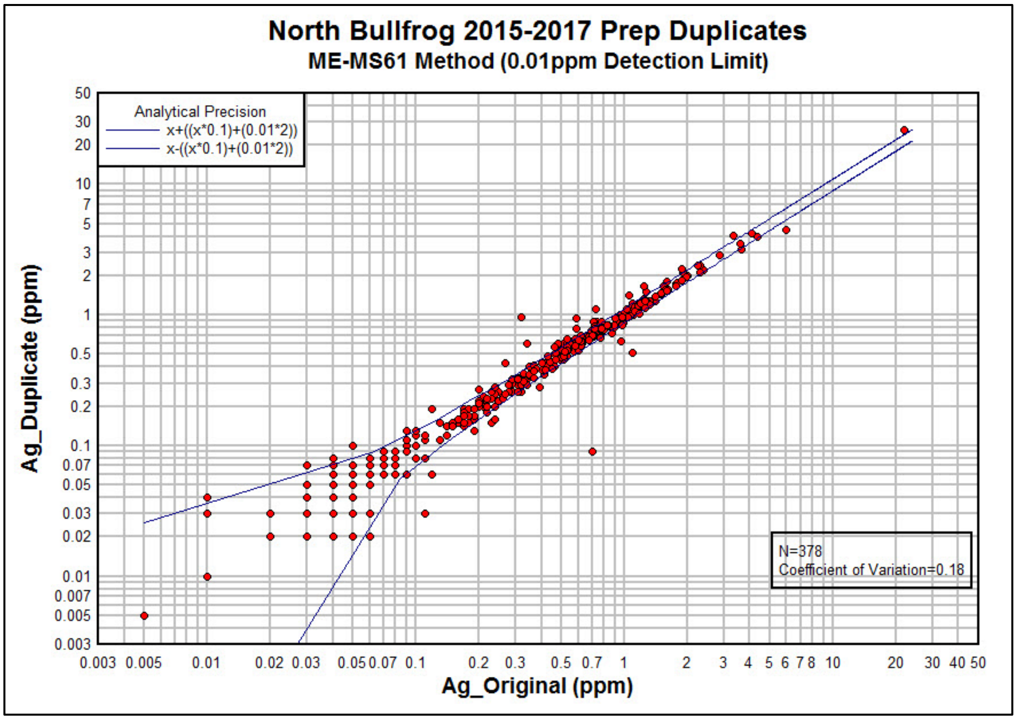


Figure 11.3 Preparation Duplicate Silver Assays from Sierra Blanca



11.1.5.2 PULP DUPLICATES

Pulp duplicates reflect the homogeneity of the pulp material that is subjected to the fire assay and variations generally reflect the nugget effect in gold samples. In this instance ALS Minerals routinely run pulp duplicates as part of their internal QA/QC program and these assays are reported as part of the assay package.

Figure 11.4 and Figure 11.5 show that the pulp duplicates reproduced well for both gold (coefficient of variation 22%) and silver (coefficient of variation 14%). Given the amount of visible gold observed in the North Bullfrog samples the homogeneity of the pulps is actually surprising and provides confidence that the sample preparation process is effective.

Figure 11.4 ALS Pulp Duplicates Gold Assays for NBP

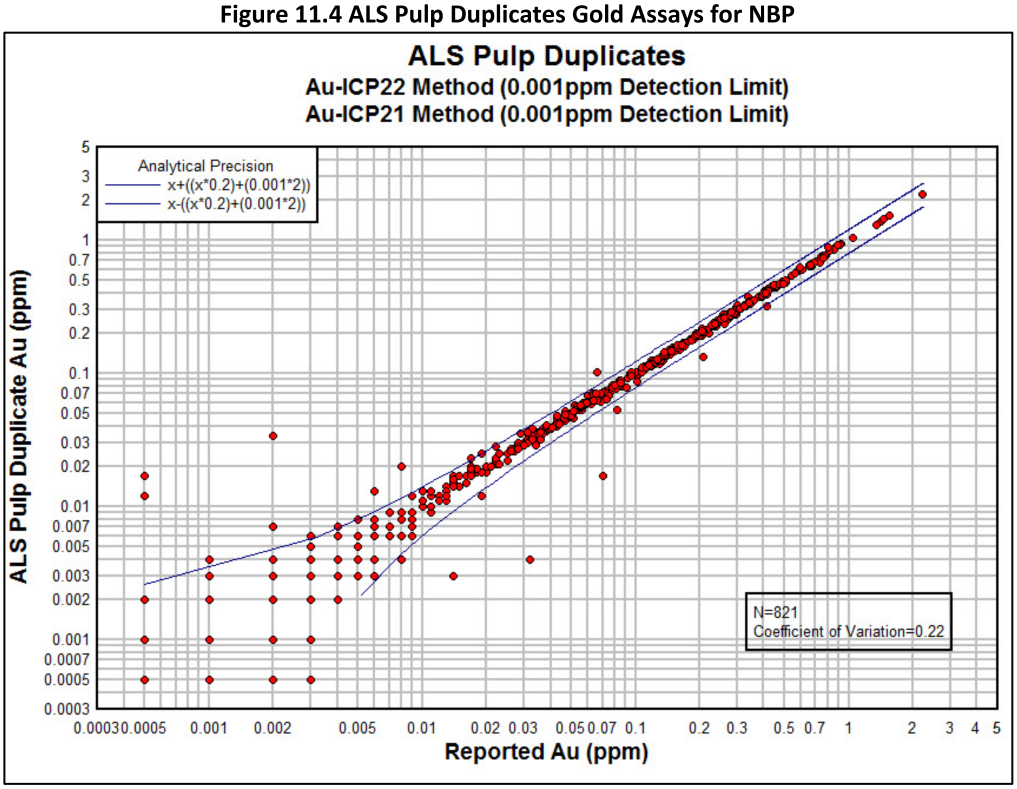
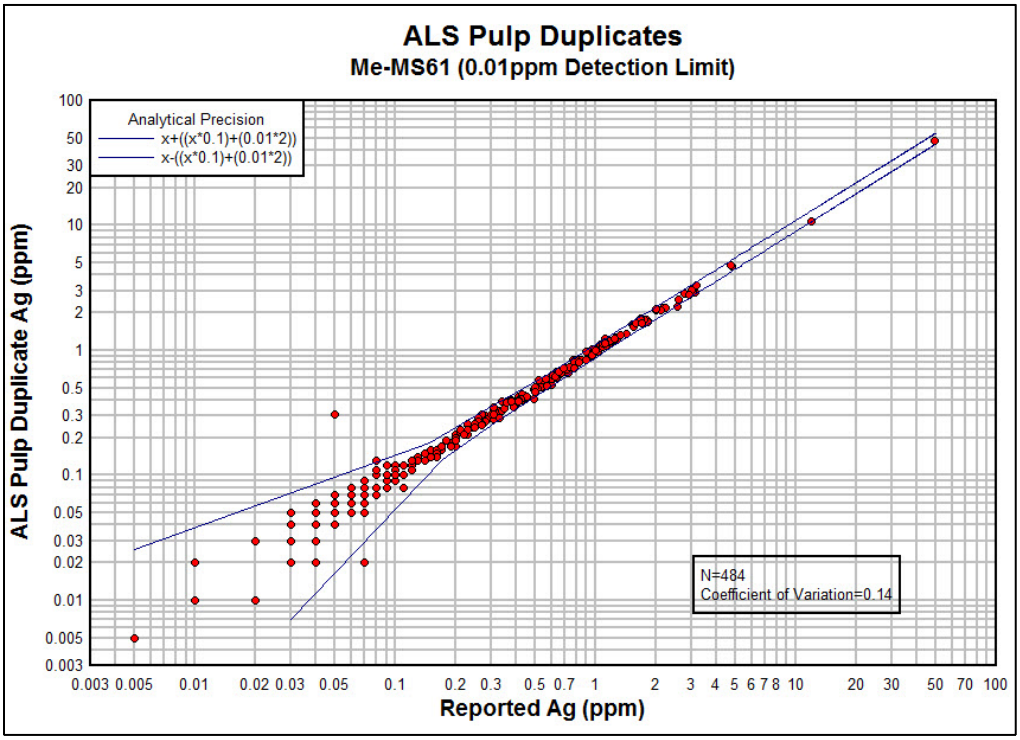


Figure 11.5 ALS Pulp Duplicate Silver Assays for NBP



11.1.6 CHECK ASSAYS

One hundred and ninety four samples were sent to Inspectorate America Corporation to check ALS Minerals results. There is very good agreement between the ALS and Inspectorate values as indicated by Figures 11.6 and 11.7, which plot the duplicate results for gold and silver, respectively.

Figure 11.6 Comparison of ALS (ICP21/22) and Inspectorate (FA330) Gold Analyses in Duplicate NBP Samples

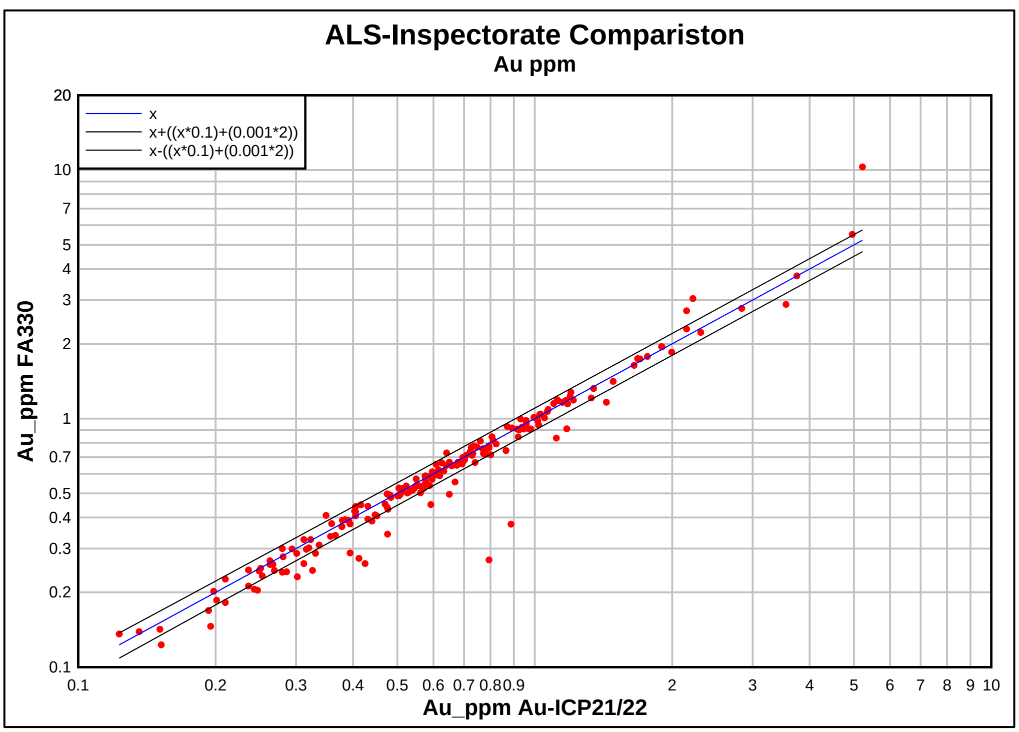
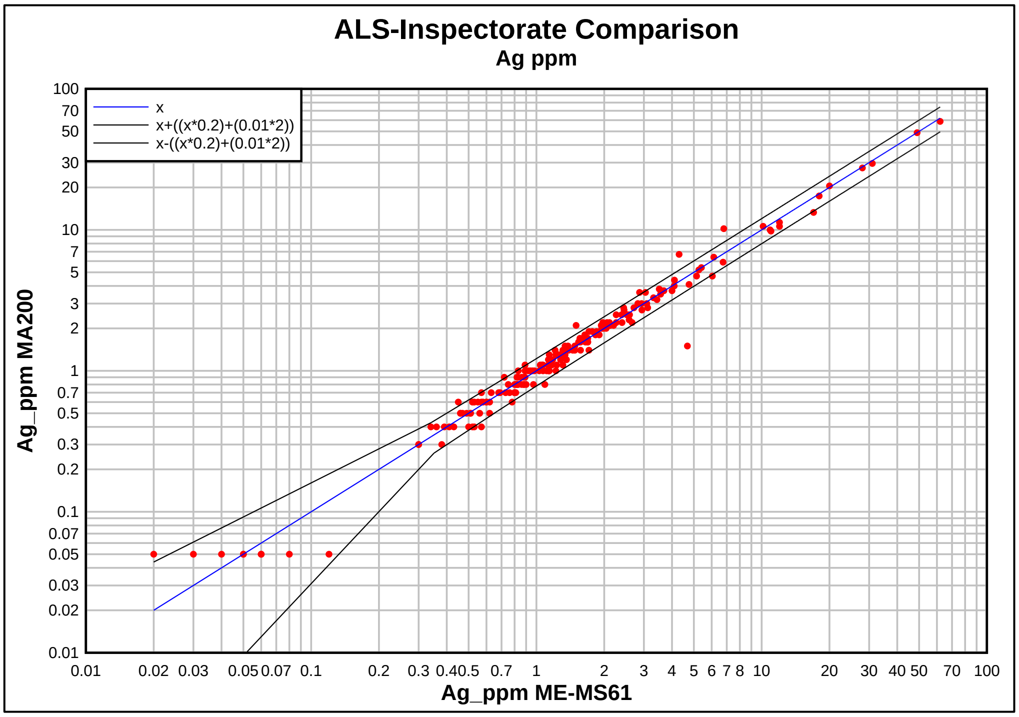


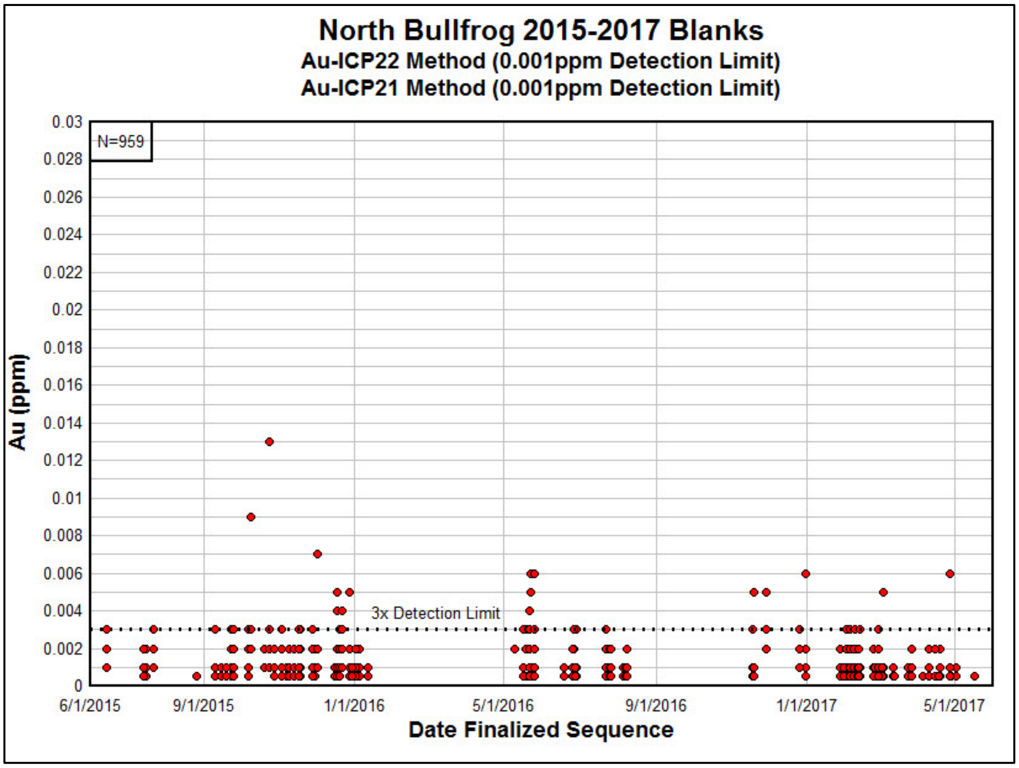
Figure 11.7 Comparison of ALS (ME-MS61) and Inspectorate (MA200) Silver Analyses in Duplicate NBP Samples



11.1.7 BLANKS

Blank material is used to monitor for carryover contamination and to ensure that there is not a high bias in the assay. Carryover is a process where a small portion of the previous sample contaminates the next sample. ALS Minerals allows a total of 1% carryover from preparation and analytical processes combined. Each blank that assays higher than three times the detection limit is evaluated to see if the value reflects carryover or some other problem. For example, if a blank assayed 0.006 ppm Au for the Au-ICP22 method and the previous sample ran 1ppm Au then the blank is not investigated because acceptable carryover could explain up to 0.01 ppm. However, if the blank had assayed 0.015 ppm Au then that is more than can be explained by carryover from a 1 ppm previous sample and an investigation will be initiated. The investigation includes a rerun of the blank and surrounding samples as well as any documentation that was associated with the work order at ALS Minerals. There are cases where the investigation does not resolve the reason for the higher than expected value. Figure 11.8 shows the performance of blank samples submitted for the NBP Quality Control from 2015 to 2017.

Figure 11.8 Sierra Blanca Blanks for Au-Icp22/ICP21 MethodS



11.1.8 CERTIFIED REFERENCE MATERIALS

Certified Reference Materials ("CRMs" or "standards") are used to monitor the accuracy of the assay results reported by ALS Minerals. CRMs are inserted into the sample sequence at a ratio of 1:20 and serve to monitor both accuracy and sample sequence errors. A number of different CRMs covering a range of grades and mineral compositions are used at the NBP. Each CRM comes with a certified concentration with a stated uncertainty. However, the precision on the assay is ultimately controlled by the 10% analytical precision reported by ALS Minerals. Therefore, in the following discussion the performance of the CRM's is discussed relative to the theoretical ALS Minerals precision.

CRM's used in the 2015-2017 drilling campaign were analyzed using the Au-ICP22 and Au-ICP21 analytical methods. All the CRM values fall within the theoretical analytical precision quoted by ALS Minerals (Figure 11.9). Figure 11.10 illustrates that a range of concentrations are being monitored with the CRM suite used at the NBP.

Figure 11.9 Au-Icp22 Certified Reference Material Gold Assays.

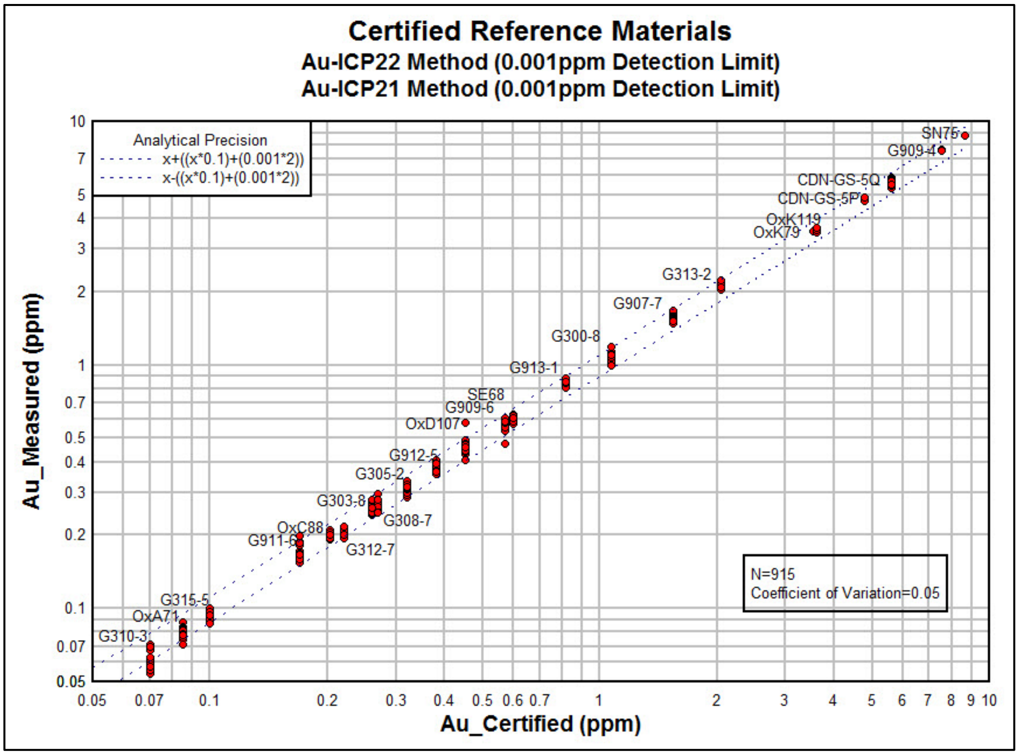
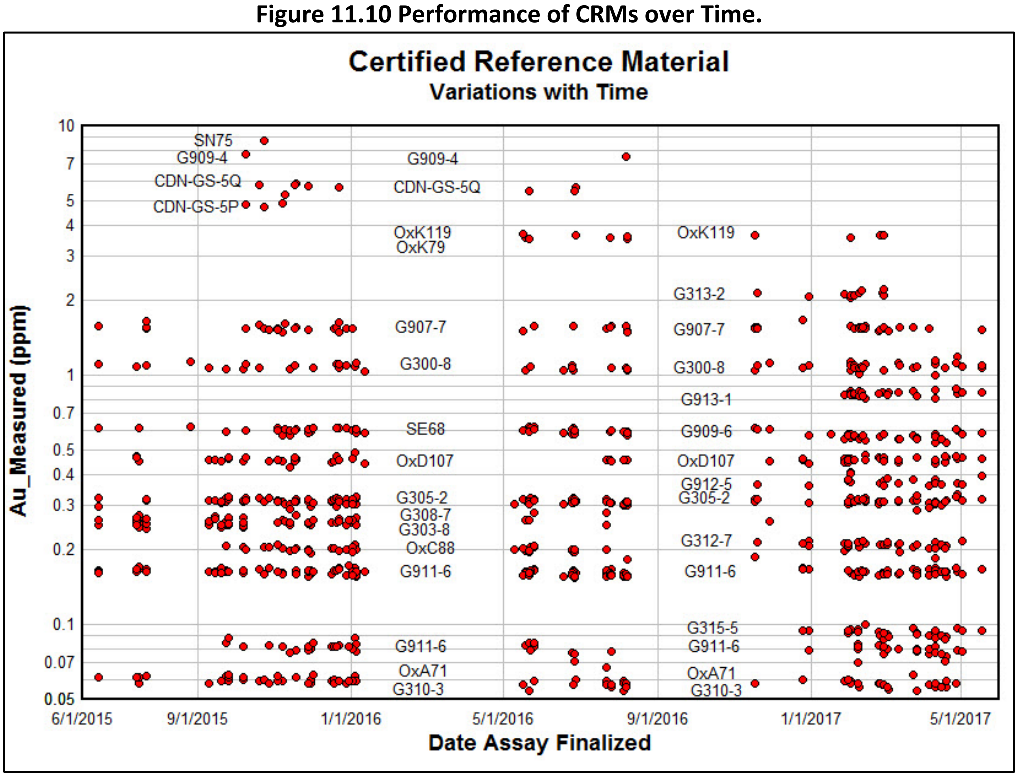


Figure 11.10 Performance of CRMs over Time.



Some of the CRMs used by Corvus have certified silver values while others that are certified for gold only have "reported" silver values. Nevertheless, these values can all be used to monitor the accuracy and precision of the silver assays (Figure 11.11). It is clear that most of the CRM silver values do report within the analytical precision of the ME-MS61 method. There are clearly problems with precision in the CRM's with values less than 0.1ppm silver. Figure 11.12 illustrates that a range of concentrations are being monitored with the CRM suite used at the NBP.

Figure 11.11 Silver Assays for CRM's

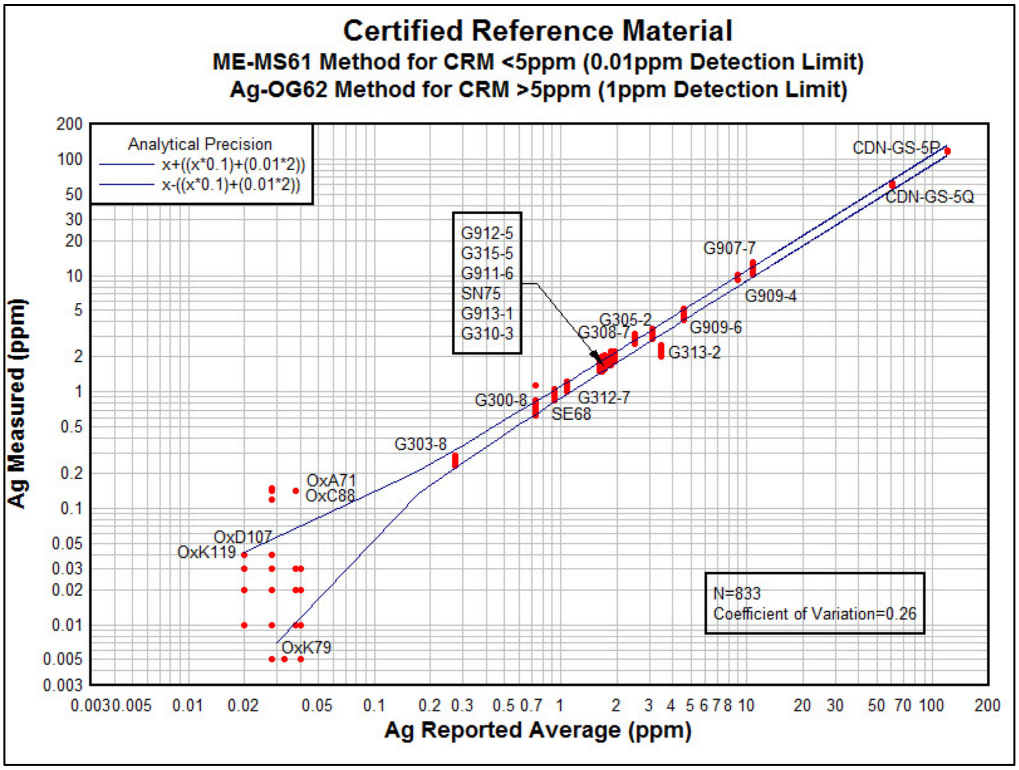
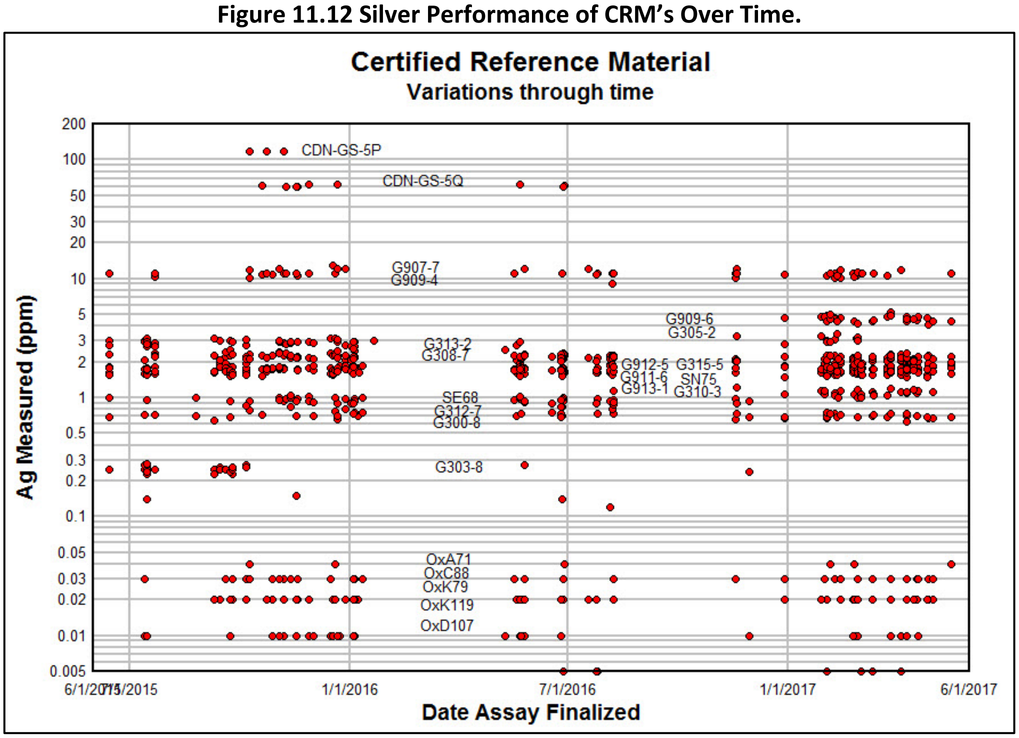


Figure 11.12 Silver Performance of CRM's Over Time.



11.2 DATA ADEQUACY

In the opinion of the author, sample preparation, security and analytical procedures as described in this Section 11, are sufficient and can be relied upon in the estimation of Mineral Resources and for the PEA, each as described herein.

12 DATA VERIFICATION

The principal author, Mr. Wilson, has verified the data used in this Technical Report by:

- Visiting the Project and confirming the geology and mineralization
- Visiting the core and RC storage areas and inspecting the core cutting facility
- Reviewing drill core
- Verifying the location of drillholes in the field
- Reviewing the QA/QC protocols

The principal author, Mr. Wilson, concludes that:

- Exploration drilling, drillhole surveys, sampling, sample preparation, assaying, and density measurements have been carried out in accordance with CIM Best Practice Guidelines and are suitable to support the Mineral Resource estimates and PEA contained herein
- Exploration and drilling programs are well planned and executed and supply sufficient information for Mineral Resource estimates and Mineral Resource classification and the PEA contained herein
- Sampling and assaying includes sufficient quality assurance procedures
- Exploration databases are professionally constructed and are sufficiently error free to support Mineral Resource estimates and the PEA contained herein

Therefore, in the opinion of the principal author, such data is adequate and can be relied upon to estimate Mineral Resources at the NBP and for the purposes of the PEA as described in this Technical Report.

12.1 DATABASE ERROR CHECKS

The drill database was reviewed by Mr. Wilson by selecting 10% of the gold sample records in the database. The certified assay certificates were crosschecked with the data entry in the database. The data entry procedures have been verified by Mr. Wilson and are accurate as compared to the certificates.

12.2 DATA VERIFICATION SAMPLES

Mr. Wilson independently collected seven field duplicates during his visit to the site in the period of June 6-8 to submit for laboratory analysis at Inspectorate America Corporation in Sparks, Nevada to independently verify the existence of the mineralization and to review the reproducibility of the original Corvus assays. No limitations were placed on the author's ability to review data or to independently verify the data used in the Mineral Resource estimate and the PEA. Samples were marked by MMC with information regarding the selected sample (Date, Sample#, Hole ID, From, To, Original Assay). The results show that check samples grades range within acceptable limits from the original individual sample grade. Table 12.1 outlines the results.

Table 12.1 Data Verification Samples (MMC-2017).

MMC Data Verification Samples - 2017						
Sample #	Hole ID	From	To	Original Value	Verification Value	Lithology
				Au	Au	
NB187273	Blank	-	-	-	-	Blank
NB187274	NB-17-329	290	295	0.722	0.767	Tsb
NB191471	NB-16-314	915	920	0.931	0.976	Tpf
NB191592	NB-16-315	860	865	0.700	0.724	Tnb
NB191667	NB-16-316	560	565	0.610	0.554	Tnb
NB191773	NB-16-318	620	625	1.070	0.718	Tpf
NB191794	NB-16-319	515	520	0.525	0.531	Tnb
NB192224	NB-16-325	595	600	0.736	0.733	Tsb
G913-1	NB-36	-	-	0.820	0.783	CRM

13 MINERAL PROCESSING AND METALLURGICAL TESTING

The samples tested as part of the NBP metallurgical program and presented here are representative of the various types and styles of mineralization and the mineral deposit as a whole at the NBP. The core and bulk samples were augmented by samples from RC holes to project spatial and depth related variability. The testing data are representative and the author knows of no known processing factors or deleterious elements that could have a significant effect on potential economic extraction.

Mining activities at NBP took place in the period 1909 – 1926, however, there are no metallurgical data available for that period. Data from subsequent exploration drilling at NBP between 1972 and 1996 by the various organizations listed in Table 6.1 do not contain any records of metallurgical test work. All of the known metallurgical test work on NBP mineralization have been produced by Corvus beginning in 2010.

NBP metallurgical test work has been performed on samples from core and RC drill cuttings generated during the exploration programs at NBP and on bulk sample materials collected from surface outcrops and from dumps resulting from previous underground mining at the NBP. The data consist of the results of cyanidation bottle roll tests at different particle sizes, cyanidation column leach tests at 80% passing (P80) -6.3mm, -12.5 mm (½ inch), -19 mm (3/4 inch) and -51 mm (2 inch) and gravity concentration with cyanidation leaching of tails tests. The metallurgical test work addresses both the disseminated, oxidized portion of the mineralization, suitable for heap leach processing and the higher-grade, vein and stockwork mineralization from the YellowJacket zone which will require milling with gravity concentration and cyanide leaching of tails. These results demonstrate high cyanide solubility of the contained gold and silver in YellowJacket mineralization at 100-200 mesh. The data indicate that simple process systems based on cyanide leaching are suitable for both the disseminated, oxidized low-grade mineralization and for the higher grade vein and vein stockwork mineralization at YellowJacket. The data indicate North Bullfrog Sierra Blanca tuff, Pioneer Formation tuff, Dacite, and Rhyolite refractory sulphide materials are cyanide amenable after sulphide and gold concentration by flotation and alkaline sulphide oxidation.

This section presents a general outline of the metallurgical testing performed to date and available for inclusion in this Technical Report. In section 13.1, the early bottle roll test data is summarized. Section 13.2 presents the results from the column leach testing, bottle roll tests from the bulk samples, from RC drilling cuttings and PQ3 core and vat leaching tests to Project particle size – Au recovery relationships for heap leaching of the disseminated mineralization. The discovery of the higher grade, vein and stockwork mineralization at YellowJacket required the expansion of the metallurgical program to include test work to define a mill process system. Section 13.2 also includes recent test results to support milling circuit recoveries for gravity concentration and cyanide leaching of concentrate and tails. Section 13.3 presents comminution test data for both disseminated mineralization and YellowJacket mineralization. Section 13.4 discusses the results of gold deportment studies on tail material from leaching of un-oxidized samples and on gravity concentrates of the vein and vein stockwork mineralization. Section 13.5 presents gold recovery from vat leaching large material, 75-200 mm. Section 13.6 presents sulphide material metallurgical data from flotation, Atmospheric Alkaline Oxidation (“AAO”) and oxidized concentrate cyanidation tests. Section 13.7 presents a metallurgical summary of the recovery and reagent consumption data.

The metallurgical testing that impacts the Mineral Resource estimate and PEA was performed by McClelland Analytical Services Laboratories Inc. of Sparks Nevada (“McClelland”). McClelland is an ISO 17025 accredited facility that supplies quantitative chemical analysis in support of metallurgical, exploration and environmental testing using classic methods and modern analytical instrumentation. McClelland has met the requirements of the IAS Accredidations Criteria for Testing Laboratories (AC89), has demonstrated compliance with ANS/ISO/IEC Standard 17025:2005, General requirements for the competence of testing and calibration laboratories, and has been accredited, since November 12, 2012.

McClelland has performed bottle roll testing on RC cuttings and core sample materials from the Sierra Blanca, the Jolly Jane, the Savage Valley and the Mayflower areas and column leach tests at P80 of -12.5 mm (1/2 inch), -19 mm (3/4 inch) and -51 mm (2 inch) for the Sierra Blanca, Savage Valley, Jolly Jane and Mayflower areas, bottle roll testing on these column leach composites at nominal P80 % of -75 micrometres (“µm”) (-200 mesh) and 1.7 mm (-10 mesh), 6.3 mm (-1/4 inch) and 19 mm (-3/4 inch), bottle roll test results for vein and stockwork materials representative of the YellowJacket mineralization at various feed sizes and gravity concentration with cyanide leaching of tail materials on YellowJacket vein and vein stockwork mineralization.

Hazen Research Inc. (“Hazen”), an independent laboratory, has performed flotation, AAO testing and cyanide leach testing on samples of sulphide mineralization from the YellowJacket zone and Swale area of Sierra Blanca. Hazen holds analytical certificates from state regulatory agencies and the US Environmental Protection Agency (the “EPA”). Hazen participates in performance evaluation studies to demonstrate competence and maintains a large stock of standard reference materials from the National Institute of Standards and Technology (NIST), the Canadian Centre for Mineral and Energy Technology

(CANMET), the EPA and other sources. Hazen's QA program has been developed for conformance to the applicable requirements and standards referenced in 10 CFR 830.120 subpart A quality assurance requirements, January 1, 2002.

Other scoping tests have been performed by lab organizations and are presented for completeness, including:

- Hazen – bottle roll testing of six samples collected from drilling in the Mayflower area, and refractory material treatment by sulphide and gold flotation, flotation concentrate sulphide oxidation by AAO and cyanidation of oxidized material.
- Kappes, Cassidy and Associates, Reno, Nevada ("KCA") – bottle roll testing on materials from the Connection area, core material from the Sierra Blanca area and on RC sample materials from the Sierra Blanca and Jolly Jane areas;
- Advanced Mineral Technology Laboratory Limited ("AMTEL"), London, Ontario, Canada - gold deportment studies of two samples of leached tail fractions of un-oxidized samples from the Savage Valley area.
- Bureau Veritas Commodities Canada Ltd. – Quemscan analysis of gravity concentrate samples YellowJacket vein and stockwork materials.

The gold mineralization at the NBP contains various amounts of silver. Silver ratios in the Sierra Blanca mineralization average 3.5 silver to 1.0 gold, the Jolly Jane mineralization averages 1.6 silver to 1.0 gold and the Mayflower mineralization averages 0.64 silver to 1.0 gold. YellowJacket mineralization averages approximately 5 silver to 1 gold. Bottle roll and column leach recoveries of silver are also reported in the data. Column Silver recoveries ranged from 3% to 16%. Discussion of the silver data contained in this Technical Report is limited to column leach testing of the disseminated low-grade mineralization and to the YellowJacket data, where relatively high silver grades and recovery is indicated by the data.

13.1 METALLURGICAL TESTING – INITIAL BOTTLE ROLL TESTING 2008-2010

13.1.1 HAZEN – MAYFLOWER AREA

Initial metallurgical testing focused on the Mayflower area which was first investigated in 2008. A total of six samples of core material were submitted to Hazen. The results are summarized in Table 13.1.

Table 13.1 Summary of Cyanide Leach Testing of Mayflower Metallurgical Samples.

Hazen ID	Corvu ID	Hole ID	From (m)	To (m)	From (ft.)	To (ft.)	Au (ppm) orig. borehole assay	Head Assay (ppm)	Tail Assay (ppm)	Estimated Au Recovery (%)
HRI 51858-1	E152440	NB08-07	47.24	48.77	155	160	0.80	0.6	0.2	67%
HRI 51858-2	E152336	NB08-10	102.11	103.63	335	340	1.62	1.7	0.3	83%
HRI 51858-3	E155073	NB08-11	117.35	118.87	385	390	0.87	1.1	0.1	91%
HRI 51858-4	E155191	NB08-12	70.10	71.63	230	235	3.09	2.4	0.9	63%
HRI 51858-5	E155211	NB08-12	97.54	99.06	320	325	14.20	11.1	1.2	89%
HRI 51858-6	E157203	NB08-17	91.44	92.96	300	305	2.03	1.2	0.4	67%

The submitted samples were stage crushed to 100% -1.7 mm (-10 mesh) and then bottle roll leached for 72 hours. The test results are contained in a letter report dated Hazen, 2008.

Each sample came from a separate borehole drilled at Mayflower, from depths ranging between 47 and 118 metres. Mayflower is distinctly different from the other resource areas currently being considered at the NBP, in that it forms along a high angle structure, striking NW. It is also higher grade than the other areas, and contains vein like intervals with much higher grade within the total mass.

13.1.2 KCA METALLURGICAL TESTING DATA

KCA performed three separate bottle roll test campaigns in early 2010 through mid-2011. The first campaign was performed on material obtained from the Sierra Blanca area, the second campaign was performed on samples from the Sierra Blanca, YellowJacket, Savage Valley and Jolly Jane areas, and the third campaign was performed on samples from the Connection area. The test data generated by KCA are organized in three reports, which are discussed in the following sections.

13.1.2.1 KCA BOTTLE ROLLS SIERRA BLANCA CORE MATERIAL

The initial test work performed by KCA was on the Sierra Blanca area samples. Table 13.2 provides a summary of the bottle roll test results (KCA, 2010).

Table 13.2 North Bullfrog Project - Sierra Blanca Pulverized Material (-0.075mm) Summary of Cyanide Bottle Roll Tests (Grams-g; Kilograms-kg; Tonnes-t).

KCA Sample No.	KCA Test No.	Calculated Head (g Au/t)	Extracted (g Au/t)	Avg. Tail (g Au/t)	Au Extracted %	Leach Time (days)	Consumption NaCN (kg/t)	Addition $Ca(OH)_2$ (kg/t)
43790 A	44111 A	0.59	0.46	0.13	78%	3	0.04	0.50
43790 B	44111 B	0.78	0.56	0.22	71%	3	0.09	0.50
43790 C	44111 C	0.46	0.42	0.03	92%	3	0.09	0.50
43790 D	41111 D	0.63	0.52	0.11	82%	3	0.04	0.50
43790 E	41112 A	0.34	0.29	0.05	84%	3	0.11	1.00
43790 F	41112 B	0.40	0.35	0.05	88%	3	0.24	0.50
43790 G	41112 C	0.47	0.43	0.04	91%	3	0.08	0.50
43790 H	41112 D	0.28	0.08	0.19	30%	3	0.05	0.50
43790 I	41113 A	0.29	0.13	0.16	46%	3	0.09	0.50
43790 J	41113 B	0.64	0.02	0.62	4%	3	0.27	1.00
43790 K	41113 C	0.74	0.13	0.62	17%	3	0.17	1.00
-	**Average**	**0.51**	**0.31**	**0.20**	**62%**	**--**	**0.12**	**0.64**

13.1.2.2 KCA BOTTLE ROLLS ON SIERRA BLANCA, YELLOWJACKET, SAVAGE VALLEY AND JOLLY JANE

The second test work program performed by KCA was on samples from the Sierra Blanca, YellowJacket, Savage Valley and Jolly Jane areas.

Bottle roll testing results generated from RC samples are reported for Sierra Blanca (10 tests), Jolly Jane (4 tests), Savage Valley (6 tests) and YellowJacket (4 tests). The tests include oxide, mixed oxide/sulphide and sulphide sample material, which are listed in Table 13.3 (KCA, 2011a).

Table 13.3 North Bullfrog Project Pulverized Material (P80 -75µm) Summary of Cyanide Bottle Roll Leach Tests (Grams-g; Kilograms-kg; Tonnes-t).

Hole ID	KCA Sample No.	KCA Test No.	Description	Area	Oxidation	Calculated Head (g Au/t)	Extracted (g Au/t)	Avg. Tail (g Au/t)	Au Extracted %	Leach Time (days)	Consumption NaCN (kg/t)	Addition $Ca(OH)_2$ (kg/t)
NB-10-42	48425 A	48432 A	NB150063M	Jolly Jane	5-oxide	0.46	0.42	0.04	90%	3	0.08	1
NB-10-43	48425 B	48432 B	NB150157M	Jolly Jane	5-oxide	0.43	0.41	0.02	95%	3	0.12	2.25
NB-10-45	48425 C	48432 C	NB150400M	Jolly Jane	5-oxide	0.34	0.3	0.04	89%	3	0.08	1
NB-10-47	48425 D	48432 D	NB150639M	Jolly Jane	5-oxide	0.26	0.22	0.04	85%	3	0.09	1
NB-10-48	48425 E	48433 A	NB150794M	Sierra Blanca	4-mostly oxide	0.35	0.3	0.04	87%	3	0.08	1
NB-10-48	48425 F	48433 B	NB150879M	Sierra Blanca	3-mixed ox/sulf	0.3	0.14	0.16	47%	3	0.16	1
NB-10-51	48425 G	48433 C	NB151271M	Sierra Blanca	5-oxide	0.35	0.27	0.08	77%	3	0.08	1
NB-10-51	48425 H	48433 D	NB151279M	Sierra Blanca	4-mostly oxide	0.35	0.25	0.1	70%	3	0.35	1
NB-10-52	48425 I	48434 A	NB151642M	Sierra Blanca	1-sulphide	0.46	0.03	0.44	6%	3	0.27	1
NB-10-53	48425 J	48434 B	NB151685M	Sierra Blanca	5-oxide	0.27	0.24	0.03	90%	3	0.32	1
NB-10-55	48425 K	48434 C	NB152098M	Sierra Blanca	2-mostly sulphide	0.3	0.06	0.24	19%	3	0.19	1
NB-10-55	48425 L	48434 D	NB152104M	Sierra Blanca	3-mixed ox/sulf	0.27	0.19	0.07	72%	3	0.16	1
NB-10-55	48425 M	48435 A	NB152106M	Sierra Blanca	2-mostly sulphide	0.3	0.06	0.24	20%	3	0.21	1
NB-10-56	48425 N	48435 B	NB152362M	Sierra Blanca	1-sulphide	0.25	0.03	0.23	10%	3	0.7	1
NB-10-64	48425 O	48435 C	NB153880M	Savage Valley	1-sulphide	0.43	0	0.43	0%	3	0.08	1
NB-10-64	48425 P	48435 D	NB153910M	Savage Valley	2-mostly sulphide	0.46	0.06	0.4	12%	3	0.08	1
NB-10-64	48425 Q	48436 A	NB153912M	Savage Valley	3-mixed ox/sulf	0.36	0.14	0.22	40%	3	0.01	1
NB-11-65	48425 R	48436 B	NB154004M	Savage Valley	5-oxide	0.63	0.59	0.04	94%	3	0.09	1.25
NB-11-65	48425 S	48436 C	NB154029M	Savage Valley	5-oxide	0.43	0.4	0.03	93%	3	0.08	1
NB-11-67	48425 T	48436 D	NB154512M	Savage Valley	1-sulphide	0.62	0	0.62	0%	3	0.08	1
NB-10-62	48425 U	48437 A	NB153462M	YellowJacket	1-sulphide	0.49	0.06	0.43	12%	3	0.35	1
NB-10-63	48425 V	48437 B	NB153655M	YellowJacket	1-sulphide	16.66	14.37	2.28	86%	6	0.59	1
NB-10-63	48425 W	48437 C	NB153677M	YellowJacket	1-sulphide	0.61	0.05	0.56	8%	3	0.05	1
NB-11-68	48425 X	48437 D	NB154852M	YellowJacket	1-sulphide	0.35	0.11	0.25	30%	3	0.09	1

13.1.2.3 KCA BOTTLE ROLLS ON CONNECTION

The third test work program performed by KCA was on samples from the Connection area.

Two oxide samples were selected from the drillholes in the Connection area. The bottle roll tests were performed on P80 -75µm material for 72 hours and are summarized in Table 13.4 (KCA, 2011b)

Table 13.4 North Bullfrog Project Pulverized Material (-0.075mm) Summary of Cyanide Bottle Roll Leach Tests (Grams-g; Kilograms-kg; Tonnes-t).

KCA Sample No.	KCA Test No.	Calculated Head (g Au/t)	Extracted (g Au/t)	Avg. Tails, (g Au/t)	Au Extracted %	Leach Time, (days)	Consumption NaCN, (kg/t)	Addition $Ca(OH)_2$ (kg/t)
48455 A	48456 A	5.87	2.85	3.03	48%	3	0.16	1.5
48455 B	48456 B	4.23	3.85	0.38	91%	3	0.22	2.0

Connection is a relatively small portion of the mineralization at the NBP. Gold recovery was 48% and 91% in the two samples. Silver recovery was high at 91% and 73%, respectively. The submitted samples had relatively high Au grades (5.9 and 4.2 g/t).

13.2 MCCLELLAND METALLURGICAL TESTING – 2012-2015

The bulk of the metallurgical testing at NBP has been performed by McClelland Laboratories of Sparks, Nevada. Results of the different testing programs are reported in chronological order.

13.2.1 MCCLELLAND METALLURGICAL TESTING - 2012

Surface outcrops at Jolly Jane and the existence of surface dumps from previous underground mining at Sierra Blanca provided an opportunity to develop bulk sample composites for column leach testing. These two areas comprise approximately 90% of the currently defined Mineral Resource. Three testing objectives were defined with the tests:

- Perform column leaching on duplicate samples at P80 of -12.5 mm (-½ inch) and -51mm (-2 inch) from bulk sample material of the Sierra Blanca and Jolly Jane areas;
- Project a particle size – leach recovery relationship from combining the column leach results with bottle roll testing of material from the 2 bulk samples at P80s of -75µm (-200 mesh) and -1.7 mm (-10 mesh); and
- Perform comparative bottle roll testing on sample composites developed from RC drilling samples at the smaller particle sizes [P80s of -75µm (-200 mesh) and -1.7mm (-10 mesh)] to verify that the bulk sample materials were characteristic of the low-grade mineralized material throughout Sierra Blanca and Jolly Jane areas.

13.2.1.1 MCCLELLAND BOTTLE ROLL TESTS

McClelland performed a series of bottle roll tests to evaluate cyanide leach recovery on material at a particle size of P80 - 0.075µm (-200 mesh) and -1.7 mm (-10 mesh). Table 13.5 lists the results from these bottle roll tests.

Table 13.5 North Bullfrog Project Summary of McClelland Bottle Roll Tests.

Composite	Area	Feed Size	Au Rec. %	Tail Grade (g/t)*	Calculated Head (g/t)*	NaCN Cons. (kg/t)**	Lime Added (kg/t)**
NBMC-1	Jolly Jane Oxide	79.3%-1.7mm	64.3	0.15	0.42	0.08	1.5
NBMC-1	Jolly Jane Oxide	80%-75µm	80.0	0.073	0.365	0.14	0.9
NBMC-2	Jolly Jane Oxide	64.8%-1.7mm	66.7	0.07	0.21	0.08	1.3
NBMC-2	Jolly Jane Oxide	80%-75µm	76.8	0.044	0.190	0.08	0.9
NBMC-3	Jolly Jane Oxide	65.3%-1.7mm	67.5	0.13	0.40	0.07	1.2
NBMC-3	Jolly Jane Oxide	80%-75µm	79.5	0.071	0.347	0.07	1.0
NBMC-4	Sierra Blanca Oxide	79.5%-1.7mm	88.1	0.05	0.42	<0.07	1.3
NBMC-4	Sierra Blanca Oxide	80%-75µm	88.2	0.049	0.415	<0.07	1.1
NBMC-5	Sierra Blanca Oxide	69.7%-1.7mm	83.8	0.06	0.37	0.07	1.3
NBMC-5	Sierra Blanca Oxide	80%-75µm	92.1	0.024	0.302	<0.07	1.0
NBMC-6	Sierra Blanca Oxide	78.5%-1.7mm	52.6	0.09	0.19	0.15	1.4
NBMC-6	Sierra Blanca Oxide	80%-75µm	86.7	0.025	0.188	0.07	1.2
NBMC-7	Sierra Blanca Mixed	20.4%-1.7mm	68.0	0.08	0.25	0.09	1.8
NBMC-7	Sierra Blanca Mixed	80%-75µm	71.0	0.080	0.276	0.08	1.3
NBMC-8	Sierra Blanca Mixed	85.3%-1.7mm	71.1	0.11	0.38	0.15	2.1
NBMC-8	Sierra Blanca Mixed	80%-75µm	75.1	0.085	0.341	0.24	1.6
NBMC-9	Savage Valley Oxide	48.7%-1.7mm	63.8	0.21	0.58	0.14	1.3
NBMC-9	Savage Valley Oxide	80%-75µm	91.0	0.050	0.554	0.53	2.4
NBMC-10	Savage Valley Oxide	70.3%-1.7mm	87.1	0.04	0.31	<0.07	1.4
NBMC-10	Savage Valley Oxide	80%-75µm	85.5	0.053	0.366	0.68	2.4
NBMC-11	Savage Valley Oxide	63.8%-1.7mm	76.5	0.04	0.17	0.07	1.4
NBMC-11	Savage Valley Oxide	80%-75µm	89.8	0.017	0.167	0.22	2.7
NBMC-12	Savage Valley Mixed	74.4%-1.7mm	73.5	0.09	0.34	0.08	1.4
NBMC-12	Savage Valley Mixed	80%-75µm	72.3	0.106	0.382	0.23	2.7
NBMC-13	Savage Valley Mixed	45.7%-1.7mm	66.7	0.07	0.21	<0.07	1.5
NBMC-13	Savage Valley Mixed	80%-75µm	81.9	0.034	0.188	0.09	1.5
SB Bulk Sample	Sierra Blanca Surface	80%-1.7mm	88.2	0.04	0.34	<0.07	1.5
SB Bulk Sample	Sierra Blanca Surface	80%-1.7mm	82.1	0.052	0.291	<0.07	1.4
SB1019	Sierra Blanca Surface	80%-1.7mm	79.8	0.070	0.347	0.15	2.0
SB Bulk Sample	Sierra Blanca Surface	80%-75µm	85.9	0.038	0.270	0.12	1.3
JJ Bulk Sample	Jolly Jane Surface	80%-1.7mm	72.7	0.09	0.33	<0.07	1.9
JJ Bulk Sample	Jolly Jane Surface	80%-1.7mm	76.6	0.067	0.286	0.07	2.0
JJ1019	Jolly Jane Surface	80%-1.7mm	73.8	0.100	0.382	<0.07	1.5
JJ Bulk Sample	Jolly Jane Surface	80%-75µm	80.0	0.063	0.315	0.15	1.8

* (g/t) grams/tonne

** (kg/t) kilograms/tonne

13.2.1.2 MCCLELLAND SIERRA BLANCA AND JOLLY JANE BULK SAMPLE COLUMN LEACH TESTS

Four bulk samples were collected from surface outcrops at Jolly Jane ("JJ") and from existing underground dumps at Sierra Blanca ("SB") on the NBP. The samples were crushed to 80 percent -51 mm (-2 inch) and 80 percent -12.5 mm (-1/2 inch). Each sample was run with duplicate columns. Table 13.6 provides the summary data from these tests.

Table 13.6 North Bullfrog Project Summary of McClelland Bulk Sample Column Leach Test Results

Sample ID	Test No.	Feed Size	Leach Time (days)	Au Recovery %	Extracted Au (g/t)	Tail Assay (g/t)	Calculated. Head (g/t)	Average Head (g/t)
SB Bulk Sample (Init.)	P-1	80%-50mm	117	75.6	0.204	0.0860	0.290	0.277
SB Bulk Sample (Dupl.)	P-2	80%-50mm	117	72.2	0.200	0.0860	0.286	0.277
JJ Bulk Sample (Init.)	P-3	80%-50mm	117	64.0	0.208	0.120	0.328	0.318
JJ Bulk Sample (Dupl.)	P-4	80%-12.5mm	117	61.0	0.217	0.122	0.339	0.318
SB Bulk Sample (Init.)	P-5	80%-12.5mm	97	80.8	0.325	0.077	0.402	0.357
SB Bulk Sample (Dupl.)	P-6	80%-12.5mm	97	82.8	0.338	0.070	0.408	0.357
JJ Bulk Sample (Init.)	P-7	80%-12.5mm	97	65.0	0.227	0.122	0.349	0.367
JJ Bulk Sample (Dupl.)	P-8	80%-12.5mm	97	65.6	0.233	0.122	0.355	0.367

*(g/t) grams/tonne

13.2.2 MCCLELLAND MAYFLOWER DUMP BULK SAMPLE TESTING – JULY 2012

McClelland performed agitated cyanidation (bottle roll) leach tests on two bulk samples from the NBP Mayflower area (McClelland Laboratories, 2013a). The two bulk samples represented material from the Main Shaft dump and the David Adit of the Mayflower area (Table 13.7).

Bottle roll tests were conducted for both bulk samples at five feed sizes in duplicate. Splits were taken from material stage crushed to just passing 62.5mm, 80% -19mm, 80% -6.3mm, 80% -1.7mm and just passing 850µm. Splits taken from material stage crushed to just passing 850µm were stage ground to 80% -75µm using laboratory stainless steel ball mills. Bottle roll leaching was conducted using lime for pH control and 1.0 g sodium cyanide per litre (“NaCN/L”) at 40% solids. After 96 hours of leaching, the final residues were washed to remove residual cyanide and dissolved metals. Tail grades for the 62.5mm, -19mm and -6.3mm charges were determined by tail screen analyses. Tails grades for the -1.7mm and -75µm charges were determined by triplicate direct assays. The feed sizes for the 100% -62.5mm charges during leaching were determined by tail screen analyses. These feed sizes ranged from 63% to 85% passing 38mm.

Table 13.7 North Bullfrog Project Summary Metallurgical Results, Grind Size Optimization Bottle Roll Tests, Bulk Mayflower Samples

Sample ID	Sample Location	Feed Size	Au Recovery, %	g Au/mt mineralization				Reagent Consumption kg/mt mineralization	
				Extracted	Tail	Calculated Head	Head Assay	NaCN Cons.	Lime Added
May 1	Main Dump	85%-38mm	36.0	0.695	1.237	1.932	5.290	0.09	0.6
May 1	Main Dump	78%-38mm	39.3	0.836	1.289	2.125	5.290	0.07	0.6
May 1	Main Dump	80%-19mm	55.1	0.679	0.553	1.232	5.290	0.08	0.8
May 1	Main Dump	80%-19mm	48.6	0.407	0.430	0.837	5.290	0.09	0.8
May 1	Main Dump	80%-6.3mm	46.5	1.083	1.246	2.329	5.290	0.17	1.3
May 1	Main Dump	80%-6.3mm	52.5	1.181	1.068	2.249	5.290	0.07	1.3
May 1	Main Dump	80%-1.7mm	62.6	2.676	1.598	4.274	5.290	0.07	0.8
May 1	Main Dump	80%-1.7mm	67.5	3.206	1.543	4.749	5.290	<0.07	1.0
May 1	Main Dump	80%-75µm	98.5	4.240	0.065	4.305	5.290	0.19	1.2
May 1	Main Dump	80%-75µm	99.3	4.709	0.032	4.741	5.290	0.12	1.4
May 2	David Adit	71%-38mm	38.9	0.793	1.248	2.041	2.060	<0.07	0.8
May 2	David Adit	63%-38mm	29.7	0.728	1.722	2.450	2.060	<0.07	0.7
May 2	David Adit	80%-19mm	54.8	0.961	0.794	1.755	2.060	<0.07	1.3
May 2	David Adit	80%-19mm	52.4	0.837	0.759	1.596	2.060	0.08	1.1
May 2	David Adit	80%-6.3mm	54.6	1.157	0.963	2.120	2.060	<0.07	1.3
May 2	David Adit	80%-6.3mm	51.2	1.106	1.054	2.160	2.060	<0.07	1.3
May 2	David Adit	80%-1.7mm	78.8	1.684	0.454	2.138	2.060	<0.07	1.1
May 2	David Adit	80%-1.7mm	78.3	1.685	0.468	2.153	2.060	<0.07	1.1
May 2	David Adit	80%-75µm	97.5	1.869	0.047	1.916	2.060	0.10	1.5
May 2	David Adit	80%-75µm	98.2	2.016	0.036	2.052	2.060	0.08	1.5

13.2.3 MCCLELLAND METALLURGICAL TESTING – 2ND HALF OF 2012

McClelland performed additional test work during the second half of 2012 which focused on the northern area of the NBP (Sierra Blanca, Savage Valley and Jolly Jane) and the Mayflower area ("Mayflower"). This test work included bottle roll testing of composite materials at particle sizes between 80% passing (P80) -75µm and -19mm and column leach tests on each composite at a nominal P80 -19mm. Bottle roll tests were conducted in duplicate at nominal 19mm and 80% -6.3mm, -1.7mm and -75µm feed sizes for each of the 12 composites. Tables 13.8 and 13.9 list the test results.

Table 13.8 Summary Metallurgical Results, Bottle Roll Tests, North Bullfrog Drill Core Composites, Mayflower (MF)

MLI Test #	Composite	Feed Size	Tail Screen	Au Recovery, %	g Au/mt mineralization				Reagent Requirements kg/mt mineralization	
					Extracted	Tail	Calculated Head	Head Grade	NaCN Cons.	Lime Added
CY-1	MFC001	79%-19mm	91%-19mm	62.5	0.322	0.193	0.515	0.454	N/A	1.0
CY-25	MFC001	79%-19mm	93%-19mm	60.6	0.352	0.229	0.581	0.454	0.07	1.4
CY-7	MFC001	80%-6.3mm		74.9	0.365	0.122	0.487	0.454	0.09	1.1
CY-31	MFC001	80%-6.3mm		72.6	0.394	0.149	0.543	0.454	<0.07	1.4
CY-13	MFC001	80%-1.7mm		81.7	0.407	0.091	0.498	0.454	<0.07	1.9
CY-37	MFC001	80%-1.7mm		86.0	0.388	0.063	0.451	0.454	0.08	1.8
CY-19	MFC001	80%-75µm		96.1	0.489	0.020	0.509	0.454	0.21	2.1
CY-43	MFC001	80%-75µm		98.4	0.492	0.008	0.500	0.454	0.24	1.9

MLI Test #	Composite	Feed Size	Tail Screen	Au Recovery, %	g Au/mt mineralization				Reagent Requirements kg/mt mineralization	
					Extracted	Tail	Calculated Head	Head Grade	NaCN Cons.	Lime Added
CY-2	MFC002	91%-19mm	87%-19mm	69.8	0.236	0.102	0.338	0.386	<0.07	1.1
CY-26	MFC002	91%-19mm	85%-19mm	64.1	0.237	0.133	0.370	0.386	<0.07	1.4
CY-8	MFC002	80%-6.3mm		82.4	0.313	0.067	0.380	0.386	0.18	1.2
CY-32	MFC002	80%-6.3mm		85.8	0.278	0.046	0.324	0.386	<0.07	1.7
CY-14	MFC002	80%-1.7mm		93.4	0.366	0.026	0.392	0.386	0.07	1.8
CY-38	MFC002	80%-1.7mm		92.8	0.284	0.022	0.306	0.386	0.12	1.7
CY-20	MFC002	80%-75µm		97.5	0.383	0.010	0.393	0.386	0.22	2.0
CY-44	MFC002	80%-75µm		92.9	0.351	0.027	0.378	0.386	0.22	2.1
CY-3R	MFC003	85%-19mm	93%-19mm	75.0	0.413	0.138	0.551	0.545	0.10	1.2
CY-27	MFC003	85%-19mm	90%-19mm	74.2	0.463	0.161	0.624	0.545	<0.07	1.3
CY-9	MFC003	80%-6.3mm		82.1	0.407	0.089	0.496	0.545	<0.07	1.2
CY-33	MFC003	80%-6.3mm		80.9	0.453	0.107	0.560	0.545	0.08	1.2
CY-15	MFC003	80%-1.7mm		90.5	0.457	0.048	0.505	0.545	0.10	1.7
CY-39	MFC003	80%-1.7mm		87.1	0.425	0.063	0.488	0.545	<0.07	1.6
CY-21	MFC003	80%-75µm		92.9	0.445	0.034	0.479	0.545	0.14	1.9
CY-45	MFC003	80%-75µm		92.8	0.461	0.036	0.497	0.545	0.14	2.0
CY-4	MFC004	89%-19mm	93%-19mm	82.5	0.141	0.030	0.171	0.148	0.13	1.4
CY-28	MFC004	89%-19mm	89%-19mm	79.4	0.139	0.036	0.175	0.148	<0.07	1.4
CY-10	MFC004	80%-6.3mm		85.6	0.143	0.024	0.167	0.148	0.10	1.4
CY-34	MFC004	80%-6.3mm		87.1	0.142	0.021	0.163	0.148	<0.07	1.7
CY-16	MFC004	80%-1.7mm		91.1	0.153	0.015	0.168	0.148	<0.07	1.8
CY-40	MFC004	80%-1.7mm		89.0	0.130	0.016	0.146	0.148	<0.07	1.5
CY-22	MFC004	80%-75µm		92.2	0.154	0.013	0.167	0.148	0.36	2.2
CY-46	MFC004	80%-75µm		70.3	0.154	0.065	0.219	0.148	0.18	1.7
CY-5	MFC005	86%-19mm	83%-19mm	73.7	0.411	0.147	0.558	0.559	<0.07	1.1
CY-29	MFC005	86%-19mm	89%-19mm	73.3	0.376	0.137	0.513	0.559	0.08	1.3
CY-11	MFC005	80%-6.3mm		81.3	0.371	0.086	0.457	0.559	0.08	1.3
CY-35	MFC005	80%-6.3mm		82.8	0.404	0.084	0.488	0.559	<0.07	1.5
CY-17	MFC005	80%-1.7mm		86.7	0.455	0.070	0.525	0.559	0.13	1.8
CY-41	MFC005	80%-1.7mm		89.4	0.491	0.058	0.549	0.559	<0.07	1.6
CY-23	MFC005	80%-75µm		92.0	0.473	0.041	0.514	0.559	0.18	1.8
CY-47	MFC005	80%-75µm		91.5	0.474	0.044	0.518	0.559	0.18	2.0
CY-6	MFC006	88%-19mm	88%-19mm	62.4	0.632	0.381	1.013	1.035	0.09	1.3
CY-6R	MFC006	88%-19mm	93%-19mm	60.4	0.682	0.448	1.130	1.035	<0.07	1.2
CY-12	MFC006	80%-6.3mm		75.0	0.805	0.268	1.0732	1.035	0.10	1.2
CY-36	MFC006	80%-6.3mm		74.2	0.835	0.290	1.125	1.035	0.10	1.6
CY-18	MFC006	80%-1.7mm		87.0	0.947	0.142	1.089	1.035	<0.07	1.7
CY-42	MFC006	80%-1.7mm		87.4	0.863	0.124	0.987	1.035	<0.07	1.6
CY-24	MFC006	80%-75µm		98.9	1.010	0.011	1.021	1.035	<0.07	1.8
CY-48	MFC006	80%-75µm		98.6	0.969	0.014	0.983	1.035	0.14	1.8

Table 13.9 Summary Metallurgical Results, Bottle Roll Tests, North Bullfrog Drill Core Composites, Savage Valley (SV).

MLI Test #	Composite	Feed Size	Tail Screen	Au Recovery, %	g Au/mt mineralization				Reagent Requirements kg/mt mineralization	
					Extracted	Tail	Calculated Head	Head Grade	NaCN Cons.	Lime Added
CY-49	SVC001	78%-19mm	89%-19mm	81.1	0.613	0.143	0.756	0.754	<0.07	0.8
CY-73	SVC001	78%-19mm	80%-19mm	81.0	0.587	0.138	0.725	0.754	<0.07	0.9
CY-55	SVC001	80%-6.3mm		88.0	0.660	0.090	0.750	0.754	0.08	1.1
CY-79	SVC001	80%-6.3mm		87.8	0.650	0.090	0.740	0.754	<0.07	1.3
CY-61	SVC001	80%-1.7mm		87.4	0.626	0.090	0.716	0.754	0.07	1.1
CY-85	SVC001	80%-1.7mm		87.3	0.690	0.100	0.790	0.754	0.16	1.0
CY-67	SVC001	80%-75µm		88.8	0.637	0.080	0.717	0.754	0.23	2.7
CY-91	SVC001	80%-75µm		90.5	0.661	0.069	0.730	0.754	0.15	1.2
CY-50	SVC002	77%-19mm	80%-19mm	73.4	0.494	0.179	0.673	0.664	0.08	0.7
CY-74	SVC002	77%-19mm	87%-19mm	78.3	0.494	0.137	0.631	0.664	0.16	0.7
CY-56	SVC002	80%-6.3mm		81.4	0.570	0.130	0.700	0.664	<0.07	1.0
CY-80	SVC002	80%-6.3mm		83.3	0.550	0.110	0.660	0.664	0.08	0.9
CY-62	SVC002	80%-1.7mm		88.2	0.589	0.079	0.668	0.664	0.09	1.2
CY-86	SVC002	80%-1.7mm		88.4	0.610	0.080	0.690	0.664	0.14	1.0
CY-68	SVC002	80%-75µm		93.7	0.613	0.041	0.654	0.664	0.12	1.1
CY-92	SVC002	80%-75µm		93.0	0.602	0.045	0.647	0.664	0.16	1.2
CY-51	SVC003	79%-19mm	89%-19mm	87.0	0.107	0.016	0.123	0.115	0.11	1.0
CY-75	SVC003	79%-19mm	92%-19mm	88.9	0.088	0.110	0.099	0.115	<0.07	1.3
CY-57	SVC003	80%-6.3mm		68.8	0.11	0.05	0.16	0.115	<0.07	1.4
CY-81	SVC003	80%-6.3mm		68.8	0.11	0.05	0.16	0.115	<0.07	1.2
CY-63	SVC003	80%-1.7mm		91.3	0.095	0.009	0.104	0.115	0.17	1.3
CY-87	SVC003	80%-1.7mm		93.4	0.114	0.008	0.122	0.115	<0.07	1.2
CY-69	SVC003	80%-75µm		95.9	0.141	0.006	0.147	0.115	0.13	1.7
CY-93	SVC003	80%-75µm		95.1	0.116	0.006	0.122	0.115	0.22	2.4
CY-52	SVC004	85%-19mm	76%-19mm	54.4	0.118	0.099	0.217	0.207	<0.07	0.5
CY-76	SVC004	85%-19mm	83%-19mm	55.9	0.118	0.093	0.211	0.207	<0.07	0.6
CY-58	SVC004	80%-6.3mm		70.0	0.14	0.06	0.20	0.207	<0.07	0.9
CY-82	SVC004	80%-6.3mm		58.3	0.14	0.10	0.24	0.207	0.10	0.8
CY-64	SVC004	80%-1.7mm		75.2	0.152	0.050	0.202	0.207	0.21	1.1
CY-88	SVC004	80%-1.7mm		77.7	0.174	0.050	0.224	0.207	0.08	0.8
CY-70	SVC004	80%-75µm		79.1	0.159	0.042	0.201	0.207	0.23	1.2
CY-53	SVC005	84%-19mm	85%-19mm	78.5	0.318	0.087	0.405	0.365	<0.07	1.0
CY-77	SVC005	84%-19mm	87%-19mm	80.5	0.264	0.064	0.328	0.365	0.11	0.9
CY-59	SVC005	80%-6.3mm		80.6	0.29	0.07	0.36	0.365	0.15	1.0
CY-83	SVC005	80%-6.3mm		74.4	0.29	0.10	0.39	0.365	<0.07	1.0
CY-65	SVC005	80%-1.7mm		83.5	0.293	0.058	0.351	0.365	0.23	1.2
CY-89	SVC005	80%-1.7mm		84.1	0.291	0.055	0.346	0.365	<0.07	1.1
CY-71	SVC005	80%-75µm		85.6	0.303	0.051	0.354	0.365	<0.07	1.4
CY-95	SVC005	80%-75µm		87.7	0.121	0.049	0.399	0.365	0.16	1.1
CY-54	SVC006	86%-19mm	89%-19mm	53.6	0.105	0.091	0.196	0.185	<0.07	0.6
CY-78	SVC006	86%-19mm		48.4	0.141	0.099	0.192	0.185	0.07	0.5
CY-60	SVC006	80%-6.3mm		60.0	0.12	0.08	0.20	0.185	<0.07	1.0
CY-84	SVC006	80%-6.3mm		66.7	0.12	0.06	0.18	0.185	<0.07	1.0
CY-66	SVC006	80%-1.7mm		77.2	0.149	0.044	0.193	0.185	0.17	1.1
CY-90	SVC006	80%-1.7mm		75.4	0.129	0.042	0.171	0.185	<0.07	0.9
CY-72	SVC006	80%-75µm		82.5	0.141	0.030	0.171	0.185	0.22	1.2
CY-96	SVC006	80%-75µm		80.7	0.269	0.029	0.150	0.185	0.10	1.6

Duplicate column leach test were performed for Mayflower and Savage Valley composites at a nominal 19mm feed size. The results of the Mayflower column leach tests are shown in Tables 13.10 and 13.11 for gold and silver, respectively. The column leach test results for the Savage Valley column leach tests are listed in Tables 13.12 and 13.13, for gold and silver, respectively.

Table 13.10 Summary Metallurgical Results, Gold Recovery from Column Percolation Leach Tests, Mayflower Drill Core Composites (kg-Kilograms, mt – Metric Tonnes).

Test No.	Sample ID.	Feed Size	Leach/Rinse Time, Days	Au Recovery, %	g Au/mt mineralization				Reagents Required kg/mt mineralization	
					Extracted	Tail Screen	Calculated Head	Avg. Head	NaCN Cons.	Lime Added
P-1	MFC001 (Init.)	79%-19mm	155	89.3	0.449	0.054	0.503	0.488	1.62	1.2
P-2	MFC001 (Dup.)	79%-19mm	155	87.8	0.411	0.057	0.468	0.488	1.44	1.2
P-3	MFC002 (Init.)	91%-19mm	94	90.8	0.278	0.028	0.306	0.356	1.12	1.3
P-4	MFC002 (Dup.)	91%-19mm	94	88.6	0.280	0.036	0.316	0.356	1.07	1.3
P-5	MFC003 (Init.)	85%-19mm	156	87.3	0.473	0.069	0.542	0.534	2.05	1.2
P-6	MFC003 (Dup.)	85%-19mm	156	87.1	0.464	0.069	0.533	0.534	2.16	1.2
P-7	MFC004 (Init.)	89%-19mm	90	89.6	0.146	0.017	0.163	0.160	0.50	1.4
P-8	MFC004 (Dup.)	89%-19mm	90	88.4	0.129	0.017	0.146	0.160	0.45	1.4
P-9	MFC005 (Init.)	86%-19mm	94	85.7	0.406	0.068	0.474	0.522	0.96	1.3
P-10	MFC005 (Dup.)	86%-19mm	94	85.7	0.396	0.066	0.462	0.522	0.91	1.3

Table 13.11 Summary Metallurgical Results, Silver Recovery from Column Percolation Leach Tests, Mayflower Drill Core Composites (kg-Kilograms, mt – Metric Tonnes)

Test No.	Sample ID	Feed Size	Leach/Rinse Time, Days	Ag Recovery, %	g Ag/mt mineralization				Reagents Required kg/mt mineralization	
					Extracted	Tail Screen	Calculated. Head	Average Head	NaCN Cons.	Lime Added
P-1	MFC001 (Init.)	79%-19mm	155	na	0.220	<1	<1.220	0.488	1.62	1.2
P-2	MFC001 (Dup.)	79%-19mm	155	na	0.179	<1	<1.179	0.488	1.44	1.2
P-3	MFC002 (Init.)	91%-19mm	94	12.4	0.141	1	1.141	0.356	1.12	1.3
P-4	MFC002 (Dup.)	91%-19mm	94	na	0.107	<1	<1.107	0.356	1.07	1.3
P-5	MFC003 (Init.)	85%-19mm	156	9.0	0.099	1	1.099	0.534	2.05	1.2
P-6	MFC003 (Dup.)	85%-19mm	156	na	0.116	<1	<1.116	0.534	2.16	1.2
P-7	MFC004 (Init.)	89%-19mm	90	na	0.050	<1	<1.050	0.160	0.50	1.4
P-8	MFC004 (Dup.)	89%-19mm	90	na	0.040	<1	<1.040	0.160	0.45	1.4
P-9	MFC005 (Init.)	86%-19mm	94	10.8	0.121	1	1.121	0.522	0.96	1.3
P-10	MFC005 (Dup.)	86%-19mm	94	na	0.104	<1	<1.104	0.522	0.91	1.3

Table 13.12 Summary Metallurgical Results, Gold Recovery from Column Percolation Leach Tests, Savage Valley Drill Core Composites (kg-Kilograms; mt-Metric Tonnes).

Test No.	Sample I.D.	Feed Size	Leach Time Days	Au Recovery %	g Au/mt mineralization				Reagents Required kg/mt mineralization	
					Extracted	Tail Screen	Calculated. Head	Avg. Head	NaCN Cons.	Lime Added
P-11	SVC001	78%-19mm	76	86.3	0.659	0.105	0.764	0.748	0.76	0.8
P-12	SVC001	78%-19mm	78	87.4	0.627	0.090	0.717	0.748	0.88	0.8
P-13	SVC002	77%-19mm	88	87.2	0.553	0.081	0.634	0.665	0.76	0.8
P-14	SVC002	77%-19mm	88	87.5	0.582	0.083	0.665	0.665	0.70	0.8
P-15	SVC003	79%-19mm	63	92.2	0.107	0.009	0.116	0.122	0.31	1.1
P-16	SVC003	79%-19mm	63	91.7	0.100	0.009	0.109	0.122	0.32	1.1
P-17	SVC004	85%-19mm	89	71.1	0.150	0.061	0.211	0.211	0.68	0.7
P-18	SVC004	85%-19mm	89	68.7	0.147	0.067	0.214	0.211	0.56	0.7
P-19	SVC005	83%-19mm	75	81.1	0.292	0.068	0.360	0.347	0.66	1.0

Test No.	Sample I.D.	Feed Size	Leach Time Days	Au Recovery %	g Au/mt mineralization				Reagents Required kg/mt mineralization	
					Extracted	Tail Screen	Calculated. Head	Avg. Head	NaCN Cons.	Lime Added
P-20	SVC005	83%-19mm	74	82.1	0.289	0.063	0.352	0.347	0.66	1.0
P-21	SVC006	86%-19mm	136	72.4	0.131	0.050	0.181	0.184	1.30	0.7
P-22	SVC006	86%-19mm	136	72.3	0.133	0.051	0.184	0.184	1.20	0.7

Table 13.13 Summary Metallurgical Results, Silver Recovery from Column Percolation Leach Tests, Savage Valley Drill Core Composites (kg-Kilograms; mt-Metric Tonnes)

Test No.	Sample I.D.	Feed Size	Leach Time Days	Ag Recovery %	g Ag/mt mineralization				Reagents Required kg/mt mineralization	
					Extracted	Tail Screen	Calculated Head	Average Head	NaCN Cons.	Lime Added
P-11	SVC001	78%-19mm	76	9.3	0.102	1	1.102	na	0.76	0.8
P-12	SVC001	78%-19mm	78	na	0.135	<1	<1.135	na	0.88	0.8
P-13	SVC002	77%-19mm	88	16.1	0.192	1	1.192	na	0.76	0.8
P-14	SVC002	77%-19mm	88	9.9	0.110	1	1.110	na	0.70	0.8
P-15	SVC003	79%-19mm	63	na	0.068	<1	<1.068	na	0.31	1.1
P-16	SVC003	79%-19mm	63	na	0.081	<1	<1.081	na	0.32	1.1
P-17	SVC004	85%-19mm	89	na	0.041	<1	<1.041	na	0.68	0.7
P-18	SVC004	85%-19mm	89	na	0.057	<1	<1.057	na	0.56	0.7
P-19	SVC005	83%-19mm	75	na	0.122	<1	<1.122	na	0.66	1.0
P-20	SVC005	83%-19mm	74	na	0.128	<1	<1.128	na	0.66	1.0
P-21	SVC006	86%-19mm	136	na	0.052	<1	<1.052	na	1.30	0.7
P-22	SVC006	86%-19mm	136	na	0.061	**<1**	<1.061	na	1.20	0.7

McClelland (2013) includes results for 96 bottle roll tests conducted on drill core composites from the Sierra Blanca and Jolly Jane areas. A total of 81 drill core intervals were received by McClelland from the Sierra Blanca and Jolly Jane zones for metallurgical testing. The 81 intervals were combined to make seven Sierra Blanca and five Jolly Jane composites for testing.

Bottle roll tests were conducted in duplicate at nominal 80% -19mm and 80% -6.3mm, -1.7mm and -75µm feed sizes for each of the 12 composites. Tables 13.14 and 13.15 list the test results.

Table 13.14 Summary Metallurgical Results, Bottle Roll Tests, North Bullfrog Drill Composites, Sierra Blanca

Composite	Feed Size	Tail Screen	Au Recovery, %	g Au/mt mineralization				Reagent Requirements kg/mt mineralization	
				Extracted	Tail	Calculated Head	Head Grade	NaCN Cons.	Lime Added
SB01 cy-137	80%-19mm	81%-19mm	59.7	0.092	0.062	0.154	0.131	<0.07	0.7
SB01 cy-165	80%-19mm	86%-19mm	66.4	0.093	0.047	0.140	0.131	0.09	0.7
SB01 cy-144	80%-6.3mm		69.8	0.088	0.038	0.126	0.131	0.10	0.8
SB01 cy-172	80%-6.3mm		68.2	0.088	0.041	0.129	0.131	<0.07	0.8
SB01 cy-151	80%-1.7mm		82.8	0.135	0.028	0.163	0.131	<0.07	0.9
SB01 cy-179	80%-1.7mm		80.1	0.109	0.027	0.136	0.131	<0.07	1.1
SB01 cy-158	80%-75µm		88.1	0.156	0.021	0.177	0.131	0.13	1.1
SB01 cy-186	80%-75µm		87.9	0.138	0.019	0.157	0.131	0.08	1.0
SB02 cy-138	80%-19mm	90%-19mm	80.3	0.122	0.030	0.152	0.139	<0.07	0.9
SB02 cy-166	80%-19mm	85%-19mm	75.2	0.106	0.035	0.141	0.139	<0.07	0.9
SB02 cy-145	80%-6.3mm		86.0	0.123	0.020	0.143	0.139	0.13	1.2
SB02 cy-173	80%-6.3mm		83.5	0.106	0.021	0.127	0.139	<0.07	1.4

Composite	Feed Size	Tail Screen	Au Recovery, %	g Au/mt mineralization				Reagent Requirements kg/mt mineralization	
				Extracted	Tail	Calculated Head	Head Grade	NaCN Cons.	Lime Added
SB02 cy-152	80%-1.7mm		88.4	0.130	0.017	0.147	0.139	<0.07	1.2
SB02 cy-180	80%-1.7mm		89.9	0.134	0.015	0.149	0.139	<0.07	1.3
SB02 cy-159	80%-75µm		92.9	0.144	0.011	0.155	0.139	<0.07	1.5
SB02 cy-187	80%-75µm		94.5	0.206	0.012	0.218	0.139	0.10	1.2
SB03 cy-139	80%-19mm	89%-19mm	58.7	0.158	0.111	0.269	0.228	<0.07	0.7
SB03 cy-167	80%-19mm	88%-19mm	60.5	0.170	0.111	0.281	0.228	<0.07	0.7
SB03 cy-146	80%-6.3mm		59.4	0.142	0.097	0.239	0.228	0.09	1.0
SB03 cy-174	80%-6.3mm		57.4	0.140	0.104	0.244	0.228	<0.07	0.8
SB03 cy-153	80%-1.7mm		66.1	0.154	0.079	0.233	0.228	<0.07	1.1
SB03 cy-181	80%-1.7mm		66.4	0.158	0.080	0.238	0.228	<0.07	1.0
SB03 cy-160	80%-75µm		71.1	0.180	0.073	0.253	0.228	<0.07	1.3
SB03 cy-188	80%-75µm		72.0	0.198	0.077	0.275	0.228	0.07	1.0
SB04 cy-140	80%-19mm	93%-19mm	82.0	0.424	0.093	0.517	0.482	<0.07	0.9
SB04 cy-168	80%-19mm	93%-19mm	80.9	0.446	0.105	0.551	0.482	<0.07	0.9
04 cy-147	80%-6.3mm		86.4	0.413	0.065	0.478	0.482	<0.07	1.1
SB04 cy-175	80%-6.3mm		86.5	0.398	0.062	0.460	0.482	<0.07	1.0
SB04 cy-154	80%-1.7mm		89.6	0.433	0.050	0.483	0.482	<0.07	1.3
B04 cy-182	80%-1.7mm		89.4	0.445	0.053	0.498	0.482	<0.07	1.4
SB04 cy-161	80%-75µm		93.2	0.643	0.047	0.690	0.482	<0.07	1.4
SB04 cy-189	80%-75µm		92.3	0.503	0.042	0.545	0.482	<0.07	1.4
SB05 cy-141	80%-19mm	93%-19mm	79.5	0.124	0.032	0.156	0.127	<0.07	0.9
SB05 cy-169	80%-19mm	84%-19mm	78.9	0.120	0.032	0.152	0.127	<0.07	0.9
SB05 cy-148	80%-6.3mm		75.6	0.090	0.029	0.119	0.127	<0.07	1.1
SB05 cy-176	80%-6.3mm		73.6	0.078	0.028	0.106	0.127	<0.07	1.0
SB05 cy-155	80%-1.7mm		82.7	0.124	0.026	0.150	0.127	<0.07	1.2
SB05 cy-183	80%-1.7mm		79.2	0.095	0.025	0.120	0.127	<0.07	1.4
SB05 cy-162	80%-75µm		85.1	0.120	0.021	0.141	0.127	<0.07	1.2
SB05 cy-190	80%-75µm		86.6	0.116	0.018	0.134	0.127	0.06	1.3
SB06 cy-142	80%-19mm	90%-19mm	89.8	0.326	0.037	0.363	0.335	<0.07	1.0
SB06 cy-170	80%-19mm	94%-19mm	90.3	0.393	0.042	0.435	0.335	<0.07	1.0
SB06 cy-149	80%-6.3mm		90.6	0.310	0.032	0.342	0.335	<0.07	1.0
SB06 cy-177	80%-6.3mm		90.7	0.311	0.032	0.343	0.335	<0.07	1.0
SB06 cy-156	80%-1.7mm		93.6	0.349	0.024	0.373	0.335	<0.07	1.3
SB06 cy-184	80%-1.7mm		92.5	0.333	0.027	0.360	0.335	<0.07	1.3
SB06 cy-163	80%-75µm		94.9	0.353	0.019	0.372	0.335	0.12	1.2
SB06 cy-191	80%-75µm		93.4	0.284	0.020	0.304	0.335	0.24	1.2
SB07 cy-143	80%-19mm	92%-19mm	82.8	0.125	0.026	0.151	0.117	<0.07	1.1
SB07 cy-171	80%-19mm	89%-19mm	80.4	0.090	0.022	0.112	0.117	<0.07	1.0
SB07 cy-150	80%-6.3mm		85.0	0.108	0.019	0.127	0.117	<0.07	1.1
SB07 cy-178	80%-6.3mm		83.3	0.090	0.018	0.108	0.117	<0.07	1.0
SB07 cy-157	80%-1.7mm		86.0	0.098	0.016	0.114	0.117	<0.07	1.3
SB07 cy-185	80%-1.7mm		87.9	0.109	0.015	0.124	0.117	<0.07	1.3
SB07 cy-164	80%-75µm		90.9	0.140	0.014	0.154	0.117	0.11	1.6
SB07 cy-192	80%-75µm		89.1	0.114	0.014	0.128	0.117	0.09	1.5

Table 13.15 Summary Metallurgical Results, Bottle Roll Tests, North Bullfrog Drill Core Composites, Jolly Jane

Composite	Feed Size			Au Recovery, %	g Au/mt mineralization				Reagent Requirements kg/mt mineralization	
	Target	Head Screen	Tail Screen		Extracted	Tail	Calculated Head	Head Grade	NaCN Cons.	Lime Added
JJC001 cy-97	80%-19mm	88%-19mm	87%-19mm	84.4	0.135	0.025	0.160	0.157	<0.07	0.9
JJC001 cy-117	80%-19mm	88%-19mm	90%-19mm	87.4	0.152	0.022	0.174	0.157	<0.07	0.8
JJC001 cy-102	80%-6.3mm			82.7	0.129	0.027	0.156	0.157	<0.07	0.8
JJC001 cy-122	80%-6.3mm			88.1	0.148	0.020	0.168	0.157	0.11	0.9
JJC001 cy-107	80%-1.7mm			83.4	0.136	0.027	0.163	0.157	<0.07	1.4
JJC001 cy-127	80%-1.7mm			87.7	0.142	0.020	0.162	0.157	0.12	1.3
JJC001 cy-112	80%-75µm			88.8	0.143	0.018	0.161	0.157	0.22	1.2
JJC001 cy-132	80%-75µm			89.6	0.163	0.019	0.182	0.157	0.10	1.2
JJC002 cy-98	80%-19mm	82%-19mm	80%-19mm	49.2	0.227	0.234	0.461	0.433	<0.07	0.6
JJC002 cy-118	80%-19mm	82%-19mm	74%-19mm	44.2	0.210	0.265	0.475	0.433	<0.07	0.7
JJC002 cy-103	80%-6.3mm			64.3	0.323	0.179	0.502	0.433	<0.07	0.7
JJC002 cy-128	80%-6.3mm			60.0	0.285	0.190	0.475	0.433	<0.07	0.9
JJC002 cy-108	80%-1.7mm			72.8	0.313	0.117	0.430	0.433	0.17	0.8
JJC002 cy-128	80%-1.7mm			71.8	0.306	0.120	0.426	0.433	<0.07	1.0
JJC002 cy-113	80%-75µm			82.2	0.338	0.073	0.411	0.433	<0.07	1.3
JJC002 cy-133	80%-75µm			80.0	0.320	0.080	0.400	0.433	0.07	1.3
JJC003 cy-99	80%-19mm	85%-19mm	88%-19mm	68.9	0.308	0.139	0.447	0.387	<0.07	0.6
JJC003 cy-119	80%-19mm	85%-19mm	90%-19mm	71.2	0.312	0.126	0.438	0.387	<0.07	0.8
JJC003 cy-104	80%-6.3mm			78.0	0.337	0.095	0.432	0.387	<0.07	0.8
JJC003 cy-124	80%-6.3mm			74.4	0.320	0.110	0.430	0.387	<0.07	1.0
JJC003 cy-109	80%-1.7mm			81.6	0.305	0.069	0.376	0.387	0.22	1.0
JJC003 cy-129	80%-1.7mm			80.2	0.288	0.071	0.359	0.387	0.16	1.1
JJC003 cy-114	80%-75µm			85.6	0.320	0.054	0.374	0.387	0.18	1.2
JJC003 cy-134	80%-75µm			87.6	0.331	0.047	0.378	0.387	<0.07	1.4
JJC004 cy-100	80%-19mm	92%-19mm	90%-19mm	68.2	0.208	0.097	0.305	0.275	<0.07	0.7
JJC004 cy-120	80%-19mm	92%-19mm	85%-19mm	65.5	0.205	0.108	0.313	0.275	<0.07	0.8
JJC004 cy-105	80%-6.3mm			74.3	0.197	0.068	0.265	0.275	<0.07	0.8
JJC004 cy-125	80%-6.3mm			76.2	0.234	0.073	0.307	0.275	<0.07	0.9
JJC004 cy-110	80%-1.7mm			77.8	0.200	0.057	0.257	0.275	0.09	1.6
JJC004 cy-130	80%-1.7mm	-----	-----	77.6	0.215	0.062	0.277	0.275	<0.07	1.2
JJC004 cy-115	80%-75µm	-----	-----	89.5	0.289	0.034	0.323	0.275	0.09	1.4
JJC004 cy-135	80%-75µm	-----	-----	86.9	0.213	0.032	0.245	0.275	0.11	1.6
JJC005 cy-101	80%-19mm	86%-19mm	90%-19mm	74.7	0.331	0.112	0.443	0.388	<0.07	0.7
JJC005 cy-121	80%-19mm	86%-19mm	90%-19mm	70.9	0.297	0.122	0.419	0.388	<0.07	1.0
JJC005 cy-106	80%-6.3mm	-----	-----	76.7	0.320	0.097	0.417	0.388	<0.07	0.9
JJC005 cy-126	80%-6.3mm	-----	-----	76.3	0.303	0.094	0.397	0.388	<0.07	1.0
JJC005 cy-111	80%-1.7mm	-----	-----	81.3	0.314	0.072	0.386	0.388	<0.07	1.3
JJC005 cy-131	80%-1.7mm	-----	-----	81.3	0.313	0.072	0.385	0.388	0.08	1.4
JJC005 cy-116	80%-75µm	-----	-----	84.7	0.322	0.058	0.380	0.388	0.09	1.4
JJC005 cy-136	80%-75µm	-----	-----	83.8	0.301	0.058	0.359	0.388	0.15	1.6

Duplicate column leach tests were initiated for each of these composites at a nominal 80% -19mm feed size. The recoveries at the days leached shown for the Jolly Jane composites are shown in Table 13.16 and 13.17 for gold and silver, respectively. The final recoveries at the days leached shown for the Sierra Blanca composites are shown in Table 13.18 and 13.19 for gold and silver, respectively. The final recoveries are based on the calculated head which is the tail screen assay plus the gold recovered in solution in the test procedure

Table 13.16 Summary Metallurgical Results, Gold Recovery from Column Percolation Leach Tests, Jolly Jane Drill Core Composites (82 to 92% -19mm).

Sample ID	Feed Size (P_{80})	Leach Time Days	Au Recovery %	g Au/mt mineralization				Reagents Required kg/mt mineralization	
				Extracted	Tail Screen	Calculated Head	Average Head	NaCN Cons.	Lime Added
JJC001 (p-23)	88%-19mm	71	83.6	0.127	0.025	0.152	0.157	0.54	0.9
JJC001 (p-24)	88%-19mm	70	85.9	0.128	0.021	0.149	0.157	0.51	0.9
JJC002 (p-25)	82%-19mm	161	64.3	0.272	0.151	0.423	0.433	1.06	0.7
JJC002 (p-26)	82%-19mm	160	62.3	0.273	0.165	0.438	0.433	1.06	0.7
JJC003 (p-27)	85%-19mm	127	76.5	0.299	0.092	0.391	0.387	0.92	0.8
JJC003 (p-28)	85%-19mm	127	76.6	0.301	0.092	0.393	0.387	0.94	0.8
JJC004 (p-29)	92%-19mm	89	75.6	0.204	0.066	0.270	0.275	0.65	0.8
JJC004 (p-30)	92%-19mm	89	74.3	0.194	0.067	0.261	0.275	0.69	0.8
JJC005 (p-31)	86%-19mm	89	73.8	0.287	0.102	0.389	0.388	0.74	0.9
JJC005 (p-32)	86%-19mm	89	75.2	0.282	0.093	0.375	0.388	0.70	0.9

Table 13.17 Summary Metallurgical Results, Silver Recovery from Column Percolation Leach Tests, Jolly Jane Drill Core Composites (82 to 92% -19mm)

Sample ID	Feed Size (P_{80})	Leach Time, days	Ag Rec. %	g Ag/mt mineralization				Reagents Required kg/mt mineralization	
				Extracted	Tail Screen	Calculated Head	Average Head	NaCN Cons.	Lime Added
JJC001 (p-23)	88%-19mm	71	na	0.043	<1	<01.043	na	0.54	0.9
JJC001 (p-24)	88%-19mm	70	na	0.034	<1	<1.034	na	0.51	0.9
JJC002 (p-25)	82%-19mm	161	8.3	0.091	1	1.091	na	1.06	0.7
JJC002 (p-26)	82%-19mm	160	9.7	0.108	1	1.108	na	1.06	0.7
JJC003 (p-27)	85%-19mm	127	na	0.047	<1	<1.047	na	0.92	0.8
JJC003 (p-28)	85%-19mm	127	4.5	0.047	1	1.047	na	0.94	0.8
JJC004 (p-29)	92%-19mm	89	na	0.050	<1	<1.050	na	0.65	0.8
JJC004 (p-30)	92%-19mm	89	na	0.067	<1	<1.067	na	0.69	0.8
JJC005 (p-31)	86%-19mm	89	na	0.051	<1	<1.051	na	0.74	0.9
JJC005 (p-32)	86%-19mm	89	na	0.063	<1	<1.063	na	0.70	0.9

Table 13.18 Summary Metallurgical Results, Gold Recovery from Column Percolation Leach Tests, Sierra Blanca Drill Core Composites (86 to 94% -19mm)

Sample ID	Feed Size (P_{80})	Leach Time, days	Au Recovery %	g Au/mt mineralization				Reagent Required kg/mt mineralization	
				Extracted	Tail Screen	Calculated Head	Average Head	NaCN Cons.	Lime Added
SB01 (p-43.)	86%-19mm	105	76.6	0.105	0.032	0.137	0.140	0.64	0.8
SB01 (p-44)	86%-19mm	102	84.6	0.104	0.019	0.123	0.140	0.55	0.8
SB02 (p-45)	88%-19mm	105	86.5	0.115	0.018	0.133	0.146	0.49	1.1
SB02 (p-46.)	88%-19mm	102	90.0	0.099	0.011	0.110	0.146	0.56	1.1
SB03 (p-33)	90%-19mm	133	76.1	0.153	0.048	0.201	0.241	0.89	0.8
SB03 (p-34)	90%-19mm	133	62.7	0.131	0.078	0.209	0.241	0.80	0.8
SB04 (p-35)	94%-19mm	107	91.1	0.441	0.043	0.484	0.506	0.66	1.0
SB04 (p-36)	94%-19mm	105	96.0	0.437	0.018	0.455	0.506	0.71	1.0
SB05 (p-37)	93%-19mm	75	73.7	0.098	0.035	0.133	0.132	0.34	1.0
SB05 (p-38)	93%-19mm	75	74.2	0.092	0.032	0.124	0.132	0.35	1.0

Sample ID	Feed Size (P_{80})	Leach Time, days	Au Recovery %	g Au/mt mineralization				Reagent Required kg/mt mineralization	
				Extracted	Tail Screen	Calculated Head	Average Head	NaCN Cons.	Lime Added
SB06 (p-39)	89%-19mm	106	97.1	0.333	0.010	0.343	0.356	0.58	1.0
SB06 (p-40)	89%-19mm	105	93.3	0.373	0.027	0.400	0.356	0.58	1.0
SB07 (p-41)	91%-19mm	73	83.8	0.098	0.019	0.117	0.125	0.35	1.1
SB07 (p-42)	91%-19mm	72	83.5	0.116	0.023	0.139	0.125	0.43	1.1

Table 13.19 Summary Metallurgical Results, Silver Recovery from Column Percolation Leach Tests, Sierra Blanca Drill Core Composites (86 to 94% -19mm)

Sample ID	Feed Size (P_{80})	Leach Time, days	Ag Recovery %	g Ag g/mt mineralization			Reagents Required kg/mt mineralization	
				Extracted	Calculated Head	Average Head	NaCN Cons.	Lime Added
SB01 (p-43.)	86%-19mm	105	9.7	0.107	1	1.107	0.64	0.8
SB01 (p-44)	86%-19mm	102	12.0	0.136	1	1.136	0.55	0.8
SB02 (p-45)	88%-19mm	105	5.3	0.056	1	1.056	0.49	1.1
SB02 (p-46.)	88%-19mm	102	2.5	0.026	1	1.026	0.56	1.1
SB03 (p-33)	90%-19mm	133	na	0.109	<1	<1.109	0.89	0.8
SB03 (p-34)	90%-19mm	133	na	0.075	<1	<1.075	0.80	0.8
SB04 (p-35)	94%-19mm	107	3.2	0.033	1	1.033	0.66	1.0
SB04 (p-36)	94%-19mm	105	3.2	0.033	1	1.033	0.71	1.0
SB05 (p-37)	93%-19mm	75	4.7	0.049	1	1.049	0.34	1.0
SB05 (p-38)	93%-19mm	75	5.0	0.053	1	1.053	0.35	1.0
SB06 (p-39)	89%-19mm	106	2.3	0.024	1	1.024	0.58	1.0
SB06 (p-40)	89%-19mm	105	3.1	0.032	1	1.032	0.58	1.0
SB07 (p-41)	91%-19mm	73	3.2	0.033	1	1.033	0.35	1.1
SB07 (p-42)	91%-19mm	72	na	0.041	<1	<1.041	0.43	1.1

13.2.4 MCCLELLAND YELLOWJACKET METALLURGICAL TESTING – 2013-2015

The YellowJacket deposit is a steeply dipping quartz vein and adjacent stockworks on the eastern edge of the Sierra Blanca resource. A series of metallurgical tests have been performed on YellowJacket mineralization by McClelland Laboratories, which consisted of CN bottle roll tests on core samples ground to 80% - 75µm, CN bottle roll tests on samples with particle sizes ranging from 80% -19 mm to 80% - 75µm , column leach tests on materials with particle sizes of 80% - 6.3 mm and 80% -19mm, E-GRG tests on composite samples of vein material and stockwork material, Gravity concentration with CN leaching of the tail material, and gravity concentration with intensive CN leaching of the gravity concentrate followed by CN leaching of the combined tails. These data were reported by McClelland (2015a) and (2015b), and are discussed in the following sub-sections.

The two sets of composite samples, prepared to evaluate gravity concentration with CN leach of the tails, were developed for vein and vein stockwork samples from above the oxidation surface (YJ PQ composites) and from below the oxidation surface (YJ JV composites).

13.2.4.1 SCOPING CN LEACH TESTS

McClelland Labs performed 24 bottle roll tests on 12 drilling core samples at nominal 80% -75µm feed sizes. Table 13.20 list the results of the bottle roll tests for both gold and silver recovery.

Table 13.20 Summary Metallurgical Results, Bottle Roll Tests, YellowJacket Drill Core Composites, 80%-75 µm Feed Size

Composite	Au Recovery. %	g Au/mt mineralization				Ag Recovery %	g Ag/mt mineralization				Reagent Requirements kg/mt mineralization	
		Extracted	Tail (1)	Calculated Head	Head Assay (2)		Extracted	Tail (1)	Calculated Head	Head Assay (2)	NaCN Cons.	Lime Added
C226950	96.2	2.27	0.09	2.36	2.16	85.7	8.4	1.4	9.8	11	0.08	1.2
C226950	96.4	2.40	0.09	2.49	2.16	85.6	8.3	1.4	9.7	11	<0.07	1.3
C226985	91.2	11.02	1.06	12.08	12.70	67.8	28.9	13.7	42.6	49	0.09	1.1
C226985	89.9	9.32	1.05	10.37	12.70	65.1	27.4	14.7	42.1	49	0.14	1.2
C226986	78.2	3.08	0.86	3.94	3.90	61.0	26.8	17.1	43.9	49	0.12	1.6
C226986	79.9	3.06	0.77	3.83	3.90	73.0	33.2	12.3	45.5	49	0.21	1.6
C226989	68.7	1.36	0.62	1.98	1.90	69.9	14.6	6.3	20.9	25	0.23	1.1
C226989	73.1	1.41	0.52	1.93	1.90	76.4	15.2	4.7	19.9	25	0.13	1.0
C226990	85.1	6.34	1.11	7.45	6.70	70.7	22.7	9.4	32.1	35	0.20	1.0
C226990	85.6	6.10	1.03	7.13	6.70	72.8	24.3	9.1	33.4	35	0.21	0.9
M612658	85.4	0.70	0.12	0.82	0.80	75.8	2.5	0.8	3.3	3	0.08	1.3
M612658	86.9	0.73	0.11	0.84	0.80	78.8	2.6	0.7	3.3	3	0.07	1.4
M612665	86.5	8.32	1.30	9.62	12.10	80.1	34.7	8.6	43.3	45	0.11	1.1
M612665	89.3	8.64	1.04	9.68	12.10	79.2	33.8	8.9	42.7	45	0.17	1.1
M612674	91.7	0.77	0.07	0.84	1.00	88.2	44.1	5.9	50.0	61	0.12	1.1
M612674	92.9	0.78	0.06	0.84	1.00	85.7	46.2	7.7	53.9	61	0.13	1.1
M612701	96.9	5.86	0.19	6.05	7.10	89.7	35.7	4.1	39.8	49	0.22	1.1
M612701	95.7	5.53	0.25	5.78	7.10	89.1	36.0	4.4	40.4	49	0.15	1.1
M612704	89.1	1.47	0.18	1.65	1.70	83.6	43.3	8.5	51.8	56	0.26	1.1
M612704	85.9	1.40	0.23	1.63	1.70	83.5	43.9	8.7	52.6	56	0.34	1.1
M612716	94.1	1.28	0.08	1.36	1.20	74.2	2.3	0.8	3.1	3	0.13	1.1
M612716	95.1	1.37	0.07	1.44	1.20	75.0	2.4	0.8	3.2	3	0.08	1.2
M612727	90.7	0.49	0.05	0.54	0.60	72.7	0.8	0.3	1.1	1	<0.07	1.2
M612727	91.7	0.66	0.06	0.72	0.60	66.7	0.8	0.4	1.2	1	0.11	1.2

(1) Average of triplicate assays

(2) Head assays were provided by Corvus

13.2.4.2 YJ PQ COMPOSITE TESTS

Extensive core was produced by drilling at YellowJacket during 2013 and 2014 was used to create composite samples designed to be representative of the types of mineralization represented by the Josh Vein and adjacent stockwork zones. Five composite samples (YJ PQ composites) were created from PQ core from above the oxidation surface and submitted to McClelland for testing. A series of tests were performed on the YJ PQ composite samples to identify processing alternatives. Those test series consisted of:

CN bottle roll tests at feed sizes of 80% -75µm, 80% - 0.106mm, 80% - 0.150mm, 80% - 1.7mm, 80% - 6.3mm and 80% - 19mm; CN Column leach tests at 80% - 6.3mm and 80% - 19mm; E-GRG tests at 80% -75µm, 80% - 250µm and 80% - 700µm; Gravity concentration at feed size of 80% -212µm with CN leach of tails at 80% -75µm and 80% -150µm. Results from each of the tests types is presented in the following sub-sections.

13.2.4.2.1 CN BOTTLE ROLL TESTS AT VARIOUS FEED SIZES

The results of bottle roll tests at particle size gradations of 80% -75µm, 80% - 0.106mm, 80% - 0.150mm, 80% - 1.7mm, 80% - 6.3mm and 80% - 19mm are listed in Table 13.21. The tests were performed to test the potential for heap leach processing of YellowJacket mineralization. The results indicated achieving high gold and silver CN recovery would require a mill to grind the mineralization and that good leach recoveries could be achieved with feed sizes in the range of 80% -0.15mm to -75µ.

Table 13.21 Summary of Bottle Roll Tests, YellowJacket YJ PQ Drill Core Composites.

Composite	Feed Size (P_{80})	Au Recovery, %	g Au/mt mineralization				Ag Recovery, %	g Ag/mt mineralization				Reagent Requirements, kg/mt mineralization	
			Extracted	Tail (1)	Calculated Head	Head (2)		Extracted	Tail (1)	Calculated Head	Head (2)	NaCN Cons.	Lime Added
YJPQ01	19mm	12.7	0.91	6.23	7.14	5.39	10.5	4.5	38.4	42.9	47.5	<0.09	0.5
YJPQ01	6.3mm	30.4	2.70	6.19	8.89	5.39	24.9	13.3	40.1	53.4	47.5	0.12	0.7
YJPQ01	1.7mm	50.0	3.88	3.88	7.76	5.39	46.9	22.5	25.5	48.0	47.5	0.17	0.7
YJPQ01	0.150mm	86.2	4.88	0.78	5.66	5.39	66.8	37.3	18.5	55.8	47.5	<0.12	1.0
YJPQ01	0.106mm	88.4	4.44	0.58	5.02	5.39	68.7	37.1	16.9	54.0	47.5	<0.12	1.0
YJPQ01	0.075mm	88.3	5.00	0.66	5.66	5.39	70.3	32.4	13.7	46.1	47.5	0.17	1.2
YJPQ02	19mm	11.3	0.60	4.69	5.29	9.74	15.0	3.4	19.2	22.6	25.0	0.11	0.7
YJPQ02	6.3mm	32.9	1.62	3.30	4.92	9.74	35.4	7.4	13.5	20.9	25.0	<0.11	0.9
YJPQ02	1.7mm	53.6	3.53	3.06	6.59	9.74	50.2	12.0	11.9	23.9	25.0	0.12	0.9
YJPQ02	0.150mm	92.0	5.29	0.46	5.75	9.74	74.3	18.2	6.3	24.5	25.0	0.10	1.3
YJPQ02	0.106mm	92.9	5.35	0.41	5.76	9.74	75.8	19.1	6.1	25.2	25.0	<0.07	1.4
YJPQ02	0.075mm	90.4	5.64	0.60	6.24	9.74	77.4	19.9	5.8	25.7	25.0	0.18	1.2
YJPQ03	19mm	13.7	0.27	1.70	1.97	1.49	11.4	0.9	7.0	7.9	9.1	0.09	0.6
YJPQ03	6.3mm	27.3	0.59	1.57	2.16	1.49	20.5	1.6	6.2	7.8	9.1	<0.07	0.8
YJPQ03	1.7mm	45.9	0.73	0.86	1.59	1.49	38.4	3.3	5.3	8.6	9.1	0.12	1.1
YJPQ03	0.150mm	88.5	1.62	0.21	1.83	1.49	68.4	5.4	2.5	7.9	9.1	<0.07	1.2
YJPQ03	0.106mm	88.3	1.58	0.21	1.79	1.49	65.9	5.6	2.9	8.5	9.1	<0.07	1.3
YJPQ03	0.075mm	89.6	1.29	0.15	1.44	1.49	76.1	7.0	2.2	9.2	9.1	0.20	1.3
YJPQ04	19mm	23.1	0.09	0.30	0.39	0.62	16.7	0.8	4.0	4.8	4.6	0.07	0.8
YJPQ04	6.3mm	33.3	0.18	0.36	0.54	0.62	41.9	1.8	2.5	4.3	4.6	<0.07	1.1
YJPQ04	1.7mm	57.8	0.37	0.27	0.64	0.62	52.3	2.3	2.1	4.4	4.6	<0.09	1.2
YJPQ04	0.150mm	61.4	0.35	0.22	0.57	0.62	62.0	3.1	1.9	5.0	4.6	0.11	1.5
YJPQ04	0.106mm	67.3	0.37	0.18	0.55	0.62	66.0	3.1	1.6	4.7	4.6	<0.07	1.6
YJPQ04	0.075mm	68.8	0.44	0.20	0.64	0.62	66.7	3.4	1.7	5.1	4.6	<0.08	2.5
YJPQ05	19mm	43.9	0.18	0.23	0.41	0.33	29.4	0.5	1.2	1.7	1.9	<0.07	1.0
YJPQ05	6.3mm	44.2	0.19	0.24	0.43	0.33	36.8	0.7	1.2	1.9	1.9	0.07	1.2
YJPQ05	1.7mm	54.0	0.27	0.23	0.50	0.33	47.4	0.9	1.0	1.9	1.9	0.16	1.3
YJPQ05	0.150mm	76.4	0.42	0.13	0.55	0.33	65.0	1.3	0.7	2.0	1.9	<0.10	1.7
YJPQ05	0.106mm	76.2	0.32	0.10	0.42	0.33	70.0	1.4	0.6	2.0	1.9	0.10	1.8
YJPQ05	0.075mm	74.4	0.32	0.11	0.43	0.33	61.9	1.3	0.8	2.1	1.9	<0.08	2.3

13.2.4.2.2 YJ PQ COLUMN LEACH TESTS

Although the bottle roll tests on the YJ PQ composites indicated that the mineralization would have to be milled to produce sufficient gold liberation to assure high recoveries, some column leach tests were performed for confirmation. Tests were performed for the relatively small particle size of P80 -6.3mm, with one sample tested at P80 -19mm. The results are listed in Tables 13.22 and 13.23 for gold and silver recoveries, respectively.

Table 13.22 Summary Metallurgical Results, Gold Recovery from Column Percolation Leach Tests, YellowJacket YJ PQ Drill Core Composites (80% -6.3mm and 80% -19mm)

Composite/Feed Size, (P_{80})	Leach/Rinse Time (days)	Au Recovery %	g Au/mt			Reagent Requirements kg/mt	
			Extracted	Tail	Calculated Head	NaCN Cons.	Lime Added
YJPQ01 -6.3mm	181	53.6	5.0	4.36	9.36	7.06	0.8
YJPQ02 -6.3mm	181	60.2	2.21	1.46	3.66	5.62	1.0
YJPQ03 -6.3mm	137	37.8	0.65	1.12	1.77	3.14	0.9
YJPQ04 -6.3mm	137	50.1	0.33	0.32	0.65	2.92	1.3
YJPQ05 -19mm	140	46.5	0.17	0.19	0.36	1.46	1.2
YJPQ05 -6.3mm	137	56.3	0.23	0.18	0.40	2.33	1.4

Table 13.23 Summary Metallurgical Results, Silver Recovery from Column Percolation Leach Tests, YellowJacket YJ PQ Drill Core Composites (80% -6.3mm and 80% -19mm)

Composite/Feed Size, (P_{80})	Leach/Rinse Time (days)	Au Recovery %	g Au/mt			Reagent Requirements kg/mt	
			Extracted	Tail	Calculated Head	NaCN Cons.	Lime Added
YJPQ01 -6.3mm	181	46.2	24.2	28.2	52.4	7.06	0.8
YJPQ02 -6.3mm	181	47.7	10.5	11.6	22.1	5.62	1.0
YJPQ03 -6.3mm	137	34.0	2.4	4.7	7.0	3.14	0.9
YJPQ04 -6.3mm	137	48.4	2.4	2.6	4.9	2.92	1.3
YJPQ05 -19mm	140	38.2	0.8	1.3	2.1	1.46	1.2
YJPQ05 -6.3mm	137	48.7	0.9	1.0	1.9	2.33	1.4

13.2.4.2.3 YJ PQ E-GRG TESTS

Extended gravity recoverable gold ("E-GRG") tests were performed on the YJ PQ composite samples to evaluate the grind size requirements to achieve good gravity recovery. This particular test is used as a basis for modeling performance of Knelson™ concentrators in mill circuits for prediction of recovery performance. The gravity recoverable gold component is measured at 3 progressively finer grind sizes, P80 -700µm, -250µm and -75µm. The E-GRG tests results for the YJ PQ composites are listed in Tables 13.24 and 13.25 for gold and silver, respectively. Insufficient material was available for the YJPQ05 sample for gravity testing.

Table 13.24 E-GRG Test Results for Gold Recovery from the YJ PQ composites

Composite	Recovery, % of Total Au Nominal Grind Size				Head Grade g Au/mt mineralization	
	700µm	250µm	75µm	Total	Calculated	Average
YJPQ01	33.3	23.2	9.4	65.9	8.13	7.56
YJPQ02	34.5	33.9	11.4	79.8	5.46	5.66
YJPQ03	18.0	17.6	11.1	46.7	1.39	1.66
YJPQ04	12.3	17.8	12.8	42.9	0.74	0.60

Table 13.25 E-GRG Test Results for Silver Recovery from the YJ PQ composites

Composite	Recovery, % of Total Ag Nominal Grind Size				Head Grade g Ag/mt mineralization	
	700µm	250µm	75µm	Total	Calculated	Average
YJPQ01	11.5	12.2	2.8	26.5	45.9	49.3
YJPQ02	7.0	8.1	4.1	19.2	19.1	22.9
YJPQ03	2.8	3.0	2.0	7.8	7.6	8.0
YJPQ04	4.5	4.6	3.1	12.2	4.3	4.8

13.2.4.2.4 YJ PQ GRAVITY CONCENTRATION WITH CN TAIL LEACH TESTS

Combined gravity concentration with CN leaching of the gravity tail products was conducted on the YJ PQ composites. Based on the results of the E-GRG tests, the composite materials were ground to P80 -212µ (-65 mesh) before being fed into the Knelson™ concentrator. The gravity gold recovery in the cleaner concentrate (Cl. Conc) and the CN leach recovery from the gravity tail component are listed in Table 13.26 and 13.27 for gold and silver, respectively. The gravity concentrates from the YJ PQ composites were assayed to destruction and therefore the combined recovery assumes that all of the metal in the gravity concentrate is recovered. This is consistent with typical process results where typically have 98% of the gold in the gravity concentrate is recovered in the refinery. Also, since the YJPQ composites were from above the oxidation surface, no gold lockup in sulphide remnants would be expected. The results indicated very high metal recoveries would be possible with a simple gravity with CN leaching plant.

Table 13.26 Gold Recovered from Gravity Concentrate and CN Leach of Gravity Tail, YJ PQ Composites

Composite/ Feed Size (P_{80})	Au Distribution, % of total				g Au/mt mineralization					Reagent	Req.
	Au rec. from Cl. Conc.	Au rec. from gravity tail	Comb. Au rec.	Au in Tail	Extracted: Cl. Conc	Extracted: CN	Extracted: Comb.	Tail	Calc'd Head	NaCN Cons. (kg/mt)	Lime Added (kg/mt)
YJPQ01											
150µm	50.7	43.0	93.7	6.3	4.67	3.96	8.63	0.59	9.22	0.26	2.1
75µm	58.3	37.3	95.6	4.4	4.67	3.01	7.68	0.36	8.03	0.15	1.4
YJPQ02											
150µm	56.3	38.6	94.8	5.2	4.34	3.02	7.36	0.40	7.76	0.14	1.7
75µm	64.2	31.4	65.6	4.4	3.34	1.63	4.97	0.23	5.20	0.17	1.6
YJPQ03											
150µm	25.7	62.6	88.2	11.8	0.36	0.88	1.24	0.17	1.40	0.10	1.4
75µm	25.4	67.9	93.3	6.7	0.36	0.96	1.32	0.10	1.42	0.13	1.5
YJPQ04											
150µm	23.6	49.2	72.8	27.2	0.14	0.29	0.43	0.16	0.59	0.15	1.4
75µm	24.2	49.9	74.1	25.9	01.4	0.29	0.43	0.15	0.58	0.12	2.0

Table 13.27 Silver Recovered from Gravity Concentrate and CN Leach of Gravity Tail, YJ PQ Composites

Composite/ Feed Size (P_{80})	Ag Distribution, % of total				g Ag/mt mineralization					Reagent	Req.
	Ag rec. from Cl. Conc.	Ag rec. for gravity tail	Comb. Ag rec.	Ag in Tail	Extracted: Cl. Conc	Extracted: CN	Extracted: Comb.	Tail	Calc'd Head	NaCN Cons. (kg/mt)	Lime Added (kg/mt)
YJPQ01											
150µm	11.7	63.4	75.0	25.0	5.5	30.1	35.6	11.9	47.4	0.26	2.1
75µm	11.7	66.5	78.2	21.8	5.5	31.6	37.1	10.4	47.5	0.15	1.4
YJPQ02											
150µm	5.8	71.2	76.9	23.1	1.2	15.0	16.2	4.9	21.0	0.14	1.7
75µm	5.9	75.0	80.8	19.2	1.2	15.5	16.7	4.0	20.6	0.17	1.6
YJPQ03											
150µm	2.3	68.9	71.1	28.9	0.2	5.6	5.8	2.4	8.2	0.10	1.4
75µm	2.2	74.9	77.1	22.9	0.2	6.2	6.4	1.9	8.3	0.13	1.5
YJPQ04											
150µm	1.9	62.3	64.2	35.8	0.1	3.1	3.2	1.8	4.9	0.15	1.4
75µm	1.8	66.5	68.2	31.8	0.1	3.4	3.5	1.6	5.1	0.12	2.0

13.2.4.3 YJ JV SAMPLES

PQ3 core drilling during 2014 sampled the Josh vein and vein stockwork mineralization at YellowJacket below the oxidation surface. Seven samples (PQ JV samples) were developed to represent variations of the Josh Vein and stockwork below the oxidation surface where sulphide minerals remained un-oxidized. The total proportion of sulphide sulphur below oxidation was a minor component of the total rock mass, ranging between 1-2%, so any impacts were expected to be relatively small.

13.2.4.3.1 YJ JV BOTTLE ROLL TESTS

The YJ JV samples were crushed and a split from each was created for blending into two composites for bottle roll testing. Samples YJ JV01 and YJ JV02 were quartz vein and strongly veined stockwork and were blend to produce the Josh Vein plus Stockwork (JV+Stockwork) Composite. Samples YJ JV03, YJ JV04, YJ JV05 and YJ JV06 were blended to produce a Stockwork composite. Sample YJ JV07 was stockwork material from above the oxidation surface and therefore not used in the composite preparation. The bottle roll test results are listed in Tables 13.28 and 13.29 list the test results for gold and silver, respectively. The tests indicated relatively high recovery of metal by cyanide leaching, although generally lower recovery was achieved than in the YJ PQ tests. Examination of the time-recovery curves indicated that metal dissolution was still increasing at 96 hours, suggesting that coarse gold particles had not been completely recovered in the bottle roll tests.

Table 13.28 Bottle Roll Tests from YJ JV Composites, Gold Recovery at Various Feed Sizes

Composite	Feed Size (P_{80})	Test	Au Rec. (%)	g Au/mt mineralization				Reagent Req., kg/mt mineralization	
				Ext'd	Tail	Cal'd Head	Head Assay	NaCN Cons.	Lime Added
JV+Stockwork	150µm	Initial	76.2	3.72	1.16	4.88	4.60	0.19	0.6
JV+Stockwork	150µm	Dup	76.4	3.72	1.15	4.87	4.60	0.21	0.6
JV+Stockwork	75µm	Initial	76.7	3.75	1.14	4.89	4.60	0.22	0.7
JV+Stockwork	75µm	Dup	77.0	3.64	1.09	4.73	4.60	0.19	0.9
Stockwork	150µm	Initial	69.2	1.17	0.52	1.69	1.64	<0.07	1.0
Stockwork	150µm	Dup	56.3	0.90	0.70	1.60	1.64	<0.07	1.1
Stockwork	75µm	Initial	75.4	1.50	0.49	1.99	1.64	0.14	1.1
Stockwork	75µm	Dup	73.5	1.39	0.50	1.89	1.64	<0.07	1.3

Table 13.29 Bottle Roll Tests from YJ JV Composites, Silver Recovery at Various Feed Sizes

Composite	Feed Size (P_{80})	Test	Ag Rec. (%)	g Ag/mt mineralization				Reagent Req., kg/mt mineralization	
				Ext'd	Tail	Cal'd Head	Head Assay	NaCN Cons.	Lime Added
JV+Stockwork	150µm	Initial	56.2	34.2	26.7	60.9	61.2	0.19	0.6
JV+Stockwork	150µm	Dup	53.5	33.0	28.7	61.7	61.2	0.21	0.6
JV+Stockwork	75µm	Initial	58.5	35.6	25.3	60.9	61.2	0.22	0.7
JV+Stockwork	75µm	Dup	58.0	34.4	24.9	59.3	61.2	0.19	0.9
Stockwork	150µm	Initial	53.8	3.5	3.0	6.5	7.5	<0.07	1.0
Stockwork	150µm	Dup	51.5	3.4	3.2	6.6	7.5	<0.07	1.1
Stockwork	75µm	Initial	57.1	3.6	2.7	6.3	7.5	0.14	1.1
Stockwork	75µm	Dup	59.1	3.9	2.7	6.6	7.5	<0.07	1.3

13.2.4.3.2 YJ JV E-GRG TESTS

E-GRG tests were conducted on splits of the two YJ JV composites to characterize metal recovery with increasingly fine grind size. The results are listed in Table 13.30 for both gold and silver.

Table 13.30 E-GRG Test Results for the YJ JV Composites, Gold and Silver Recovery

Composite	Recovery, % of Total Metal Nominal Grind Size				Head Grade g /mt mineralization	
	700µm	250µm	75µm	Total	Calculated	Average
Gold						
JV+Stockwork	30.4	22.3	15.6	68.3	4.56	4.80
Stockwork	31.6	25.2	11.0	67.8	1.75	1.82
Silver						
JV+Stockwork	11.4	12.1	5.5	29.0	56.1	63.8
Stockwork	8.5	7.9	5.5	21.9	6.0	6.4

13.2.4.3.3 GRAVITY CONCENTRATION / GRAVITY PRODUCT CYANIDATION TESTS

Each YJ JV sample, JV01 through JV06, was fed individually into a Knelson™ concentrator at a particle size of P80 -212µm (-65 mesh). The individual gravity concentrates were then blended to produce the two composite samples of Josh

Vein+Stockwork (YJ JV01 and JV02) and Stockwork (YJ JV03, JV04, JV05 and JV06). Composites of the gravity tail material were also constructed. The gravity concentrates were then re-ground to P80 -45µm (-325 mesh) and then subjected to intense CN leaching for 104 hours. The gravity tail composites were re-ground to produce 3 samples at P80 -45µm (-325 mesh), -75µm (-200 mesh) and -150 micrometres ("µm") (-100 mesh) to allow characterization of the impact of grind size on tail recovery. The leached gravity concentrate was then blended into the gravity tail material and leached for 144 hours. Gold and silver recoveries for combined tail leach and separate tail leach are listed in Table 13.31.

Table 13.31 Gold and Silver Recoveries from YJ JV Composites with Intense CN leaching of Gravity Concentrate and CN Leach of Tail

Composite	Process	Gravity Tail Regrind (P_{80})	Leach Recoveries (%)		Reagent Requirements, kg/mt mineralization	
			Gold	Silver	NaCN	Lime
JV+Stkwrk	Conc. Int. CN w/Pretreat;Combined Tail Leach[1]	150µm	87.1	66.5	0.22	0.7
JV+Stkwrk	Conc. Int. CN w/Pretreat;Combined Tail Leach[1]	75µm	89.0	69.7	0.23	1.1
JV+Stkwrk	Conc. Int. CN no/Pretreat;Combined Tail Leach[1]	150µm	86.2	66.3	0.22	0.7
JV+Stkwrk	Conc. Int. CN no/Pretreat;Combined Tail Leach[1]	75µm	88.2	69.6	0.23	1.1
JV+Stkwrk	Conc. Int. CN w/Pretreat;SeparateTail Leach[2]	150µm	83.8	66.5	0.24	3.9
JV+Stkwrk	Conc. Int. CN w/Pretreat;SeparateTail Leach[2]	75µm	79.0	64.1	0.37	3.7
JV+Stkwrk	Conc. Int. CN w/Pretreat;SeparateTail Leach[2]	45µm	87.3	63.6	0.29	4.4
JV+Stkwrk	Conc. Int. CN no Pretreat;SeparateTail Leach[2]	150µm	79.2	66.1	0.24	3.5
JV+Stkwrk	Conc. Int. CN no Pretreat;SeparateTail Leach[2]	75µm	74.2	63.9	0.37	3.4
JV+Stkwrk	Conc. Int. CN no Pretreat;SeparateTail Leach[2]	45µm	83.1	63.2	0.29	4.0
Stockwork	Conc. Int. CN w/Pretreat;Combined Tail Leach[1]	150µm	77.6	64.1	0.15	1.0
Stockwork	Conc. Int. CN w/Pretreat;Combined Tail Leach[1]	75µm	78.1	64.6	0.11	1.2
Stockwork	Conc. Int. CN no/Pretreat;Combined Tail Leach[1]	150µm	77.0	64.2	0.14	0.9
Stockwork	Conc. Int. CN no/Pretreat;Combined Tail Leach[1]	75µm	77.6	64.7	0.10	1.1
Stockwork	Conc. Int. CN w/Pretreat;SeparateTail Leach[2]	150µm	72.6	60.8	0.11	1.2
Stockwork	Conc. Int. CN w/Pretreat;SeparateTail Leach[2]	75µm	74.2	64.4	0.10	1.3
Stockwork	Conc. Int. CN w/Pretreat;SeparateTail Leach[2]	45µm	73.7	68.0	0.11	1.8
Stockwork	Conc. Int. CN no Pretreat;SeparateTail Leach[2]	150µm	73.0	60.9	0.10	1.1
Stockwork	Conc. Int. CN no Pretreat;SeparateTail Leach[2]	75µm	74.7	64.6	0.09	1.2
Stockwork	Conc. Int. CN no Pretreat;SeparateTail Leach[2]	45µm	74.2	68.2	0.10	1.7

1) Combined recoveries and reagent consumptions for gravity concentrate at 80%-212µm, intensive cyanidation of gravity rougher concentrate at 80%-45µm regrind, and leaching of gravity rougher tailings (with the intensive cyanidation residue added for re-leaching) at the indicated regrind size.
2) Combined recoveries and reagent consumptions for gravity concentrate at 80%-212µm, intensive cyanidation of gravity rougher concentrate at 80%-45µm regrind, and leaching of gravity rougher tailings (with the intensive cyanidation residue added for re-leaching) at the indicated regrind size.

Gold and silver recoveries from the YJ JV composite samples were higher than the bottle roll testing confirming that leaching of coarse gold particles was incomplete in the bottle rolls. Total recoveries were high, but less than measured in the YJ PQ composite tests indicating some fall off below oxidation. The tests confirmed that gravity concentration of YellowJacket mineralization with CN leaching of the tails would produce a consistent and high metal recovery from a relatively simple mill circuit.

13.3 COMMINUTION TEST WORK

Material from the Sierra Blanca, Jolly Jane, and Mayflower Bulk samples were submitted to McClelland for measurements of crusher work index, ball mill grindability and abrasion index. In addition, six composites were developed from PQ3 core holes NB-13-362 and NB-13-363 to develop comminution characteristics of vein and vein stockwork materials from the YellowJacket zone. The YellowJacket composites were developed for materials both above and below the oxidation surface. Table 13.32 lists the results of the both sets of tests.

Table 13.32 Summary of Comminution Test Work on Sierra Blanca, Jolly Jane, and Mayflower Bulk Materials and on YellowJacket PQ3 Core Materials

Sample ID	Location with respect to Oxidation surface	Ball Mill Work Index (kW-hr/tonne)	Crusher Work Index (kW-hr/tonne)	Abrasion Index
Heap Leach				
Sierra Blanca (SB 1019)	above	23.27	16.68	0.4577
Jolly Jane (JJ 1019)	above	24.72	22.60	0.6260
Mayflower	above	-	14.05	0.3946
Mill				
YJ Comm Comp 1	above	22.8	12.3	0.7154
YJ Comm Comp 1	above	22.1	9.8	0.4259
YJ Comm Comp 1	above	21.5	7.8	0.2718
YJ Comm Comp 1	below	22.1	10.9	0.5729
YJ Comm Comp 1	below	22.5	10.5	0.5766
YJ Comm Comp 1	below	22.0	10.6	0.4778

13.4 GOLD DEPORTMENT STUDIES

Investigations of gold deportment in NBP sample materials have been performed to add detail on the character of gold occurrence in the YellowJacket mineralization, and to develop preliminary information on gold occurrence in un-oxidized sulphide mineralization.

13.4.1 GOLD DEPORTMENT IN JOSH VEIN AND STOCKWORKS

Gold and silver mineralization in the Josh Vein and associated stockwork zones at YellowJacket is predominantly native gold and electrum. This was indicated by the high metal recovery in the gravity concentration with CN leaching of tail materials for the YJ PQ and YJ JV composites. Samples of gravity concentrate from the YJ JV samples JV01 to JV07 were analyzed by QEMSCAN Particle Mineral Analysis (PMA), Trace Mineral Search (TMS), Whole Rock Analysis (WRA) and X-Ray Diffraction Analysis (XDF) by Bureau Veritas Commodities Canada Ltd. (McClelland 2015B). Conclusions and recommendations from the analyses were:

- 95% of the gold in the seven YJ JV concentrates presented as liberated particles or gold adhesion binaries with exposed surfaces. The liberated gold and gold adhesions were probably expected to be leached using further normal cyanidation leaching methodology. Gold leach recovery of 90% to 95% from these concentrates may be expected to be achieved.
- The locked inclusion gold would be unlikely to be leached. The unliberated gold was principally locked with pyrite and non-sulphide gangue either in binary or multiphase forms.
- The silver bearing minerals were identified as gold/electrum, acanthite/argentite, stephanite/pyrargyrite, stromeyerite and tetrahedrite. Unliberated silver was mostly associated with pyrite and non-sulphide gangue either in binary or multiphase forms.

13.4.2 GOLD DEPORTMENT IN SULPHIDE MINERALIZATION

In addition to the substantial oxidized gold mineralization, Josh vein and vein stockwork mineralization, other areas of un-oxidized mineralized material exists at the NBP. Metallurgical testing has indicated that some of the un-oxidized mineralized material are refractory, with gold recovery ranging from <10% - 40%. Some gold deportment work was performed on two samples of the un-oxidized material to better understand the characteristics and occurrence of the gold that was not cyanide recoverable. The gold deportment analysis was performed on the tail material after 72 hours of cyanide leaching by AMTEL. In summary, the primary conclusion from the study was, "The refractoriness to direct cyanidation of the North Bullfrog some un-oxidized mineralization is directly related to the fact that the primary Au carrier is submicroscopic Au in pyrite."

The gold deportment as submicroscopic particles was confirmed by metallic screen analysis at the +10 mesh in the study. The +10 mesh material contained 0.1% to 1.8% of the total gold in these tests.

The ICP analysis of all samples indicated that a weak relationship exists between arsenic and gold mineralization.

Bodies of sulphide mineralization with relatively high grades have been detected in drilling in the YellowJacket zone, along fault zones below oxidation and in drilling to the north of Sierra Blanca. A group of samples were developed to confirm previous indications of the metallurgical character of theses sulphide materials. Eleven sulphide composite samples, the YJS composites, were submitted to McClelland Labs for bottle roll testing (McClelland 2014b). Gold head grades ranged from 0.4 g/t to 4 g/t, with gold recoveries ranging from 4% to 35% at a feed size of P80 -75µm. Silver head grades were similar, ranging from 0.9 g/t to 7.4 g/t, with silver recoveries ranging from 28% to 65%. These test results indicate that simple CN leaching of the sulphide ores will not be successful. Section 13.6 details gold dissolution results by sulphide flotation followed by AAO and cyanidation.

13.5 CRUSH SIZE VS RECOVERY PREDICTION FOR HEAP LEACHING

The metallurgical study was primarily based on column leach tests at a feed size of P80 -19mm (-3/4") particle size. Projected heap leach recoveries and leach time were the defined using this column leach test data reported here. The test data indicate high solubility, and that ultimate gold recovery is time dependent only. The column test results indicate that there is no relationship between head grade to recovery, with lower grades reporting recoveries as high as the higher grades, albeit in shorter leach time

The time dependence is being investigated at larger particle sizes in vat leach tests on Mayflower and Sierra Blanca mineralized material. The vat leaching was done on select samples at nominal particle sizes of 200-250mm, 150 mm and 75-90mm. The results are listed in Table 13.33 for gold and Table 13.34 for silver.

Mayflower David Adit material at a nominal feed sizes of 75, 150 and 200 mm obtained gold dissolutions of 68.5, 71.9 and 38.7%, respectively, in 197-198 days of leaching. Silver recovery was 9.1, 22.2 and 7.7%, respectively. The material head grade ranged from 0.47-1.22 gpt. Cyanide consumption averaged 1.6 kg/t and lime consumptions ranged from 0.0-0.04 kg/ton.

Mayflower Starlight material at a nominal feed sizes of 75, 150 and 200 mm obtained gold dissolutions of 57.8, 57.0 and 45.7%, respectively, in 197-198 days of leaching. Silver recovery was 23.5, 20.0 and 10.0%, respectively. The material head grade ranged from 1.38-3.08 gpt. Cyanide consumption averaged 1.5 kg/t and lime was not consumed.

Sierra Blanca dump material at a nominal feed sizes of 90, 150 and 250 mm obtained gold dissolutions of 57.1, 31.4 and 21.7%, respectively, in 114 days of leaching. Silver recovery was <12.5, <14.3 and <12.5%, respectively. The material head grade ranged from 0.21-0.35 gpt. Cyanide consumption averaged 0.5 kg/t and lime consumption averaged 0.65 kg/ton.

Table 13.33 Vat Leach Test Measurements of Gold Recovery on Large Particles Sizes from Mayflower and Sierra Blanca Dump Materials

Sample	Nom. Feed Size (mm)	Leach Time, Days	Au Rec., (%)	g Au/mt mineralization			Reagent Requirements Kg/mt mineralization	
				Ext'd	Tail	Calc'd Head	NaCN Cons.	Lime Added
MF David Adit	200	198	38.7	0.77	1.22	1.99	2.15	0.00
MF David Adit	150	197	71.9	1.20	0.47	1.67	1.23	0.00
MF David Adit	75	197	68.5	1.02	0.47	1.49	1.42	0.04
MF Starlight	200	198	45.7	0.63	0.75	1.38	1.88	0.00
MF Starlight	150	197	57.0	1.59	1.20	2.79	1.27	0.00
MF Starlight	75	197	57.8	1.78	1.30	3.08	1.40	0.00
SB Dump	250	114	21.7	0.05	0.18	0.23	0.36	0.35
SB Dump	150	114	31.4	0.11	0.24	0.35	0.42	0.67
SB Dump	90	114	57.1	0.12	0.09	0.21	0.71	0.93

Table 13.34 Vat Leach Test Measurements of Silver Recovery on Large Particles Sizes from Mayflower and Sierra Blanca Dump Materials

Sample	Nom. Feed size (mm)	Leach Time (days)	Ag Rec., (%)	g Ag/mt mineralization			Reagent Requirements Kg/mt mineralization	
				Ext'd	Tail	Calc'd Head	NaCN Cons.	Lime Added
MF David Adit	200	198	7.7	0.1	1.2	1.3	2.15	0.00
MF David Adit	150	197	22.2	0.2	0.7	0.9	1.23	0.00
MF David Adit	75	197	9.1	0.1	1.0	1.1	1.42	0.04
MF Starlight	200	198	10.0	0.1	0.9	1.0	1.88	0.00
MF Starlight	150	197	20.0	0.3	1.2	1.5	1.27	0.00
MF Starlight	75	197	23.5	0.4	1.3	1.7	1.40	0.00
SB Dump	250	114	<12.5	<0.1	<0.1	<0.1	0.36	0.35
SB Dump	150	114	<14.3	<0.7	<0.6	<0.7	0.42	0.67
SB Dump	90	114	<12.5	<0.8	<0.7	<0.7	0.71	0.93

*silver head grade below detection resolution

13.6 SULPHIDE MATERIAL PROCESSING

Hazen Research, Inc. performed sulphide flotation, AAO and cyanide leach experiments on gold material samples from November 2016 to October 2017.

The goals of the bench-scale work were to determine the potential to concentrate gold bearing sulphides by froth flotation, oxidize the sulphide concentrates at atmospheric pressure with oxygen and leaching the oxidized residues with sodium cyanide to recover gold and silver.

The program was conducted in three phases:

a) The first, phase1, consisted of flotation, concentrate Alkaline Atmospheric Oxidation (AAO) tests and cyanidation of oxidized material. Flotation was conducted in three stages with 1 kg and 10 kg charges. Flotation amenability tests were completed on Dacite material to establish reagent and material grinding requirements. Variability tests on individual composites were completed after amenability tests. Variability drillhole composites were designated as Sierra Blanca and Pioneer Formation volcanic tuff, Dacite and Rhyolite. Variability tests were followed by 10 kg bulk tests to generate concentrate for AAO amenability testing.

   In atmospheric alkaline oxidation (AAO) testing, sulphide in flotation concentrate material was oxidized by pure oxygen with the addition of soda ash or trona and gold and silver dissolution obtained by cyanidation of the oxidized residues.

b) The second, phase 2, consisted of seven additional AAO tests; five on remaining Phase 1 sulphide concentrate and two whole ore oxidation tests. Sierra Blanca Tuff and Dacite materials were used. Gold recovery as a function of sulphide oxidation was evaluated on Sierra Blanca Tuff with soda ash in three tests. Magnesium carbonate as an alternative to soda ash was evaluated on Sierra Blanca and Dacite material in two tests. Whole ore oxidation using AAO conditions was evaluated with magnesium carbonate and soda ash on Sierra Blanca material in two test.

c) The third, phase 3, consisted of ten flotation tests and five additional AAO and cyanidation tests to evaluate operation at higher temperature, simulate commercial vessel pressure and commercial operation gas composition, 93 vol% oxygen. Sierra Blanca tuff material was used for all Phase III tests. Flotation tests consisted of seven grind sizes versus recovery tests, three duplicate tests at a revised reagent concentration and three bulk flotation tests to generate concentrate for AAO oxidation.

13.6.1 PHASE I – SAMPLE AND COMPOSITE PREPARATION

Approximately 876 kg of whole ore samples produced from 10 drillholes were received by Hazen in October 2016. Table 13.35 summarizes the received samples. Individual drillholes were identified by ore type with seven classified as tuff and two as dacite. The tenth drillhole (NB16S-9) consisted of two ore types, tuff and rhyolite. This increased the number of individual samples received to 11. Previous mineralogical studies indicated gold and silver were mostly bound as submicron particles in solid solution with pyritic mineralization, rendering them refractory to cyanide leaching.

Sulphur speciation indicated sulfate-sulphur and elemental sulphur assays were below the detection limit. Total sulphur assays were considered to be equivalent to sulphide sulphur. Sulphide sulphur content ranged from 0.9 to 3.2 wt%. Holes NB16S-9 and 10 contain higher levels of thorium and uranium.

Each of the eleven samples was staged crushed to -10 mesh (US) and blended by coning and quartering. Afterwards, each composite was rotary split to generate eight 1 kg charges for the initial round of bench flotation scoping experiments. Analytical head samples were riffle split and analyzed for: gold, silver, the inductively coupled plasma–optical emission spectroscopy (ICP–OES) 19 element suite, uranium, total sulphur, sulfate-sulphur and sulphide by difference. Table 13.36 and 13.37 present drillhole composite analyses.

Table 13.35 Drillhole Composite Classification

Hole ID	From Depth Interval, m	To Depth Interval, m	Weight, kg	Ore Type
NB-13-230 (NB16S-1)	128.02	207.26	54.4	Sierra Blanca tuff
NB-13-366 (NB16S-2)	73.21	88.85	36.9	Upper dacite
NB-15-269 (NB16S-3)	94.49	112.78	96.6	Savage Valley dacite
NB-16-295 (NB16S-4)	74.68	86.87	45.3	Sierra Blanca tuff
NB-16-296 (NB16S-5)	74.68	96.01	104.8	Sierra Blanca tuff
NB-16-297 (NB16S-6)	108.2	123.44	85.2	Sierra Blanca tuff
NB-16-298 (NB16S-7)	128.02	144.78	111.7	Sierra Blanca Tuff
NB-16-303 (NB16S-8)	275.84	291.08	74.7	Pioneer tuff
NB-16-300a (NB16S-9a)	217.93	237.74	126.3	Pioneer tuff
NB-16-300b (NB16S-9b)	237.74	254.51	92.1	Rhyolite
NB-16-310 (NB16S-10)	149.35	163.07	48.1	Sierra Blanca tuff

Table 13.36 Drillhole Composite Analysis for the North Bullfrog Samples 1 of 2

Composite ID		NB16S-1	NB16S-2	NB16S-3	NB16S-4	NB16S-5	NB16S-6	NB16S-7	NB16S-8	NB16S-9a	NB16S-9b	NB16S-10
Lithology		SBTff	UpDc	SVDc	SBTff	SBTff	SBTff	SBTff	PnFmTff	PnFmTff	Rhyolite	SBTff
NAME	SYMBOL	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Gold	Au	1.82	1.41	1.48	1.12	0.93	0.65	2.19	0.89	0.84	1.66	1.52
Silver	Ag	5.4	<3	1.3	1.8	ND	3.1	3.6	1.0	0.7	ND	0.6
Aluminum	Al	50,500	80,900	70,420	60,300	54,600	52,200	50,000	49,200	49,300	48,300	46,600
Beryllium	Be	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Arsenic	As	490	1500	1400	560	390	340	330	220	360	260	590
Barium	Ba	180	1,430	1,410	590	670	350	240	300	460	280	410
Bismuth	Bi	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Calcium	Ca	560	6,260	5,820	980	730	320	410	16,100	24,900	16,100	18,800
Cadmium	Cd	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cerium	Ce	81	121	117	155	165	108	101	88	89	78	87
Cobalt	Co	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Chromium	Cr	<50	60	60	<50	<50	<50	<50	<50	<50	60	140
Copper	Cu	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Iron	Fe	14,200	39,000	39,400	14,400	13,300	10,800	10,700	12,700	11,000	9,350	22,800
Potassium	K	65,900	77,100	65,900	74,200	85,900	74,200	58,000	44,300	88,900	65,000	67,200
Lanthanum	La	39	62	58	82	88	56	49	42	41	36	43

Table 13.37 Drillhole Composite Analysis for the North Bullfrog Samples 2 of 2

Composite ID		NB16S-1	NB16S-2	NB16S-3	NB16S-4	NB16S-5	NB16S-6	NB16S-7	NB16S-8	NB16S-9a	NB16S-9b	NB16S-10
Lithology		SBTff	UpDc	SVDc	SBTff	SBTff	SBTff	SBTff	PnFmTff	PnFmTff	Rhyolite	SBTff
NAME	SYMBOL	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Magnesium	Mg	520	2,490	2,490	460	260	380	670	1,690	720	670	1,460
Manganese	Mn	219	1,270	1,750	231	45	51	45	1,130	176	165	130
Molybdenum	Mo	<10	<10	<10	<10	<10	40	160	<10	220	340	150
Sodium	Na	1,130	3,770	3,090	1,870	2,050	2,080	1,630	1,850	1,890	1,640	1,510
Nickel	Ni	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	60
Phosphorus	P	240	1,050	1,230	290	<50	<50	<50	230	11,100	6,520	9,050
Lead	Pb	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Rhenium	Re	6	13	7	<5	<5	<5	<5	<5	<5	<5	7
Antimony	Sb	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Strontium	Sr	30	90	100	40	40	40	<25	80	280	180	270
Tellurium	Te	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Thorium	Th	13	8	5	7	10	8	15	14	14	12	10
Titanium	Ti	540	1,940	3,000	1,210	1,180	675	639	737	638	492	3,150
Uranium	U	2.9	--	2.5	2.1	2.7	2.9	3.4	3.1	368	281	287
Vanadium	V	11	103	108	17	13	12	14	14	16	17	76
Yttrium	Y	11	13	13	8	9	7	11	14	21	18	22
Zinc	Zn	220	150	100	110	60	100	80	90	240	180	150
Zirconium	Zr	29	36	88	42	45	32	31	20	35	29	43
Total Sulfur	Stot	13,900	32,000	31,500	13,600	12,200	9,900	10,300	8,900	10,000	8,000	23,100
Sulfate	SO4	2,000	1,500	3,400	<800	<800	1,100	<800	<800	2,000	<800	7,200
aSulfide (by diff)	S2-	13,233	31,500	30,367	13,600	12,200	9,533	10,300	8,900	9,333	8,000	20,700

aAssumes no elemental sulfur is present

ND = no detection

SBTff': Sierra Blanca Tuff, PnFMTff Poineer Formation Tuff, UpDc-Upper Dacite, SVDc Savage Valley Dacite

After the initial round of flotation scoping experiments on each drillhole, larger quantities of concentrates were needed for the AAO experimental program. Whole ore composites were blended to obtain four ore type composites. The four composites were V-blended and riffle split into 10 kg quantities as feedstock for lithology flotation experiments. Table 13.38 presents whole ore composite blending information.

Table 13.38 Composites for Lithology Flotation

Composite	Ore Type	Source	Quantity, kg
NB16-CompSBT	Sierra Blanca tuff	NB16S-1	10
	Sierra Blanca tuff	NB16S-4	10
	Sierra Blanca tuff	NB16S-5	10
	Sierra Blanca tuff	NB16S-6	10
	Sierra Blanca tuff	NB16S-7	10
	Sierra Blanca tuff	NB16S-10	10
NB16-CompPFT	Pioneer tuff	NB16S-8	30
		NB16S-9A	30
NB16-CompDAC	Upper Dacite	NB16S-2	10
	Savage Valley Dacite	NB16S-3	10
NB16-CompRHY	Rhyolite	NB16S-9B	20

13.6.2 SULPHIDE FLOTATION – DEVELOPMENT, VARIABILITY AND LITHOLOGY TESTS

In Phase I, a series of 25 flotation experiments were performed on nineteen 1 kg drillhole composites and six, 10 kg, lithology composites. In Phase 3, ten additional flotation tests were conducted on Sierra Blanca tuff to further evaluate flotation conditions and obtain concentrate material for additional AAO tests.

The mechanical flotation experiments were carried out in a Denver (Metso) sub-aeration flotation machine using cells with capacities of 2.2 and 4.4 L. The impeller speed was 1,500 rpm for the 2.2 L cell and 1,000 rpm for the 4.4 L cell. For the larger lithology flotation experiments, a Denver D-7, 28.3 L capacity cell was used.

Phase I investigations consisted of:

- Development flotation on Composite NB16S-2 (Upper Dacite).
- Variability flotation on 11 drill whole composites.
- Flotation on four lithology composites to produce concentrates for AAO work.

Phase III investigations consisted of:

- Four additional grind versus recovery tests on Sierra Blanca tuff.
- Three repeat test at an adjusted regent concentration.
- Three bulk, 10 kg, flotation tests to produce concentrate for AAO work.

13.6.2.1 FLOTATION – SIERRA BLANCA TUFF

Sierra Blanca tuff material was tested in thirteen lithology flotation tests and five bulk flotation tests. Flotation pulp densities ranged from 19 to 32% solids. Flotation feed was conditioned for 11–22 min and flotation retention times ranged from 8 to 38 min. The slurry pH averaged 6.7.

Sierra Blanca flotation feed size ranged from P80 48-104 um, flotation mass pull ranged from 7.0-13.8%, gold recovery ranged from 66.9%-96.5% and concentrate gold grades ranged from 6.1-20.1 gpt. The Sierra Blanca tuff reagent schedule and dosages test results are presented in Table 13.39 and Table 13.40.

Table 13.39 Sierra Blanca Tuff – Flotation Reagents

Flotation Reagent	Reagent	Dosage, kg/t
Modifier	Cyquest 3223	0.12-2.2
Collector	C 3535	0.71
Frother	Polyfroth W22C	0.000 - 0.06

Table 13.40 Sierra Blanca Tuff – Flotation Results

Name	Material Type	Test No.	Grind, P80	Mass Pull	Recovery Au	Recovery Ag	Recovery Sulfide	Concentrate Au Assay	Concentrate Ag Assay	Concentrate Sulfide Assay
			um	%	%	%	%	gpt	gpt	wt.%
Phase I Variability	Sierra Blanca	3934-59	62	11.3%	95.4%	25.6%	94.6%	13.2	68.0	
	Sierra Blanca	3934-62	71	10.1%	96.5%	n/a	95.3%	7.4		
	Sierra Blanca	3934-61	74	9.7%	95.2%	n/a	95.4%	9.3		
	Sierra Blanca	3934-64	79	13.8%	91.8%	n/a	91.1%	14.0		
	Sierra Blanca	3934-68	79	13.0%	90.7%	47.8%	92.1%	7.8	49.0	
	Sierra Blanca	3934-63	81	8.1%	93.3%	n/a	93.2%	6.1		
Phase III Variability	Sierra Blanca	3696-26	48	8.4%	92.3%	n/a	94.4%	18.5		18.7
	Sierra Blanca	3696-71	53	8.1%	89.6%	n/a	84.9%	19.5		18.5
	Sierra Blanca	3696-70	66	7.9%	91.0%	n/a	84.2%	20.1		18.7
	Sierra Blanca	3696-62	68	9.2%	87.9%	n/a	93.8%	17.3		16.5
	Sierra Blanca	3696-69	87	8.3%	90.5%	n/a	86.6%	19.0		18.0
	Sierra Blanca	3696-27	89	8.4%	89.1%	n/a	91.2%	17.7		17.9
	Sierra Blanca	3696-28	104	9.6%	88.2%	n/a	92.8%	16.9		15.8
Lithology Phase I	Sierra Blanca	3934-101	79	7.0%	72.0%	n/a		17.1	26.9	
	Sierra Blanca	3934-102	79	8.8%	74.8%	n/a		14.7	<3	
Lithology Phase III	Sierra Blanca	3696-44	63	8.1%	66.9%	n/a	74.0%	12.1		12.3
	Sierra Blanca	3696-46	69	8.3%	73.0%	n/a	77.4%	12.0		12.0
	Sierra Blanca	3696-45	70	9.8%	81.0%	n/a	84.8%	13.3		12.7

13.6.2.2 FLOTATION – UPPER AND SAVAGE VALLEY DACITE

Initial development flotation work was performed on Composite NB16S-2 (Upper Dacite). This drillhole sample was collected as core, while the other drillhole samples were rotary bit drilled. A concern was expressed that drilling mud reagents mixed in with rotary cuttings might negatively affect float performance. Test results indicated this was not an issue.

Upper Dacite material was tested in eight development, one variability and one lithology flotation tests. Savage Valley Dacite was evaluated in one variability test. Flotation pulp densities ranged from 19 to 39% solids. Flotation feed was conditioned for 6–16 min and flotation retention times ranged from 8 to 30 min. The pH averaged 6.6. The reagent schedule and dosages are provided in Table 13.41.

Table 13.41 Dacite – Flotation Reagents

Flotation Reagent	Reagent	Dosage, kg/t
Modifier	Cyquest 3223	0.0-1.1
Collector	Aerophene 3418 A/ C 3535	0.000 -0.054 /0.20-0.51
Frother	Polyfroth W22C	0.013-0.055

Upper Dacite flotation feed size ranged from P80 73-196 um, flotation mass pull ranged from 9.2-48.7%, gold recovery ranged from 53%-95.6% and concentrate gold grades ranged from 2.7-13.2 gpt. Upper Dacite and Savage Valley Dacite test results are presented in Table 13.42.

Table 13.42 Upper and Savage Valley Dacite Flotation Results

Name	Material Type	Test No.	Grind, P80	Mass Pull	Recovery Au	Recovery Ag	Concentrate Au Assay
			um	%	%	%	gpt
Development	Upper Dacite	3934-16	73	9.2%	85.2%	n/a	13.0
	Upper Dacite	3934-3	73	41.9%	93.3%	77.4%	2.9
	Upper Dacite	3906-145	93	21.8%	53.0%	64.2%	3.5
	Upper Dacite	3934-6	97	9.6%	88.6%	n/a	13.2
	Upper Dacite	3934-4	97	47.6%	93.6%	86.8%	2.7
	Upper Dacite	3906-142	113	10.5%	59.4%	33.4%	8.1
	Upper Dacite	3906-146	127	13.7%	70.2%	51.1%	7.9
	Upper Dacite	3934-5	191	48.7%	95.6%	n/a	2.8
Variability	Upper Dacite	3934-17	95	13.6%	93.1%	n/a	9.5
Variability	Savage Valley Dacite	3934-60	196	28.7%	81.7%	n/a	3.7
Lithology	Dacite Lithology	3934-105	142	11.5%	86.8%	n/a	10.6

13.6.2.3 FLOTATION – PIONEER FORMATION AND RHYOLITE

Pioneer Formation tuff material was tested in two lithology flotation tests and two bulk flotation tests. Flotation pulp densities averaged 30.5% solids. Flotation feed was conditioned for 11 min and flotation retention times ranged from 8 to 16 min. The slurry pH averaged 8.7.

Flotation feed grind sizes ranged from 62 – 91 um. Pioneer Formation flotation mass pull ranged from 4.0-7.7%, gold recovery ranged from 84%-97.6% and concentrate gold grades ranged from 7.0-16.1 gpt. Rhyolite material was tested in one lithology flotation test and one bulk flotation test. Flotation feed grind sizes were 83 and 188 um. Flotation pulp density averaged 32.5% solids. Flotation feed was conditioned for 11 min and flotation retention times were 8 and 16 min. The slurry pH averaged 7.6.

Rhyolite flotation mass pulls were 7.2 and 6.9%, gold recoveries were 89.3% and 76.0% and concentrate gold grades were 17.2 and 16.9 gpt. Pioneer Formation and Rhyolite reagent schedule and dosages and test results are presented in Table 13.43 and Table 13.44.

Table 13.43 Pioneer and Rhyolite – Flotation Reagents

Flotation Reagent	Reagent	Dosage, kg/t
Modifier	Cyquest 3223	1.1
Collector	C 3535	0.03-0.31
Frother	Polyfroth W22C	0.010 - 0.041

Table 13.44 Pioneer and Rhyolite – Flotation Test Results

Name	Material Type	Test No.	Grind, P80	Mass Pull	Recovery Au	Recovery Ag	Recovery Sulfide	Concentrate Au Assay	Concentrate Ag Assay	Concentrate Sulfide Assay
			um	%	%	%	%	gpt	gpt	wt.%
Phase I Variability	Pioneer Formation	3934-65	62	6.2%	97.6%	25.6%	95.2%	12.1	n/a	n/a
	Pioneer Formation	3934-66	63	7.7%	89.4%	n/a	32.0%	7.0	34.0	93.5
Phase I Lithology	Pioneer Formation	3934-103	91	4.0%	84.0%	n/a	n/a	16.1	23.7	n/a
	Pioneer Formation	3934-104	91	4.4%	84.0%	n/a	n/a	15.4	25.0	n/a
Phase I Variability	Rhyolite	3934-67	83	7.2%	89.3%	n/a	86.1%	17.2	29.0	86.1
Phase I Lithology	Rhyolite	3934-106	188	6.9%	76.0%	n/a	n/a	16.9	11.6	n/a

13.6.2.4 FLOTATION – URANIUM DEPORTMENT

Uranium deportment was evaluated on Sierra Blanca tuff, Pioneer Formation tuff and Rhyolite material. Uranium concentrations in feed materials were 287, 368 and 281 mg/kg, respectively. Uranium recoveries to concentrates were 29.7, 20.0 and 12.0%, respectively. Concentrate uranium grades were 650, 970 and 490 mg/kg, respectively. Uranium accountability based on mass pull and uranium analysis, [(Concentrate + Tails)/Feed)] were 99.2, 100.6 and 101.7% respectively. Table 13.45 presents flotation uranium deportment test results.

Table 13.45 Flotation Uranium Deportment Test Results

Name	Material Type	Drill Hole	Test No.	Mass Pull	Recovery U Concentrate	Recovery U Tails	Feed Concentration	Uranium Concentrate	Uranium Tails	Uranium Accountability
				%	%	%	mg/kg	mg/kg	mg/kg	%
Uranium Deportment	Sierra Blanca Tuff	NB16S-10-SBTff	3934-68	13.0%	29.7%	70.3%	287	650	230	99.2
	Pioneer Formation	NB16s-9a-PmFmTff	3934-66	7.7%	20.0%	80.0%	368	970	320	100.6
	Rhyolite	NB16S-9b-Rhyolite	3934-67	7.2%	12.0%	88.0%	281	490	270	101.7

13.6.3 PHASE I – ATMOSPHERIC ALKALINE OXIDATION

The phase I AAO and Cyanidation test results are listed in Table 13.46. Gold bound as submicron particles in pyritic mineralization will leach in cyanide when liberated by sulphide oxidation. Pyrite will be oxidized to goethite or hematite and sulphide oxidizes to sulphuric acid, as shown in Reaction 1.

- $2 FeS_2 + 7.5 O_2 + 4H_2O \rightarrow Fe_2O_3 + 4H_2SO_4$ (1)

The rate of atmospheric pyritic oxidation at temperatures below 100°C increases as the pH is raised. The AAO process targets an alkaline environment by neutralizing the acid generated in Reaction 1 with a base reagent such as soda ash, Na_2CO_3, or trona ($Na_2CO_3 \cdot NaHCO_3 \cdot 2H_2O$).

Trona dissociates to sodium carbonate, Na_2CO_3, sodium bicarbonate, $NaHCO_3$ and water, H_2O, according to Reaction 2. Sodium carbonate reacts with the acid generated from the sulphide oxidation to form $NaHCO_3$. Sodium bicarbonate from trona and generated via Reaction 3 is consumed by Reaction 4 to form sodium sulfate, Na_2SO_4. Thus the overall reaction when all of the trona is completely decomposed is shown by Reaction 5.

- $Na_2CO_3 \cdot NaHCO_3 \cdot 2H_2O \rightarrow Na_2CO_3 + NaHCO_3 + 2H_2O$ (2)
- $2FeS_2 + 7.5O_2 + 8Na_2CO_3 + 5H_2O \rightarrow 2FeOOH + 4Na_2SO_4 + 8NaHCO_3$ (3)
- $2FeS_2 + 7.5O_2 + 8NaHCO_3 \rightarrow 2FeOOH + 4Na_2SO_4 + 8CO_2 + 3H_2O$ (4)
- $6FeS_2 + 22.5O_2 + 8Na_2CO_3 \cdot NaHCO_3 \cdot 2H_2O \rightarrow 6FeOOH + 12Na_2SO_4 + 16CO_2 + 17H_2O$ (5)

13.6.3.1 FLOTATION CONCENTRATE PREPARATION AND AAO APPARATUS

The concentrates produced from the six lithology flotation experiments were used as feed for the AAO experiments. The two Sierra Blanca concentrates were combined, V-blended and riffle split into 200 g increments. The two Pioneer Formation tuff concentrates were also prepared in this manner. The dacite and rhyolite concentrates did not need blending because only one lithology float was performed for each ore type. The blended concentrates were ground to a fine particle size, P80 below 20 µm.

The sulphide concentrate was reacted with oxygen in a 2 L glass resin kettle equipped with a Teflon radial agitator, a thermocouple to measure temperature and a reflux condenser on the gas outlet to return evaporated water to the reactor. The resin kettle was placed in heating mantles with automatic temperature controllers. Oxygen was introduced through a 1/8 inch stainless steel tube that discharged directly underneath the mixer blades to better disperse the gas bubbles.

The ground concentrate was slurried with water to 15% pulp density and heated to 75°C. Once the target temperature was reached, dry sodium carbonate, Na2CO3, or trona was added and the oxygen turned on. Oxygen flow was manually set with a rotameter to 140–145 cubic centimeters per minute (“cm^3/min”). The pH and electromotive force (emf) of the slurry were measured periodically. Kinetic samples were collected to measure the sulphide oxidation rate of the solids.

At the conclusion of the experiment, the oxidized slurry was filtered and the solid cakes washed with three bed displacements of deionized water. The oxidized solids were advanced as a wet filter cake for a 48 hr Carbon-In-Leach (CIL) cyanide bottle roll leach test.

13.6.3.2 PHASE I – AAO AND CYANIDATION RESULTS

Table 13.46 present results of AAO and cyanidation tests. Un-oxidized Sierra Blanca tuff had a gold dissolution of 9.5%. Cyanide and lime consumptions were 1.0 and 2.5 kg/ton concentrate, respectively.

In soda ash, Sierra Blanca tuff gold dissolution, with 99.4% sulphide oxidation, was 99.2%. Cyanide and lime consumptions were 0.26 and 3.4 kg/ton concentrate, respectively. In trona, Sierra Blanca tuff gold dissolution, with 96.4% sulphide oxidation was 91.9%. Cyanide and lime consumptions were 0.26 and 3.4 kg/ton concentrate, respectively.

In soda ash, Pioneer Formation tuff, Dacite and Rhyolite obtained sulphide oxidation of 98.8, 96.4 and 99.3%, respectively. Gold dissolutions were 99.8-99.9%. Cyanide consumptions were 2.6-3.5 kg/ton concentrate. Lime consumptions were 3.0-5.3 kg/ton concentrate.

In trona, Pioneer Formation tuff, Dacite and Rhyolite obtained sulphide oxidation of 96.7, 96.5 and 99.3%, respectively. Gold dissolutions were 97.6, 96.4 and 98.7%, respectively. Cyanide consumptions were 2.8-3.6 kg/ton concentrate. Lime consumptions were 2.3-8.4 kg/ton concentrate.

13.6.3.3 AAO – SOLUBLE GOLD

Gold dissolution in the AAO leach solution ranged from 4.2-58.9%. Sulphide sulphur may be partially oxidized in the AAO leach to form sodium thiosulfate, Na2S2O3. Gold is soluble in thiosulfate solutions via the following reaction.

- 4Au+ 8S2O3-2 +O2 +2H2O →4[Au(S2O3)2]-3 + 4OH-1 (6)

Gold thiosulfate will not be recovered on activated carbon, but is currently recovered commercially on resins. Sodium thiosulfate present in leach solutions also leads to higher lime consumptions by the formation of calcium thiosulfate.

- Na2S2O3- + Ca(OH)2 → CaS2O3 + 2NaOH (7)

Additional test work will be required to eliminate thiosulfate formation in the AAO leach or produce conditions after the leach to naturally decompose the thiosulfate species. Soluble gold in the AAO leach solution is a low risk and manageable issue.

Table 13.46 Phase I – AAO and Cyanidation Test Results

Experiment No.	Conc. Type	Neutralizing Reagent	Conc. Sulfide	Conc Au	P_{80} Partical Size Distribution	P_{50} Partical Size Distribution	Reagent/ sulfide	Reagent Addition	Ending pH	Ending emf, mV	Temperature	Ending Bicarbonate, $H(CO_3)^{-1}$	Ending Carbonate, $(CO_3)^{-2}$
			%	mg/kg	microns	microns	g/g	kg/ton Concentrate	pH	mV	°C	wt%	wt%
3908-54	Sierra Blanca Tuff	Soda Ash	15.2	16.7	9	5.8	4.3	665	9.36	176	71	0.38	1.44
3908-56	Sierra Blanca Tuff	Trona	15.2	16.7	9	5.8	4.3	665	7.45	161	71	0.01	0
3673-150	Sierra Blanca Tuff	none	15.2	16.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3908-58	Pioneer Formation Tuff	Soda Ash	20.7	15.4	10	6.5	3	640	8.55	132	74	0.06	0.01
3908-60	Dacite	Soda Ash	23.3	10.6	11	6.8	3	719	8.82	130	74	0.18	0.1
3908-62	Rhyolite	Soda Ash	8.8	16.9	13	8.4	3	274	9.59	147	75	0.12	0.27
3908-64	Pioneer Formation Tuff	Trona	20.7	15.4	10	6.5	4.3	909	7.26	77	76	0.01	0.01
3908-66	Dacite	Trona	23.3	10.6	11	6.8	4.3	1023	7.47	77	75	0.01	0.01
3908-68	Rhyolite	Trona	8.8	16.9	13	8.4	4.3	390	9.15	91	75	0.07	0.01

Experiment No.	Conc. Type	Neutralizing Reagent	Weight loss	Residual Au	Soluble Au	Ending sulfide oxidation	Au Solubilization	CIL Head Au Assay	CIL Tail Au Assay	CIL Au Extraction	Overall Au Extraction (AAO+CIL)	Cyanide Consumption	Lime Consumption
			%	mg/kg	g/L	%	%	mg/kg	mg/kg	%	%	kg/ton	kg/ton
3908-54	Sierra Blanca Tuff	Soda Ash	2.53	15.09	0.0006	99.4	12	15.1	0.08	99.2	97.4	0.26	3.40
3908-56	Sierra Blanca Tuff	Trona	0.39	6.89	0.0028	96.4	58.9	6.9	0.4	91.9	9.5	0.26	5.90
3673-150	Sierra Blanca Tuff	none	N/A	N/A	N/A	N/A	N/A	16.7	14.7	9.5	99.9	1.00	2.50
3908-58	Pioneer Formation Tuff	Soda Ash	9.53	16.3	0.0005	98.8	4.2	16.3	<0.02	99.9	99.8	3.40	4.20
3908-60	Dacite	Soda Ash	8.82	10.8	0.0005	96.4	7.1	10.8	<.02	99.8	99.8	3.50	5.30
3908-62	Rhyolite	Soda Ash	7.57	14.4	0.0011	99.3	21.0	14.4	<0.02	99.9	99.9	2.60	3.00
3908-64	Pioneer Formation Tuff	Trona	6.42	8.16	0.00145	96.7	50.0	8.2	<0.2	97.6	98.7	3.30	7.40
3908-66	Dacite	Trona	5.75	5.56	0.00085	96.5	51.0	5.6	<0.2	96.4	98.1	3.60	8.40
3908-68	Rhyolite	Trona	3.71	15.3	0.001	99.3	13.0	15.3	<0.2	98.7	98.8	2.80	2.30

13.6.3.4 PHASE II – AAO AND RESULTS

Phase 2 AAO leach tests utilized previously floated Sierra Blanca and Dacite concentrate and whole ore Sierra Blanca materials. Table 13.47 presents Phase II AAO test results.

Gold recovery versus sulphide oxidation tests were conducted at 40, 60 and 80% stoichiometric calculated soda ash addition on Sierra Blanca concentrate. Sulphide oxidation was 52, 71 and 78%, respectively. Cyanide leach, CIL, gold dissolutions were 75.6, 88.6 and 79.6%, respectively. Cyanide consumptions were 3.8, 3.5 and 4.5 kg/ton concentrate. Lime consumptions were 10.6, 12.1 and 11.5 kg/ton concentrate. Soluble gold in the AAO leach solutions indicated 6.1, 3.9 and 49.7% gold dissolution.

Magnesium carbonate as an alternative neutralizing agent was evaluated with Sierra Blanca and Dacite concentrate. Test results indicated magnesium carbonate was not a suitable reagent. Sulphide oxidation was 30 and 41%, respectively. Cyanide leach, CIL, gold dissolutions were 35 and 53%, respectively. Cyanide consumptions were 3.4 and 3.6 kg/ton concentrate. Lime consumptions were 4.6 and 6.0 kg/ton concentrate. Soluble gold in the AAO leach solutions was not detected.

Whole ore AAO leach tests at a primary grind P80 of 60 microns were completed on Sierra Blanca material with magnesium carbonate and soda ash. Test results indicate low sulphide oxidation and gold recovery. Sulphide oxidation was 6 and 71.4%, respectively. Cyanide leach, CIL, gold dissolutions were 37 and 77%, respectively. Cyanide consumptions were 2.8 and 2.6 kg/ton whole ore. Lime consumptions were 2.3 and 1.5 kg/ton whole ore. Soluble gold in the AAO leach solutions was not detected.

Table 13.47 Phase II – AAO and Cyanidation Test Results

Experiment No.	Type	Neutralizing reagent	Sulfide, %	Head Au, mg/kg	P_{80} Partical Size Distribution	Reagent/ sulfide	Reagent Addition	Ending pH	Ending emf	Temperature	Ending HCO_3^{-1}	Ending CO_3^{-2}
			%	mg/kg	microns	kg/kg	kg/ton Concentrate	pH	mV	°C	wt%	wt%
3908-74	Sierra Blanca Tuff conc	Na_2CO_3	15.2	16.7	10.6	1.2	186	3.4	248	74	0.01	0.01
3908-76	Sierra Blanca Tuff conc	Na_2CO_3	15.2	16.7	10.6	1.8	279	3.6	248	74	0.01	0.01
3908-78	Sierra Blanca Tuff conc	Na_2CO_3	15.2	16.7	10.6	2.4	372	4.7	144	74	0.01	0.01
3908-80	Sierra Blanca Tuff conc	$MgCO_3$	15.2	16.7	10.6	2.39	398	6.1	120	75	0.01	0.01
3908-82	Dacite conc	$MgCO_3$	23.3	10.6	8.7	2.39	610	5.9	155	74	0.01	0.01
3908-84	Sierra Blanca Ore	$MgCO_3$	1.33	1.65	60	3	41	7.4	112	74	0.01	0.01
3908-86	Sierra Blanca Ore	Na_2CO_3	1.33	1.65	60	3	42	9.6	-14	74	0.07	0.04

Experiment No.	Type	Neutralizing reagent	Weight loss	AAO Residual Au	Filtrate Au	Ending Sulfide Oxidation	Au Solubilization	CIL Head Au assay	CIL Tails Au assay	CIL Au extraction	Cyanide Consumption	Lime Consumption
			%	mg/kg	gpl	%	%	mg/kg	mg/kg	%	kg/ton	kg/ton
3908-74	Sierra Blanca Tuff conc	Na_2CO_3	0.7	15.8	0.0002	52.0	6.1	15.8	3.94	75.6	3.8	10.6
3908-76	Sierra Blanca Tuff conc	Na_2CO_3	2.8	16.5	0.0002	71.3	3.9	16.5	1.85	88.6	3.5	12.1
3908-78	Sierra Blanca Tuff conc	Na_2CO_3	5.2	8.85	0.00114	77.9	49.7	8.85	1.99	79.6	4.5	11.5
3908-80	Sierra Blanca Tuff conc	$MgCO_3$	-28.8	12.1	--	30.2	--	12.1	7.92	35.0	3.4	4.6
3908-82	Dacite conc	$MgCO_3$	-35.9	7.41	--	40.6	--	7.41	3.63	53.0	3.6	6.0
3908-84	Sierra Blanca Ore	$MgCO_3$	-4.3	1.78	--	6.1	--	1.78	1.24	37.0	2.8	2.3
3908-86	Sierra Blanca Ore	Na_2CO_3	-6.8	1.92	--	71.4	--	1.92	0.46	77.0	2.6	1.5

13.6.3.5 PHASE III – AAO TESTING AND RESULTS

In Phase III, four additional AAO leach tests were completed. The tests were conducted in a two liter autoclave with 93 vol% oxygen at pressures that ranged from 15-47 psig and temperatures that ranged from 85°C to 120°C. Sierra Blanca flotation concentrate material was produced in Phase III bulk flotation tests. Table 13.48 presents results of Phase III AAO and cyanidation tests.

In tests conducted at 85, 100 and 120°C with oxygen pressures of 33, 15 and 47 psig, sulphide oxidations were 92.5, 85.6 and 98.1%, respectively. Cyanide leach, CIL, gold dissolutions were 92, 84 and 97%, respectively. Cyanide consumptions were 0.4, 1.6 and 0.4 kg/ton concentrate and lime consumptions were 12, 7 and 14 kg/ton, respectively.

In a duplicate test at 85°C and 33 psig oxygen pressure, the oxidized slurry was immediately neutralized with lime after the AAO leach and the slurry conditioned for 24 hours to allow thiosulfate to decompose. Thiosulfate was monitored and decreased from 5 gpl to 2 gpl after 24 hours. Soluble gold was very low 2%. Cyanide leach, CIL, gold dissolution was 97%. Cyanide consumption was 1.5 kg/ton concentrate. Lime consumption in the conditioning step was very high due to the thiosulfate present, 322 kg/ton concentrate.

Table 13.48 Phase III – AAO and Cyanidation Test Results

Experiment No.	Conc. Type	Neutralizing Reagent	Conc. Sulfide	Conc Au	P_{80} Partical Size Distribution	Pressure	Initial Oxygen Composition	Temperature	Reagent/ sulfide	Reagent Addition	Ending pH	Ending Bicarbonate, $H(CO_3)^{-1}$	Ending Carbonate, $(CO_3)^{-2}$
			%	mg/kg	microns	psig	vol%	°C	g/g	kg/ton Concentrate	pH	wt%	wt%
3872-114	Seirra Blanca - Phase III	Soda Ash	12.3	12.0	14.8	33	93	85	3	270	1.7	0.0	0.0
3872-115	Seirra Blanca - Phase III	Soda Ash	12.3	11.8	14.3	33	93	85	3	273	2.0	0.0	0.0
3872-117	Seirra Blanca - Phase III	Soda Ash	12.3	11.3	8.9	47	93	120	3	265	1.9	0.0	0.0
3872-118	Seirra Blanca - Phase III	Soda Ash	12.3	12.7	15.4	15	93	100	3	274	3.1	0.0	0.0

Experiment No.	Conc. Type	Neutralizing Reagent	Weight loss	Residual Au	Soluble Au	Ending sulfide oxidation	Au Solubilization	AAO Gold Accountability (Out/In)	CIL Head Au Assay	CIL Tail Au Assay	CIL Au Extraction	Cyanide Consumption	Lime Consumption
			%	mg/kg	g/L	%	%	%	mg/kg	mg/kg	%	kg/ton	kg/ton
3872-114	Seirra Blanca - Phase III	Soda Ash	7.1	3.7	0.00	92.5	0.0	103	12.7	1.1	92	0.42	12
3872-115	Seirra Blanca - Phase III	Soda Ash	0.0	3.8	0.00	92.2	0.0	108	8.1	0.3	97	1.5	322
3872-117	Seirra Blanca - Phase III	Soda Ash	4.7	3.3	0.00	98.1	0.0	97	12.1	0.4	97	0.4	14
3872-118	Seirra Blanca - Phase III	Soda Ash	9.0	2.5	0.00	85.6	0.0	66	8.6	1.5	84	1.6	7

13.7 METALLURGICAL SUMMARY

The samples tested are representative of the various types and styles of mineralization and the mineral deposit as a whole at the NBP. The core and bulk samples were augmented by samples from RC holes to project spatial and depth related variability. The Author knows of no known processing factors or deleterious elements that could have a significant effect on potential economic extraction.

The testing on higher grade vein and stockwork mineralization in the YellowJacket zone indicates it should be processed in a milling system using gravity concentration, intensive CN leaching of the gravity concentrate followed by CN leaching of the combined gravity tail and leached gravity concentrate. A conventional tailing management facility would be constructed for the limited volume of milled material. The grades and recoveries of the NBP disseminated mineralized material are suitable for heap leach processing. NBP sulphide material is amenable to sulphide and gold concentration by flotation, oxidative pretreatment by AAO followed by cyanidation.

13.7.1 MILL PROCESS CHARACTERISTICS AND RECOVERY

The parameters, listed in Table 13.49, assumed for the mill process assumed in the process analysis are based on metallurgical testing results for the gravity concentration, intense cyanide leaching of gravity concentrate and cyanide leaching of the combined gravity tail.

Table 13.49 Assumed Oxide Mill Process Parameters

Process Parameter	Assumed Value
Primary Cush Size	P80 - 110mm
Secondary Crush Size	P80 - 32mm
Tertiary Crush Size	P80 - 9.4mm
Gravity Concentrate Feed	P80 - 212µm
Gravity Concentrate Mass Pull	0.3 - 1%
Gravity Concentrate Re-grind Size	P80 -45µm (-325 mesh)
Ball Mill Cyclone Overflow	P80 -75µm (-200 mesh)
Gravity Concentrate Leach – NaCN consumption	25 .0 kg/tonne
Gravity Concentrate Leach – Lime added	14.0 kg/tonne
Gravity Tail Leach – NaCN consumption	0.13 kg/tonne
Gravity Tail Leach – Lime added	1.0 kg/tonne

Metal recoveries indicated by the gravity concentration/CN leaching test work on YellowJacket vein and vein stockwork samples were high (+90%) across a grade range 1.5 – 9 g/t, then dropped at lower grade (0.5 g/t) for composite samples from above the oxidation surface. The recoveries for composite samples from below the oxidation surface were approximately 5% lower. Mineralization in YellowJacket, associated with the structural zones were subdivided by structure type, grade and location with respect to the oxidation surface to estimate gold and silver recovery. Minor amounts of pyrite (1-2%) were present in the mineralization below the oxidation surface and contained a small fraction of the gold, which probably impacted recovery. Table 13.50 lists the portions of metal projected to occur in each structural zone and the estimated metal recovery used to estimate a weighted average for the YellowJacket mineralization.

Table 13.50 Proportions of Metal and Estimated Gold and Silver Recovery

Oxidation	Structural Zone	Estimated Au Rec. (%)	Proportion of Au (%)	Estimated Ag Rec. (%)	Proportion of Ag (%)
Above	Vein and Vein Stockwork	91.0	36	78.2	52
Above	Minor Stockwork	92.9	4	79.0	2
Above	Faults	76.1	4	68.2	4
Below	Vein and Vein Stockwork	84.7	52	63.3	41
Below	Minor Stockwork	80.8	2	60.7	1
Below	Faults	71.0	1	60.7	1
Weighted Average	All	86.8	100	71.4	100

13.7.2 SULPHIDE MATERIAL CHARACTERISTICS AND RECOVERY

The parameters, listed in Table 13.51, assumed for the mill/flotation/AAO process, are based on metallurgical testing results for flotation concentration, sulphide AAO and CIL cyanidation of the oxidized material.

Gold recoveries are presented in Table 13.52. Sierra Blanca and Pioneer Formation tuff had overall gold recoveries of 93 and 94%, in Soda Ash, respectively and 91 and 93% when in trona, respectively. Rhyolite gold dissolution was 89 and 87% in soda and trona, respectively. Dacite gold dissolution was 88 and 87% in soda ash and trona, respectively. Silver recovery was based on Sierra Blanca concentrate values back calculated through flotation to a calculated head grade. Silver recovery was estimated at 77% in flotation and 74% in the cyanide leach for a weighted recovery of 57%. Based on a 10% mass pull for all material types, the average bottle roll cyanide and lime consumptions are 0.2 and 0.6 kg/tonne ore.

Table 13.51 Assumed Sulphide Mill Process Parameters

Process Parameter	Assumed Value
Primary Cush Size	P80 - 110mm
Secondary Crush Size	P80 - 32mm
Tertiary Crush Size	P80 - 9.4mm
Ball Mill Cyclone Overflow	P80 -75µm (-200 mesh)
Flotation	
Lab Residence Time	20 min
Commercial Residence Time	50 min
Rougher Flotation Concentrate Mass Pull	10%
Sulphide Recovery to Concentrate	85-95%
Gold Recovery to Concentrate	88-94%
Silver Recovery to Concentrate	77%
Flotation Concentrate Re-grind Size	P_{80} -15µm
PAX	0.25 kg/t
Cyquest 3223	0.1 kg/t
Polyfroth	0.03 kg/t
Flocculant	0.01 kg/t
AAO Leach	
AAO Oxygen Concentration	93 vol%
Alkaline Reagent	Soda Ash
Leach Residence Time	40 hrs
Cyanide Leach	
Gold Dissolution	97%
Silver Dissolution	74%
CIL Leach – NaCN consumption	0.4 kg/tonne
CIL Leach – Lime Consumption	2.5 kg/tonne
Overall Recovery	
Overall Gold Recovery	91%
Overall Silver Recovery	57%

Table 13.52 AAO Metal and Estimated Gold and Silver Recoveries

Conc. Type	Neutralizing Reagent	Flotation Recovery	CIL Recovery	Overall Recovery
		Au %	Au %	Au %
Sierra Blanca Tuff	Soda Ash	94%	99%	93%

Conc. Type	Neutralizing Reagent	Flotation Recovery	CIL Recovery	Overall Recovery
		Au %	Au %	Au %
Pioneer Formation Tuff	Soda Ash	94%	100%	94%
Rhyolite	Soda Ash	89%	100%	89%
Dacite	Soda Ash	88%	100%	88%
Sierra Blanca Tuff	Trona	94%	97%	91%
Pioneer Formation Tuff	Trona	94%	99%	93%
Rhyolite	Trona	89%	99%	87%
Dacite	Trona	88%	99%	87%

13.7.3 HEAP LEACH PROCESS CHARACTERISTICS AND RECOVERY

Column leach testing was performed on composites samples from Sierra Blanca/Savage Valley, Jolly Jane and Maflower resource areas. The testing indicated higher gold recovery with decreasing particle size and ultra-high intensity blasting has been assumed during mining of the heap leach mineralization to produce particle size fraction similar to primary crushing at P80 -76 mm.

Size vs recovery data has been used to extrapolate the column leach test results at P80 -19mm to the larger ROM size, and recoveries have been adjusted for time and lift height effects. ROM gold recoveries established by extrapolation of time and feed material size, with the current set of data, carry a risk of being lower because of extrapolation. It is recommended large column tests, at or above, the anticipated ROM size be completed to confirm gold recoveries, and allow for interpolation of ROM material recoveries. Table 13.53 lists the projected field leach recoveries assumed after 1000 days of leaching, and the estimated field NaCN and Lime consumptions derived from the tests results.

Table 13.53 Assumed Heap Leach Metal Recoveries and Reagent Consumptions

Resource Area	% of Total Au in Heap Leach Mineralization	Average Column Test Au Recovery* Au at 360 days (P80 - 19mm)	Projected Field Leach Recovery* at 1000 days Assuming ROM at P80 -76 mm		NaCN Cons. (kg/tonne)	Lime Cons. (kg/tonne)
			Au (%)	Ag (%)		
Sierra Blanca/Savage Valley	77	83.4	74.4	5.8	0.25	1.0
Jolly Jane	14	79.1	67.3	6.8	0.25	1.0
Mayflower	9	88.0	79.2	9.7	0.45	1.25

The column leach recoveries at 360 days leach is based on column leach tests at P80 -19mm, without consideration of placement, wetting, heap retention, pond retention and process gold recovery. Projected field leach recoveries from the heap leach pad assume 1,000 days leaching and a ROM particle size gradation of P80 -76mm (similar to primary crushing) produced by ultra-high intensity blasting. ROM heap leach gold recovery depends on secondary leaching from solutions applied to the next lift stacked over it to complete leaching. Relying on solution applied to an upper lift will cause delays in cash flow from gold in heap inventory and carries significant risk that the ultimate recovery may not be achieved. This risk may be managed by conducting large column ROM recovery test to establish the leach cycle with ROM sized material.

14 MINERAL RESOURCE ESTIMATES

At the request of Corvus, MMC was contracted to complete a Mineral Resource update on the Sierra Blanca and YellowJacket gold mineral deposits for the NBP as discussed below. Previous Mineral Resource estimates for Mayflower and Jolly Jane were not updated and remain current as discussed below for the purpose of this Technical Report. Project mineral inventories are reported at various cut-off-grades and classifications. Mineral Resources stated for the NBP conform to CIM. Mineral Resources have been reported in accordance with the disclosure obligations under NI 43-101.

Vulcan® Software was used to estimate and quantify the Project Mineral Resources. Vulcan® software utilizes a block modeling approach to represent the deposit as a series of 3-D blocks to which grade attributes, and other attributes can be assigned. Mineral inventories have been pit constrained in order to demonstrate the reasonable prospects of eventual economic extraction. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. MMC knows of no environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other factors that may materially affect the Mineral Resource estimate.

Corvus provided MMC with a drillhole database in the form of Microsoft Excel spreadsheets which contained collar location, surveys, assays and lithology data. MMC audited the database for errors prior to defining Mineral Resources. The drillhole database has been converted to a Vulcan® Isis database with the identifier of “2017_database.dhd.isis” – a naming convention that works with Vulcan® software. The data provided to estimate the mineralization inventory consists of data from 767 drillholes, totaling 141,286 metres, which were drilled by a number of companies and verified by Corvus and the Authors. A total of 89,170 samples were assayed for gold and 79,236 samples were assayed for silver.

14.1 SIERRA BLANCA

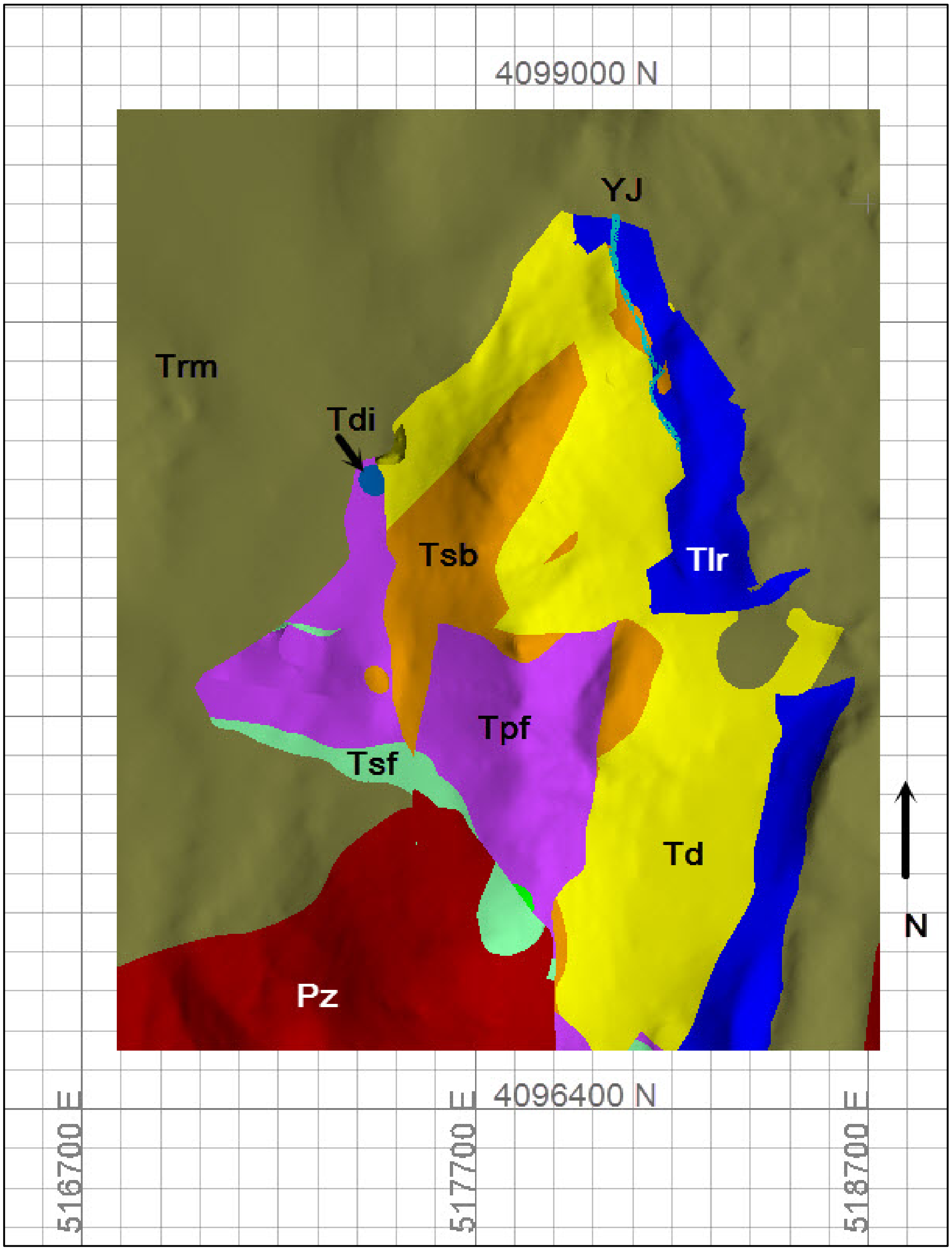
14.1.1 SIERRA BANCA GEOLOGY MODEL

The geological model provided as a basis for the 2017 Mineral Resource estimation at Sierra Blanca was constructed by Corvus geologists using Leapfrog®. The model is an updated interpretation of the NBP stratigraphy as described in sections 7 and 8. The model consists of the elements necessary to contain the resource estimate geologically. Topologically coherent volumes have been created which allowed the block model to be tagged with all appropriate geological properties. Elements such as structural offsets and lithologic contacts are modeled in a way that the resource estimate has confidence to be categorized into CIM defined resources.

14.1.1.1 STRUCTURAL MODEL

Sierra Blanca area has been divided into a number of structural blocks with coherent internal stratigraphy (Figure 14.1). Each of these blocks has an encompassing domain volume which is divided into sub-volumes according to the stratigraphy in the block. Each domain block has been assigned a stratigraphy code to be used in designating estimation domains. Paleozoic Basement (Pz) has been interpreted to be a hard boundary and contains minimal to no mineralization.

Figure 14.1 Stratigraphy Blocks Defined within Sierra Blanca and YellowJacket (metres).



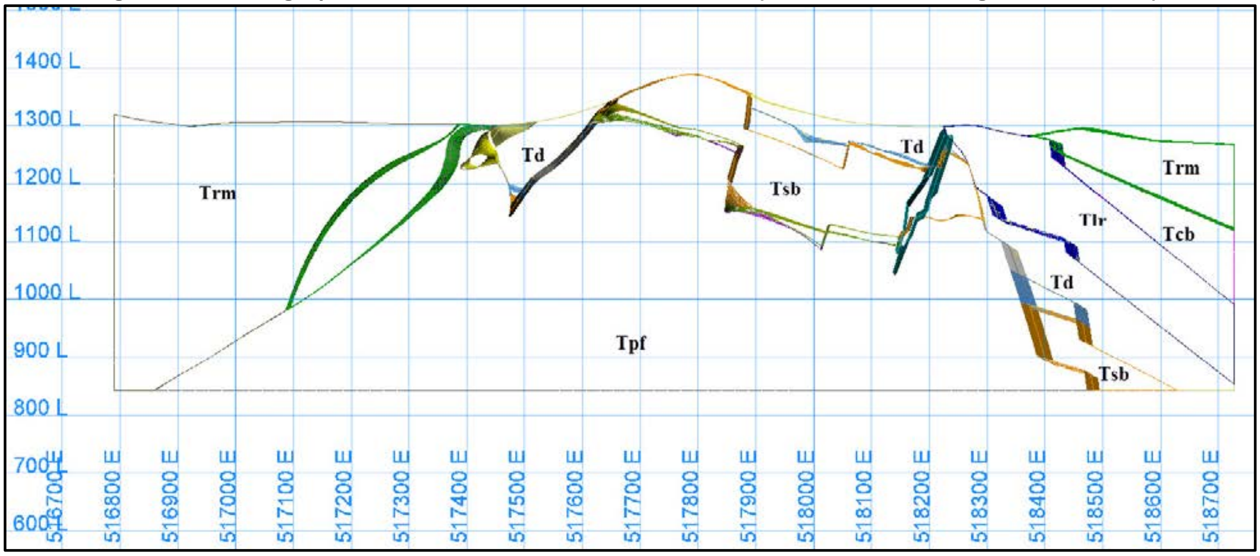
14.1.1.2 STRATIGRAPHIC MODEL

The Project stratigraphic model consists of seven units which from oldest to youngest include:

1. Paleozoic Basement (Pz)
2. Savage Formation (Tsf)
3. North Bullfrog suite (Tnb1)
4. Pioneer Formation (Tpf)
5. Sierra Blanca Tuff (Tsb)
6. Dacite Dikes and Intrusives (Tdi)
7. Savage Valley Dacite (Td)
8. Lithic Ridge and Bullfrog Tuff (Tlr)
9. Rainbow Mountain (Trm)

Within each structural block, stratigraphic units have a separate volume defined. Vulcan® cross section. (Figure 14.2).

Figure 14.2 Stratigraphic Domains Modeled in Sierra Blanca (N 4,098,050 Looking North, metres).



14.1.1.3 OXIDATION MODEL

With the exception of a few historical holes, the degree of oxidation has been determined for every sample in the drill database. The oxidation is evaluated on a scale of 1 to 5 with 1 being un-oxidized and 5 being completely oxidized. Cyanide shake leach and bottle roll tests have shown that oxidation levels 4 and 5 behave similar to level 3, which has mixed oxide and sulphide. Levels 2 and 1 are dominantly or completely sulphide and will be excluded from the oxide processing the stream in both the mill and heap leach.

Oxidation was estimated based on indicators. Three variables were added to the composite database based upon oxidation picks:

- Oxide_1 (sulphide) set to 1 if logged sulphidation is 1 or 2, set to 0 if not
- Oxide_3 (mixed) set to 1 if logged sulphidation is 3, set to 0 if not
- Oxide_5 (oxide) set to 1 if logged sulphidation is 4 or 5, set to 0 if not

Oxide was then estimated in three runs based on the three above indicators. Each run stores the probability that the block is oxide, mixed or sulphide. The resulting variables are evaluated to determine the highest probability of a block being oxide, mixed or sulphide and the block is flagged by the resulting highest probability.

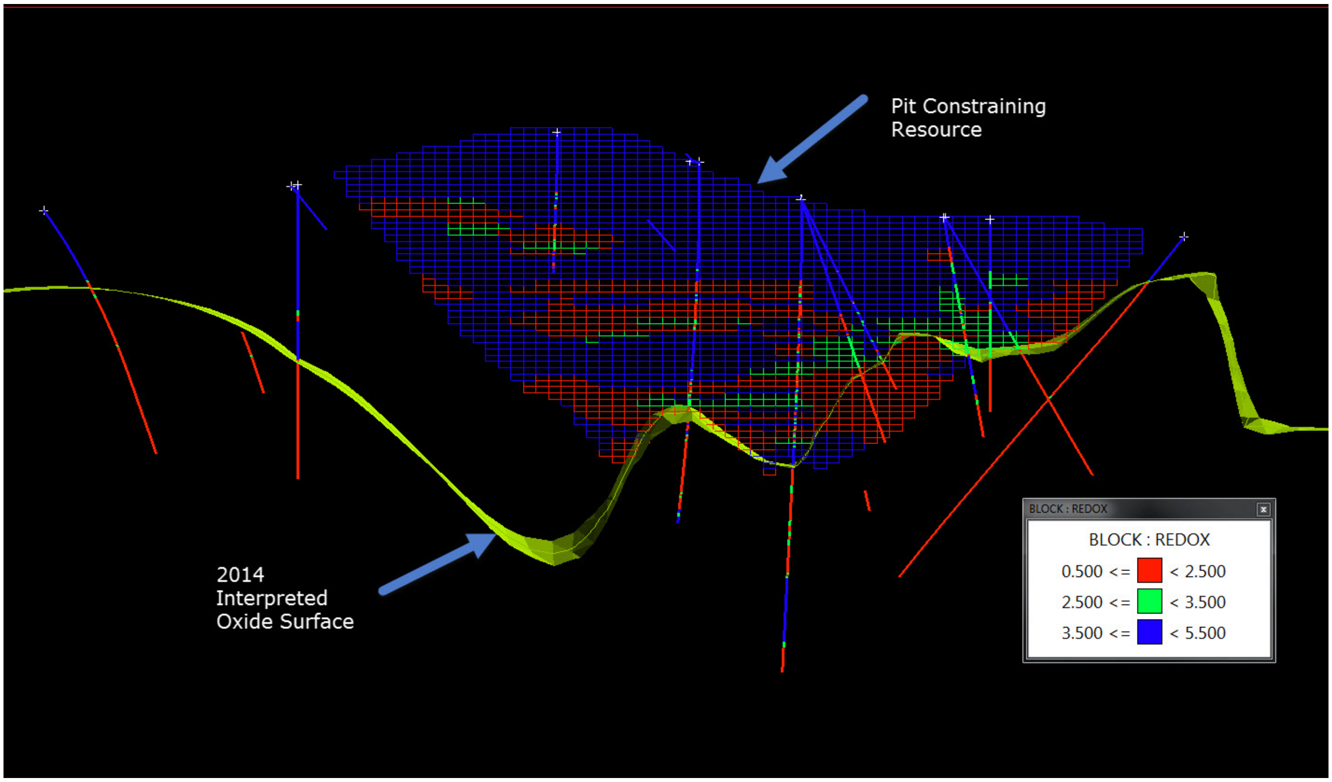
Sage was used to determine the indicator variograms for each oxidation state. Table 14.1 summarizes the Vulcan® variogram estimation parameters.

Table 14.1 Oxide Indicator Variogram Parameters

Oxidation Type	Nugget	Sill Differential	Major Radius	Semi-Major Radius	Minor Radius	Rotation about Z axis	Rotation about Y axis	Rotation about X axis
Oxide	0.05	0.75	750	390	75	138	0	-3
Mixed	0.76	0.26	430	250	115	152	-9	-6
Sulphide	0.07	0.83	920	475	85	143	-2	-1

Figure 14.3 demonstrates the resulting oxidation estimate, constrained to the 2014 resource constraining pit compared to the 2014 oxidation surface. The resultant 2017 oxidation estimate more accurately reflects logged oxidation in the NBP drilling database.

Figure 14.3 Comparison of estimated oxidation to the 2014 oxide/sulphide surface (looking north).



14.1.2 MINERALIZATION MODEL

Mineralization at Sierra Blanca occurs in two distinct settings: low-grade disseminated mineralization and higher grade structurally controlled mineralization. The geological model has been constructed to reflect these two styles of mineralization. Two structurally controlled mineralization structures were modeled; the YellowJacket vein and the Liberator vein Figure 14.4. Two separate grade shells were modeled to represent the higher grades associated with the vein zones. A 0.5g/ton Au cutoff was used to estimate these domain volumes. These two high-grade mineralized zones allow for estimation parameters to be applied to only these vein zones and to limit the effects of high-grades on the surrounding disseminated mineral zones.

Recent drilling identified the Swale Zone which is interpreted as a high-grade lens within disseminated mineralization just to the north and east of the YellowJacket corridor (Figure 14.5). Similarly to YellowJacket, a 0.5 g/t Au grade shell was created to characterize this lens and allow for separate estimation parameters to be applied for evaluation.

Disseminated mineralization has been modeled and limited by the newly interpreted stratigraphic models. Paleozoic basement stratigraphy comprising micritic limestone, quartzite and sandstone is considered to be barren of any mineralization. No mineralization was interpreted into this unit. Contact profiles indicated that gold and silver mineralization were related through the remaining stratigraphic units.

The mineral domains used to control the estimation for mineralization are listed below:

- Sierra Blanca: Pervasive disseminated gold and silver mineralization and represented in all units.
- YellowJacket: High-grade faulting and stockwork veining (Figure 14.4).
- Liberator: High-grade mineralization, faulting and stockwork veining (Figure 14.5).
- Swale: High-grade mineralization (Figure 14.6).

Figure 14.4 Isometric View of Modeled YellowJacket Mineralization Grade Shell (Blue)-metres.

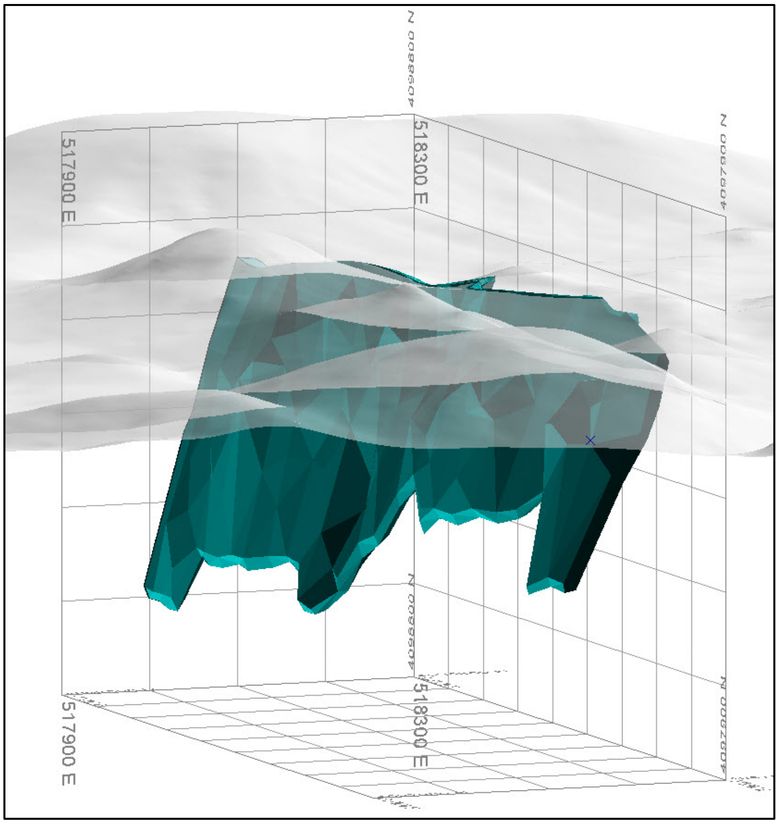


Figure 14.5 Isometric View of YellowJacket (Blue) and Liberator Veins (Green)-metres

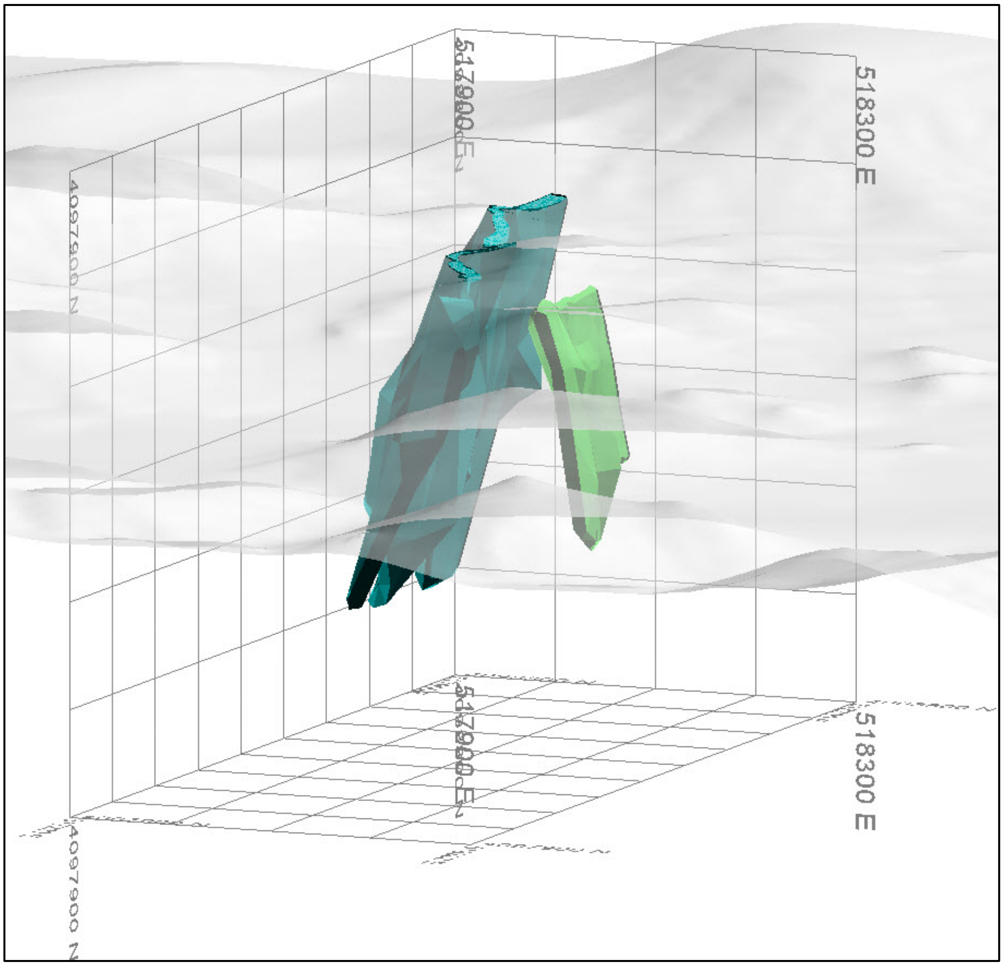
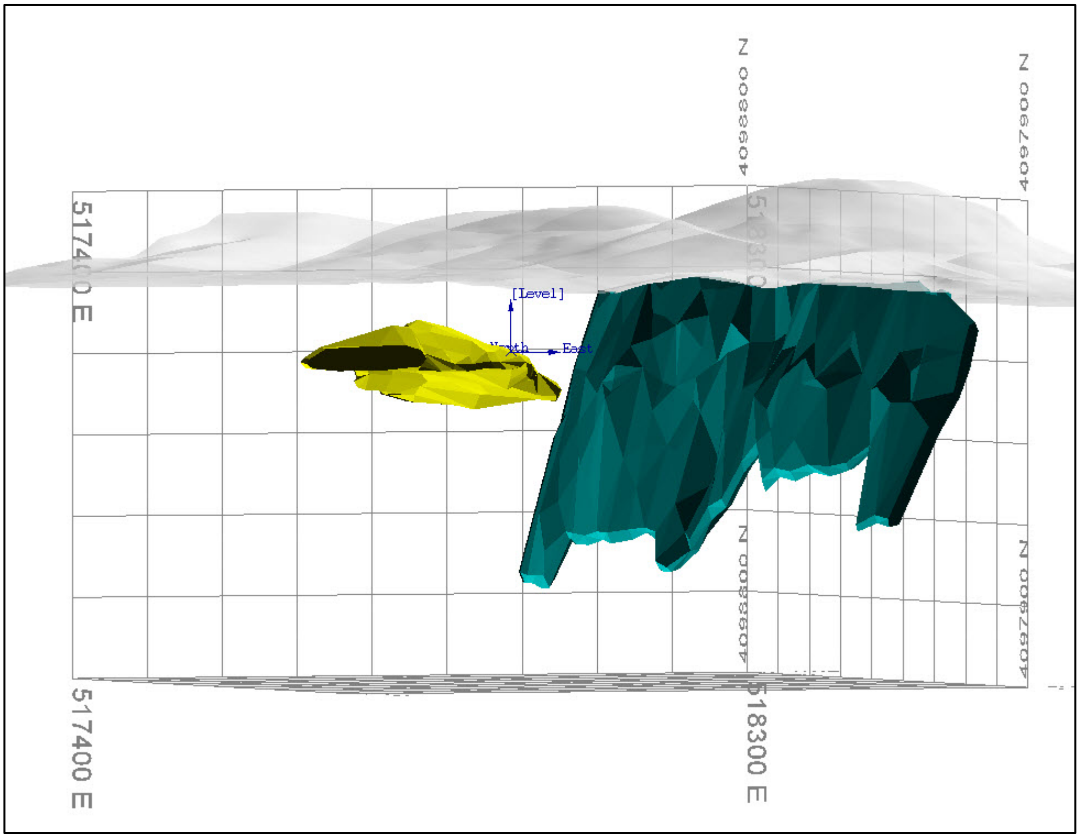


Figure 14.6 Isometric View of YellowJacket (Blue) and Disseminated Swale (Yellow)-metres.



14.1.3 EXPLORATORY DATA ANALYSIS

14.1.3.1 ASSAY STATISTICS

A total of 767 drillholes containing 6,003 down-hole surveys and 92,319 assays were provided to be used for the Project mineral estimate. Of these supplied drillholes, a total of 351 drillholes, totaling 78,966 metres, intersected the geologic solid models that define the Sierra Blanca deposit. Table 14.2 presents the gold assay statistics for each of the modeled geologic domains, while Table 14.3 includes the silver assay statistics.

Table 14.2 Gold Assay Statistics Sorted By Zone

Zone	Number	Mean Au (g/t)	Stand. Dev.	Min Assay	Max Assay	Coefficient of Variation
YellowJacket Vein	3,119	2.846	14.352	0.0005	431.0	5.043
Liberator Vein	232	0.836	2.041	0.001	17.299	2.442
Swale	550	0.719	0.512	0.0005	6.390	0.712
Disseminated	88,418	0.121	1.225	0.0005	209.0	10.145
All	92,319	0.218	2.941	0.0005	431.0	13.484

Table 14.3 Silver Assay Statistics Sorted by Zone

Zone	Number	Mean Ag (g/t)	Stand. Dev.	Min Assay	Max Assay	Coefficient of Variation
YellowJacket Vein	3,119	23.751	162.028	0.010	7590.0	6.822
Liberator Vein	232	2.372	5.382	0.030	65.0	2.269
Swale	550	1.892	3.440	0.0005	61.0	1.818
Disseminated	88,418	0.458	2.875	0.0005	308.0	6.276
All	92,319	1.258	30.211	0.0005	7590.0	24.007

14.1.3.2 CAPPING

Grade distributions for gold and silver within each of the different zones were examined to determine if capping was required and, if so, at what value. Assays for each zone were graphically displayed as histograms and as lognormal probability plots. YellowJacket samples were capped at 100 g/t Au and 550 g/t Ag. Both of these capping levels were determined to be where a natural break occurred in the lognormal distribution curve around the 99.5th percentile. Figures 14.7 and 14.8 show the lognormal distributions of uncapped gold and silver assays within the YellowJacket Vein. Disseminated samples were capped at 10 g/t au and 200 g/t ag. The lognormal distribution curves both have smooth distributions, so capping levels were determined to be at the 99.9th percentile. Figures 14.9 and 14.10 show the lognormal distributions of the uncapped gold and silver assays within disseminated mineralization. Assays in the Liberator and Swale zones were unaffected by assay capping. Table 14.4 describes the number of gold and silver assays capped for Mineral Resource estimates.

Figure 14.7 Au Lognormal Graph (within YellowJacket)

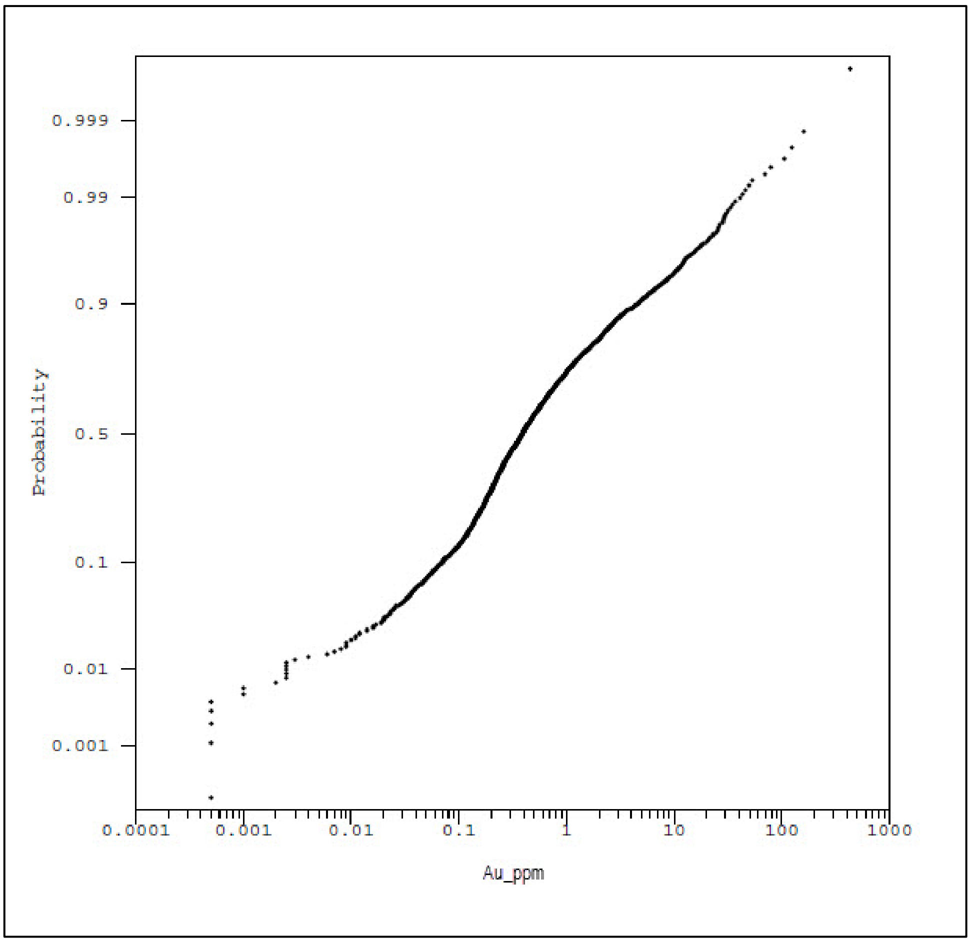


Figure 14.8 Ag Lognormal Graph (within YellowJacket)

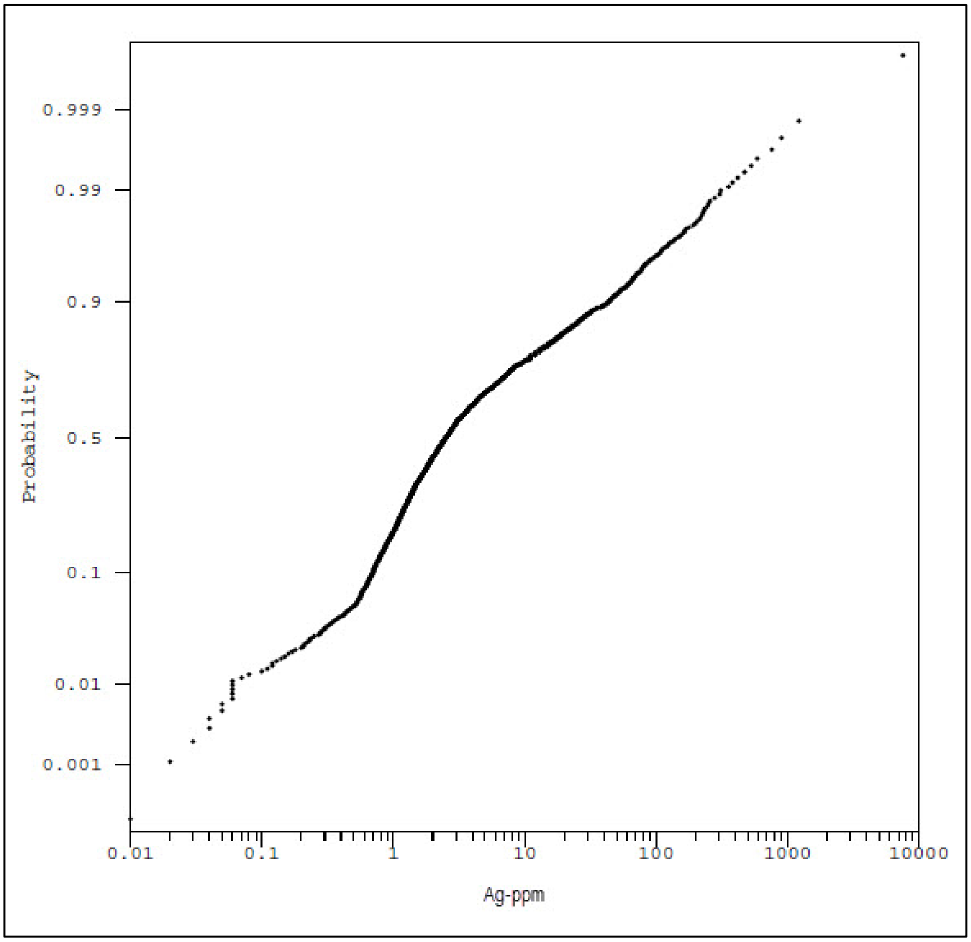


Figure 14.9 Au Lognormal Graph (Disseminated)

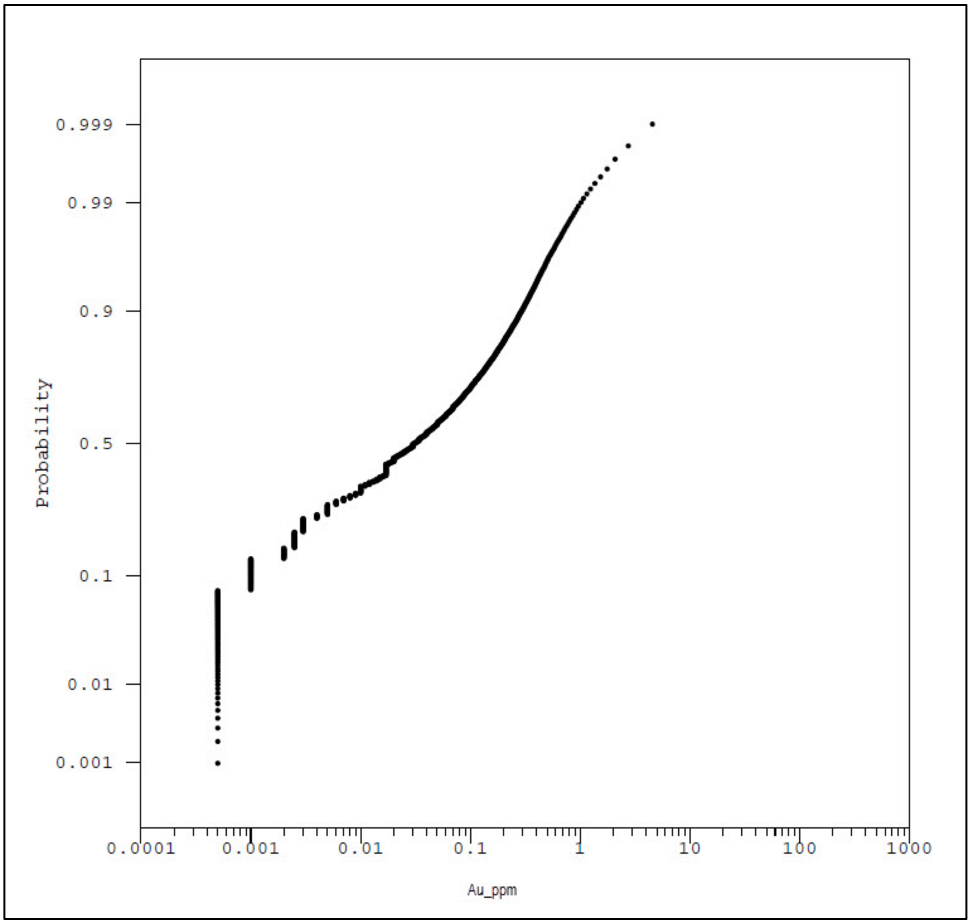


Figure 14.10 Ag Lognormal Graph (Disseminated)

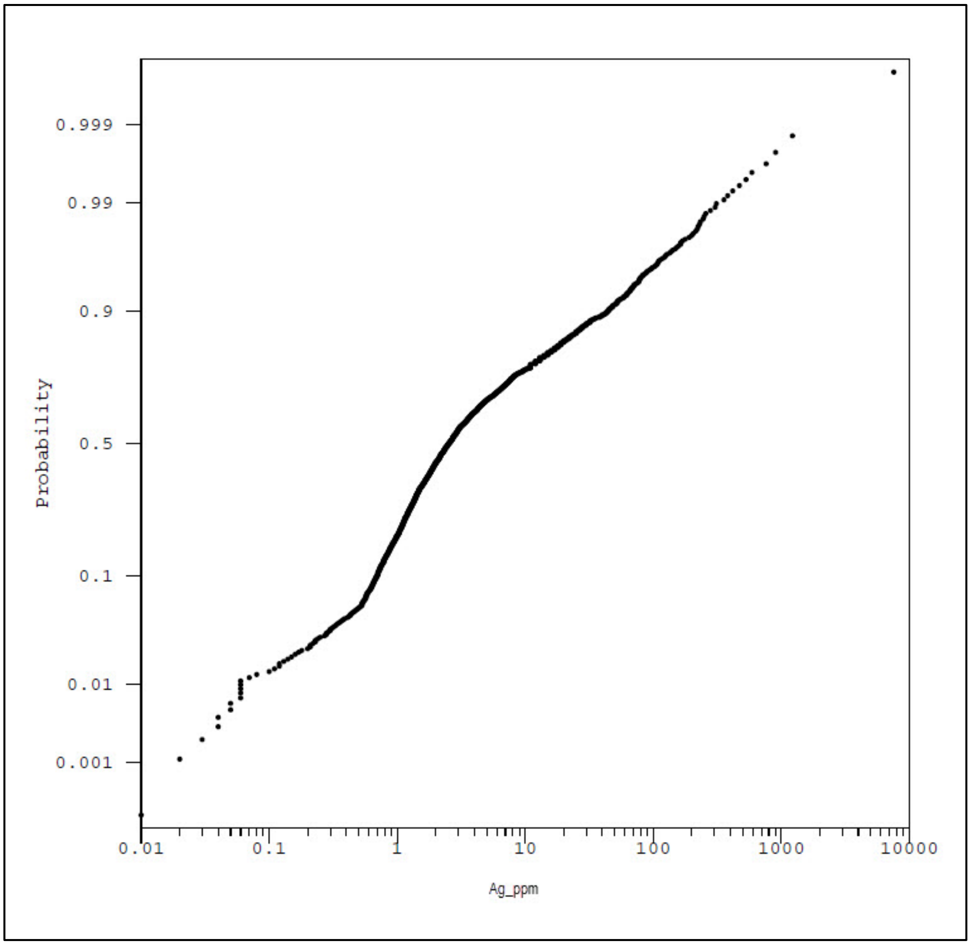


Table 14.4 Capped Assays by Zone

Zone	Au Cap (g/t)	Number Capped	Ag Cap (g/t)	Number Capped
YellowJacket	100	11	550	15
Liberator	100	0	100	0
Swale	10	0	200	0
Disseminated	10	27	200	6

The results from capping (Tables 14.5 and 14.6) show reduced standard deviation and coefficients of variation in all groups when compared to the uncapped assays (Tables 14.3 and 14.4).

Table 14.5 Capped Assay Statistics for Gold Sorted By Zone

Zone	Number	Mean Au (g/t)	Stand. Dev.	Min Assay	Max Assay	Coefficient of Variation
YellowJacket	3,119	2.511	8.671	0.0005	100.0	3.453
Liberator	232	0.836	2.041	0.001	17.299	2.442
Swale	550	0.719	0.512	0.0005	6.390	0.712
Disseminated	88,418	0.110	0.312	0.0005	10.0	2.826

Table 14.6 Capped Assay Statistics for Silver Sorted by Zone

Zone	Number	Mean Ag (g/t)	Stand. Dev.	Min Assay	Max Assay	Coefficient of Variation
YellowJacket	3,119	19.195	59.181	0.010	550.0	3.083
Liberator	232	2.372	5.382	0.030	65.0	2.269
Swale	550	1.892	3.440	0.0005	61.0	1.818
Disseminated	88,418	0.453	2.437	0.0005	200.0	5.376

14.1.4 ASSAY COMPOSITES

Capped drillhole assays for Sierra Blanca were composited using 5 metre down–the–hole composite lengths. Composite lengths were chosen based on the anticipated mine selectivity of 5 metres which corresponds to the block size length in the z-direction. A total of 27,729 x 5 metres gold and silver composites were constructed. Intervals with missing assays were ignored and a new composite centroid was generated at that point. A merge tolerance of 2.5 metres was also used to limit the number of "short" composites lengths in the database. Composite statistics are compiled and listed in Table 14.7 and 14.8.

Table 14.7 Composite Statistics for Gold Sorted By Zone

Zone	Number	Mean Au (g/t)	Stand. Dev.	Min Assay	Max Assay	Coefficient of Variation
YellowJacket Vein	625	1.473	3.152	0.001	37.096	2.140
Liberator Vein	62	0.775	1.556	0.005	8.825	2.009
Disseminated Swale	149	0.721	0.443	0.114	3.537	0.615
Disseminated	26,893	0.106	0.222	0.0005	6.096	2.088
All	27,729	0.142	0.567	0.0005	37.096	4.003

Table 14.8 Composite Statistics for Silver Sorted by Zone

Zone	Number	Mean Ag (g/t)	Stand. Dev.	Min Assay	Max Assay	Coefficient of Variation
YellowJacket Vein	625	11.361	28.733	0.007	349.659	2.529
Liberator Vein	62	1.917	2.660	0.043	12.903	1.387
Disseminated Swale	149	1.930	2.877	0.444	32.104	1.491
Disseminated	26,893	0.413	1.335	0.0005	88.967	3.233
All	27,729	0.671	4.801	0.0005	349.659	7.151

14.1.5 BLOCK MODEL

The Mineral Resource model contains information about the deposit and is stored variably in each block. The information stored includes:

- Estimated characteristics of Au, Ag, S and Oxide
- Percentage of block below the surface topography
- Specific gravity defined by geologic triangulations
- Stratigraphic Unit
- Percentage of a block found within a vein and percentage of a block found within the disseminated material

Table 14.9 outlines the framework for the Sierra Blanca block model.

Table 14.9 Sierra Blanca Block Model Framework

Item	Easting	Northing	Elevation
Block Model Reference Point	516760	4096460	720
Number of Blocks	197	259	148
Parent Block Size	10	10	5

14.1.6 BULK DENSITY

A total of 1,365 specific gravity measurements were used to define the density value of each block based on modeled lithology types. Basic statistics were compiled and tabulated (Table 14.10). The final density values assigned to the model were derived by eliminating 10% of the lowest and highest density values for each lithology type and using the mean value. Table 14.11 is a translation of the old Lithology units to the correlating stratigraphic units used.

Table 14.10 Lithology Types and Corresponding Specific Gravity Values

Lithology	All Samples				Minus 10% of Lowest and Highest Values			
	Count	min	max	mean	Count	min	max	mean
Post SB	462	1.88	2.64	2.33	370	2.15	2.49	2.34
Mélange	40	1.74	2.53	2.34	32	2.2	2.49	2.36
SB Middle	484	2.04	2.63	2.42	387	2.29	2.54	2.43
SB Lower	165	2.19	2.58	2.46	132	2.33	2.55	2.47
Pre SB	1	1.86	1.86	1.86	1	1.86	1.86	1.86
Camb	1	2.56	2.56	2.56	1	2.56	2.56	2.56
Gravel	1	1.85	1.85	1.85	1	1.85	1.85	1.85
Unknown Default	1	1.85	1.85	1.85	1	1.85	1.85	1.85
Rhyolite_9	68	1.85	2.50	2.18	54	2.00	2.41	2.18
Rhyolite	142	2.06	2.60	2.43	114	2.25	2.55	2.44

Table 14.11 Specific Gravity by Stratigraphy

Stratigraphy	Specific Gravity
PZ_Basement	2.56
Tsf	1.86
Tnb1	2.18
Tpf	2.47
Tsb	2.43
Tdi	2.43
Td	2.34
Tlr	2.34
Trm	2.34
YellowJacket	2.36

14.1.7 CONTACT PROFILES

A contact profile analysis investigates the relationships between assay values in relation to the contact of geological units. This analysis was used to identify separate mineral estimation domains based on assay grades in relation to the stratigraphic units. This method takes samples from one stratigraphic unit and pairs it with samples from another geological unit based on a separation distance. The pairs are constructed over an increasing separation distance. The average grade of the first unit is plotted against the average grade calculated with the second unit. Figure 14.11 is the contact profile comparing gold assays within the YellowJacket vein vs all other stratigraphic unit within 30 metres. Figure 14.12 is the contact profile again, but with silver assays. These analyses confirm that the YellowJacket contains much higher gold and silver grades than the surrounding stratigraphy and should be used as its own estimation domain.

Figure 14.11 YellowJacket Contact Profile (Au)

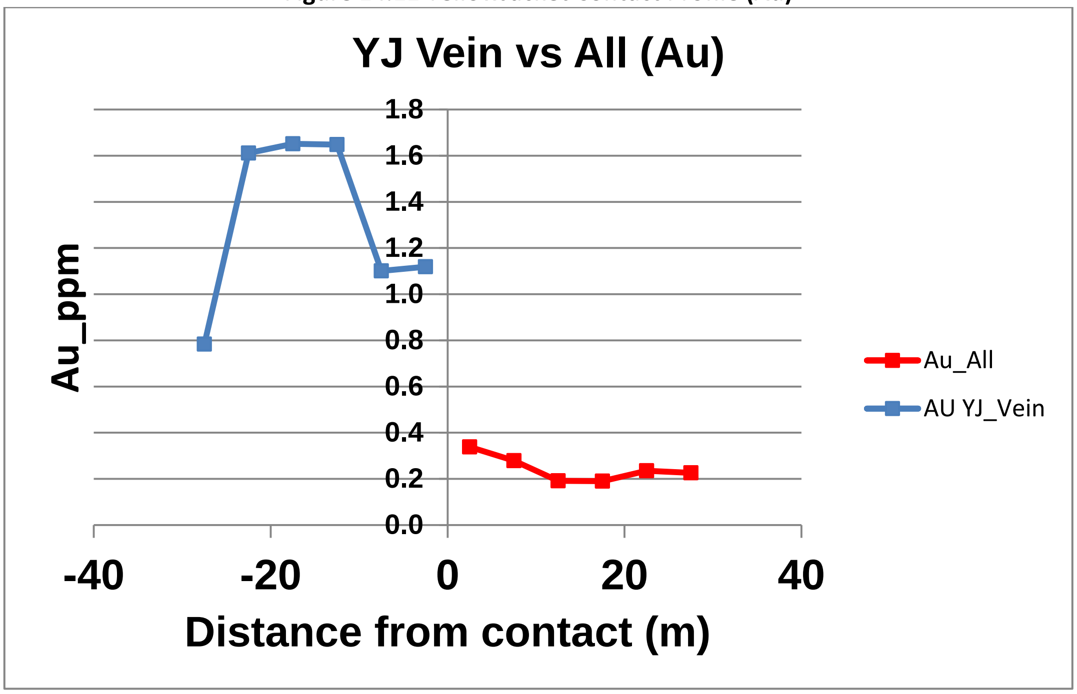
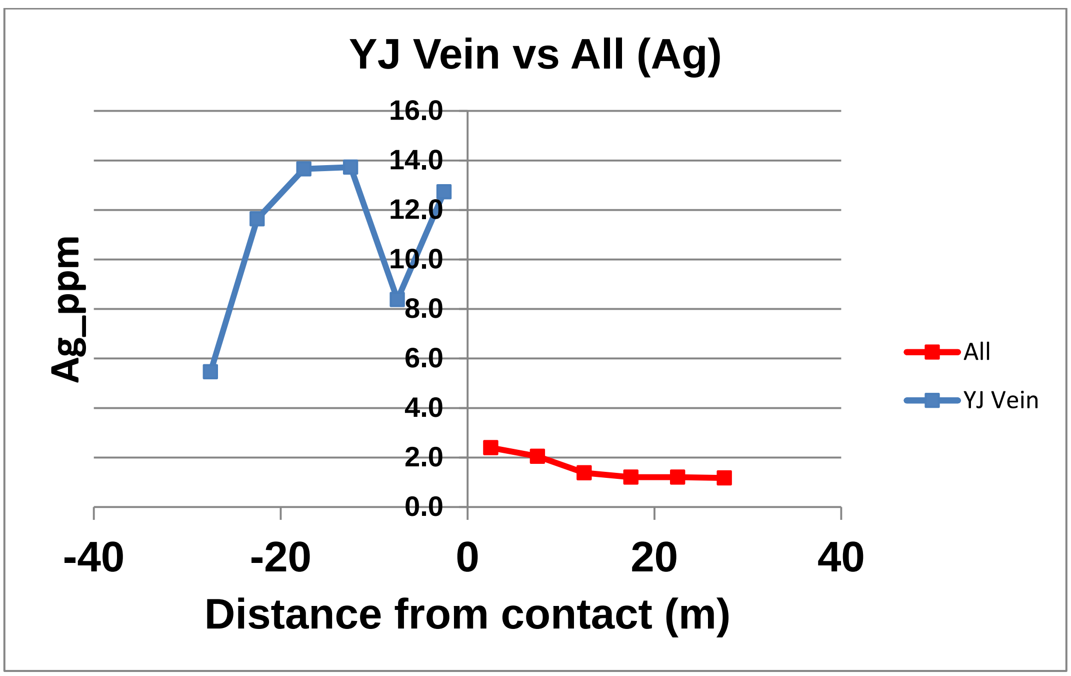


Figure 14.12 YellowJacket Contact Profile (Ag)



All stratigraphic units at NBP were evaluated to determine if separate individual estimation domain were required outside of YellowJacket, Liberator and Swale. No additional domains were identified. Figures 14.13 and 14.14 are examples.

Figure 14.13 Savage Formation vs Pioneer Formation Contact Profile (Au)

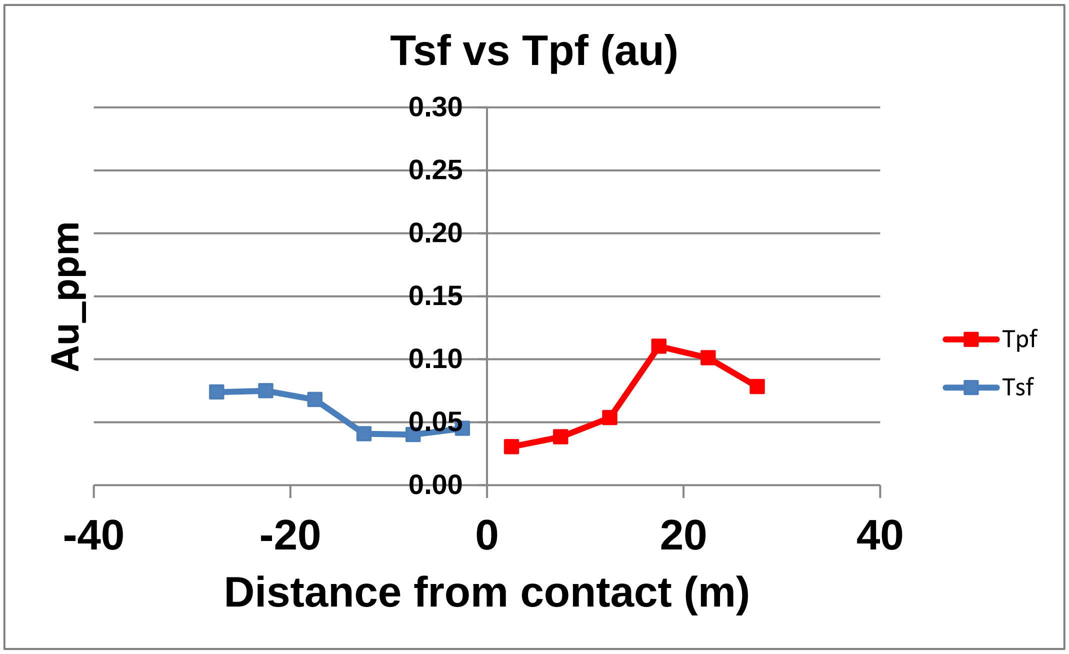
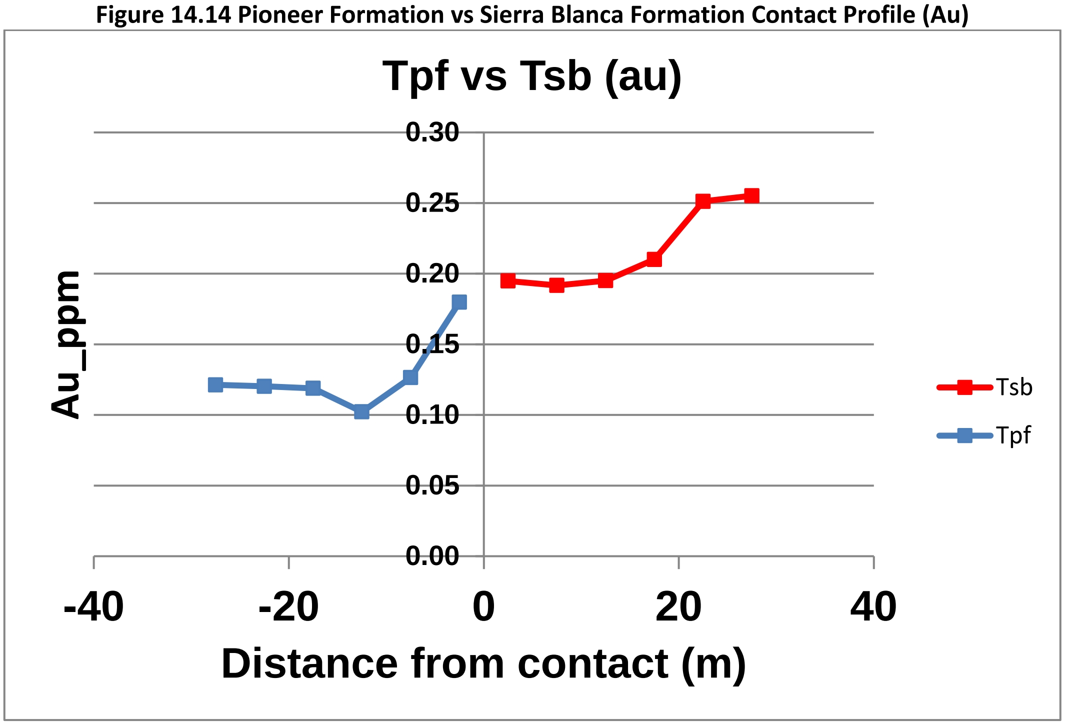


Figure 14.14 Pioneer Formation vs Sierra Blanca Formation Contact Profile (Au)



Contact profile analyses strongly indicate that disseminated mineralization contains consistent grades from one stratigraphic unit to the next. This information allows for the mineral estimation domains to include all of the disseminated mineralization to be estimated in one run.

14.1.8 DECLUSTERING

Declustering is a technique used to smooth out higher drill densities in the bulk of a deposit. Assays are assigned a weight which is directly proportional to the area or volume of interest of each sample (Rossi and Deutsch 2014). Declustering was performed using the nearest-neighbor declustering technique. Each point receives a weight inversely proportional to the number of points that fall in the same cell. The weights are scaled to a mean of 1.

The weights depend on the cell size. When a cell size is very small, each datum is in its own cell and receives an equal weight. When the cell size is very large, all data fall into one cell and are equally weighted (Rossi and Deutsch 2014). To choose the appropriate cell, the declustered mean versus a range of cell sizes is plotted. Figure 14.15 is a graph showing the cell size versus the mean grade for YellowJacket. The lowest mean along the curve is the cell size to be used. Figure 14.16 is a graph used for declustering the silver grades. Cell sizes used for gold and silver are 135 and 110 metres, respectively.

Figure 14.15 YellowJacket Decluster Au

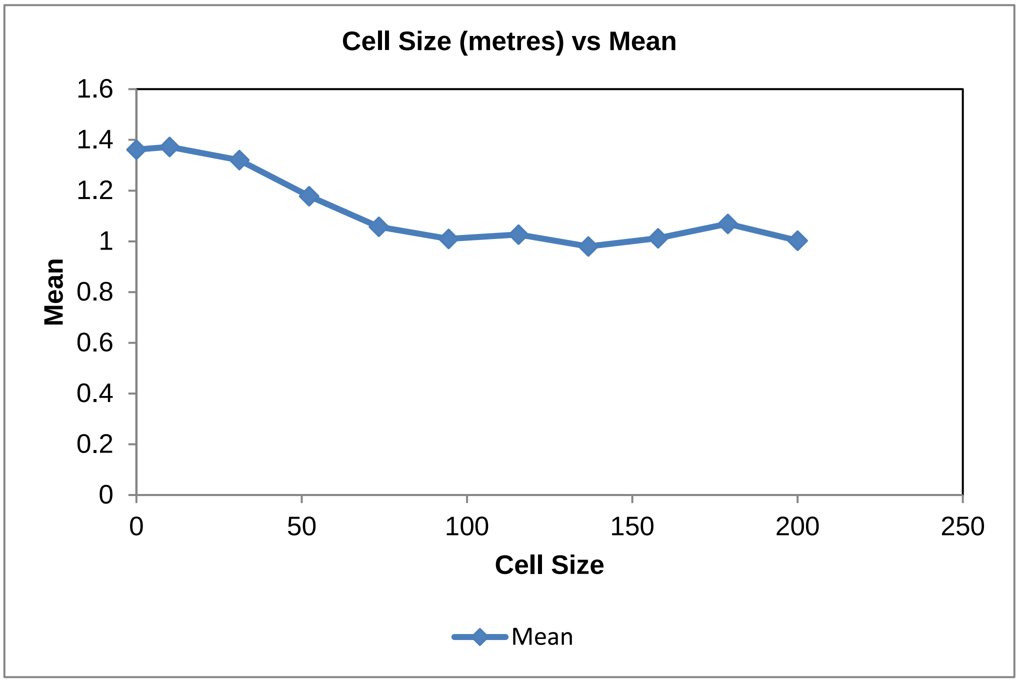
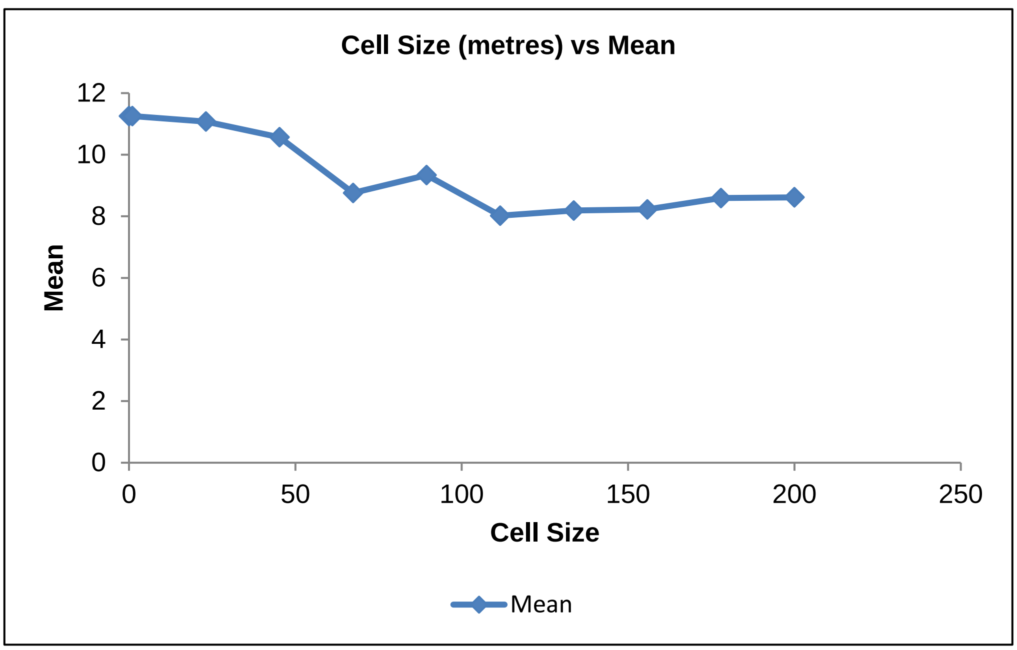


Figure 14.16 YellowJacket Decluster Ag



Declustering was used for inverse distance estimation techniques at YellowJacket, Liberator and Swale.

14.1.9 GRADE INTERPOLATION

Gold and silver were estimated into the four mineralized material domains of YellowJacket, Liberator, Swale and disseminated mineralization. Each material type and their corresponding composites were evaluated independently with unique estimation parameters. Estimation parameters were selected to best represent the style of mineralization and structural attitude of each component. The following sections outline the grade estimation for YellowJacket, Liberator, Swale and Disseminated mineralization.

14.1.9.1 YELLOWJACKET MINERALIZATION

Gold and silver was estimated using inverse distance squared (ID2). Search ellipsoid orientations were determined by evaluating the structural characteristics and drilling density along the vein. Search ellipsoid orientations were assigned based on the geographic bearing and plunge changes within the YellowJacket mineral shape. Orientations were calculated and stored in each model block. Table 14.12 summarizes the breakdown of the different bearings and plunges used based on these criteria. Figure 14.17 is a horizontal section showing the lateral location of strike measurements. Figure 14.18 is a cross section looking north showing changes in the plunge of the vein with depth. A two pass estimation was performed to insure mineralization was estimated into the entire shape.

Table 14.12 YellowJacket Vein Estimation Parameters for Au and Ag

YellowJacket Vein Estimation Parameters			
Estimation Type	Inverse Distance Squared (ID2)		
Search Ellipsoid	**Bearing**	**Plunge**	**Dip**
Northing > 4098500	100		0
Northing 4098275 – 4098500	65		0
Northing 4098225 – 4098275	120		0
Northing 4098175 – 4098225	90		0
Northing < 4098175	95		0
Elevation > 1140		65	0
Elevation < 1140		80	0
Search Ellipse	**Major Axis**	**Semi-Major Axis**	**Minor Axis**
Pass 1	100	60	20
Pass 2	180	130	20
Samples	**Min**	**Max**	
	4	20	
Maximum Samples per Drillhole	**Max**		
	2		

Figure 14.17 YellowJacket Vein Estimation Bearing Changes (Elevation 1,150 m)-metres

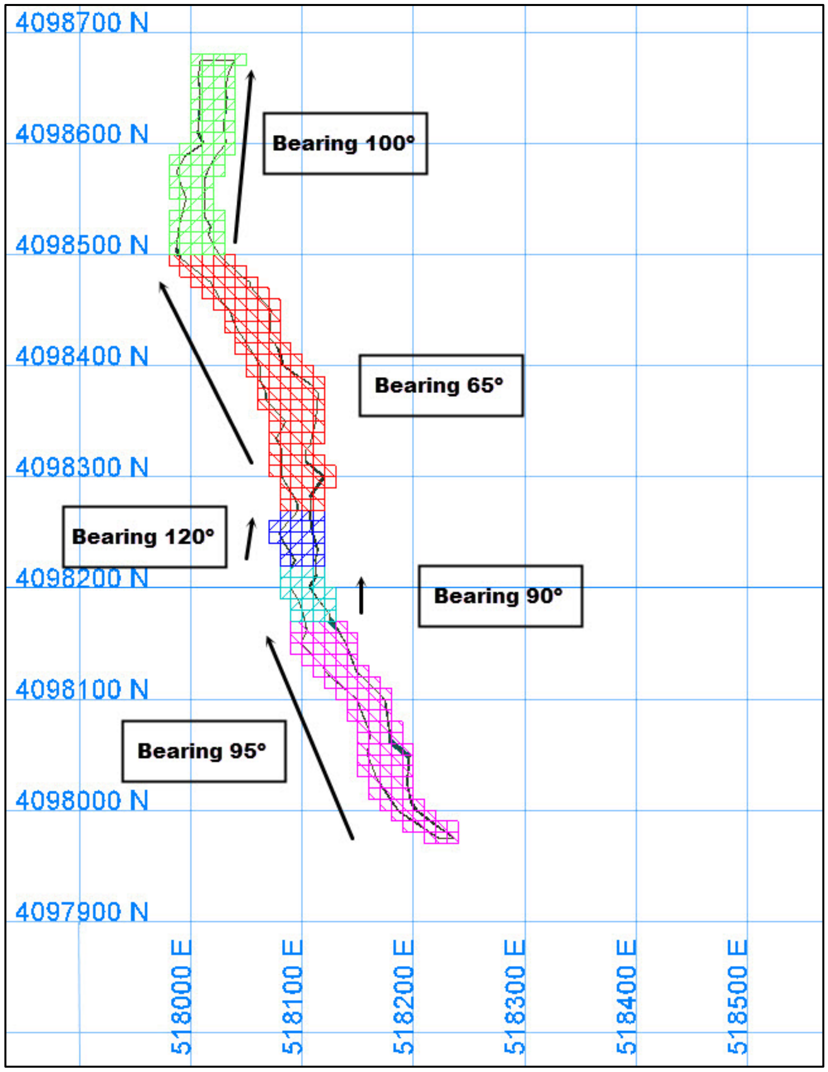
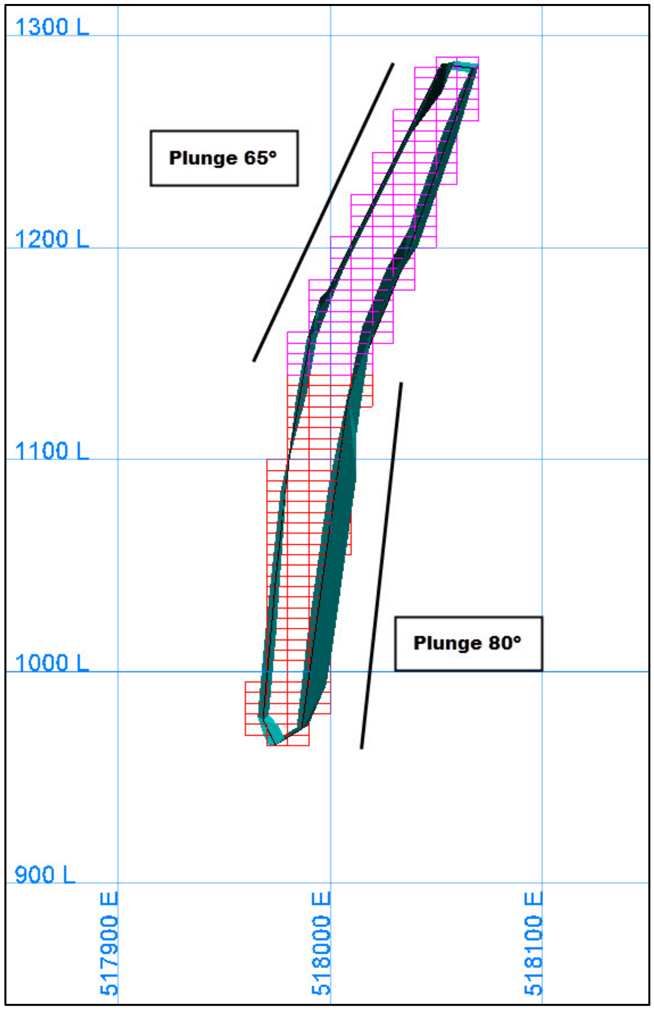


Figure 14.18 YellowJacket Vein Estimation Plunge Changes (Northing 4098525)-metres



14.1.9.1.1 LIBERATOR

Gold and silver were estimated using inverse distance squared (ID2). Search ellipsoid orientations and dimensions were determined by evaluating the structural characteristics, and drill density along the vein and are listed in Table 14.13.

Table 14.13 Liberator Au and Ag Estimation Parameters

YellowJacket Vein Estimation Parameters			
Estimation Type	Inverse Distance Squared (ID2)		
Search Ellipsoid	**Bearing**	**Plunge**	**Dip**
	254	80	0
Search Ellipse	**Major Axis**	**Semi-Major Axis**	**Minor Axis**
Pass 1	135	60	20
Samples	**Min**	**Max**	
	2	20	
Maximum Samples per Drillhole	**Max**		
	2		

14.1.10 DISSEMINATED MINERALIZATION

Gold, silver and sulphur were estimated into disseminated blocks using Ordinary Kriging as the estimation technique. One variogram was calculated for gold and another for silver. Eight domains were established to insure that mineralization would not be estimated through the YellowJacket, Liberator and Swale zones. Only composites and blocks in the same domain were allowed to be used during the interpolation. This limited mineralization within the vein domains to have influence on adjacent stratigraphic horizons. Gold was estimated in two passes to ensure complete coverage of mineralization as identified by drilling. Drillhole data was used to define a variogram for the mineralization. Table 14.14 and Table 14.16 lists gold and silver variogram model parameters according to the variograms in Figure 14.19 and 14.20, respectively. Variograms were auto-fit and evaluated for accuracy. Table 14.15 and 14.17 list the estimation parameters used for the gold and silver kriging estimates, respectively.

Table 14.14 Gold Variogram Model Parameters

Variogram Model Parameters							
Nugget	0.153	**Number of Structures**		1	**Distance (m)**		
Variogram Type	**Sill Differential**	**Bearing**	**Plunge**	**Dip**	**Major Axis**	**Semi-Major Axis**	**Minor Axis**
Exponential	0.819	330	15	-25	105	54.5	43.4

Figure 14.19 Gold Variogram Model-metres

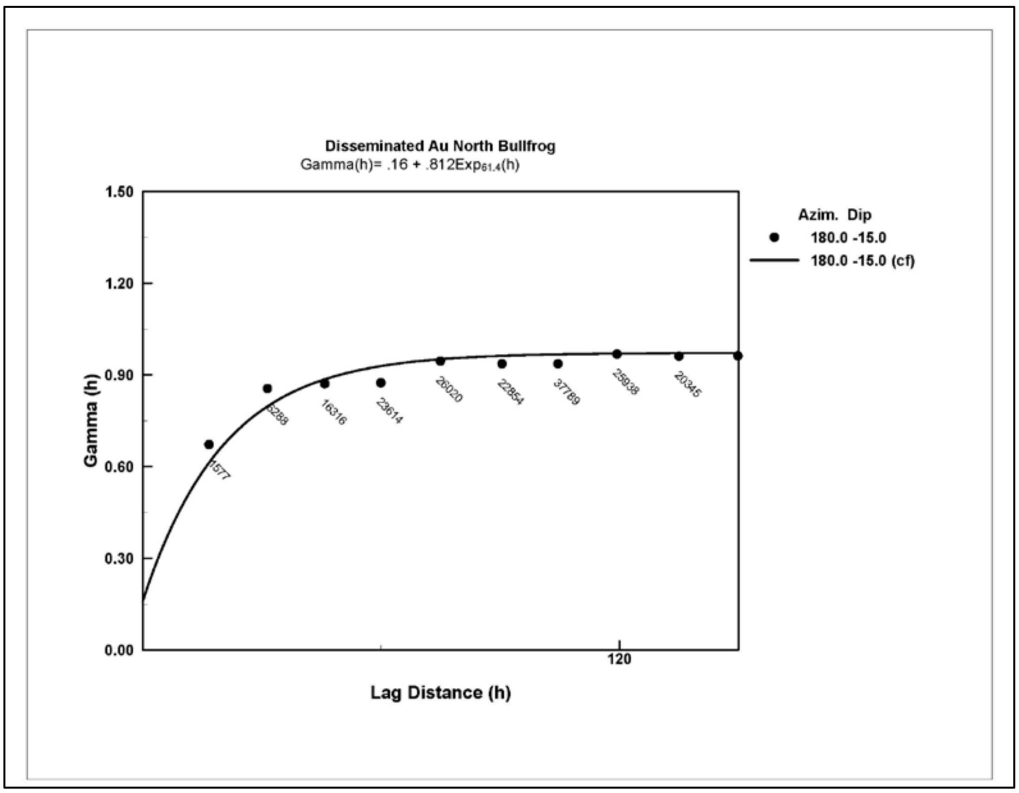


Table 14.15 Gold Ordinary Kriging Estimation Parameters in Vulcan® Format

Disseminated Mineralization			
Estimation Type	**Ordinary Kriging**		
Search Ellipsoid	**Bearing**	**Plunge**	**Dip**
	330	15	-25
Search Distance	**Major Axis**	**Semi-Major Axis**	**Minor Axis**
Pass 1	105	54.5	43.4
Pass 2	225	150	50
Samples	**Min**	**Max**	
	4	20	
Maximum Samples per Drillhole	**Max**		
Pass 1 and 2	2		

Table 14.16 Silver Variogram Model Parameters

Variogram Model Parameters							
Nugget	0.331	**Number of Structures**		1	**Distance (m)**		
Variogram Type	**Sill Differential**	**Bearing**	**Plunge**	**Dip**	**Major Axis**	**Semi-Major Axis**	**Minor Axis**
Exponential	0.581	160	0	7	140	111.8	91.3

Figure 14.20 Silver Variogram Model-metres

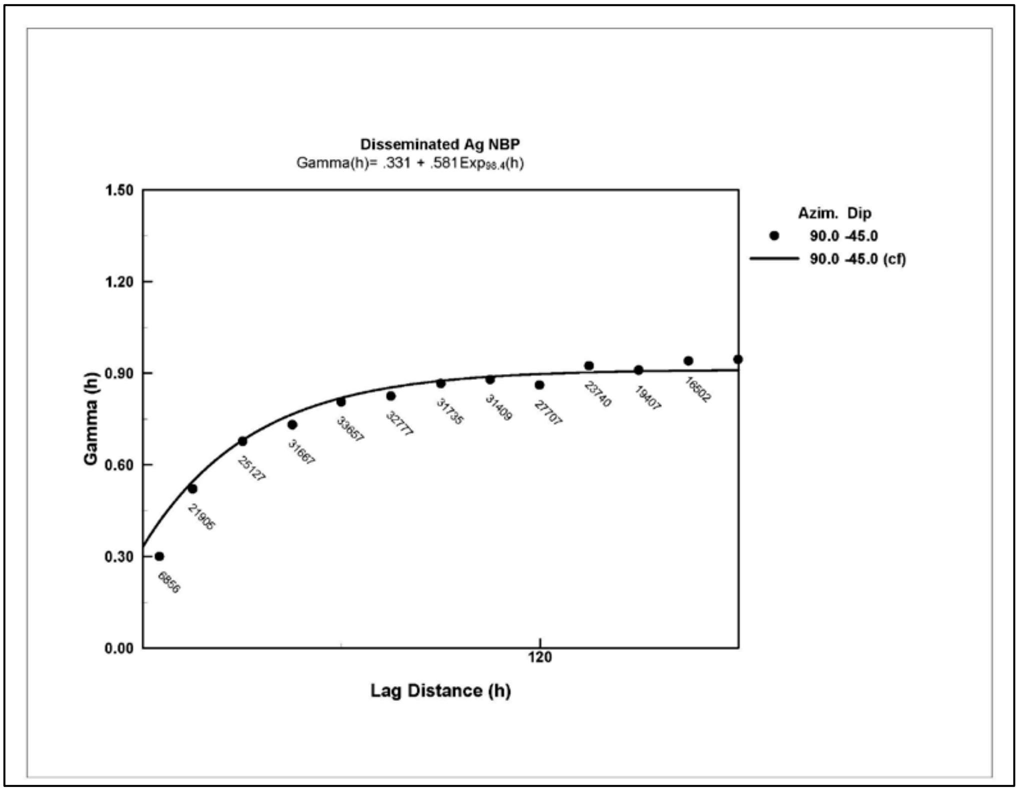


Table 14.17 Silver Ordinary Kriging Estimation Parameters in Vulcan® Format

Disseminated Mineralization			
Estimation Type	**Ordinary Kriging**		
Search Ellipsoid	**Bearing**	**Plunge**	**Dip**
	160	0	7
Search Distance	**Major Axis**	**Semi-Major Axis**	**Minor Axis**
	140	112	92
Samples	**Min**	**Max**	
	4	20	
Maximum Samples per Drillhole	**Max**		
	2		

Sulphur was kriged into all rocktypes and domains. Sulphur content will be useful for potential processing evaluations and metallurgical testing. Sulphur content is important for determination of mechanical oxidation potential of various mineralization types. Variograms and kriging estimation parameters for Sulphur are listed in Tables 14.18 and 14.19. The Sulphur variogram model is shown graphically in Figure 14.21.

Table 14.18 Sulphur Variogram Model Parameters

Variogram Model Parameters							
Nugget	0.132	**Number of Structures**		2	**Distance (m)**		
Variogram Type	**Sill Differential**	**Bearing**	**Plunge**	**Dip**	**Major Axis**	**Semi-Major Axis**	**Minor Axis**
Exponential	0.299	349	-64	23	104	56	27.5
Exponential	0.368	122	-3	5	408	267	123

Figure 14.21 Sulphur Variogram Model-metres

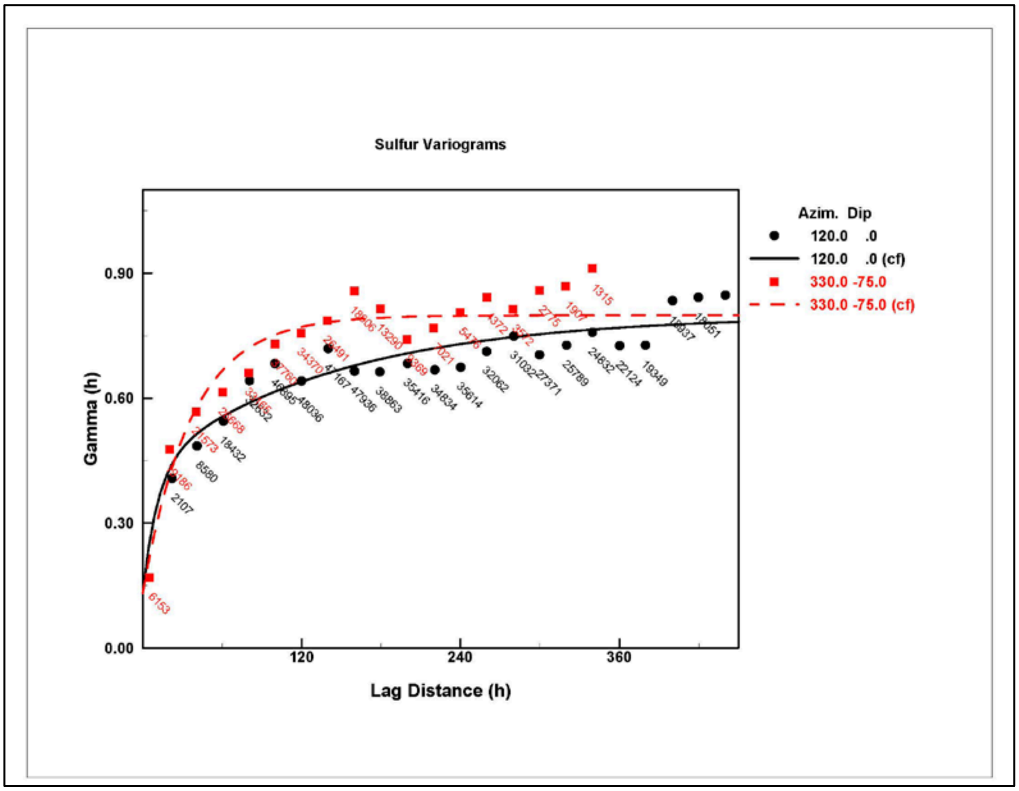


Table 14.19 Sulphur Ordinary Kriging Estimation Parameters in Vulcan® Format

Disseminated Mineralization			
Estimation Type	**Ordinary Kriging**		
Search Ellipsoid	**Bearing**	**Plunge**	**Dip**
	122	-3	5
Search Distance	**Major Axis**	**Semi-Major Axis**	**Minor Axis**
	408	267	123
Samples	**Min**	**Max**	
	4	20	
Maximum Samples per Drillhole	**Max**		
	2		

14.1.11 SWATH PLOTS

A swath plot is an analysis which compares estimated block grades to composite grades for a slice taken from the block model. This is a useful tool to help determine whether grade estimation parameters correlate well with expected values based on composite grades. Figure 14.22 is an overview map that shows the spatial relationship of the section line (Northing 4098300) with the YellowJacket, Liberator and Swale grade shells. Figure 14.23 shows the results of the swath plot analysis.

Grade shells used for estimation domains are identified. The swath plot analysis indicates that the grade estimates for the Swale, YellowJacket and Liberator grade shells correlate well with sample composites.

Figure 14.22 North Bullfrog Project Swath Plot Section Line-metres

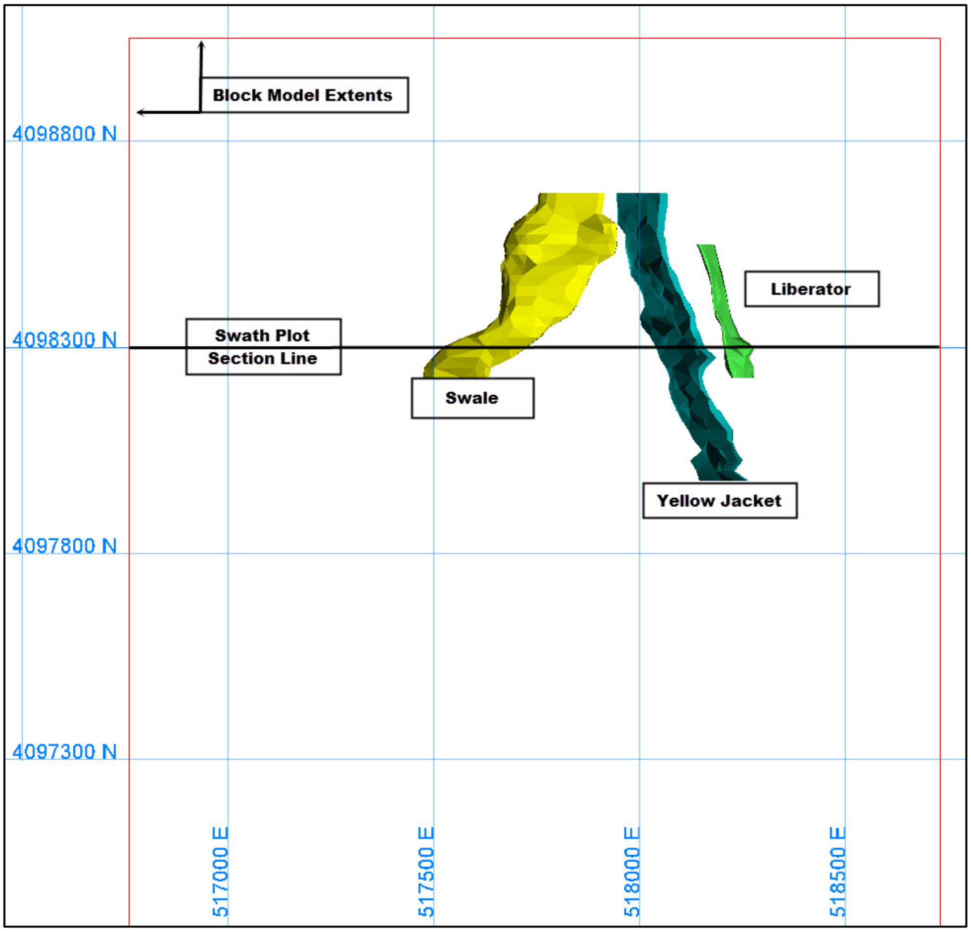
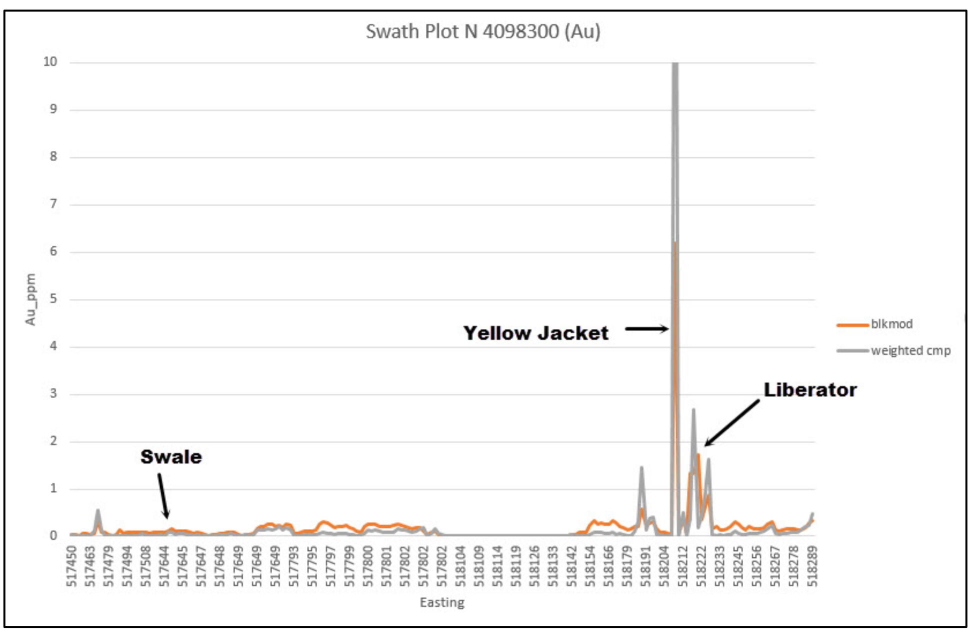


Figure 14.23 Swath Plot Graphical Analysis-metres

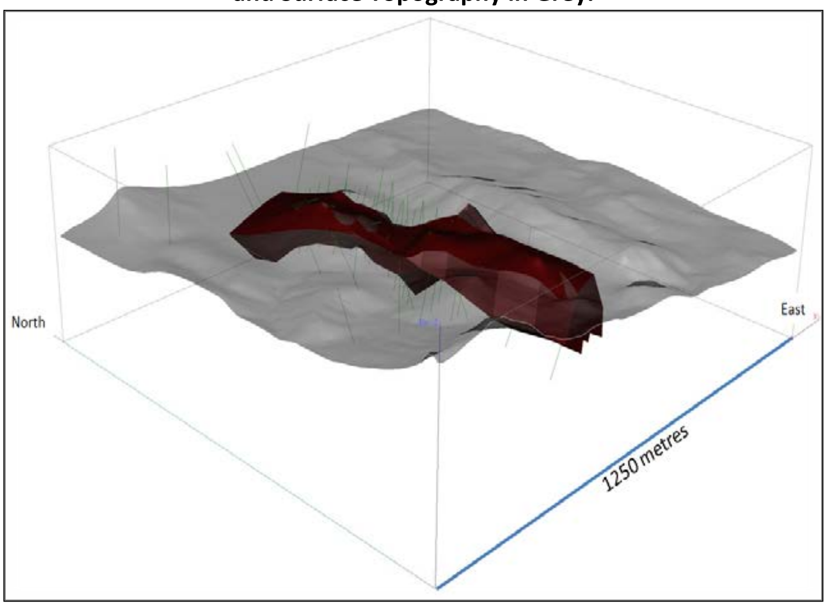


14.2 JOLLY JANE

The geologic model for Jolly Jane was built by Corvus geologists. Ninety-four (94) reverse circulation drillholes and 5 surface outcrop channel sample lines define the Jolly Jane zone. Within the 9,450 gold assays supplied for Jolly Jane a total of 61 gaps in the assay record were identified. [These gaps were filled with values of 0.001 g/t Au which is an acceptable practice and has no impact on the results.

The 3D geology for Jolly Jane was modeled as two surfaces, one describing the lower contact of the mineralized Crater Flat Tuff and the other describing the upper contact. These 3D surfaces were constructed by Corvus geologists and are shown in Figure 14.24. The lower contact is sometimes the original depositional contact on Tertiary sediments or the basement Paleozoic sediments. However, in other places the lower contact is with post-mineral dacite intrusions. The lower contact has been offset by a series of west dipping faults. The upper contact is generally defined by post-mineral dacite intrusions or locally the next stratigraphic unit. Because the dacites are post-mineral they are not offset by the same faults as the lower contact. There are some minor internal dacite intervals. These dacites are a different composition to the post mineral intrusions and they are generally mineralized so they have been included in the volume between the upper and lower contacts. The upper and lower contacts have been extended north and south to the limits that should be modeled. Consequently, the volume to model should be defined by the upper and lower contacts together with the topography and then the ends should just be clipped with vertical planes which coincide with the edge of the triangulated surfaces.

Figure 14.24 Isometric View of Jolly Jane Looking Northeasterly Showing Mineralization Solid in Red, Drillholes in Green and Surface Topography in Grey.



14.2.1 DATA ANALYSIS JOLLY JANE

Drillholes were compared to the geologic solid and the assays were back-tagged with a mineralized code if inside the solid. The sample statistics are tabulated below (Table 14.20).

Table 14.20 Summary of Assay Statistics for Jolly Jane Mineralized Solid

	Inside Solid		Outside Solid	
	Au (g/t)	Ag (g/t)	Au (g/t)	Ag (g/t)
Number of Samples	4,585	4,417	4,549	4,390
Mean Grade	0.143	0.361	0.033	0.288
Standard Deviation	0.164	0.378	0.075	0.639
Minimum Value	0.001	0.005	0.001	0.005
Maximum Value	1.45	4.46	0.93	17.75
Coefficient of Variation	1.14	1.04	2.29	2.22

The grade distribution for gold was evaluated using a lognormal cumulative frequency plot for samples within the mineralization solid. Five overlapping lognormal populations made up the gold distribution for the mineralized zone. The highest grade population, with a mean value of 0.85 g/t Au, represented 0.73% of the data or 33 samples and was not considered erratic high grade. A cap level was chosen at two standard deviations above the mean of this highest grade population. A cap value of 1.78 g/t Au was used and no assays required capping.

A similar exercise was completed for silver within the mineralization solid. No silver assays within the mineralization zone required capping.

For assays outside the mineralization solid a total of 55 assays were capped at 0.35 g/t Au and 13 assays were capped at 4.4 g/t Ag.

14.2.2 COMPOSITES JOLLY JANE

Drillholes at Jolly Jane were compared to the mineralization solid and the points at which each hole entered and left the solid were recorded. Uniform down hole composites, 5 metres in length, were formed and made to honor the solid boundaries. Intervals less than ½ the composite length at the solid boundaries were joined with adjoining samples to produce a composites file of uniform support, 5± 2.5 metres in length. The statistics for 5 metres composites are summarized below (Table 14.21). A similar exercise was completed for samples outside the solid.

Table 14.21 Summary of 5 M Composite Statistics for Mineralization Solid Jolly Jane

	Mineralized Solid		Outside Solid	
	Au (g/t)	Ag (g/t)	Au (g/t)	Ag (g/t)
Number of Samples	1,441	1,408	1,414	1,396
Mean Grade	0.144	0.37	0.031	0.31
Standard Deviation	0.152	0.41	0.057	0.55
Minimum Value	0.001	0.005	0.001	0.005
Maximum Value	1.28	4.46	0.35	4.40
Coefficient of Variation	1.06	1.10	1.85	1.78

14.2.3 VARIOGRAPHY JOLLY JANE

Pairwise relative semivariograms were used to model the gold continuity at Jolly Jane. The direction of longest continuity for gold in the horizontal plane was along azimuth 0° dipping -30°. In the plane perpendicular to this the longest continuity was along azimuth 90º dipping -40º. Nested spherical models were fit to all directions. The nugget-to-sill ratio of 16% for Au and 11% for Ag were very good. For Au and Ag in waste, isotropic spherical models were produced. The parameters are tabulated below.

The parameters are tabulated in Table 14.22.

Table 14.22 Summary of Jolly Jane Gold and Silver Semivariogram Parameters

Domain	Azimuth	Dip	C_o	C_1	C_2	Short Range (m)	Long Range (m)
Mineralized Solid Au	0º	-30º	0.10	0.10	0.43	20	120
	90º	-20º	0.10	0.10	0.43	30	110
	270º	-70º	0.10	0.10	0.43	20	50
Mineralized Solid Ag	0º	-30º	0.05	0.10	0.30	30	120
	90º	-40º	0.05	0.10	0.30	40	80
	270º	-50º	0.05	0.10	0.30	15	60
Waste Au	Omni Directional		0.15	0.15	0.40	25	90
Waste Ag	Omni Directional		0.10	0.10	0.35	30	100

14.2.4 BULK DENSITY JOLLY JANE

During the 2010 drill campaign on the NBP, a total of 102 samples of RC chips were sent to ALS Minerals for specific gravity measurements by pycnometer (method OA-GRA08b). The average specific gravity from 46 samples within the oxidized Tuff units from mineralization zones drilled in 2010 was 2.60.

During the 2012 drill campaign 74 specific gravity determinations were made from drill core which is far more representative than RC Chips, as porosity is included. Of these samples 59 were within the Crater Flat Tuff unit which hosts the mineralization at Jolly Jane. The average specific gravity from these samples, listed in Table 14.23, was 2.34.

Table 14.23 Specific Gravity Determinations for Tuff Units-Jolly Jane

HoleID	SampleID	From_m	To_m	SG	StratUnit1
NB-12-130	M610829	17.68	20.73	2.48	fault zone
NB-12-130	M610836	35.97	39.01	2.43	fault zone
NB-12-130	M610838	42.06	45.11	2.44	fault zone
NB-12-130	M610851	79.56	82.76	1.93	fault zone
NB-12-130	M610855	89.31	92.50	1.96	fault zone
NB-12-131	M612269	11.44	13.50	2.38	fault zone
NB-12-131	M612279	36.10	39.01	2.21	fault zone
NB-12-131	M612283	44.40	46.33	2.23	fault zone
Average				2.26	Fault zones
NB-12-131	M612265	0.00	3.05	2.36	Crater Flat Tuff
NB-12-131	M612266	3.05	6.27	2.37	Crater Flat Tuff
NB-12-131	M612267	6.27	9.40	2.41	Crater Flat Tuff
NB-12-130	M610859	101.80	105.55	2.44	lower Crater Flat Tuff
NB-12-130	M610860	105.55	109.42	2.43	lower Crater Flat Tuff
NB-12-130	M610824	2.20	5.38	2.34	middle Crater Flat Tuff
NB-12-130	M610825	5.38	8.45	2.43	middle Crater Flat Tuff
NB-12-130	M610826	8.45	11.58	2.40	middle Crater Flat Tuff
NB-12-130	M610827	11.58	14.63	2.39	middle Crater Flat Tuff
NB-12-130	M610828	14.63	17.68	2.41	middle Crater Flat Tuff
NB-12-130	M610830	20.73	23.77	2.38	middle Crater Flat Tuff
NB-12-130	M610831	23.77	26.82	2.47	middle Crater Flat Tuff
NB-12-130	M610832	26.82	29.87	2.41	middle Crater Flat Tuff
NB-12-130	M610834	29.87	32.92	2.40	middle Crater Flat Tuff
NB-12-130	M610835	32.92	35.97	2.47	middle Crater Flat Tuff
NB-12-130	M610837	39.01	42.06	2.39	middle Crater Flat Tuff
NB-12-130	M610839	45.11	48.11	2.43	middle Crater Flat Tuff
NB-12-130	M610840	48.11	51.21	2.50	middle Crater Flat Tuff
NB-12-130	M610841	51.21	54.25	2.52	middle Crater Flat Tuff
NB-12-130	M610842	54.25	57.30	2.47	middle Crater Flat Tuff
NB-12-130	M610844	57.30	60.35	2.45	middle Crater Flat Tuff
NB-12-130	M610845	60.35	63.74	2.43	middle Crater Flat Tuff
NB-12-130	M610846	63.74	67.18	2.33	middle Crater Flat Tuff
NB-12-130	M610847	67.18	70.30	2.32	middle Crater Flat Tuff
NB-12-130	M610848	70.30	73.34	2.34	middle Crater Flat Tuff
NB-12-130	M610849	73.34	76.48	2.01	middle Crater Flat Tuff
NB-12-130	M610850	76.48	79.56	2.06	middle Crater Flat Tuff
NB-12-130	M610852	82.76	86.26	1.98	middle Crater Flat Tuff
NB-12-130	M610854	86.26	89.31	1.95	middle Crater Flat Tuff
NB-12-130	M610856	92.50	95.52	2.17	middle Crater Flat Tuff
NB-12-130	M610857	95.52	98.63	2.30	middle Crater Flat Tuff
NB-12-130	M610858	98.63	101.80	2.27	middle Crater Flat Tuff
NB-12-131	M612276	27.53	30.29	2.34	middle Crater Flat Tuff

HoleID	SampleID	From_m	To_m	SG	StratUnit1
NB-12-131	M612277	30.29	33.22	2.39	middle Crater Flat Tuff
NB-12-131	M612278	33.22	36.10	2.32	middle Crater Flat Tuff
NB-12-131	M612280	39.01	42.06	2.35	middle Crater Flat Tuff
NB-12-131	M612282	42.06	44.40	2.31	middle Crater Flat Tuff
NB-12-131	M612284	46.33	49.68	2.36	middle Crater Flat Tuff
NB-12-131	M610862	49.68	52.73	2.28	middle Crater Flat Tuff
NB-12-131	M610863	52.73	56.66	2.21	middle Crater Flat Tuff
NB-12-131	M610864	56.66	60.35	2.34	middle Crater Flat Tuff
NB-12-131	M610865	60.35	64.10	2.38	middle Crater Flat Tuff
NB-12-131	M610866	64.10	67.97	2.40	middle Crater Flat Tuff
NB-12-131	M610867	67.97	71.60	2.49	middle Crater Flat Tuff
NB-12-131	M610868	71.60	75.24	2.45	middle Crater Flat Tuff
NB-12-131	M610869	75.24	78.64	2.37	middle Crater Flat Tuff
NB-12-131	M610870	78.64	81.69	2.42	middle Crater Flat Tuff
NB-12-131	M610872	81.69	84.73	2.22	middle Crater Flat Tuff
NB-12-131	M610873	84.73	87.78	2.30	middle Crater Flat Tuff
NB-12-131	M610874	87.78	90.83	2.29	middle Crater Flat Tuff
NB-12-131	M610875	90.83	93.88	2.31	middle Crater Flat Tuff
NB-12-131	M610876	93.88	97.88	2.22	middle Crater Flat Tuff
NB-12-131	M610877	97.88	101.72	2.50	middle Crater Flat Tuff
NB-12-131	M610878	101.72	105.58	2.47	middle Crater Flat Tuff
NB-12-131	M610879	105.58	109.32	2.43	middle Crater Flat Tuff
NB-12-131	M610880	109.32	112.34	2.22	middle Crater Flat Tuff
NB-12-131	M610882	112.34	116.30	2.13	middle Crater Flat Tuff
NB-12-131	M610883	116.30	119.40	2.34	middle Crater Flat Tuff
NB-12-131	M610884	119.40	120.94	2.10	middle Crater Flat Tuff
Average				**2.34**	**Crater Flat Tuff**
NB-12-131	M612268	9.40	11.44	2.16	dacite breccia
NB-12-131	M612270	13.50	16.68	2.33	dacite breccia
NB-12-131	M612272	16.68	19.80	2.51	dacite breccia
NB-12-131	M612273	19.80	23.49	2.48	dacite breccia
NB-12-131	M612274	23.49	26.92	2.45	dacite breccia
NB-12-131	M612275	26.92	27.53	2.25	dacite breccia
NB-12-131	M610885	120.94	122.40	2.32	dacite breccia
Average				**2.36**	**Dacite Breccia**

For Jolly Jane, a specific gravity of 2.34 was used to determine tonnage.

14.2.5 GRADE ESTIMATION

Grades for gold were interpolated by ordinary kriging into all blocks, with some percentage within the Jolly Jane mineralization solid. Kriging was completed in a series of passes with the dimensions and orientation of the search ellipse for each pass tied to the semivariogram for gold. The first pass used dimensions equal to ¼ of the semivariogram range in the three principal directions. If a minimum of 4 composites were found within this ellipse centered on a block, the block was estimated. For blocks not estimated, the search ellipse was expanded to ½ the semivariogram range. Again, a minimum of 4 composites within the search ellipse were required to estimate any given block. A third pass using the full semivariogram range was completed for blocks not estimated during the first two passes. Finally, a fourth pass using roughly twice the range was completed. In all cases if more than 12 composites were located in any search, the closest 12 were used. A maximum of three composites from any individual hole were allowed in all passes. The search parameters for the Kriging procedure are tabulated below (Table 14.24).

A similar procedure was used to estimate silver with the pass four ellipse expanded to the pass four gold search to insure all blocks estimated for gold had a silver value.

Volumes for each block estimated were determined by multiplying the block volume by the percentage of block below topography and within the solid. The tonnage was determined by multiplying the block volume by the S.G. (2.34).

Table 14.24 Summary of Kriging Search Parameters for Jolly Jane

Domain	Pass	Number Estimated	Az/Dip	Dist. (m)	Az/Dip	Dist. (m)	Az/Dip	Dist. (m)
Mineralized Solid Au	1	3,145	0 / -30	30.0	270 / -70	12.5	90 / -20	27.5
	2	35,918	0 / -30	60.0	270 / -70	25.0	90 / -20	55.0
	3	34,632	0 / -30	120.0	270 / -70	50.0	90 / -20	110.0
	4	7,968	0 / -30	240.0	270 / -70	100.0	90 / -20	220.0
Mineralized Solid Ag	1	1,473	0 / -30	30.0	270 / -50	15.0	90 / -40	20.0
	2	28,358	0 / -30	60.0	270 / -50	30.0	90 / -40	40.0
	3	38,531	0 / -30	120.0	270 / -50	60.0	90 / -40	80.0
	4	13,301	0 / -30	240.0	270 / -50	120.0	90 / -40	160.0

14.3 MAYFLOWER

14.3.1 MAYFLOWER GEOLOGIC MODEL

The supplied data for the Mayflower Estimation consisted of 104 drillholes totaling 17,228 m. Of these 104 supplied holes, 79 of them penetrated the mineralization solid and were used for this estimate. A total of 10,950 samples were assayed for gold and 10,492 for silver.

The distribution of mineralization at the Mayflower prospect is complicated. It is clear that mineralization is controlled by a complex fracture network without the clear definition of a simple central vein system. In order to define a volume to be included in the estimation model, a combination of the alteration, trace element geochemistry and gold mineralization were taken into account. The underlying premise for the model was that the form of the zone should be roughly tabular following the main fault zone.

The Mayflower geochemical data show that there is a clear correlation between the higher-grade gold mineralization, potassium feldspar alteration and arsenic mineralization. The first step in building the model was to define the distribution of potassium feldspar alteration using the molar K/Al and Na/Al ratios. The next step was to look at the statistical distribution of arsenic and establish that the mineralized population begins at approximately 10 ppm arsenic in unit Trt2 and 25 ppm in all other lithologies. Finally, the cumulative frequency distribution of gold indicates that 0.04 g/t is the lower limit of the main mineralized population. The “Mayflower Zone” was then defined as continuous drilled intervals which had K-feldspar alteration, high As and Au>0.04 g/t.

The drillhole data with the “Mayflower Zone” designation was loaded into a 3-D view and the “Hanging wall” and “Footwall” was constructed using the top and bottom contacts of the “Mayflower Zone”. Once this was done, the surface was extended and modified by integrating the Barrick drilling data into the model. The same 0.04 g/t cutoff was used to define zones of mineralization in the Barrick holes. The resulting model surfaces were exported to Surpac™ where the final closed volume was constructed. The base of the modeled volume was arbitrarily cut off at an elevation of 1000 metres.

The overall form of the Mayflower Zone is narrow at depth and widens as it approaches the surface, a configuration that is quite common in near surface fault systems (Figures 14.25 and 14.26). The hanging wall is steeper and more planar than the footwall.

Figure 14.25 Mayflower Model Looking NW with the Mineralization Solid in Red and Topography in Grey.

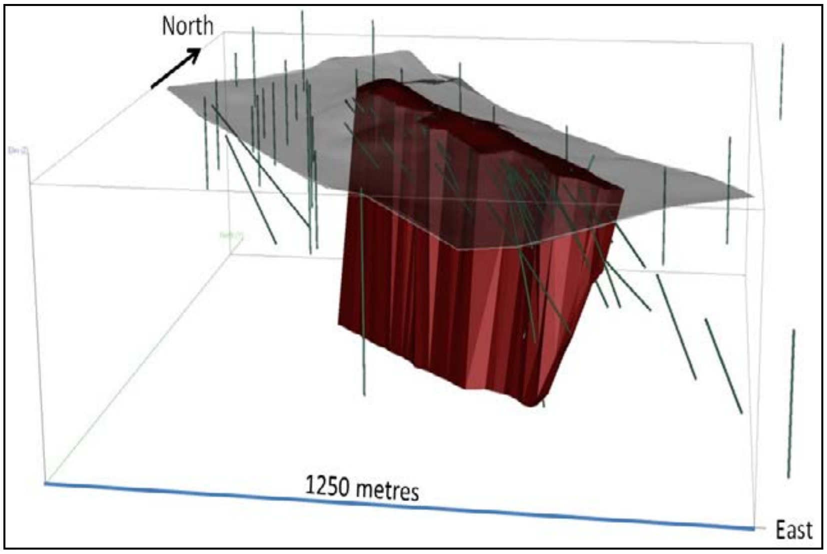
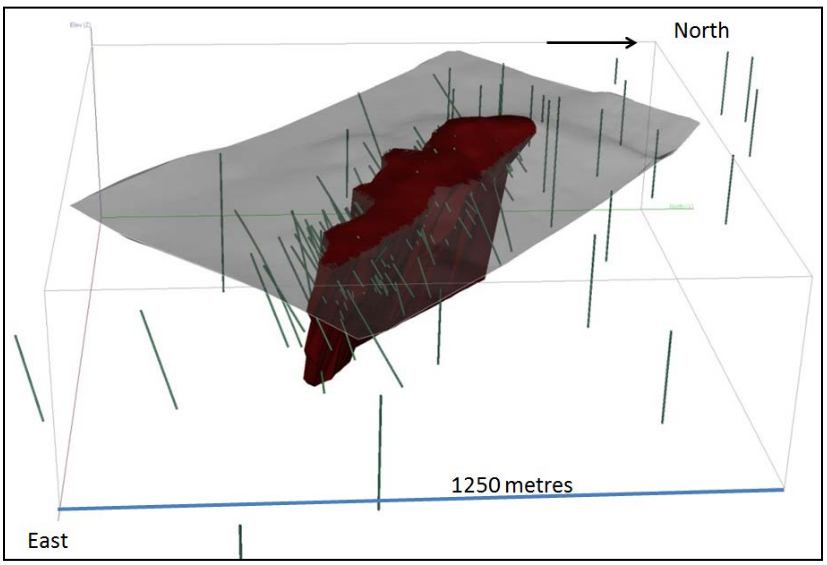


Figure 14.26 Isometric View Looking W of the Mayflower Geologic Solid in Red with Surface Topography Shown in Grey.



14.3.2 DATA ANALYSIS

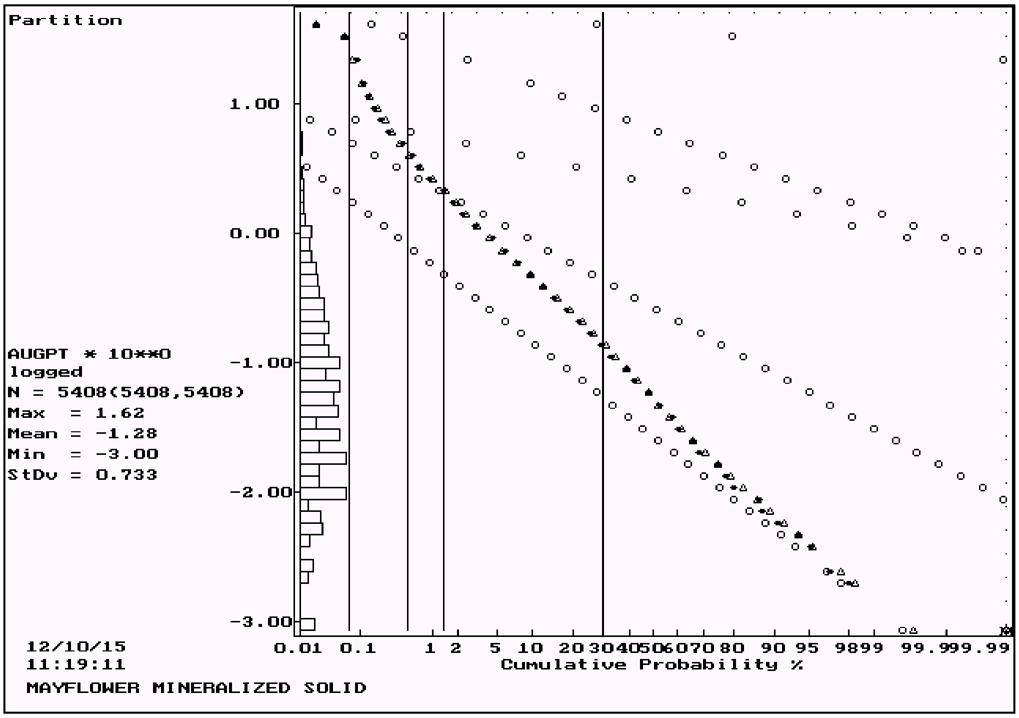
Using the interpreted geologic solid, the assays were back tagged with a mineralization code if inside the mineralized solid. The sample statistics are tabulated below (Table 14.25).

Table 14.25 Summary of Assay Statistics for Mineralization Solid and Waste- Mayflower.

	Inside Mineralization Solid		Outside Mineralization Solid	
	Au (g/t)	Ag (g/t)	Au (g/t)	Ag (g/t)
Number of Samples	5,408	5,408	5,629	5,171
Mean Grade	0.233	0.274	0.027	0.222
Standard Deviation	1.153	1.147	0.062	0.923
Minimum Value	0.001	0.001	0.001	0.001
Maximum Value	41.50	75.90	1.41	27.43
Coefficient of Variation	4.94	4.18	2.32	4.15

The grade distributions for gold and silver were evaluated using lognormal cumulative frequency plots for samples within both the mineralization solid and the surrounding waste. In all cases, multiple overlapping lognormal populations were seen. Within the mineralization zone for gold, there were five overlapping populations (Figure 14.27). The highest population with average grades of 37.2 g/t Au, represents 0.07% of the data, and was considered erratic high grade. A cap consisting of two standard deviations above the mean of population of two, a value of 22 g/t was used to cap five gold assays.

Figure 14.27 Lognormal Cumulative Frequency Plot for Au within the Mineralization Solid-Mayflower.



A similar exercise completed on silver, resulted in 4 assays capped at 8.0 g/t. Within waste, gold showed 6 overlapping lognormal populations with the upper two populations averaging 1.26 g/t and 0.85 g/t representing a combined 0.23% of the data, considered erratic. A cap level of 0.55 g/t or two standard deviations above the mean of population 3 was used to cap 13 gold assays at 0.55 g/t Au. For silver in waste a cap level of 3.8 g/t Ag was used to cap 27 assays. The results of capping reduce the mean grade slightly and significantly reduce the standard deviation and as a result the coefficient of variation in all variables. The capped assay statistics are listed in Table 14.26.

Table 14.26 Summary of Capped Assay Statistics for Mineralization Solid and Waste-Mayflower

	Inside Mineralized Solid		**Outside Mineralized Solid**	
	Au (g/t)	Ag (g/t)	Au (g/t)	Ag (g/t)
Number of Samples	5,408	5,408	5,629	5,171
Mean Grade	0.224	0.257	0.026	0.188
Standard Deviation	0.884	0.385	0.048	0.433
Minimum Value	0.001	0.001	0.001	0.001
Maximum Value	22.00	8.00	0.55	3.80
Coefficient of Variation	3.95	1.50	1.85	2.30

14.3.3 COMPOSITES

Drillholes at Mayflower were compared to the mineralization solid and the points each hole entered and left the solid were recorded. Uniform down hole composites, 5 metres in length, were formed and made to honor the solid boundaries. Intervals less than ½ the composite length at the solid boundaries were joined with adjoining samples to produce a composites file of uniform support, 5± 2.5 metres in length. The statistics for 5 metre composites are summarized below (Table 14.27).

Table 14.27 Summary of 5 M Composite Statistics for Mineralization Solid-Mayflower

	Inside Mineralized Solid	
	Au (g/t)	Ag (g/t)
Number of Samples	1,706	1,706
Mean Grade	0.222	0.261
Standard Deviation	0.617	0.296
Minimum Value	0.001	0.001
Maximum Value	13.60	4.74
Coefficient of Variation	2.78	1.14

14.3.4 VARIOGRAPHY

Pairwise relative semivariograms were produced from composites within the mineralization solid for both gold and silver. The semivariograms were produced along strike, down dip and across dip within the mineralized lens. Nested spherical models were fit to the three directions of anisotropy. The nugget-to-sill ratio was 32% for gold and 24% for silver. The model parameters are summarized below (Table 14.28).

Table 14.28 Summary of Semivariogram Parameters-Mayflower

Variable	Azimuth	Dip	C_o	C_1	C_2	Short Range (m)	Long Range (m)
Au	315°	0°	0.30	0.40	0.25	50	160
	225°	-70°	0.30	0.40	0.25	40	100
	45°	-20°	0.30	0.40	0.25	30	45
Ag	315°	0°	0.13	0.20	0.22	20	60
	225°	-70°	0.13	0.20	0.22	30	100
	45°	-20°	0.13	0.20	0.22	10	40
Min Ind	315°	0°	0.25	0.40	0.25	30	150
	225°	-70°	0.25	0.40	0.25	10	60
	45°	-20°	0.25	0.40	0.25	15	60
Vein Ind	315°	0°	1.20	0.45	0.35	15	100
	225°	-70°	1.20	0.45	0.35	30	80
	45°	-20°	1.20	0.45	0.35	10	64

14.3.5 BULK DENSITY

During the 2012 drill program, a total of 271 specific gravity measurements were made from drill core using the weight in air/weight in water method. These determinations came from holes NB-12-132, 133, 140, 141, 142 and 143. The results can be sorted by lithology and by gold grade. While there is a range of specific gravities for the various lithologies sampled, lithology has not been modeled so it is not of any use in assigning density to estimated blocks. There does, however, appear to be a reasonable correlation between gold grade and specific gravity as shown in Table 14.29 with higher densities associated with higher gold grades. As a result, the specific gravity assigned to each block in the model is based on the estimated gold grade as tabulated below in Table 14.30.

Table 14.29 Specific Gravities Sorted By Lithology - Mayflower

Lithology	Number	Min. SG	Max. SG	Average SG
Cz	1			2.58
Fault	6	1.79	2.45	2.20
Tcm	1			2.26
Tdfh	214	2.02	2.63	2.28
Tdfm	4	2.35	2.40	2.38
eTpbx	2			2.38
Trt2	43	1.59	2.56	2.19
Total	**271**	**1.59**	**2.63**	**2.27**

Table 14.30 Specific Gravities Sorted By Gold Grade - Mayflower

Gold Grade (g/t)	Average Au (g/t)	Number	Average SG
> 0.0 < 0.1	0.029	135	2.22
≥ 0.1 < 0.5	0.243	83	2.30
≥ 0.5 < 1.0	0.688	36	2.33
≥ 1.0	2.350	17	2.36
Total		**271**	**2.27**

14.3.6 BLOCK MODEL

A block model with blocks 10 x 10 x 5 meters in dimension was superimposed over the mineralization solid. The model was rotated 45° to better fit the solid. The block model origin was as follows:

Lower left corner of model

518838.0 E	Column width – 10 m	30 columns
4093900.0 N	Row width – 10 m	81 rows

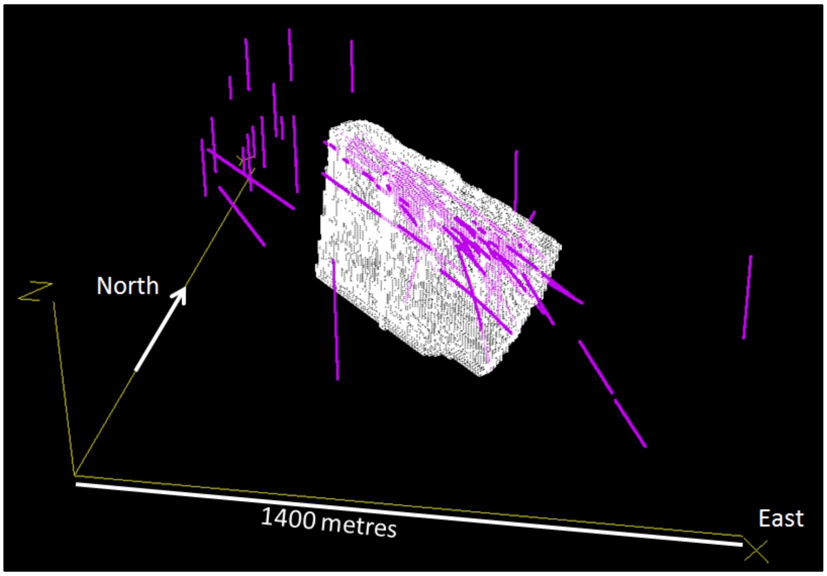
Top of Model

1395 Elevation	Level width – 5 m	90 levels

Rotation 45° counter clockwise

Within each block, the percentage below surface topography and within the mineralization solid was recorded (Figure 14.28).

Figure 14.28 Isometric View Looking NNW Showing Block Model in White and Drillholes in Magenta-Mayflower.



14.3.7 GRADE INTERPOLATION

Grades for gold and silver were interpolated into all blocks, with some percentage within the mineralization solid, by Ordinary Kriging. Kriging was completed in a series of passes with the dimensions and orientation of the search ellipse for each pass tied to the semivariogram. The first pass used dimensions equal to ¼ of the semivariogram range in the three principal directions. If a minimum of 4 composites were found within this ellipse centered on a block, the block was estimated. For blocks not estimated, the search ellipse was expanded to ½ the semivariogram range. Again, a minimum of 4 composites within the search ellipse were required to estimate any given block. A third pass using the full semivariogram range was completed for blocks not estimated during the first two passes. Finally, a fourth pass using roughly twice the range was completed. This pass was modified to use the maximum range for both gold and silver to ensure all blocks were estimated for both variables. In all cases, if more than 12 composites were located in any search, the closest 12 were used.

In all cases, the maximum number of composites allowed, from a single drillhole, was set to three to ensure all blocks were estimated by a minimum of two drillholes. The search parameters for the Kriging procedure are tabulated below (Table 14.31). Volumes for each block estimated were determined by multiplying the block volume by the percentage of block below topography and within the solid. The tonnage was determined by multiplying the block volume by the block specific gravity.

In a similar manner, the mineralization indicator and the vein indicator was kriged into all estimated blocks.

Table 14.31 Summary of Kriging Search Parameters - Mayflower

Variable	Pass	Number Estimated	Az/Dip	Dist. (m)	Az/Dip	Dist. (m)	Az/Dip	Dist. (m)
Au	1	12,486	315/0	40.0	225/-70	25.0	45/-20	11.25
	2	13,510	315/0	80.0	225/-70	50.0	45/-20	22.5
	3	7,417	315/0	160.0	225/-70	100.0	45/-20	45.0
	4	6,412	315/0	320.0	225/-70	200.0	45/-20	90.0
Ag	1	3,089	315/0	15.0	225/-70	25.0	45/-20	10.0
	2	14,774	315/0	30.0	225/-70	50.0	45/-20	20.0
	3	12,562	315/0	60.0	225/-70	100.0	45/-20	40.0
	4	9,400	315/0	320.0	225/-70	200.0	45/-20	90.0

14.4 MINERAL RESOURCE CLASSIFICATION

Mineral Resources are characterized according to CIM Definitions Standards which are incorporated by reference in NI 43-101. Mineralization at NBP has been categorized as Inferred Mineral Resources, Indicated Resources and Measured Resources, based upon increasing levels of confidence in various physical characteristics of the Project. Drillhole spacing, search neighborhoods, metallurgical characterization, geological confidence, kriging variance and many other factors are used to give the author confidence in the Mineral Resource estimate for any given project. Classification parameters are unchanged for Jolly Jane and Mayflower. MMC has chosen to use kriging variance versus distance as the approach to determining the Mineral Resource classification at Sierra Blanca.

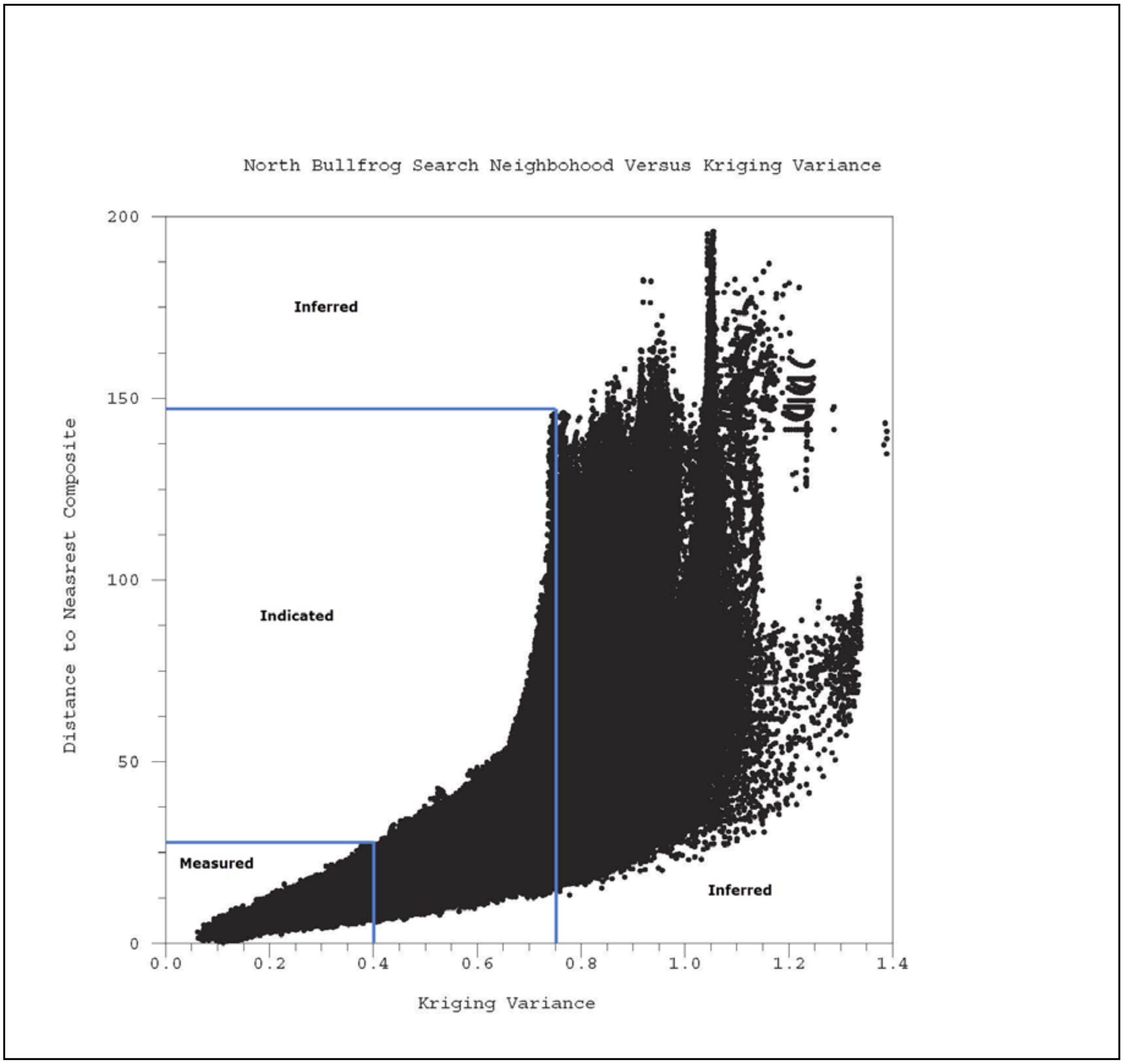
14.4.1 SIERRA BLANCA

Disseminated mineralization at Sierra Blanca has been categorized according to kriging variance. Kriging is an interpolation technique that minimizes the squared error between the estimated value and the unknown true value. The resulting error variance, stored as kriging variance in the block model, is dependent only on the estimation location, the location of samples used in the estimate and the variogram. Kriging variance thresholds were used to differentiate between measured, indicated and inferred categories. The advantage of using kriging variance is the consideration of the spatial structure of the gold and silver grades and redundancy between the samples.

Drillhole NB-16-309 was flagged and determined to have the highest kriging variance in the deposit at 0.406. The highest kriging variance estimated in the deposit is 1.39. A graph of kriging variance versus distance was evaluated. A variance of 0.406 correlated well with a distance of approximately 25 metres. No extraneous holes or islands of mineralization have been interpreted at this threshold. The kriging variance of 0.406 was chosen to be the boundary between measured and indicated classification. (Figure 14.29)

Indicated Mineral Resources has been interpreted for the kriging variance versus distance graph at a threshold of 0.768. This correlates with the near vertical departure of the lower end of the point cloud with the majority of the mineralization being within 50 metres of a drillhole. There are a few model blocks between 50 and 105 metres that fall into the indicated category but the geological confidence is very high for these few blocks. Globally, any model block greater than 0.768 is neither supported by minimal samples nor lays greater than 50 metres from a drillhole. (Figure 14.29)

Figure 14.29 Kriging Variance vs. Distance, Sierra Blanca Classification-metres



14.4.2 JOLLY JANE

For the Jolly Jane Deposit, blocks estimated in Pass 1 or Pass 2 using up to one half the variogram ranges for the search ellipse, were classified as Indicated. All other blocks were classified as Inferred. All blocks at Jolly Jane are oxidized.

14.4.3 MAYFLOWER

For the Mayflower Deposit, Blocks estimated during pass 1 and 2 using search ellipses with dimensions up to ½ the variogram range were classified as Indicated. All other blocks were classified as Inferred. All blocks at Mayflower are oxidized.

14.5 MINERAL RESOURCES

14.5.1 PIT CONSTRAINING PARAMETERS

Mineral Resources must demonstrate reasonable prospects for eventual economic extraction in accordance with the CIM Definition Standards. Pit constraining limits were determined using the Lerchs-Grossman© economic algorithm which constructs lists of related blocks that should or should not be mined. The final list defines a surface pit shell that has the highest possible total value, while honoring the required surface mine slope and economic parameters.

Mineral Resources are not Mineral Reserves and do not demonstrate economic viability. There is no certainty that all or any part of the Mineral Resource will be converted to mineral reserves. Quantity and grade are estimates and are rounded to reflect the fact that the resource estimate is an approximation.

Economic parameters used in the analysis are listed in Table 14.32 and are based on the following three processes:

- Gravity – CIL mill processing of YellowJacket mineralization
- Heap Leach processing of disseminated mineralization
- Ambient Alkaline Oxidation processing of sulphide mineralization

Table 14.32 Pit Constraining Parameters Used For the North Bullfrog Resource Update 2017

Parameter	Unit	Mayflower	Jolly Jane	Sierra Blanca	YellowJacket Vein/Vein Stockwork	YellowJacket Sulphide
Mining Cost	US$/total tonne	1.64	1.42	1.54	1.54	1.54
Au Cut-Off	g/tonne	0.10	0.10	0.10	0.35	0.71
Processing Cost	US$/ process tonne	1.72	1.72	1.15	11.84	25.6
Au Recovery	%	70	72	73.8	86.6	91
Ag Recovery	%	8	8	6.3	74.3	57.2
Administrative Cost	US$/process tonne	0.5	0.5	0.45	0.45	0.45
Refining & Sales	US$/tonne	0.07	0.04	0.02	0.11	0.11
Au Selling Price	US$/oz	1,250	1,250	1,250	1,250	1,250
Slope Angle	Degrees	50	50	50	50	50

The parameters listed in Table 14.32 define a realistic basis to estimate the Mineral Resources for the Project and are representative of similar mining operations throughout Nevada. The Mineral Resource has been limited to mineralized material that occurs within the pit shells and which could be scheduled to be processed based on a defined cut-off grade. All other material within the defined pit shells was characterized as non-mineralized material.

14.5.2 ESTIMATED MINERAL RESOURCES

The estimate considers three potential processing methods; 1) mill processing of oxide and gravity-separable gold and silver; 2) heap leach processing of oxide gold and silver; and 3) mill processing of sulphide gold and silver. Mineralization within the YellowJacket vein, including the surrounding stockwork veining, associated with the YellowJacket structural corridor, is situated within a well-defined zone that holds together at higher cutoff grades within resource constraining pit. Since this part of the mineral deposit contains the highest grades, it is reasonable to expect this part of the Sierra Blanca deposit would be economically extracted prior to economically extracting lower grade, heap-leachable mineralization. This portion of the mineral deposit is referred to as Phase I. The limits of the constraining pit were determined by assuming only mill mineralization and higher grade disseminated mineralization would be processed. Mineralization is reported at higher cutoff grades for this portion of the deposit. Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.

Phase I NBP Mineral Resources are estimated according to the following cutoff grades and are reported in Table 14.33:

- Phase I Mill Resources (Oxide, Vein and Stockwork Mineralization) - >= 0.35 g/t Au
- Phase I Mill Resources (Sulphide Disseminated Mineralization) - >= 0.71 g/t Au
- Phase I Heap Leach Resources (Oxide Vein Mineralization) – (>= 0.15 and <0.35) g/t Au
- Phase I Heap Leach Resources (Oxide Disseminated Mineralization) - >= 0.15 g/t Au

Silver is assumed to be recovered as a byproduct of processing and is reported from model blocks that meet the gold cutoff grade criteria.

Mineral Resources which meet the reasonable prospects of eventual economic extraction, based upon the costs and parameters in Table 14.32, are reported at the breakeven cutoff grades for the mineralization and processing methods described. There is no assurance that any or all of the Mineral Resources will be converted to mineral reserves.

Phase II NBP Mineral Resources are estimated at the following cutoff grades:

- Phase II Mill Resources (Oxide, Vein and Stockwork Mineralization) - >= 0.35 g/t Au
- Phase II Mill Resources (Sulphide Disseminated Mineralization) - >= 0.71 g/t Au
- Phase II Heap Leach Resources (Oxide Vein Mineralization) – (>= 0.10 and <0.35) g/t Au
- Phase II Heap Leach Resources (Oxide Disseminated Mineralization) - >= 0.10 g/t Au

Phase II Mineral Resources are pit constrained and are reported exclusive of Phase I Mineral Resources in Table 14.33.

Table 14.33 North Bullfrog Project Pit Constrained Mineral Resource Estimate.

	Classification	Tonnes (k)	Au (g/t)	Ag (g/t)	Contained Au (000's)	Contained Ag (000's)
Phase I	Measured	10,415	1.08	7.59	362	2,540
	Indicated	24,557	0.69	3.70	542	5,459
	Inferred	5,908	0.31	0.74	59	140
Phase II	Measured	10,129	0.26	1.04	84	338
	Indicated	113,009	0.21	0.61	771	2,227
	Inferred	58,887	0.19	0.48	367	902
Total Mineral Resources	Measured	20,544	0.68	4.36	446	2,878
	Indicated	137,566	0.30	1.16	1,314	5,146
	Inferred	64,785	0.20	0.50	426	1,042

14.6 MINERALIZATION INVENTORY BY DEPOSIT

Resource tables for the individual NBP mineralization areas are presented in the following sections and are accumulated according by separate classification.

14.7 SIERRA BLANCA MINERAL RESOURCES

The results presented Table 14.34 and 14.35, show the resources separated by process method for Measured, Indicated and Inferred resources for Sierra Blanca for Phase I and II, respectively. Resources are pit constrained and reported at cutoff grades based on processing methods.

Table 14.34 Sierra Blanca Mineral Resources Phase I

	Milling 0.35 g/t Au cut off			Heap Leach 0.15 g/t Au cutoff			Sulphides 0.71 g/t cutoff				
Classification	Tonnes (Kt)	Au g/t	Ag g/t	Tonnes (Kt)	Au g/t	Ag g/t	Tonnes (Kt)	Au g/t	Ag g/t	Au Ounces (x1,000)	Ag Ounces (x1,000)
Measured	4,465	1.87	13.97	5,194	0.37	2.42	756	1.32	5.35	362	2,540
Indicated	4,445	1.80	13.40	13,736	0.34	1.63	1,137	1.56	5.83	464	2,850
Inferred	34	1.83	19.21	5,831	0.30	0.59	15	2.07	16.59	59	140

Table 14.35 Sierra Blanca Mineral Resources Phase II

	Milling 0.35 g/t Au cut off			Heap Leach 0.15 g/t Au cutoff			Sulphides 0.71 g/t cutoff				
Classification	Tonnes (Kt)	Au g/t	Ag g/t	Tonnes (Kt)	Au g/t	Ag g/t	Tonnes (Kt)	Au g/t	Ag g/t	Au Ounces (x1,000)	Ag Ounces (x1,000)
Measured	397	0.78	4.07	9,331	0.19	0.85	401	1.24	2.48	84	338
Indicated	1,331	0.89	4.16	91,525	0.18	0.58	1,402	1.18	1.82	625	1,973
Inferred	6	0	5.18	50,939	0.19	0.46	61	1.53	2.04	314	760

Total tonnages are rounded to the nearest thousand tonnes so small errors in the estimated grades may appear incorrect.

14.7.1 JOLLY JANE MINERAL RESOURCES

The results presented in Table 14.36, show the Indicated and Inferred mineralization inventory for Jolly Jane. Resources are separated by classification. All material is assumed to be processed by heap leaching methods. Resources are pit constrained and reported at a gold cutoff grade of 0.10 g/t Au.

Table 14.36 Jolly Jane Mineral Resources-Phase II

Classification	Tonnes (kt)	Au g/t	Ag g/t	Contained Au (x1,000)	Contained Ag (x1,000)
Indicated	18,571	0.24	0.42	146	254
Inferred	7,871	0.21	0.56	53	142

14.7.2 MAYFLOWER MINERAL RESOURCES

The results presented in Table 14.37, show the Phase I Indicated and Inferred mineralization inventory for Mayflower. Resources are separated by classification. All material is assumed to be processed by heap leaching methods. Resources are pit constrained and reported at a gold cut-off grade of 0.10 g/t Au.

Table 14.37 Mayflower Resources Phase 1

Classification	Tonnes (kt)	Au g/t	Ag g/t	Contained Au (x1,000)	Contained Ag (x1,000)
Indicated	5,239	0.46	0.41	78	69
Inferred	28	0.21	0.24	0	0

Total tonnages are rounded to the nearest thousand tonnes and small errors in the estimated grades may appear incorrect.

14.8 VISUAL VALIDATION

The portions of the mineralization block models bounded by the Whittle™ defined open pit mining shells are illustrated in Figures 14.30 through 14.34. Figures 14.30 and 14.31 contain a long section through the YellowJacket corridor and cross-section through Sierra Blanca and YellowJacket, respectively. Figures 14.32 and 14.33 are cross-sections and long sections, respectively, through Mayflower. Figure 14.34 shows a cross section through Jolly Jane.

Figure 14.30 Long Section through Sierra Blanca/YellowJacket Mineral Resource Model-metres

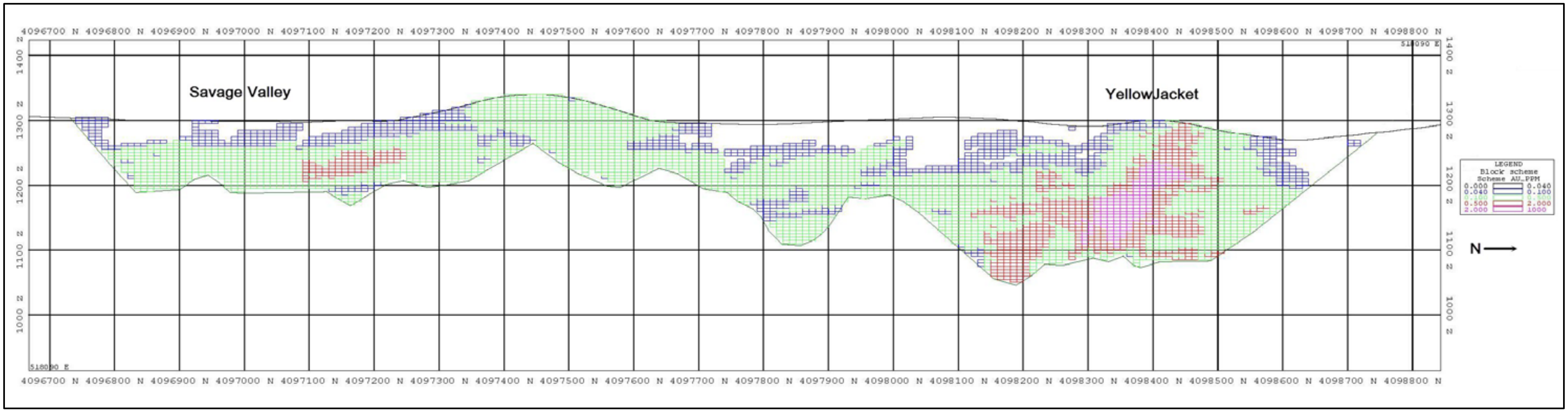


Figure 14.31 Cross Section across Sierra Blanca/YellowJacket Looking North-metres.

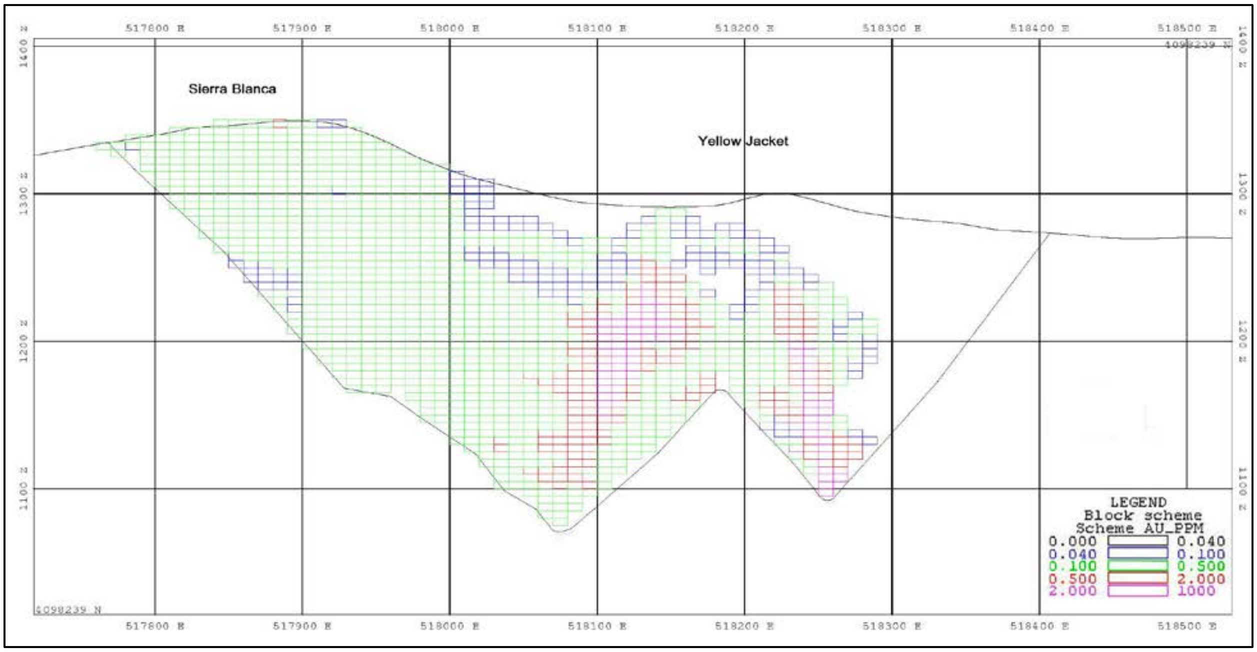


Figure 14.32 Cross Section through Mayflower Deposit-metres.

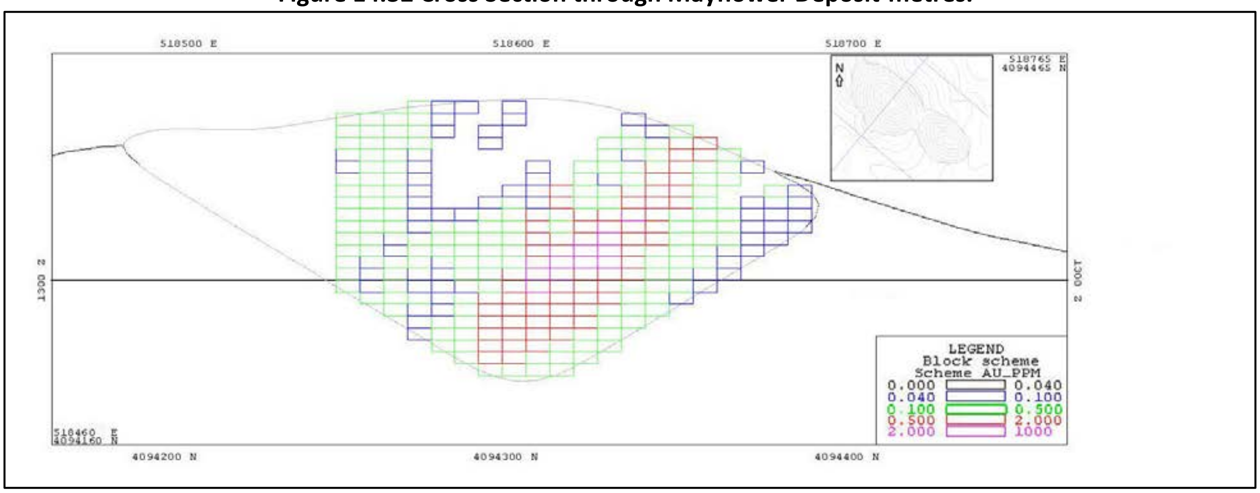


Figure 14.33 Long Section through Mayflower-metres.

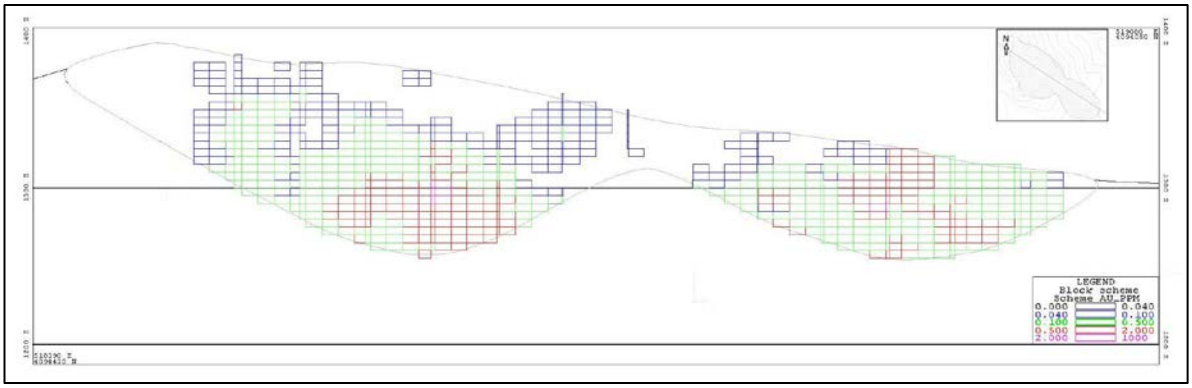
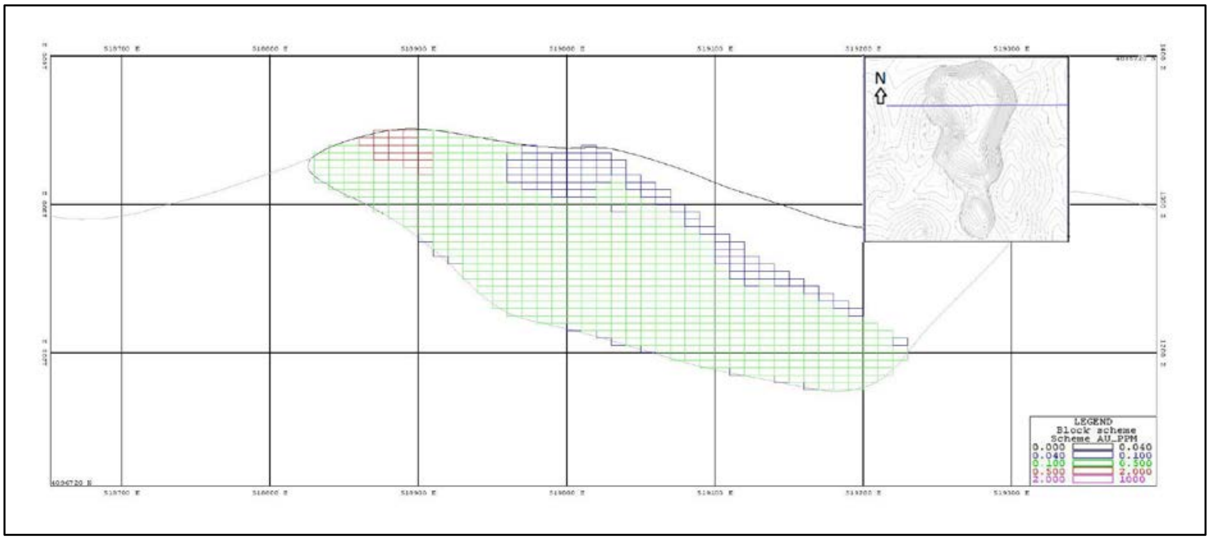


Figure 14.34 Cross Section through Jolly Jane-metres.



15 MINERAL RESERVE ESTIMATES

No mineral reserve has been estimated for NBP.

16 MINING METHODS

This Technical Report assumes conventional surface mining methods using surface drill and blast techniques with off highway haul trucks and front end loaders.

This PEA is preliminary in nature, and is based on technical and economic assumptions which will be evaluated in more advanced studies. The PEA is based on the North Bullfrog Mineral Resource model which includes Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the PEA will be realized. The basis for the PEA is to demonstrate the economic viability of the NBP. The PEA results are only intended as an initial, first-pass review of the potential Project economics based on preliminary information. There are no advanced studies on the Project that would be impacted by the PEA.

16.1 MINE CONFIGURATION

Mineralized material will be delivered to one of two different processes; heap leaching or milling, dependent on the material type and gold grade. Structurally controlled mineralization in YellowJacket above 0.37 g/t would be delivered to a mill with a crushing plant, where it would be crushed to meet mill feed requirements. This would be followed by grinding, gravity concentration and CIL leaching. Material between the grades of 0.10 g/t and 0.37 at YellowJacket and above 0.10 g/t from the disseminated mineralization in the other deposits would be delivered to a run-of-mine heap leaching facility by trucks to a conveyor stacker system on the heap leach pad. Cyanide solution would be used to dissolve the gold and then be processed through standard carbon-in-column leach plants. Loaded carbon will be refined into gold doré produced in an on-site refinery. Overburden material would be trucked to overburden storage facilities.

A single leach pad and process facility location is proposed to recover metal from mineralized material. The facility, with average daily leach pad placement of 41,400 tonnes per day, would be located near the northwest corner of the Project site. The Project would produce from the Company's Federal land and private land resources. Each of the Project resource areas, Mayflower, Sierra Blanca, Jolly Jane and YellowJacket, would require a separate surface mine excavation. Material would be mined from each mine excavation at different times in the schedule.

In the conceptual mine plan, 10 metre high benches would be drilled and blasted, then loaded into 136 tonne haul trucks using 13 cubic metre front end loaders. Haul trucks would deliver the mineralized material to either the mill crushing system or a conveyor/stacker to place the blasted material on a leach pad. The mine plan calls for an average total mining rate of 25.2 million ("M") tonnes per year combined overburden and mineralized material. Of that, an average of 15 M tonnes per year would be mineralized material placed on a heap leach pad at an average rate of 41,400 tonnes per day. Another 1.1 M tonnes per year would be delivered to the mill at an average of 3,000 tonnes per day. The average overburden to mineralized material (strip ratio) would be 0.59. Based on this mining rate, the Project would have an active life of 10 years, with minor gold production for the additional 3 year rinse down period on the leach pad.

16.2 MINE OPTIMIZATION

Economic mine limits were determined using Gemcom's Whittle® 4.5 software which employs the Lerch-Grossman© economic algorithm. Whittle works on a block model of the mineralized material, and progressively constructs lists of related blocks that should or should not be mined. The final list defines a surface mine outline that has the highest possible total value, while honoring the required surface mine slope parameters.

The mine optimization was performed using the resource block models discussed in Section 14. The models were reviewed by the Stephen Batman and determined to be suitable for use in the mine optimization studies. The individual block models for each mineral deposit were each imported into Whittle. Model block sizes were re-blocked to 20 m x 20 m x 10 m and defined a minimum mining selection unit of 10 m. The following Table 16.1 lists the parameters used in Whittle to derive the ultimate pit limits.

Table 16.1 Whittle Parameters used for the Production Plan in the 2015/2016 PEA

Parameter	Unit	Mayflower	Jolly Jane*	Sierra Blanca	YellowJacket
Mining Cost	US$/total tonne	1.64	1.42	1.62	1.62
Au Cut-Off	g/tonne	0.2	0.15	0.15	0.56
Processing Cost	US$/ process tonne	1.72	1.72	1.27	11.57
Au Recovery	%	70	72	74	86.8
Ag Recovery	%	8	8	0	71.4
Administrative Cost	US$/process tonne	0.5	0.5	0.4	0.4
Refining & Sales	US$/tonne	0.07	0.04	0.02	0.11
Au Selling Price	US$/oz	1,200	1,200	1,200	1,200
Slope Angle	Degrees	50	50	50	50

Only oxide mineralized material is considered for the Heap Leach circuit. Mineralization above and below the oxidation surface in the structurally controlled YellowJacket zone, where the gold occurs as free gold and electrum, was scheduled for treatment in the milling circuit. A series of nested excavation shells were created between $400 and $1,500 per gold ounce and used to guide phases within the surface mine plan. For the purposes of scheduling YellowJacket and Sierra Blanca were cut into multiple production phases based on Whittle pit shells.

16.3 MINE PRODUCTION SCHEDULE

Mining production would begin at an initial rate of 21,000 tonnes of mineralized material per day, increasing to a peak rate of 45,600 tonnes of mineralized material per day by the second production year. Total gold mined would begin at approximately 94,000 contained troy ounces for the first year and average at approximately 190,000 contained troy ounces per year for the first six years of production. Three key factors influenced the production schedule. First, the truck fleet requirement needed to be consistent throughout the life of the mine given that production would be limited to ten and a half years. Second, mill production would be limited at 3,000 tonnes per day. Third, and finally, the schedule would provide an approximately level ounce production rate through the life of the mine.

YellowJacket would be mined as the start-up pit to provide high grade feed for the mill at commissioning and would continue for 6 years. Sierra Blanca would be mined throughout the life of the operation and would be split into three phases; a starter phase, a mid-grade phase and a low-grade phase. Mayflower would be mined in the midpoint of the mine life, followed by Jolly Jane for the remainder of production. The total Project would contain 163.3 million mineralized tonnes at an average grade of 0.292 g/t gold and a byproduct silver grade of 1.87 g/t. The life of mine strip ratio would be 0.59:1, which includes all heap leach and mill material and pit slopes were assumed to be 50^{o}.

The LOM production schedule is displayed in Table 16.2 and are subdivided into the classifications of Measured and Indicated and Inferred Resources.

Table 16.2 Production Schedule by Resource Classification for Mill, Heap Leach and Waste Storage Facilities

	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Overburden											
Tonnes (mt)	6,766,394	12,452,078	15,688,415	12,850,645	10,083,872	11,247,745	12,541,876	5,068,513	4,943,813	2,579,536	1,577,115
Measured Mill											
Tonnes (mt)	-	496,474	799,655	821,613	530,790	581,220	521,999	-	-	-	-
Gold Grade (gpt)	-	1.50	3.26	3.92	3.38	1.20	1.34	-	-	-	-
Gold Ounces	-	23,869	83,885	103,509	57,679	22,458	22,433	-	-	-	-
Silver Grade (gpt)	-	14.07	32.45	23.63	16.66	0.65	1.11	-	-	-	-
Silver Ounces	-	224,583	834,157	624,197	284,346	12,203	18,661	-	-	-	-
Indicated Mill											
Tonnes (mt)	-	381,251	144,030	144,624	215,009	364,223	424,920	-	-	-	-
Grade (gpt)	-	1.65	2.47	2.72	1.58	1.04	1.37	-	-	-	-
Gold Ounces	-	20,223	11,458	12,660	10,921	12,203	18,661	-	-	-	-
Silver Grade (gpt)	-	14.95	21.12	18.79	3.85	1.04	1.37	-	-	-	-
Silver Ounces	-	183,292	97,801	87,389	26,623	12,203	18,661	-	-	-	-
M&I Mill Total											
Tonnes (mt)	-	877,725	943,685	966,237	745,799	945,443	946,919	-	-	-	-
Grade (gpt)	-	1.56	3.14	3.74	2.86	1.14	1.35	-	-	-	-
Gold Ounces	-	44,093	95,343	116,169	68,599	34,661	41,094	-	-	-	-
Silver Grade (gpt)	-	14.45	30.72	22.91	12.97	0.80	1.23	-	-	-	-
Silver Ounces	-	407,875	931,958	711,586	310,969	24,406	37,322	-	-	-	-
Measured Heap Leach											
Tonnes (mt)	-	118,139	30,157	-	-	-	-	-	-	-	-
Grade (gpt)	-	0.26	0.31	-	-	-	-	-	-	-	-
Gold Ounces	-	981	299	-	-	-	-	-	-	-	-
Silver Grade (gpt)	-	0.14	0.76	-	-	-	-	-	-	-	-
Silver Ounces	-	546	733	-	-	-	-	-	-	-	-
Indicated Heap Leach											
Tonnes (mt)	-	58,399	3,132	10,061	28,841	677,634	2,371,720	2,036,854	1,763,035	6,451,353	7,067,939
Grade (gpt)	-	0.24	0.29	0.25	0.28	0.43	0.43	0.31	0.39	0.30	0.25
Gold Ounces	-	446	30	81	264	9,380	32,829	20,336	22,046	61,796	56,972
Silver Grade (gpt)	-	2.03	2.68	1.39	1.39	0.38	0.38	0.42	0.39	0.42	0.44
Silver Ounces	-	3,804	270	449	1,284	8,308	29,077	27,536	22,384	88,067	99,985
M&I Total Heap Leach											
Tonnes (mt)	-	176,538	33,289	10,061	28,841	677,634	2,371,720	2,036,854	1,763,035	6,451,353	7,067,939
Grade (gpt)	-	0.25	0.31	0.25	0.28	0.43	0.43	0.31	0.39	0.30	0.25
Gold Ounces	-	1,427	328	81	264	9,380	32,829	20,336	22,046	61,796	56,972
Silver Grade (gpt)	-	0.77	0.94	1.39	1.39	0.38	0.38	0.42	0.39	0.42	0.44
Silver Ounces	-	4,351	1,003	449	1,284	8,308	29,077	27,536	22,384	88,067	99,985
Inferred Mill Material											
Tonnes (mt)	-	217,891	151,504	121,432	343,372	146,682	106,622	-	-	-	-
Grade (gpt)	-	0.91	0.91	1.11	1.06	0.96	0.64	-	-	-	-
Gold Ounces	-	6,389	4,446	4,332	11,726	4,536	2,189	-	-	-	-
Silver Grade (gpt)	-	9.48	6.46	5.65	15.23	56.42	62.43	-	-	-	-
Silver Ounces	-	66,419	31,457	22,067	168,145	266,052	213,996	-	-	-	-
Inferred Heap Leach Mat'l											
Tonnes (mt)	1,172,881	18,944,908	15,897,521	17,021,004	17,882,214	14,446,486	11,909,328	13,973,673	13,794,698	6,490,216	4,691,313
Grade (gpt)	0.246	0.23	0.32	0.18	0.19	0.19	0.16	0.18	0.17	0.18	0.18
Gold Ounces	9,259	140,974	164,910	98,923	110,075	86,678	61,659	79,080	74,583	37,981	27,152
Silver Grade (gpt)	1.04	0.82	0.86	0.71	0.78	0.54	0.64	0.70	0.67	0.60	0.53
Silver Ounces	39,163	498,679	437,977	390,864	445,661	251,979	246,485	314,163	297,556	125,324	79,582

Note: Some difference may occur due to rounding.

16.4 MINE PRODUCTION

Mining production would come from open pit mining methods. As this is an assessment that is preliminary in nature, unsmoothed Whittle pits were used as the basis of the open pit production quantities. Volumes were extracted from the Vulcan® block models and scheduled out with Microsoft Excel spreadsheets. The Heap Leach mineralization in the production plan was selected on a whole block basis and was therefore assumed to include dilution. Mill mineralization in the production plan used perfect selection from the resource model and was then diluted with an additional 10% of material at an assumed grade of 0.24 g/t gold. That grade was consistent with sub-grade material in the YellowJacket structural mineralization. In all areas of the mine the swell factors used standard mining swell factors of 35% for all bucket and truck body calculations.

The Whittle process determines the pit volume. Destination of the material within the pit shell was determined by applying cut-off grades based on processing costs. The cut-off grades used for selection of the heap leach or mill were 0.1 g/t and 0.37 g/t, respectively. Mineralization below 0.1 g/t were scheduled for the waste storage facility.

16.4.1 YELLOWJACKET / SIERRA BLANCA PITS

YellowJacket contains both heap leach mineralization and mill grade mineralization. The pit would be in close proximity to the Sierra Blanca such that there would be a sharing of waste between the two pits. No detailed toe/crest mine designs or ramp configurations were created for the ultimate pit. The YellowJacket pit contains approximately 25% of the scheduled metal resource. The pit slope was assumed to be 50^{o} and the pit bottom would be beneath the water table.

For Sierra Blanca, no detailed toe/crest mine designs or ramp configurations were created for the ultimate pit. All resources used for production scheduling were based on the whole-block pits produced directly out of Gemcom's Whittle® 4.5 software. The Sierra Blanca pit would be 1,600 metres long, 830 metres wide and 190 metres deep. Sierra Blanca's ultimate pit depth was limited to the oxidation boundary and the pit slope was assumed to be 50^{o}.

16.4.2 MAYFLOWER PIT

The Mayflower pit would be approximately 760 metres long, 240 metres wide and 135 metres deep. For Mayflower, no detailed toe/crest mine designs or ramp configurations were created for the ultimate pit at the time of this Technical Report. All resources used for production scheduling were based on the whole-block pits produced directly out of Gemcom's Whittle® 4.5 software.

For Whittle, an ultimate pit slope of 50^{o} was used

16.4.3 JOLLY JANE

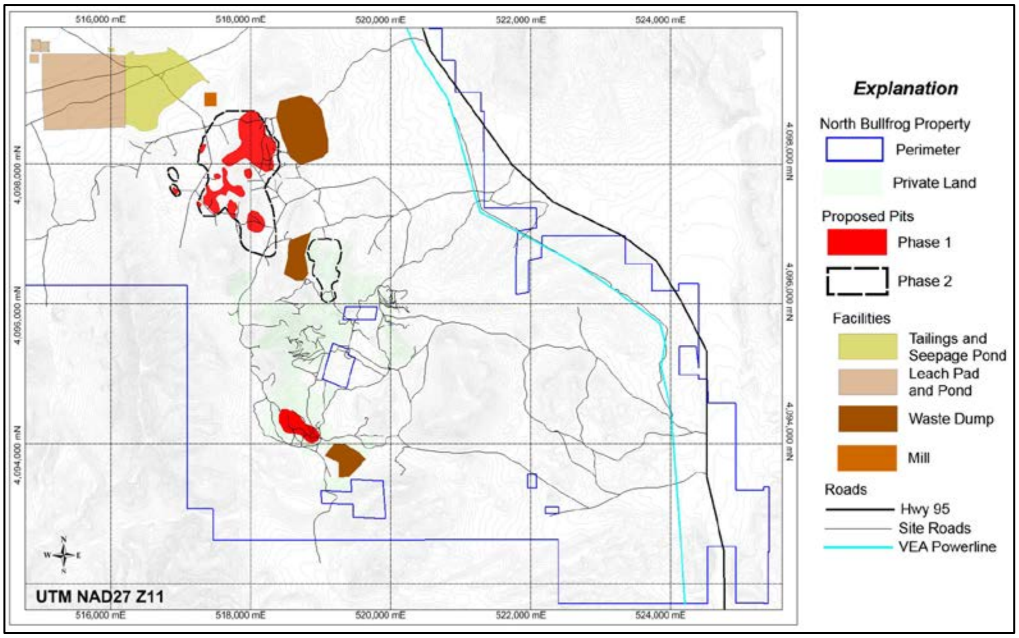
For Jolly Jane, no detailed toe/crest mine designs or ramp configurations were created for the ultimate pit at the time of this Technical Report. All resources used for production scheduling were based on the whole-block pits produced directly out of Gemcom's Whittle® 4.5 software

For Whittle, an ultimate pit slope of 50^{o} was used.

16.5 GENERAL SITE LAYOUT

A conceptual site layout has been developed to provide a basis to estimate haul distances for equipment specification and cost estimation. The layout is presented as Figure 16.1.

Figure 16.1 Conceptual Configuration of the North Bullfrog Surface Mines and Associated Overburden Storage, Mill, Tailings and Leach Pad Facilities



16.6 MINE FLEET AND CAPITAL

Preliminary mining fleet definitions were based on material haul routes and cycle times. Maptek's Vulcan® 3D mine planning software was used to digitize haulage routes from each surface mine to either the projected crusher location, feeder conveyor or the respective pit overburden storage facility. These routes, including distances and grade information, were exported to Microsoft Excel to calculate haul times. Different scenarios were evaluated based on different equipment options. Round-trip cycle times were calculated for 136 tonne haul trucks. These cycle times were used with the mine production schedule to determine fleet requirements.

The mining fleet is expected to contain four 13 cubic metre wheel loaders and twelve 136 tonne capacity haul trucks, three 306 kW bull dozers, four rotary drills with 24.6 kilogram per centimeter squared compressors to handle the harder rock types, three 193 kW road graders along with associated support and maintenance equipment. A truck shop 40 metres by 100 metres has been estimated and would include mine and maintenance offices above the warehouse first and second floors.

For the annual schedule, YellowJacket and Sierra Blanca deposits were broken into benches. Mayflower and Jolly Jane were summarized on one central bench and scheduled based on total pit resources. These benches were then scheduled until the annual goal was produced. For each bench, a round trip cycle time was calculated. Based on the calculated number of operating hours per truck using a utilization of 85% and availability of 85% and a target load of 127 tonnes, it was then possible to determine the number of trucks required per scheduled period. The equipment requirements were assumed to be truck constrained.

Table 16.3 lists the projected mining mobile equipment requirements for the NBP (Mining Cost Services, Costmine (2015)).

Table 16.3 Mining Capital Equipment Requirements

Equipment	Quantity	Unit Cost (000s)	Total Cost (000s)
Front End Loader, 13 cu m bucket	4	$1,979	$7,916
Haul Truck, 136 Tonne	12	$2,657	$31,884
Rotary Blast hole Drill	4	$1,043	$4,172
Dozer	3	$922	$2,768
Grader	3	$491	$1,473
Water Truck	1	$258	$258
Bulk Explosive Truck	1	$257	$257
Service Truck	3	$86	$258
Tire Truck	1	$170	$170

Equipment	Quantity	Unit Cost (000s)	Total Cost (000s)
Fuel Truck	2	$85	$170
Dispatch System	1	$790	$790
Light Vehicles, Pickups	12	$47	$564
Pumps and Light Plants	5	$16	$88
Truck Shop and Auxiliary Equipment	10	Varies	$7,564

As can be seen in the Table 16.3 above, the mine production fleet is designed to have up to 10 trucks operating under three wheel loaders at any time. This leaves one wheel loader and two trucks as spares to allow maintenance and servicing as needed on an ongoing basis. The availability of 85% and utilization of 85% is normally sufficient to allow normal maintenance on all of the mine equipment as required to meet manufacturer specifications. Based on a 250 hour preventative maintenance schedule, means trucks and loaders would be maintained on day shift only and other mining equipment would be maintained on night shift. The 35 pieces of primary mining equipment would need to be maintained to meet the mining schedule as shown in Table 16.2.

Minimal replacement capital was assumed due to the short Project life. The fleet was projected to meet the mine schedule without any major equipment replacement. All of the operating and major and minor servicing expenses were included in the hourly operating cost.

16.7 DRILL AND BLAST METHODS

The drill pattern spacing is based on a pattern spacing of six metres by six metres for a ten metre bench height. The holes would be drilled 0.75 metres deeper than bench height on average to manage fall back and sub-drill needs. The mill feed and waste would be drilled and shot using an average pattern and powder factor, of six metres by six metres with a 0.2 kilogram per tonne powder factor, respectively.

The heap leach material to be stacked on the pad at North Bullfrog would be blasted using an ultra-high intensity blasting method that has been demonstrated in Australian surface mining as reported by Brent et al, 2014, to increase overall leaching recovery of metals. The basic description of the method would be to increase the powder factor by a factor of 1.9 and 3.8 times more than normal, for the top and bottom sections on any pattern with heap leach material. This method would be used to develop a finer particle size gradation (p80-76mm) and would induce micro fractures in the coarser particles to allow higher heap recoveries than a normal ROM material might achieve. The average powder factor using this high intensity blasting technique would be expected to increase to 0.38 kilograms per tonne of heap leach material. Only the heap leach material would utilize this blasting method. The process would normally load all holes but delay the timing of the second blast with electronic controls. First, the top hole of the bench would be blasted and the particles allowed to settle from the blasting energy. Then, the bottom of each hole and intermediate holes would be blasted on a second initiation of the shot pattern. This would allow a very high powder factor to provide finer rock particle sizes and develop micro-fractures to allow the cyanide on the heap leaching facility to infiltrate into the core of each coarse rock fragment. The plan would be to develop a square pattern that allows a center hole to be drilled and very heavily loaded with ANFO to provide ultra-high intensity blasting in the heap leach mineralized zones. This would require about one more hole for each four holes in the leach mineralization zones of the pits to be drilled and double initiation of shots. All heap zones holes would be double primed and then shot a second time in a short sequence to allow quick turnaround of these heap leach patterns.

16.8 MANPOWER

The NBP mining group would be expected to operate on a 24-hour day and 365 days per year. The mining and maintenance operations plus support would be expected to be spread over a four crew rotation planned as 12 hour day and night shifts with rotation between days and nights as defined by the operations group. The engineering and geology groups would work a four day schedule and would have sufficient coverage over the weekends to limit any delays caused by manning schedules. The technical staff schedule would be based on rotating each month. This would provide overlap between the two survey, engineering and geology groups during the week when the workload would be heaviest. The projected staff requirements are shown in the Table 16.4.

Table 16.4 Mining Manpower Requirements

Class	Function	No. of Mining Personnel

Salaried	Mine Manager	1
	Shift Foreman	8
	Chief Engineer	1
	Mine Engineer	2
	Surveyor	1
	Asst. Surveyor	1
	Environmental Tech	2
	Chief Geologist	2
	Ore Control Geologist	1
	Maint. Foreman	2
	Subtotal Salaried	21
Operations Hourly	Drill Operators	12
	Loader Operators	12
	Truck Drivers	44
	Dozer Operators	8
	Water Truck Operator	4
	Grader Operators	8
	Blasters	8
	Pump Operators	4
	Training/Absentee	4
	Subtotal Operations	104
Maintenance Hourly	Electrical	8
	Mechanics	16
	Welder/other	8
	Subtotal Maintenance	32
Total	**Total Mining**	**157**

The mine operation would be scheduled based on a 4-days on, 4-days off schedule on a 12-hour shift basis. This would produce about 8 hours of overtime in an average week, which has been utilized for cost estimates. The burden rate was estimated at 38% above the base rate to cover the cost of insurance, social security and other benefits to be determined by the owners of this project.

17 RECOVERY METHODS

The method chosen for gold recovery for the disseminated mineralization in the Sierra Blanca/Savage Valley, Mayflower and Jolly Jane material evaluated in this Technical Report is a standard heap leach recovery circuit commonly used in the region. The higher grade YellowJacket, Vein and stockwork material would be processed through a small gold milling / gravity / cyanide leach circuit.

Due to the apparent effect of particle size on gold recovery, the heap leach assessment was based on a feed size P80 -76mm (3 inches) produced from ultra-high intensity blasting, eliminating the need for crushing. This material would also be suitable for loading onto a conveyor and pad stacking system for delivering the mineralization to the heap leach pad.

The cyanide solutions from the heap leach would be treated in a Carbon-in-Columns (“CIC”) gold adsorption circuit, while the mill circuit would utilize Carbon-in-Leach (“CIL”) for gold recovery from the milled slurry. Carbon from the CIC and CIL circuits would be processed in one carbon handling circuit located at the mill. The carbon handling would include carbon stripping, acid washing and reactivation circuits. The process would produce a doré bar for shipping to a refinery for final metal processing.

17.1 GOLD RECOVERY

17.1.1 HEAP LEACHING

The gold recovery and reagent consumptions for the heap leach materials are based on +100 bottle roll tests at varying sizes and 40 column tests, and are described in Section 13 of this Technical Report. In the test program, Savage Valley ores were independently tested. Because of the metallurgical response, similar geology and overlapping location of the two pits, the Savage Valley and Sierra Blanca ores were combined and described hereafter as Sierra Blanca.

The average Au recovery for the heap leach, considering the 3 mineralization resources was 74%. Silver recoveries were assumed to range from 5.8% to 9.7% for the different resource areas, and would average 6%.

17.1.2 MILLING

The higher grade YellowJacket material would be processed using a small mill / gravity / cyanide leach circuit. The material would be stage crushed through tertiary crushing, followed by primary ball milling, gravity separation of the cyclone underflow, CIL leaching of the gravity tail (cyclone overflow), carbon stripping/acid washing/regeneration and doré production. Projective modeling of gravity gold and silver recovery by a Knelson^{TM} concentrator was reported by Fullam (2015) based the E-GRG test results for YellowJacket samples reported in Section 13. Using the plant gravity recoveries from the modeling and the leach recoveries of gold and silver from the concentrates and tail products as reported in Section 13, mill performance was projected for the Josh vein, vein stockworks and fault mineralization both above and below the oxidation surface. A weighted average estimate of gold and silver recovery was calculated considering the proportions of the mineralization in the resource. Average gold recovery was assumed to be 86.8% with an average silver recovery of 71.4%.

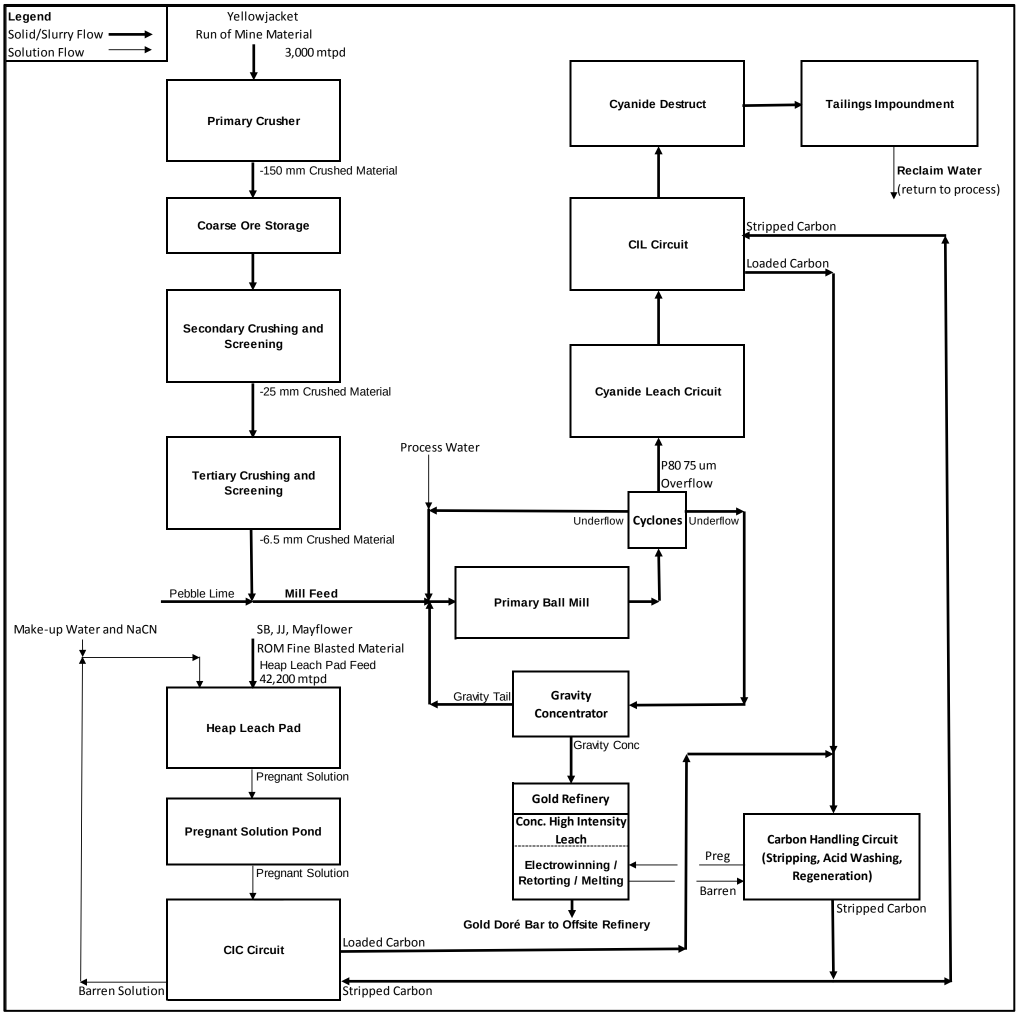
17.2 PROCESS GENERAL DESCRIPTION

The Figure 17.1 is an illustration of the process flow diagram for the NBP. Main electrical power and water are currently available in quantities sufficient for the operation and process reagents are common commodities utilized in the Nevada gold mining industry.

17.2.1 HEAP LEACHING

The North Bullfrog heap leach materials would be conveyed or trucked to the heap leach pad at a nominal rate of 41,400 tonnes per day. The mineralized material would be stacked on the heap in 30’ lifts. Lime would be added to the material stream on the heap leach feed conveyor belt or to individual truck loads. The heap would be leached using buried emitters with a weak cyanide solution. The leachate solution would be treated in a 5-stage carbon column. The loaded carbon from the 1st stage would be acid washed, stripped gold values, with the strip solution being sent to electrolytic cells for recovery in a precipitate sludge. The sludge would be retorted for mercury removal and then melted into doré bars in a furnace.

Figure 17.1 Block Processing Flow Diagram for Proposed Processing of North Bullfrog Mineralized Material.



17.2.1.1 CONVEYING AND STACKING

ROM mineralized material would be ultra-fine blasted and delivered from the mine by haul truck or direct dumped into a hopper connected to the heap leach feed conveyor. A feeder could transfer the heap leach feed to a conveyor/stacker system. The product would be delivered to the heap leach pad and stacked by a series of overland and grasshopper conveyors, nominal 1.4m (54 inch) wide or by truck haulage. The mineralized material would be stacked on the heap using a system consisting of a self-propelled extendable 45 meters (150 feet) stacker.

Lime would be added to the feed conveyor using a lime feeder and silo adjacent to the conveyor.

17.2.1.2 CIC PLANT

The CIC Plant would consist of two parallel trains, comprising five 5.0 meters (16 feet) cascading carbon columns, processing approximately 1,818 m^3/hr, (8,000 gpm) of solution. The column train would be equipped with a feed box and trash carbon screen on the tailings. Carbon would be advanced on a weekly basis countercurrent to the solution flow in two 3.5 tonne lots and would be transferred to the carbon handling circuit using a carbon truck. Regenerated and washed stripped carbon would be brought back to the CIC circuit via return carbon truck, and added back into the circuit as needed to maintain sufficient carbon inventory.

17.2.1.3 HEAP LEACH DISTRIBUTION

The barren solution from the carbon columns would be adjusted with makeup water, sodium cyanide, anti-scalant and mercury inhibitor, and would be pumped to the heap leach. The pH would be adjusted with lime (CaO) onto the pad if necessary. The solution distribution on the heap would use buried emitters. Solution application rates would range from 12 l/hr-m2 (0.005 gpm/ft2) to 6.0 l/hr-m2 (0.0025 gpm/ft2). Provision would be made to recycle a portion of the heap leach to extend the leach times. The makeup water requirement for the heap leach pad loss was estimated to be 2800 l/min (750 gpm).

17.2.2 MILLING

Higher grade YellowJacket mineralization would be processed in a 3,000 tonne/day mill.

17.2.2.1 CRUSHING AND GRINDING

The mill feed material would be delivered from the mine via haul truck and dumped onto a concrete pad housing a variable rate feeder. Material would either be direct dumped and or pushed with a small track dozier into the feeder. The feeder would control the material processing rate to an average of 3,000 tonne/day. The mineralized material would be metered on to the primary crusher feed conveyor and carried to a primary jaw crusher. Product from the jaw crusher would be conveyed to a secondary crusher, the secondary crusher product would be screened with the -9.5 mm product passing the screen and continuing on to the mill feed conveyor. Material coarser than 9.5 mm would be conveyed to the tertiary crusher for final crushing to -9.5 mm. The tertiary crusher product would be combined with the screened product on the mill feed conveyor.

Milling would be performed using a single stage primary ball mill in closed circuit with cyclones. The ball mill product would be pumped to the cyclones with cyclone overflow at a P80 of 74 microns exiting the grinding circuit. Material coarser than 74 microns would report to the cyclone underflow for gravity separation and/or return to the ball mill for additional grinding.

The gravity circuit would consist of a single centrifugal type gravity separation unit (Knelson or Falcon type). The concentrate from the gravity concentrator would be flushed from the concentrator and pumped to the refinery for high intensity cyanide leaching. The tail from the concentrator would return to the ball mill for additional grinding and sizing.

17.2.2.2 CYANIDE LEACHING AND CARBON ABSORPTION

The mill product, cyclone overflow, would flow by gravity to a trash screen and the first of two leach tanks. The leach tanks would provide for approximately 24 hours of leach time. After leaching, the slurry would flow to the first of five Carbon in Leach (CIL) tanks, each containing seven tonnes of carbon. Stripped carbon would be added to the circuit in the last CIL tank and would be pumped once a day upstream into the fourth CIL tank. Carbon from the fourth tank would be pumped upstream to the third tank, and third to second, all once per day, creating a countercurrent carbon flow to the slurry flow. Loaded carbon would be taken from the first CIL tank in seven ton batches, for processing in the carbon handling circuit, where it would be screened, stripped of gold, acid washed, and regenerated in a reactivation kiln prior to being brought back to the sixth tank.

The slurry exiting the last CIL tank would be screened to remove carbon, and pumped to the tailings storage facility.

17.2.2.3 TAILINGS STORAGE

Material exiting the mill process facility would be pumped to a conventional tailings storage facility (TSF). The tailing would incorporate multipoint subaerial deposition to maximize tailings densification and decanted solution return. The TSF would be a lined facility with drainage layers and piping to improve water recovery and tails mass densification. Water reclaim pumps would be installed at the decant pond within the facility, and would pump recycled water back to the mill and heap leach pad for reuse.

17.2.2.4 CARBON HANDLING

Carbon recovered from the CIC circuit and the CIL circuit would be processed in one carbon handling facility located at the mill. Carbon from both the mill and heap leach processes would be batch stripped, in seven ton batches, one of two strip vessels. Upon leaving the strip vessel, the carbon would be screened to have fine carbon removed from the circuit. After screening the carbon would be acid washed in a weak hydrochloric acid solution to remove calcium and other containments. The washed carbon would then be pumped to the regeneration kiln for reactivation.

As the carbon was processed in the kiln, the carbon would be heated to 700°C in a reducing atmosphere. This process would open the pores on the carbon and would raise the carbon's affinity for gold and silver. Following reactivation, the carbon would be sized once again using a screen to remove any fines generated in the process. The screened reactivated carbon would then be returned as needed to the last CIL tank or into the CIC circuit for reloading.

17.2.3 REFINERY

The refinery would have electrowinning cells with sludge tanks, a mercury retort, flux mixer and furnace. The refinery would also contain the high intensity leach circuit for the gravity concentrate. Pregnant solutions from the high intensity leach would be combined with the pregnant strip solution from the strip circuit and would be processed in one of two electrowinning cells. Periodically, the electrowinng cells would be drained, cathodic sludge would be pressure washed from the cathodes, and the sludge would be drained from the cell and placed into a mercury retort for mercury removal.

Following retorting, the sludge would be placed into a furnace with fluxing agents, and the melted metal would be poured into doré bars for shipping to an outside refinery for final processing and sale.

The refinery would be enclosed with a pre-engineered steel building. The capital cost of the carbon handling plant and refinery included all valves, samplers and security cameras necessary to operate in an efficient manner.

The State of Nevada requires that all processes with temperatures exceeding 175ºF be equipped with mercury abatement equipment. The NBP would comply with this requirement.

17.2.4 ASSAY LABORATORY

A full scale Assay Laboratory with Fire Assay and ICP capabilities would be built for the NBP. Because of the low cut-off grades, a 30g Fire Assay, followed by an ICP finish would be utilized on mine samples. The Assay Laboratory would contain equipment for sample preparation, for screening of crushed products and for carbon activity testing.

A metallurgical test laboratory within the assay laboratory would have screening, bottle roll and column testing facilities. As the project developed and bulk samples would become available, column and vat leach tests would be conducted on crushed and ROM samples.

17.3 PROCESS MANPOWER

Manpower requirements for the mill and heap leach process facilities is listed in Table 17.1.

Table 17.1 Process Manpower

Class	Function	No. of Mill Personnel	Function	No. of Heap Leach Personnel
Salaried	Process Manager	1	Operations Planner	1
	Chief Metallurgist	1	Maintenance Foreman	1
	Metallurgist	1	Metallurgist	1
	Shift Foreman	4	-	-
	Maint,/Elect. Foreman	1	-	-
	Chief Assayer	1	-	-
	Refiner	1	-	-
	Subtotal	**10**	**Subtotal**	**4**
Operations Hourly	Crusher Operators	4	Assay Prep	2
	Grinding Operators	4	Refiner	1
	Mill Control Operators	4	Feeder/Conveyore Operators	4
	Leach/CIP/Gravity Operators	4	Leach Pad Operators	8
	Stripping Operators	4	Helpers	4
	Tails Operator	1	-	-
	Assayers	2	-	-
	Subtotal	23	Subtotal	19
Maint. Hourly	Mechanics/Electricians	8	Mechanics/Electricians	4
	Total Mill	**41**	**Total Heap Leach**	**27**
	Total Process	**68**	**-**	**-**

18 INFRASTRUCTURE

Much of the primary infrastructure required to develop a surface mine is available in close proximity to the NBP. The availability of these key infrastructure elements is described in the following sections on location and access, human resources, electrical power, water resources and project infrastructure elements.

18.1 LOCATION AND ACCESS

The NBP is located approximately 16 kilometres (9.3 miles) north of the community of Beatty, in Nye County Nevada. The property is approximately 3 kilometres (2 miles) immediately west of Nevada Highway 95, which connects the major cities of Las Vegas and Reno. Access to the property from the highway is currently by several dirt roads that are maintained and provide access for a commercial aggregate producer, as well as, cattle grazing operations further to the west.

Major mining and construction equipment sales and service are readily available throughout Nevada; however, most major mining operations are located in the northern part of the State and are serviced from the cities of Reno and Elko. Las Vegas, 200 kilometres (125 miles) south of NBP, has a major construction industry and heavy equipment sales and service are available there.

Beatty is primarily a small residential community, with motels, restaurants and stores.

18.2 HUMAN RESOURCES

Human resources are available within the community of Beatty, which has a population of approximately 1,100 people, and historically provided a substantial portion of the workforce for the Bullfrog Mine, which operated between 1989 and 1998 as both an open pit and underground gold mining operation. The community has a long association with the mining industry, and could contribute experienced personnel to a mining project at NBP. The community has schools, a medical clinic, motels, as well as fuel service and food stores.

Pahrump, approximately 110 kilometres (68 miles) to the southeast of Beatty, is a larger community with a population of 36,000. Pahrump is a local regional center, with a hospital and emergency medical services, a college campus with technical training for industrial support and expanded service sectors. Pahrump has traditionally provided human resources for the Nevada Test Site, which had numerous high technology and underground construction projects. The Test Site is approximately 40 miles from Pahrump, so locals are used to relatively long commutes on a daily basis.

18.3 ELECTRICAL POWER

Electrical power is provided to the immediate area of NBP by the Valley Electric Association (VEA), Inc., which is headquartered in Pahrump, Nevada. A 25 kVA line runs north from Beatty, Nevada along US Highway 95. VEA has recently upgraded the main powerline, which now exceeds the projected requirements for NBP at 15 Mw capacity. Corvus NBP requirements were considered in the upgrade.

Two electrical feeder lines run west from the main line, one to the perimeter of the NBP property to power an aggregate crushing plant operating in the southern portion of NBP and a second that traverses the property to power a centrally located microwave station and the Company’s weather station which has been installed on Corvus controlled patented mining claims near Mayflower.

18.4 WATER RESOURCES

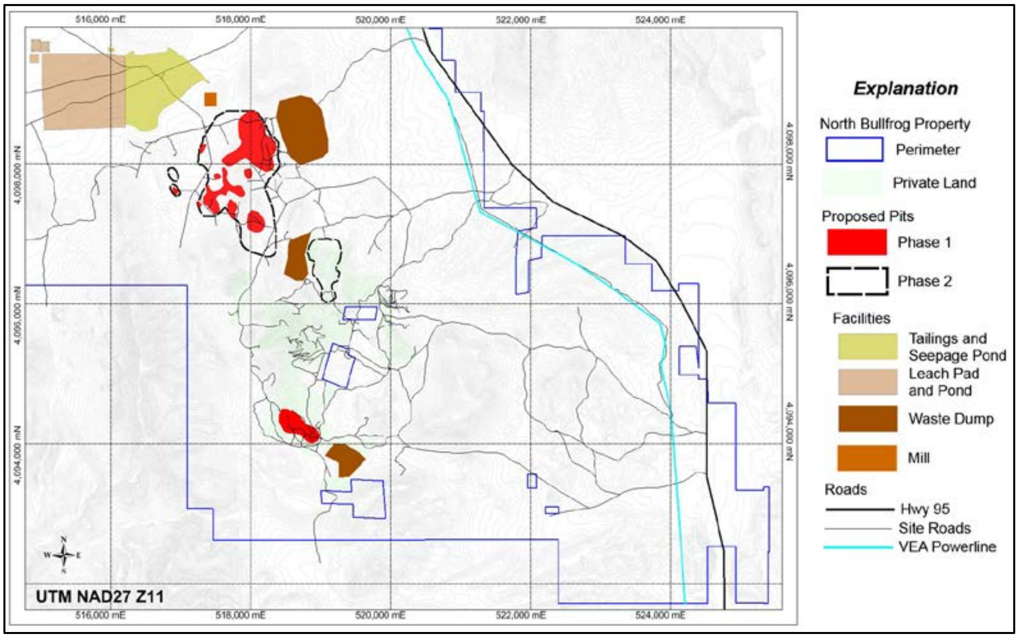
Water resources for a mining project at NBP must be obtained from the ground water in the Sarcobatis Flats. In 2014, Corvus purchased a 430 acre property located 48 kilometres (30 miles) to the north of NBP in the Sarcobatus hygrographic basin which included a 1600 acre-foot water right. The northeast corner of NBP lies within the Sarcobatus hydrographic basin, and Corvus would explore for a water production well field in the basin near the Project, and make application to the Nevada State Engineer for a temporary relocation of the production location.

Water wells, booster stations and pipelines would be developed to provide water to the mine, process facilities and ancillary structures. Water exploration would potentially locate several wells northwest of the heap leach pad and Corvus would install a fresh water pipeline from the well fields to the process plant.

18.5 PROJECT INFRASTRUCTURE ELEMENTS

A conceptual configuration of the NBP is shown in Figure 18.1.

Figure 18.1 Conceptual Configuration of the North Bullfrog Surface Mines and Associated Overburden Storage, Mill, Tailings and Leach Pad Facilities.



18.5.1 SITE ACCESS ROAD

Access to the NBP would be from US 95 just north of the Town of Beatty. The site access would follow an existing roadway corridor for approximately 7.5 kilometres (4.6 miles) and would require improvement to allow 2 lane traffic. The access to the site from the access road would be designed such that the site would be secured with a perimeter fence and security gate, but historical access by others would not be impeded.

18.5.2 HAUL ROADS

The conceptual plan for loading the leach pad would use a feeder/conveyor/stacker system and haul roads would only be needed from the various mines to a central feeder projected to be located to the west of Sierra Blanca. The Mayflower mine requires the longest haul road with an approximate haul distance of 4.5 kilometres (2.8 miles) along the western edge of the property to the central feeder location. The mine plan calls for the mining of the Sierra Blanca prior to mining of the Jolly Jane and a haul road within the Sierra Blanca pit would be planned for hauling from the Jolly Jane pit to the central feeder. The haul distance from the Sierra Blanca to the crusher pad is approximately 0.6 kilometres (0.4 miles) and the haul road between the Jolly Jane and Sierra Blanca is approximately 250m (800 feet).

18.5.3 LEACH PAD ACCESS ROAD

An access road for maintenance of the feeder/conveyor/stacker system would be constructed from the feeder location to the leach pad. A leach pad perimeter road would be constructed for access to the leach pad and process ponds.

18.5.4 HEAP LEACH PAD AND PONDS

The heap leach pad would be located northwest of Sierra Blanca and is shown in Figure 18.1 with an approximate total storage capacity of 157 M tonnes of mineralized material. The final design of the leach pad would include construction specifications for a prepared subgrade, soil underliner, HDPE liner, solution collection system and overliner layer. The leach pad would be constructed in phases with three expansions added to the initial leach pad constructed.

The final design would include a solution management system that connects the solution collection system within the leach pad, to the process pond and CIC array. It is intended that the final design would show the compartmentalization of the leach pad into solution collection cells and the individual cells would have flow measuring points and sampling locations. From this point, the solution would be directed to the pond or the CIC array, as necessary for maximizing recovery. Adjacent to the process pond would be an event pond and the two ponds would be connected by a spillway. The size of the ponds would be based on the 100-yr, 24-hr event and the 24-hr draindown of the leach pad, as well as, 0.6 meters (two feet) of freeboard per state regulations. Similar to the heap leach pad, the ponds would have a prepared subgrade, soil underliner and two layers of HDPE liner for leak detection and primary containment, respectively.

18.5.5 MILL FACILITY

A mill facility would be constructed north of the YellowJacket portion of the Sierra Blanca pit, and would consist of primary, secondary and tertiary stage crushing equipment, ball mill, gravity concentrator and leach tanks. Minimal building would be required due to the relatively mild climate at NBP. The mill facility would be open air, with some portions of the plant roofed. The refinery and laboratory facilities would require climate controlled buildings.

18.5.6 TAILING STORAGE FACILITY

There is a great deal of flat open terrain at the north end of NBP which has sufficient area for both the heap leach pad and a tails storage facility (TSF). The NBP conceptual configuration would locate the TSF on the south edge of a low ridge and immediately east of the heap leach pad as shown in Figure 18.1. This would eliminate the embankment construction on the west side which would use the heap leach pad for constraint, and on the North side which would use the natural ridge. The gradual rise in topography to the south would provide the south embankment. A thickened tail, using high rate thickeners, is projected to favorably impact water consumption and shorten the TSF reclamation period.

18.5.7 ANCILLARY FACILITIES

The NBP would require the design and the construction of several ancillary structures for the day to day operations of the mine. These facilities would include a truck/tire shop, warehouse, administration, and clinic, wash bay, fuel island, assay/met lab, security and maintenance facilities. These structures would be centrally located near the process plant and leach pad with access points to each of the facilities from the existing site access roadway from US 95. The aforementioned would be constructed in the first phase of mine development and infrastructure construction. To the extent possible, the facilities would be of a temporary nature consistent with the currently envisioned short life of the Project.

18.5.8 SURFACE WATER MANAGEMENT FACILITIES

The location of the heap leach pad, ponds, and process plant would require diversion structures to redirect surface runoff around these facilities and discharge into natural drainage channels. For ease of construction, the channels were assumed to be 3 meters (10 feet) wide at the bottom of the channel, 1.5m (5 feet) deep, and have side slopes of 3:1. The channel would be lined with a geotextile fabric and riprap along the entire length of the channel and up the side slopes to protect the channel for a flow depth of 1.2m (4 feet).

18.5.9 WASTE ROCK MANAGEMENT FACILITIES

Based on the most recent mine production schedule, 96 M tonnes of waste rock would need to be stockpiled. Figure 18.1 shows the potential locations of the waste rock stockpile on the east side of the Sierra Blanca pit and west of the Jolly Jane pit. These stockpiles would be for the waste rock that would be mined from the Sierra Blanca and Jolly Jane. Another waste rock stockpile would be located east of Mayflower.

19 MARKET STUDIES AND CONTRACTS

No market studies have been undertaken by the Project at this time, and no contracts have been discussed for the sale of the gold which may be produced at the NBP. It is assumed that the process facilities at the NBP would produce a gold doré with high purity, which will be shipped to a commercial refiner such as Johnson Matthey in Salt Lake City. All-in charges from such refiners are currently in the range of US $1.50-2.00/Oz, based on a minimum one-year contract at quantity levels consistent with this Project. Sales price would be based on the spot price of gold. A gold price of $1,200 per ounce has been assumed for the life of the mine.

Gold is readily sold on the spot market, and historically has not been a demand limited commodity. This PEA assumes that gold with be sold at spot price and this assumption is considered to be reasonable by the Author.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

Corvus currently has permits to conduct exploration activities at NBP with both the Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR) and the Bureau of Land Management (BLM). Those permits allow 20 acres and 120 acres of surface disturbance on the private and public land, respectively. The permits for activities on the public lands are based on an Environmental Assessment that contains environmental baseline data on wildlife, climate and local physical characteristics.

20.1 EXISTING ENVIRONMENTAL BASELINE CHARACTERIZATION ACTIVITIES

Corvus has developed characterization plans which describe the on-going and future collection of baseline environmental data that will be required to support a future mine permitting process. Current baseline characterization activities include:

Geochemical characterization of waste rock geochemistry – Acid-Base Accounting (ABA) characterization of waste rock as defined in the current mining plans using static tests have been completed and a first phase of Humidity Cell Tests have been completed for the waste rock associated with mining the heap leach disseminated mineralization. The second phase of HCTs are being defined to characterize waste associated with the mining of the YellowJacket mineralization.

Hydrologic characterization testing has been performed during installation of 12 ground water monitoring wells. Collection of water quality data began in Q4 2012 on a quarterly basis for the ground water monitoring wells and a group of 12 surface springs surrounding NBP. NDEP Profile I parameters are reported for each ground water and spring sample.

Surveys of plants and wildlife have been conducted on a large portion of NBP, including special surveys for bats and Desert Tortoise. Desert Tortoise range is currently limited to the eastern portion of NBP, outside of the areas containing currently defined Mineral Resources. Recent habitat studies of the eastern portion of NBP have indicated that the area is not critical Tortise habitat.

A meteorological station has been in operation on the NBP site since August 2012.

These studies address baseline data whose collection is time critical to production of a mining plan of operations which would serve as the basis to initiate the BLM's National Environmental Policy Act (NEPA) process (likely through the preparation of an environmental impact statement (EIS) that is required for the processing of a Plan of Operations. Other baseline characterization activities would be required, but would not control the schedule for completion of the EIS.

No known environmental issues have been identified at the NBP site that would materially affect the current mine design or scope of the needed environmental permits. Geochemical characteristics of the waste rock suggest that no acid generation and only minor metals leaching would be expected from the waste materials associated with the heap leach mineralization. Ground water quality is typical of the regional data and drilling activities suggest minimal water inflow because only a small portion mining would be below the water table.

20.2 PERMITS REQUIRED FOR FUTURE MINING ACTIVITIES

This section of the Technical Report summarizes the permits that will likely be required to conduct mining activities at the NBP. The details of the mine area and activities are not well defined at this time. However, in order to conduct mining and processing activities, the Project will need specific permits from the State of Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR) and the Bureau of Land Management (BLM). The following is a list of the major permits that will be required followed by a brief discussion of each. None of the permits are currently in application stage.

1. Plan of Operations/Nevada Reclamation Permit;
2. Water Pollution Control Permit;
3. Air Quality Operating Permits;
4. Water Rights; and
5. Industrial Artificial Pond Permit.

20.3 PLAN OF OPERATIONS / NEVADA RECLAMATION PERMIT

A Plan of Operations/Nevada Reclamation Permit (Plan) is a joint application that is submitted to the BLM and NDEP BMRR that utilizes a format accepted by the BLM and BMRR. The application will describe the operational procedures for the construction, operation and closure of the Project. As required by the BLM and BMRR, the Plan will include a waste rock management plan, quality assurance plan, a storm water spill contingency plan, reclamation plan, a monitoring plan and an interim management plan. In addition, the Plan includes a Reclamation Cost Estimate for the closure of the Project. The mine design must be completed prior to submittal of the Plan.

20.4 WATER POLLUTION CONTROL PERMIT APPLICATION

The Water Pollution Control Permit (WPCP) application must address the open pit, waste rock dump, heap leach pad, mining activities and the water management system, as well as the potential for these facilities to degrade waters of the state. The application includes an engineering design for the waste rock dump, a waste characterization report and a modeling report for the closure of the waste rock dump, as well as an engineering design for the water management system.

A Tentative Permanent Closure Plan must also be completed and submitted to the NDEP-BMRR in conjunction with the WPCP. A Final Permanent Closure Plan will need to be developed two years prior to Project closure.

20.5 AIR QUALITY OPERATING PERMITS

An Application for a Class II Air Quality Permit for those portions of the stationary source that have the potential to emit pollutants must be prepared using Bureau of Air Pollution Control (BAPC) forms. The Application includes a description of the facility and a detailed emission inventory. The Application also includes locations, plot plans and process flow diagrams. The Application must also include a fugitive dust control Plan to be used during construction and operation of the Plan. If the facility will process loaded carbon or electrowinning precipitate, then a Mercury Operating Permit application and a Title V Operating Permit application will also be necessary, which will have to address the necessary state and federal mercury controls, respectively.

20.6 WATER RIGHTS

Water rights will need to be obtained from the Nevada Division of Water Resources (NDWR) to remove and utilize the water from the mining operation and to provide water for the public water system.

20.7 INDUSTRIAL ARTIFICIAL POND PERMIT

The development of the water storage pond, which is part of the water management system, will require an Industrial Artificial Pond Permit (IAPP) from the Nevada Department of Wildlife.

20.8 MINOR PERMITS AND APPLICATIONS

In addition to the above noted permits, Table 20.1 lists potential other notifications or ministerial permits that will likely be necessary to conduct the mining operations.

Table 20.1 Required Minor Permits and Applications.

Notification/Permit	Agency	Comments
Mine Registry	Nevada Division of Minerals	-
Mine Opening Notification	State Inspector of Mines	-
Solid Waste Landfill	Nevada Bureau of Waste Management	-
Hazardous Waste Management Permit	Nevada Bureau of Waste Management	-
General Storm Water Permit	Nevada Bureau of Water Pollution Control	-
Hazardous Materials Permit	State Fire Marshall	-
Fire and Life Safety	State Fire Marshall	-
Explosives Permit	Bureau of Alcohol, Tobacco, Firearms and Explosives	Mining contractor may be responsible for permit
Notification of Commencement of Operation	Mine Safety and Health Administration	-
Radio License	Federal Communications Commission	-
Public Water Supply Permit	NV Division of Environmental Protection	-
MSHA Identification Number and MSHA Coordination	U.S. Department of Labor Mine Safety and Health Administration (MSHA)	-
Septic Tank	NDEP – Bureau of Water Pollution Control	-
Petroleum Contaminated Soils	NV Division of Environmental Protection	-

21 CAPITAL AND OPERATION COSTS

Capital and operating costs used for the PEA are based on evaluation of multiple sources of information. Active Nevada mining operations based on exclusive heap leach processing and combined heap leach processing and mill processing of gold ores were visited in the period November-December, 2011, again in October of 2014. Operating costs, consumable costs and construction costs were discussed with mine site staff during the visits, and were used as bench marks for establishing the PEA estimates. Capital and operating costs were developed using information available from the CostMine cost data service for 2015 by InfoMine USA, Inc. In addition, all available Project technical data and metallurgical process related test work were considered to build up a processing operating cost estimate.

Preliminary site infrastructure (mill, tailing storage facility, heap leach pad, overburden storage facility, roads, shops, offices, etc.) have been evaluated and a conceptual arrangement was defined as the basis of capital costs estimates. Capital costs were developed based on the nominal mining rates of 44,400 tonnes of mineralized material per day. The capital cost includes estimates of sustaining capital and all facilities and equipment needed for all phases of the Project over its projected 10 years of active mining. The mobile equipment were assumed to be financed over its first 5 years of use with 20% down payment and assuming 5% annual interest. All costs are in constant USD from 2015.

Cost accuracy is estimated to be + or – 30%, in the opinion of the Author.

21.1 CAPITAL COST ESTIMATE

Capital cost estimates are described in the general categories of initial capital and sustaining capital.

21.1.1 INITIAL CAPITAL COST ESTIMATE

The initial capital cost estimates are listed in Table 21.1 and consist of go-forward costs to be incurred after approval of a Plan of Operations, and after construction/operating permits have been received. It covers the schedule period year -1, and includes all construction costs up to the start of production, which is defined as when the first mineralized material is placed on the leach pad and the first mineralization is processed in the mill. The scope of the initial capital includes direct capital costs, indirect costs, Owner's costs and contingency. Direct capital costs include the, heap leach facilities (I.e. ponds, initial leach pad construction, feeder-conveyor-stacker, carbon columns) and mill facilities (i.e. 3,000 mtpd crushing and grinding circuit, leach and CIL circuits, carbon ADR plant, tailings storage facility and mill water storage ponds/tanks), infrastructure and the mobile mining fleet. Pre-production mining occurs in the construction year -1 to insure that YellowJacket mineralization would be available for the mill in year +1. Indirect costs include Engineering, Procurement and Construction Management ("EPCM"). Owner's costs include an allowance for property maintenance and the expansion and training of the mine management and labor force. Contingency was set at 25% on all items excluding mobile equipment, EPCM, Owner's Cost and Working Capital.

Table 21.1 North Bullfrog Project – Initial Capital Cost Estimate

Capital Item	Estimated Capital Cost (USD $M)
Initial Direct Capital Cost	129.8
EPCM	19.1
Contingency	26.5
Total	175.4

The direct initial capital costs are further subdivided in Table 21.2. Only the first year, down payment on the mobile equipment was included in Table 21.2.

Table 21.2 North Bullfrog Project – Initial Direct Capital Cost Estimate (including Contingency)

Capital Item	Estimated Capital Cost (USD $M)
Mill	82.2
Heap Leach	19.2
Mobile Equipment	7.3
Infrastructure & Facilities	20.4
Capitalized Mining	13.3
Total	142.4

For indirect initial capital costs, listed in Table 21.3, EPCM was calculated as 18% of the initial capital costs for the mill, heap leach and infrastructure.

Table 21.3 NBP - Initial Indirect Capital Cost Estimates (including contingency)

Capital Item	Estimated Capital Cost (USD $M)
EPCM	19.1
Owner’s Cost	3.0
Freight	10.9
Total	33.0

21.1.2 SUSTAINING CAPITAL COST ESTIMATE

Sustaining capital cost estimates included all capital costs that would be incurred after production starts (year +1 to year 10). It included estimated capital for expansion of production capability (leach pad expansion, haul road construction, etc.) and replacement capital (mobile equipment overhaul or replacement of worn out equipment). Annual principal payments for the mobile equipment were also included in sustaining capital. Sustaining capital cost estimates are listed in Table 21.4, along with the remaining contingency calculated at 25% of cost items excluding the mobile equipment and working capital.

Table 21.4 NBP – Sustaining Capital Cost Estimates and Remaining Contingency

Capital Item	Estimated Capital Cost (USD $M)
Sustaining LOM	77.1
Remaining EPCM	2.6
Remaining Contingency	3.6
Total	83.3

21.1.3 WORKING CAPITAL

Working capital was estimated to be equivalent to operating costs for the first 3 months of production, or $16.1 M. Working capital is credited to the project operating costs in the first year of production. Initial fills costs were estimated to be $0.4 M and were recovered in the last year of active operation.

21.1.4 LIFE OF MINE CAPITAL ESTIMATE

Total estimated capital costs are listed in Table 21.5.

Table 21.5 NBP PEA – Total Capital Cost Estimate

Capital Item	Estimated Capital Cost (USD $M)
Total Initial Capital	175.4
Sustaining Capital	83.3
Total*	258.7

* includes working capital

21.2 OPERATING COST ESTIMATES

Operating cost estimates were developed from spreadsheet cost models built up from first principles. These spreadsheets considered the schedule of production physicals, assumed equipment productivities, consumables and operating maintenance and production labor. The projected unit costs were compared to benchmark information for the Nevada heap leach operations visited in late 2014. Mine operating costs were developed by Metal Mining Consultants, Inc. The process cost estimation spreadsheets were developed separately for heap leach processing and for the mill processing.

Operating costs were estimated for the categories of mining, processing, administration and reclamation. Table 21.6 list the operating cost estimates used in the economic analysis.

Table 21.6 North Bullfrog Project – Average Operating Cost Assumptions

Operating Cost Area	LOM Average Operating Cost ($/ process tonne)	LOM Average Operating Cost ($/Au oz)
Mining	2.41	332
Processing	1.65	227
Administration*	0.43	60
Reclamation	0.12	17
Total	4.62	635

* excludes royalties

Mining costs were estimated at $1.52 per unit tonne of mineralized material or overburden material. The mill processing cost estimate averaged $11.57 per tonne processed and heap leach processing cost was estimated to average $1.20 per tonne processed.

22 ECONOMIC ANALYSIS

This PEA is preliminary in nature, and is based on technical and economic assumptions which will be evaluated in more advanced studies. The PEA is based on the North Bullfrog Mineral Resource model which consists of material in Measured, Indicated and Inferred classifications. Inferred Mineral Resources are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves. The current basis of Project information is not sufficient to convert the in-situ Mineral Resources to Mineral Reserves, and Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. Accordingly, there can be no certainty that the results estimated in this PEA will be realized. The PEA results are only intended as an initial, first-pass review of the potential Project economics based on preliminary information.

The economic analysis of the NBP assumes constant 2017 US $ and is performed on an annual basis beginning at the start of year -1 when operating permits are assumed to have been issued. Construction was assumed to require 1 year with placement of mineralized material on a heap leach pad and mill processing to start at the beginning of year +1. The PEA utilized estimates mill gold recoveries based on bottle roll testing and gravity concentration testing performed on the YellowJacket Josh vein and stockwork materials. Heap leach recoveries were based on column leach testing data for composite samples constructed from Mayflower, Jolly Jane, Savage Valley and Sierra Blanca 2012 PQ core drilling.

The mill process recovery assumptions reflected overall gold and silver recoveries based on the flow diagram shown in Section 17. The average mill recoveries for gold were 86.8% and 71.4% for silver.

The heap leach process recovery assumptions reflected consideration of the particle size resulting from ultra-high intensity blasting to produce a gradation similar to primary crushing (P80 -76mm) and the leach pad placement schedule. The leach pad production model predicts an average gold recovery of 73.8%, and an average silver recovery of 6% of fire assay grade. The production model assumes a 3 year buildup of gold in solution inventory which would require 3 years of rinsing after the final leach pad placement to recover inventory. No cost escalation was included in the calculations, and the cash flows were presented after-royalty and after-tax. A gold price of $1,200 per ounce was assumed for all years (1-13) for the base case. All economic projections were made on an after-royalty and after-tax basis.

The analysis included Measured, Indicated and Inferred Mineral Resources in the mining and economic study. Measured and Indicated Resources make up 45% of the gold ounces in the total production plan. The remaining 55% of the gold ounces in the production plan are classified as Inferred Mineral Resources. Subdivided by process, 91% of the gold ounces in the mill production schedule are classified as Measured and Indicated Mineral Resources, and 17% of the gold ounces in the heap leach production schedule are classified as indicated Mineral Resources.

22.1 KEY PERFORMANCE PARAMETERS

Mining physicals in the production schedule presented in Table 16.2 were used in conjunction with unit operating cost assumptions to estimate OPEX costs on an annual basis. Estimated capital costs were input on an annual basis from a conceptual schedule that included initial capital associated with pre-mining construction of the Project in year -1, and sustaining capital over the LOM. Mobile equipment were assumed to be financed with 20% down payment and a five year term at 5% interest. Interest costs were transferred to administrative operating cost.

Key performance parameters are listed in Table 22.1; Figure 22.1 shows the projected annual gold and silver production from NBP facilities.

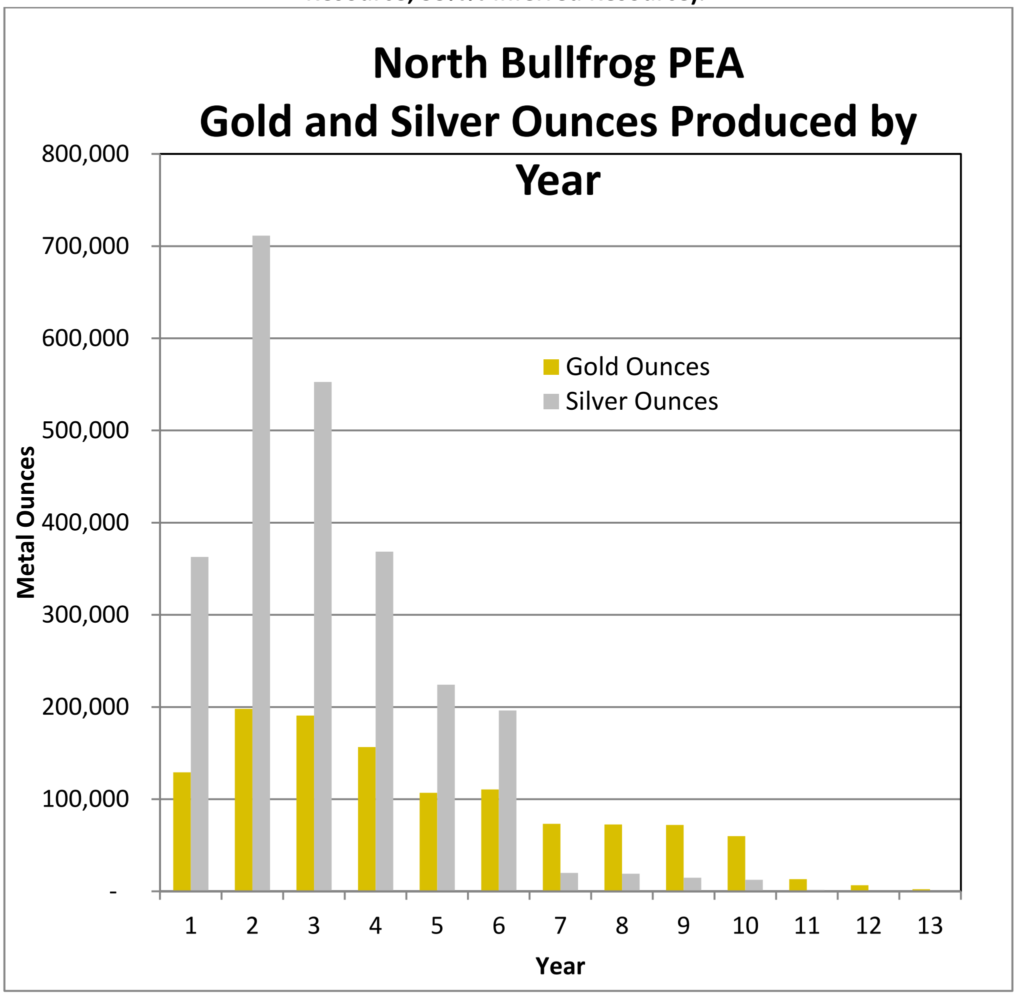
Table 22.1 Projected Key Performance Parameters from the North Bullfrog Project Preliminary Economic Assessment (Constant $US, No Escalation, Constant $1,200 per Ounce Gold Price, after-Royalty and after-Tax)

Parameter	Data Value
Measured Resource within Whittle Shells*	4.0 M t at 2.43 g/t Au for 316.2 kozs and at 18.89 g/t Ag for 2.46 Mozs
Indicated Resource within Whittle Shells*	22.1 M t at 0.41 g/t Au for 289.6 kozs and at 1.18 g/t Ag for 0.84 Mozs
Inferred Resource within Whittle Shells*	137.1 M t at 0.21 g/t Au for 926.2 kozs and 0.75 g/t Ag for 3.32 Mozs
Post-Tax and Royalty NPV at 5%	$US 245.9 M
Post Tax and Royalty IRR	37.9 %
Pre-tax cashflow ; IRR	$479 ; ≈53%
Overall Strip Ratio	0.6:1 (overburden:mineralized material)
Average Annual Gold Production years 1-6	154 kozsz/year
Average Annual Gold Production years 7-10	69 kozs/year
Average Gold Recovery - mill	86.8%

Parameter	Data Value
Average Gold Recovery- heap leach	73.9%
Average Cash Cost	$US 635/Au Oz*
Average Silver Recovery-mill	71.4%
Average Silver Recovery – heap leach	6%
Average Total Mining Rate	69.7k tonne/day
Average Mineralized Material Mining Rate	44.4 k tonne/day

* Mill selection COG = 0.372 g/t, Heap Leach selection COG= 0.1 g/t

Figure 22.1 Estimated Gold and Silver Production by Year for North Bullfrog Project (45% Measured and Indicated Resource; 55%% Inferred Resource).



Physical data for the NBP are listed in Table 22.2, for the estimated mine life of 10 years of active mining (13 years with leach pad rinse down).

Table 22.2 Summary Projected Physical Data for the North Bullfrog Project Estimated Production Schedule

Key Physical Data	Units	Value
Heap Leach Feed Mined	M tonnes	156.8
Mill Feed Mined	M tonnes	7.1
Overburden Mined	M tonnes	95.8
Total Material Mined	M tonnes	259.7
Mine Life*	Years	10
Contained Gold**	M Oz	1.53

Key Physical Data	Units	Value
Recovered Gold	M Oz	1.19
Contained Silver	M oz	6.61
Recovered Silver	M Oz	2.49
Average Strip Ratio	Overburden/Process Feed	0.6
Average Diluted Gold Grade Heap Leach	g/t	0.22
Average Diluted Gold Grade Mill	g/t	1.92
Average Gold Recovery	%	77.5
Annual Process Feed Mined	M tonnes/yr	16.2
Annual Gold Produced	K Oz/yr	117.0

* active mining, excludes leach pad rinse period at end of mine life
** 40% Measured and Indicated Mineral Resource; 60% Inferred Mineral Resource

LOM unit costs for OPEX and capex are listed in Table 22.3.

Table 22.3 Projected LOM Unit Operating Cost and Capital Cost per Process Tonne and per Produced Au Ounce for the North Bullfrog Project (Constant 2015 $US, No Escalation).

Cost Area	Cost per Process tonne* ($/tonne)	Cost per Recovered Gold Oz* ($/Oz)
Mining	$2.41	$332
Processing	$1.65	$227
Administration*	$0.41	$ 60
Reclamation	$0.12	$16
Total Operating Cost	*$4.59*	*$635*
Capital Cost	$1.50	$206
Projected Total Cost	$6.12	$841

*-Excludes royalty on Jolly Jane and Mayflower production.

22.2 CASH FLOW

The projected annual production and cash flow (after-royalty and after-tax) for the NBP are listed in Table 22.4. The estimated payback period assuming the average gold price of $1,200 and average silver price of $16.28 per ounce is 2.2 years.

Table 22.4 Projected Annual Production and Cash Flow (after-Royalty and after-Tax) for the North Bullfrog Project – Base Case (Gold Price $1,200; Silver Price $16.28)

Year	Over-burden Mined (M t)	Process Feed Mined (M t)	Contained Au* (k Oz)	Produced Au (k Oz)	Gold Revenue (US $M)	Produced Ag (k Oz)	Silver Revenue (US $M)	Operating Cost (US $M)	Capital Cost (US $M)	Pre-Tax/ Royalty Cash Flow (US $M)	Federal Income Tax (US$M)	Nevada NPT Tax (US$M)	Royalty (US $M)	Cash Flow After Tax, After Royalty (US $M)
(1)	6.8								$(162.1)	$(162.1)	$0.0	$0.0	$0.0	$(162.1)
1	12.3	21.5	202.9	129.1	$ 154.9	362.8	$5.9	$(87.4)	$ (26.7)	$46.7	$(6.4)	$(2.4)	$0.0	$37.9
2	15.6	17.1	265.9	198.0	$237.6	711.4	S11.6	$(84.7)	$(14.6)	$149.9	$(33.8)	$(7.7)	$0.0	$108.4
3	12.7	18.2	220.3	190.8	$228.9	552.7	$9.0	$ (84.9)	$(18.5)	$134.5	$(34.7)	$(7.0)	$0.0	$92.8
4	10.0	19.1	191.4	156.6	$187.9	368.6	$6.0	$(84.5)	$(12.7)	$96.7	$ (17.9)	$(4.8)	$0.0	$74.0
5	11.1	16.3	136.1	106.8	$128.2	224.1	$3.6	$(79.5)	$(2.2)	$50.1	$(4.5)	$(2.0)	$(0.4)	$43.2
6	12.4	15.4	137.9	110.5	$132.6	196.2	$3.2	$ (79.3)	$(8.3)	$48.2	$(5.3)	$(2.1)	$(1.2)	$39.6
7	5.1	16.0	99.4	73.2	87.8	19.9	$0.3	$ (58.9)	$0.0	$29.2	$(1.5)	$(0.8)	$(0.6)	$26.3
8	4.9	15.6	96.9	72.6	$87.2	19.1	$0.3	$ (58.5)	$(0.2)	$28.8	$(2.7)	$0.0	$(0.8)	$25.3
9	2.6	12.9	100.1	72.0	$86.4	14.8	$0.2	$ (53.0)	$(0.2)	$33.4	$(3.6)	$0.0	$(1.8)	$28.0
10	2.2	11.7	86.0	59.9	$71.9	12.6	$0.2	$(48.4)	$0.0	$23.7	$(2.6)	$0.0	$(1.3)	$19.8
11				13.2	$15.9	1.6	$0.0	$(7.1)	$0.0	$8.8	$0.0	$(0.4)	$0.0	$8.4
12				6.6	$7.9	0.8	$0.0	$(7.1)	$0.0	$0.8	$0.0	$0.0	$0.0	$0.8
13				2.2	$2.6	0.3	$0.0	$(6.8)	$0.0	$(4.2)	$0.0	$0.0	$0.0	$(4.2)
LOM	95.7	163.8	1,536.9	1,191.5	$ 1,429.8	2,484.9	$40.3	$(740.2)	$(245.5)	$484.4	$(113.0)	$ (27.2)	$ (6.1)	$338.1
										NPV@5%: US$365.1M				NPV@5% US$245.9M
										IRR: 53%				IRR: 38%

*- Contained Au includes 6.6 kozs in vein dilution which are not classified

22.3 SENSITIVITY

The sensitivity of the Preliminary Economic Assessment for the Project has been evaluated for variations in the gold price assumption, gold recovery assumption, operating cost and capital cost. These sensitivities are evaluated around the base case price assumptions of an average gold price of US $1,200 per ounce, and the average gold recovery, OPEX and capex price assumptions listed in Tables 22.2 and 22.3. Table 22.5 lists the estimated Net Present Value (NPV) at discount rates of 0%, 5%, 7.5% and 10%, and the estimated Internal Rate of Return ("IRR") for the gold price assumptions between US $900 and $1,500 per ounce.

Table 22.5 Projected Sensitivity of Net Present Value and Internal Rate of Return to Variation in Gold Price (after-Royalty and after-Tax)

Gold Price ($/Oz)	Total Cash Flow (US $M)	NPV @ 5% (US $M)	NPV @ 7.5% (US $M)	NPV @ 10% (US $M)	IRR (%)	Payback (years)
$900	$60.4	24.1	9.3	$(3.8)	9.2%	3.0
$1,000	$159.8	$102.9	$80.2	$60.4	20.5%	3.0
$1,100	$249.7	$174.9	$145.3	$119.7	29.6%	2.5
$1,200	$338.1	$245.9	$209.6	$178.2	37.9%	2.2
$1,300	$427.5	$317.4	$274.2	$237	45.8%	1.9
$1,400	$515.2	$387.6	$337.6	$294.6	53.2%	1.8
$1,500	$602.4	$457.3	$400.6	$352.0	60.4%	1.6

Sensitivity to the proportional change from the base case economic projection, derived at an average gold price of US $1,200 per ounce and gold recovery, OPEX and capex unit costs listed in Tables 22.2 and 22.3, were estimated for a nominal range of + 25% to – 25% from the base case assumptions. The sensitivity is shown graphically for NPV @ 5% and for IRR in Figures 22.2 and 22.3, respectively.

Figure 22.2 Sensitivity of Estimated NPV @ 5% (after-Royalty and after-Tax) for Changes in Cost, Gold Recovery or Gold Price as a Percent of the Base Case at a Gold Price of $1,200 per Ounce, Gold:Silver Price Ratio of 73.7, 78%% Gold Recovery and Cost as Defined in Table 22.3

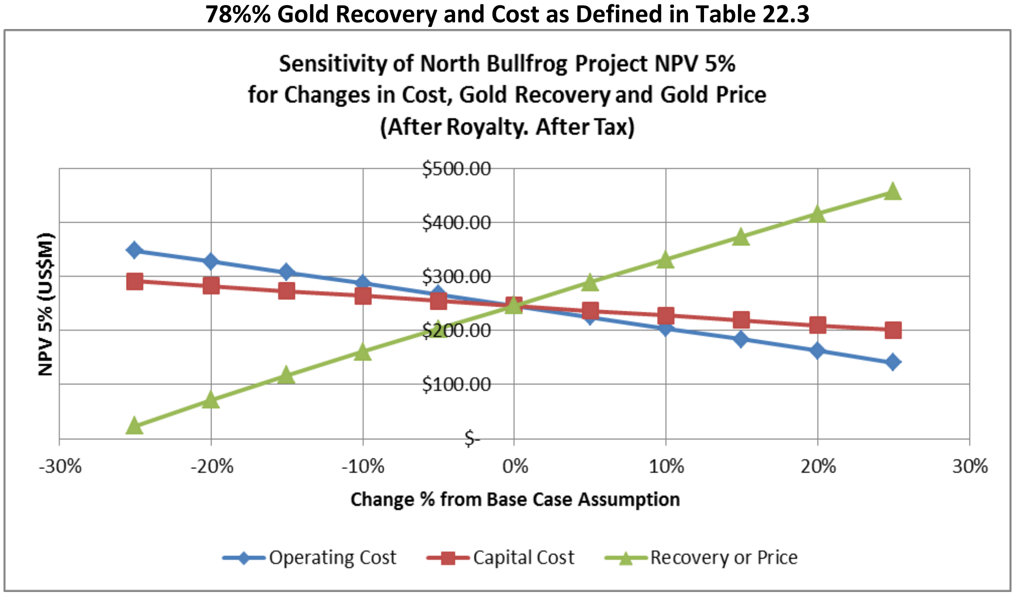
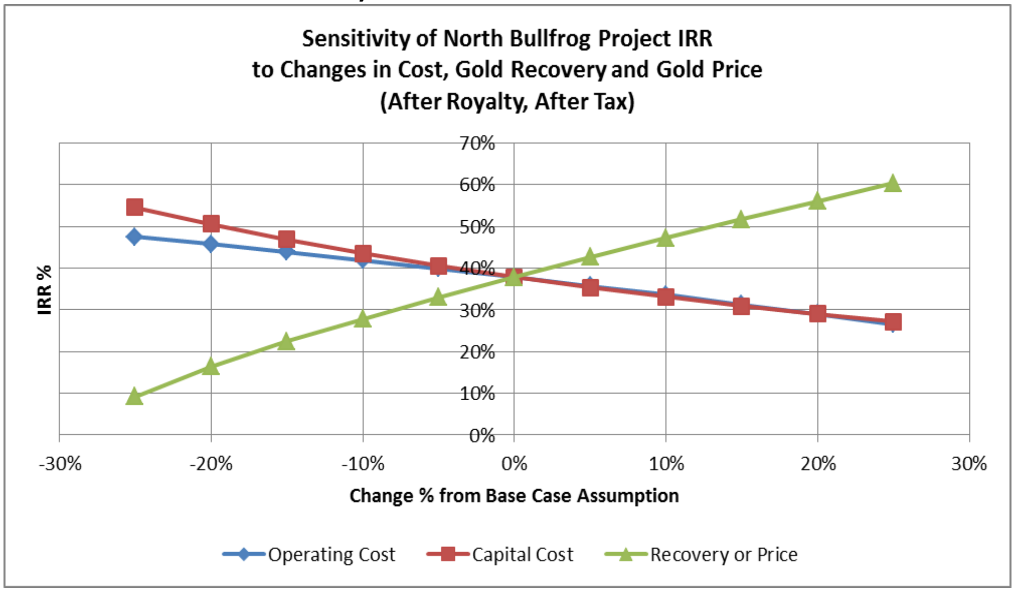


Figure 22.3 Sensitivity of Estimated IRR (after-Royalty and after-Tax) for Changes in Cost, Gold Recovery or Gold Price as a Percent of the Base Case at a Gold Price of $1,200 per Ounce, Gold:Silver Price Ratio 0f 73.7, 78% Gold Recovery and Cost as Defined in Table 22.3.



The sensitivity analysis indicates that the PEA of the NBP would be most sensitive to gold price and gold recovery assumptions. The PEA was less sensitive to changes in cost, with changes in capex having a greater effect than changes in OPEX.

22.4 TAXES, ROYALTIES AND OTHER INTERESTS

Corvus would be subject to the following taxes as they relate to the Project:

- Nevada Net Proceeds Tax
- Federal Income Tax

Corvus would also be subject to royalties as described in Section 22.4.3.

Estimates of these taxes and royalties were made based on the production schedule in Table 22.4 and operating and capital cost estimates described in Section 21.

22.4.1 NEVADA NET PROCEEDS MINERAL TAX

In Nevada, if the net proceeds of a mine in the taxable year totals US$4 million or more the tax rate is 5%. The gross proceeds from the sale of the minerals minus certain allowable deductions were used to estimate the taxable net proceeds. The Nevada net proceeds tax is calculated before deductions of Federal income tax. In general, all operating costs and capital costs directly related to the mining operation are deductible, using Nevada depreciation and depletion schedules.

22.4.1.1 FEDERAL INCOME TAX

Corporate Federal income tax was estimated by computing the higher of a regular tax or a Tentative Minimum Tax (TMT). If the TMT exceeds the regular tax, the difference is called the Alternative Minimum Tax (AMT). Regular tax was estimated by subtracting Nevada Net Proceeds Mineral tax, all allowable operating expenses, overhead, depreciation, amortization and depletion from revenues on an annual basis to estimate the taxable income. The tax rate was then determined from the published progressive tax schedule. An operating loss may be used to offset taxable income, thereby reducing taxes owed, in the previous two and following 20 years. The highest effective corporate income tax is 35%.

The AMT was estimated in three steps. First, regular taxable income was adjusted by recalculating certain regular tax deductions, based on AMT laws, to estimate AMT Income (AMTI). Second, AMTI was multiplied by 20% to determine TMT. Third, if TMT exceeded the estimated regular tax, the excess was the AMT amount payable in addition to the regular tax liability.

22.4.2 DEPLETION

Generally speaking, depletion, like depreciation, is a form of cost recovery. Just as the owner of a business asset is allowed to recover the cost of an asset over its useful life, a miner would be allowed to recover the cost of the mineral property. Depletion was taken over the projected period that minerals would be extracted.

For federal income tax purposes, two forms of depletion are allowed: cost depletion and percentage depletion. The taxpayer is required to use the method that will result in the greatest deduction.

22.4.2.1 COST DEPLETION

Cost depletion was estimated based on the adjusted basis of the depletable property multiplied by the units of mineralized material projected to be produced over the production schedule in Table 16.1.

22.4.2.2 PERCENTAGE DEPLETION

Under the percentage depletion method, a flat percentage of 15% of adjusted gross income from gold mining was used to estimate the depletion allowance. However, the deduction for depletion cannot exceed 50% of the adjusted taxable income from the activity. This limitation was computed without regard to the depletion allowance. The amount of the deduction allowable under percentage depletion is not limited by the basis of the property, except for AMT purposes. Thus, even though the basis of the property would be reduced by the amount of depletion taken, if the basis becomes zero, the depletion based on the percentage of adjusted gross income may continue to be claimed for tax purposes.

22.4.2.3 DEPRECIATION

Cost recovery for capital invested was estimated using standard depreciation schedules specified for different types of investment. The estimated cost recovery for calculation of Federal income tax included the 7 years 200% declining balance calculation, a expense 73% with 6% for the next 4 years and the final 3% in the last year calculation, and a units of production depreciation schedule. Both an alternative minimum tax and regular tax depreciation was estimated.

22.4.3 ROYALTIES

The calculation of estimated royalties was based on projected mining production underlying individual leases to which royalties apply. The royalty status of the various patented claim blocks is discussed in Section 4.1, Table 4.1. Where lease agreements provide for royalties, annual gold and silver production from those claim blocks has been projected and used to estimate royalty ounces of gold and silver. Those royalty ounces are deducted from the payable gold and silver production.

23 ADJACENT PROPERTIES

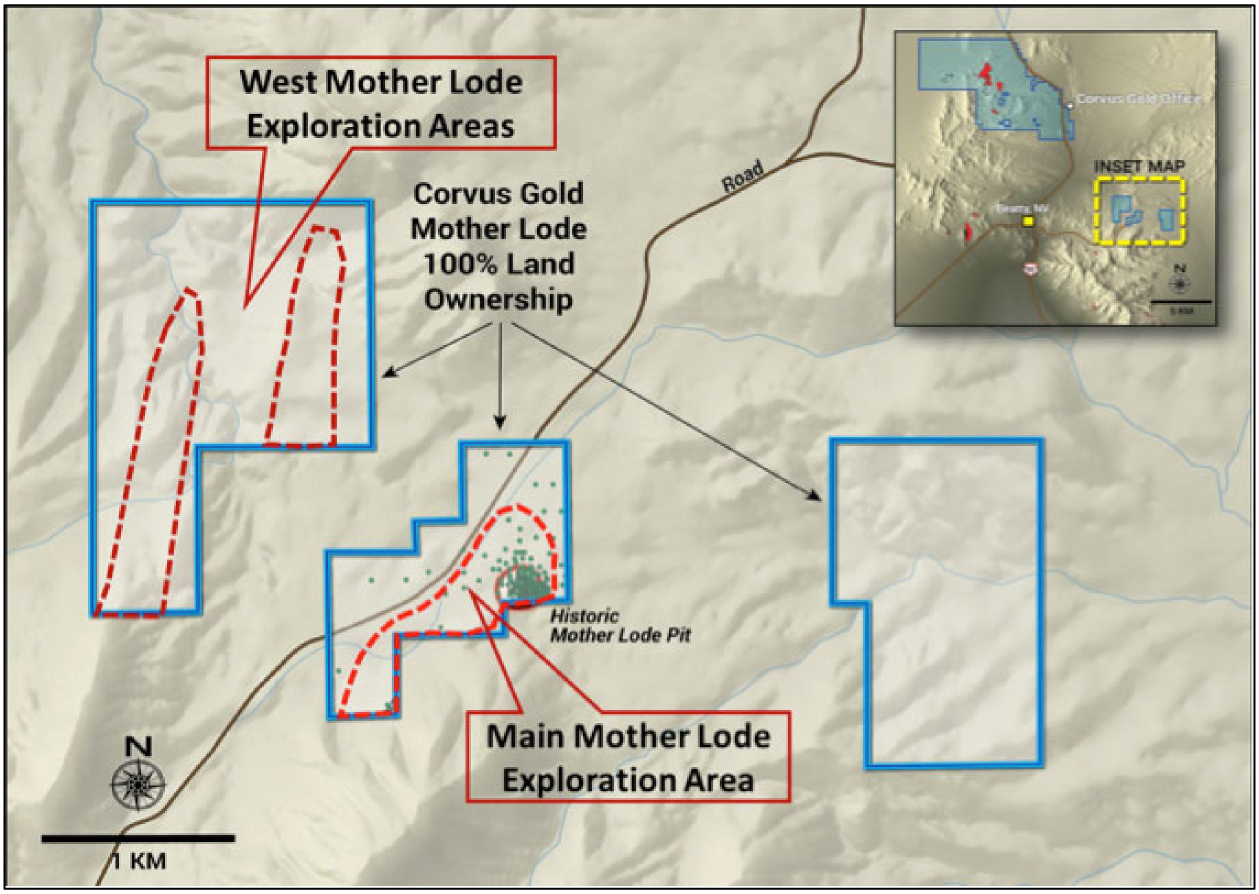
There are two adjacent properties that are relevant to the NBP: the Sterling Mine, owned by Northern Empire Resources Corp. and the Reward Gold Project owned by Waterton Resources Limited (previously owned by Atna Resources, Limited). Both properties have published technical reports that can be found under the respective owner's profiles on SEDAR.

The authors have been unable to verify the information available with respect to the adjacent properties, and such information is not necessarily indicative of the mineralization at the NBP.

24 OTHER RELEVANT DATA AND INFORMATION

In May 2017, Corvus Gold purchased 100% of the MLP, covering approximately 250 acres including the historic Mother Lode open pit mine. In addition, Corvus Gold staked two additional adjacent claim blocks to the MLP totaling 1,040 acres, covering areas of exploration and development potential. The MLP is located approximately 10 kilometres from Corvus's NBP, as shown in Figure 24.1

Figure 24.1 Map of Mother Lode claims with inset showing the relative location of Mother Lode and the North Bullfrog Project



The MLP deposit was mined in the late 1980's when gold price was about $400/ounce. Low gold prices made the operation uneconomic and resulted in the closure of the operation in 1989 after less than 3 years in operation which produced 34,000 ounces of gold. The MLP is similar in age to the historic Bullfrog Mine and the NBP and is hosted in both Tertiary volcanic-sedimentary rocks and Paleozoic sedimentary rocks. The mineralization occurs as low angle, north dipping, near surface, tabular bodies of mixed sulfide and oxide mineralization. Key structural controls in the deposit appear to be a series of north northwest high angle structures which have acted as conduits for mineralizing fluids (similar to the YellowJacket deposit at North Bullfrog). An important untested target for additional high-grade mineralization is the intersection of the major, low angle east-northeast trending Fluorspar Canyon Fault Zone and the high-angle N-NW trending feeder structures approximately 50 metres below the existing MLP deposit.

Phase 1 of the MLP drill program utilizes three drill rigs (two reverse circulation and one core) and began in September 2017. The initial program is scheduled for approximately 13,000 metres and is focused on confirmation of the existing 172-hole database and addressing priority resource expansion exploration targets in four main zones of historic mineralization. Phase 1 of the MLP drilling program is underway and a second phase is projected to begin in Q1 of 2018.

Based on geologic results from Phase 1, Corvus will initiate a metallurgical testing program and begin conceptual studies to define the integration of the anticipated MLP resource mineralization with the NBP. A PEA for the integration of the two sites would be based on the Mineral Resources and technical data identified by Phase 1 and 2 of the MLP drilling program and technical data developed in Q1 and Q2 2018.

There has not been sufficient work done on the deposit and the MLP does not currently form part of the PEA.

25 INTERPRETATION AND CONCLUSIONS

25.1 MINERAL RESOURCES

Previous PEA documents based on the addition of higher grade vein and vein stockwork Mineral Resources in the YellowJacket Zone suitable for mill processing has substantially improved the estimated performance of the Project. This improvement emphasizes the importance of further exploration for higher grade structural mineralization zones at NBP and the recently acquired MLP.

25.2 GEOLOGIC POTENTIAL

Exploration work at NBP has demonstrated that gold bearing quartz vein zones and replacement deposits exist along the YellowJacket corridor at NBP. This represented a completely blind discovery of a previously unrecognized style of mineralization at NBP. A 3D IP survey, a gravity survey in the eastern Steam-heated Zone along with more detailed structural/geologic mapping in early 2015 have provided the basis for target generation on the rest of NBP. These structural targets and the general Jolly Jane and Sierra Blanca areas were the priority for work at the NBP. There are also other alteration and geochemical anomalies throughout in the Eastern Steam-heated Alteration Zone that the Project should evaluate.

The 2015-2016 drilling programs outlined significant continuous disseminated mineralization in several areas that need additional drilling to fully define the extent of mineralization. However, that exploration should have lower priority than the higher grade structural zone targets and the higher grade MLP. Recent drilling at the MLP has identified significantly higher grade drilling intercepts.

25.3 METALLURGICAL TESTING

Metallurgical testing data indicates that simple cyanide leach processing, either mill or heap leach, has high gold recovery in oxidized materials. Since the primary gold occurrence in the quartz vein and vein stockworks of the YellowJacket Zone is free gold and electrum, cyanide processing techniques would have good performance below the oxidation horizon. Further metallurgical testing during 2016-2017 has demonstrated the potential to process NBP sulphide mineralization using the AAO approach. If the characteristics of any future discoveries are different than expected, Corvus should perform additional metallurgical tests.

25.4 OVERALL PROJECT

Corvus has invested considerable effort and investment in the advancement of the NBP through drilling, permitting, technical and metallurgical evaluations, internally and with the assistance of reputable consulting firms. This evaluation indicates a strong positive and robust performance of a combination heap leaching and milling facility at the Project at the current metal price environment. The Project performance is most sensitive to gold price and gold recovery. Metallurgical data to this point indicates economic extraction of metals is not complicated.

The Project economics suggest that NBP can be put into production for a total capital investment of approximately US $258.7 million and with the initial capital being paid back within 2.2 years of startup. Good potential exists for the discovery of additional mill and heap leach Mineral Resources at exploration target areas identified within the Project claim block and at the recently acquired MLP.

MMC is of the opinion that the current Mineral Resource and PEA at North Bullfrog is sufficient to warrant continued planning and effort to explore, permit and develop the Project.

MMC believes there is sufficient data to support continued exploration, geologic modeling and continuing development of the Project.

MMC is not aware of any risks or uncertainties that could affect the reliability of the conclusions of this Technical Report, the PEA or the economic viability of the Project.

26 RECOMMENDATIONS

The PEA results, for the combined mill and heap leach configuration, indicate the substantial financial impact on project performance of the higher grade vein and vein stockwork mineralization. Therefore it is recommended that future exploration should focus on the identification and development of the higher grade mineralization. In addition MMC recommends that Corvus define and execute programs to develop the required supporting technical information as a basis of a preliminary economic assessment of a combination of NBP with MLP. These recommended activities are:

- Resource definition drilling
- Metallurgical testing of gold bearing mineralization
- Continue environmental baseline characterization
- Evaluate the economic performance of MLP and NBP with combined infrastructure

The projected costs for the next phase of this program are outlined in Table 26.1.

Table 26.1 Proposed Budget to Support Recommended Program at NBP/MLP.

Activity	Amount
Exploration Drilling and Data Management	US$ 0.80 M
Baseline Data Collection	US$ 0.05 M
Metallurgical Testing	US$ 0.15 M
Resource Model, Geologic Model and PEA	US$ 0.35M
Total	US$ 1.35M

MMC has not recommended successive phases of work for the advancement of the Project.

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