



ASSESSMENT REPORT TITLE PAGE AND SUMMARY

TITLE OF REPORT: Franklin Project; Exploration and Metallurgical Testing – Union, Ida and Golden Zone

TOTAL COST: \$5,426.26

AUTHOR(S): Doug Warkentin

SIGNATURE(S): 

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YEAR OF WORK: 2017

PROPERTY NAME: Franklin

CLAIM NAME(S) (on which work was done): Ida-Dane; Union

COMMODITIES SOUGHT: Au, Ag, Cu

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: Franklin Camp, including 082ENE003 and 082ENE004

MINING DIVISION: Greenwood

NTS / BCGS: NTS 082E09W

LATITUDE: 49° 33' 25"

LONGITUDE: 118° 20' 55" (at centre of work)

UTM Zone: 11 **EASTING:** 402500 **NORTHING:** 5490250

OWNER(S): Doug Warkentin

MAILING ADDRESS: 7069 McBride St., Burnaby, BC, V5E 1R1

OPERATOR(S) [who paid for the work]: Crucible Resources Ltd.

MAILING ADDRESS: 7069 McBride St., Burnaby, BC, V5E 1R1

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**) Jurassic, Eocene, Carboniferous-Permian, Penticton Group, Harper Ranch Group, Volcaniclastic Rocks, Granites, Kettle River Formation, Marron Formation, Franklin Group, Limestone Skarns, Averill Complex

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:
00637, 17273, 21768, 26306, 26440, 27328, 27604, 27929, 28790, 29306, 33945, 34310, 34714, 34846, 35780, 36027, 36292, 36574

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for ...)			
Soil			
Silt			
Rock	6 samples ICP-MS	Ida-Dane	\$1876.77
Other			
DRILLING (total metres, number of holes, size, storage location)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling / Assaying	6 samples, prep and ICP analysis	Ida-Dane	\$210.32
Bacteriologic			
Microbiologic			
Metallurgic	6 tests, 4 solid and 21 solutions - ICP analysis	Union	\$3339.17
PROSPECTING (scale/area)			
PREPARATORY / PHYSICAL			
Line/grid (km)			
Topo/Photogrammetric (scale, area)			
Legal Surveys (scale, area)			
Road, local access (km/trail)			
Trench (number/metres)			
Underground development (metres)			
Other			
		TOTAL COST	\$5,426.26

Franklin Project

***Greenwood Mining Division
NTS 082E/08 and /09***

***Project Area Location:
UTM NAD 83: Zone 11, 402500 East, 5490250 North***

**Registered Owner: Doug Warkentin
Operator: Crucible Resources Ltd.**

Exploration and Metallurgical Testing – Union, Ida and Golden Zone

***Project Tenure Numbers: 1040223, 1044203, 1044204, 1045746, 1047875, 1047876,
1052520, 1052521, 1057014 and 1057213.***

SOW Event Numbers: 5659314, 5664089, 5669414, 5674377, 5678144 and 5682886.

January 30, 2018

Prepared By: Doug Warkentin, P.Eng

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Introduction

Location and Access

The Franklin project lies along the Burrell Creek valley in the Christina Range of the Monashee Mountains of Southeast BC, approximately 65 km north of Grand Forks, BC. It covers part of the historic Franklin Camp, which includes the abandoned town sites of Franklin and Gloucester City. The general project location is shown in Figure 1.

The property consists of a contiguous grouping of MTO claims covering much of Mt. McKinley and Mt. Franklin, extending across Burrell Creek to the east and along Franklin Creek to the northwest. The project area is crossed by the Burrell Creek Forest Service Road (FSR) which is a well-maintained all-season two wheel drive accessible road. It connects with Grand Forks via the Granby Valley road to the south, and runs along the east side of the Burrell Creek Valley in the project area. Near the northeast boundary of the property a forestry spur road crosses Burrell Creek and splits into three branches, providing access to much of the western and north-western parts of the project area. These are recently active logging roads that mostly remain in good condition. The middle branch, accessing the upper part of Franklin Creek, has been decommissioned but remains passable by high clearance two-wheel drive vehicles. The other two branches, accessing the Mt. McKinley area south of Franklin Creek and the Gloucester Creek area to the north, remain as active forestry roads and are in good condition where they pass through the property.

The entire area was part of an active exploration and mining camp in the early part of the last century, and there are therefore also many overgrown and unmaintained roads and trails accessing old workings, particularly in the areas surrounding Mt. Franklin and the north side of Mt. McKinley.

The area is mountainous, with deep valleys to the west of the broader Burrell Creek Valley. The east-facing slopes tend to be steep, while west-facing slopes are gentler. The climate is generally dry in the summer and the terrain is mainly tree-covered, but with relatively little undergrowth.

Tenure Information

The Franklin Project currently consists of 10 Mineral Titles Online claims with a total area of 1949 hectares. The project claims form a single contiguous block in an area covering the confluence of Franklin, Gloucester and Burrell Creeks, and covering much of Mt. McKinley and Mt. Franklin. It extends to the northwest along Franklin Creek, including the Twin Creek and McDonald Creek areas. The project claims also include smaller areas on the east side of Burrell Creek north of Dinsmore Creek and along the lower portion of Nichol Creek. The project claims cover large parts of the historically active Franklin mining camp, with a long history of past exploration and previous tenures. The area includes many reverted crown granted mineral claims that no longer hold title, along with a smaller number of crown grants that remain in good standing. The active crown grants principally cover the past producing Union and McKinley Mines, along with the area around the Homestake mine. Together these claims affect the title to approximately 90 hectares of the total project area. The specific rights associated with these crown grants have not been investigated in detail, but it is assumed that they pre-empt all rights of the overlying MTO claims within their boundaries.

The claims are all owned by the author, and Crucible Resources Ltd. has an option to acquire 100% ownership of these claims. Claim details are shown in Table 1. Expiry dates shown in this table reflect the application of work described in this report.



Figure 1 – Franklin Project Location Map

Figure 2 outlines the tenures of the Franklin Project.

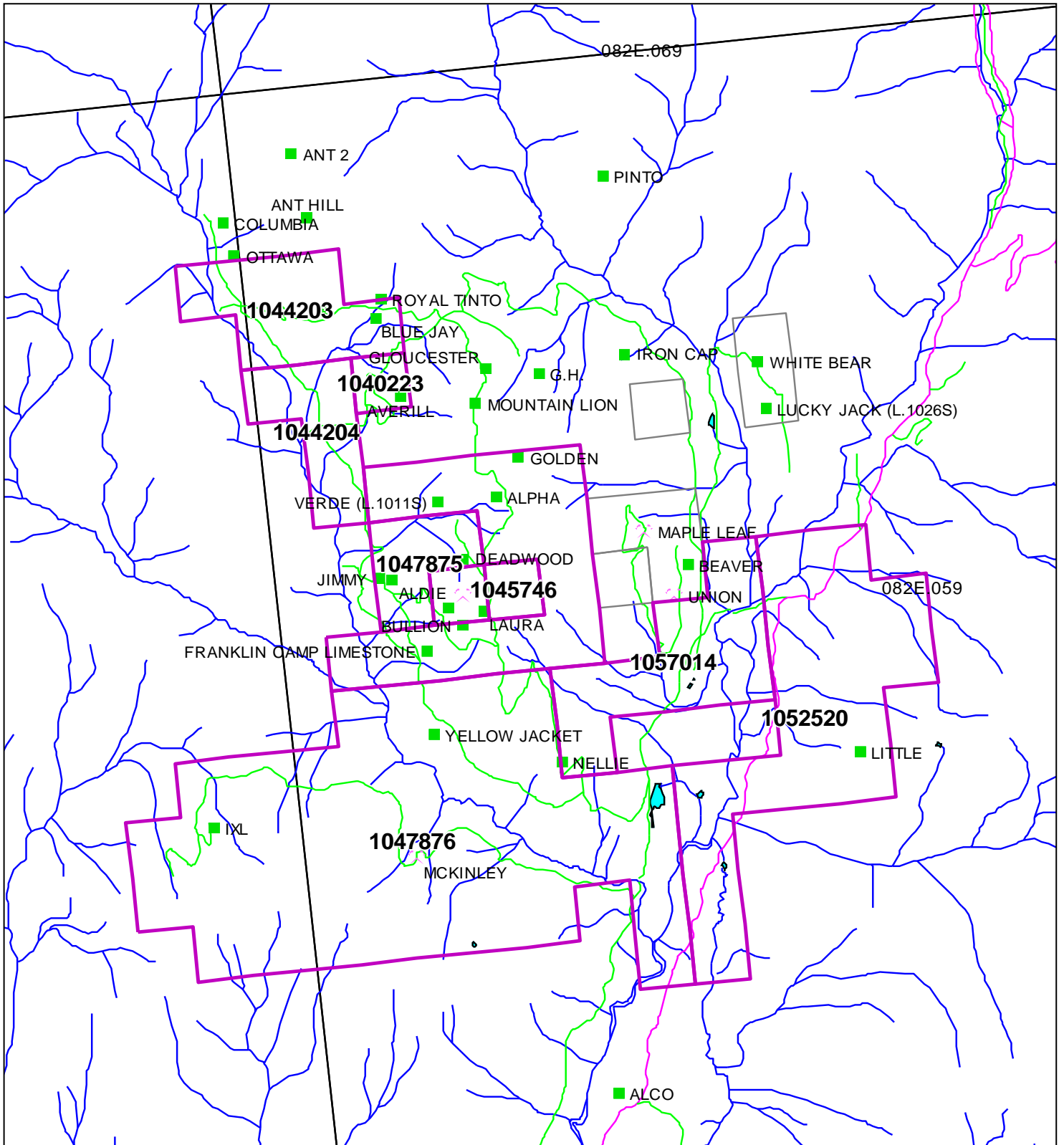


Figure 2 – Project Tenure Outline

Table 1: Franklin Project Mineral Tenures

Title Number	Claim Name	Owner	Map Number	Issue Date	Good To Date	Area (ha)
1040223	AVERRILL	145582 (100%)	082E	2015/NOV/29	2018/MAR/31	20.9
1044203	MCDONALD CREEK	145582 (100%)	082E	2016/MAY/18	2018/MAR/05	125.7
1044204	AVERILL WEST	145582 (100%)	082E	2016/MAY/18	2018/MAR/05	83.8
1045746	UV	145582 (100%)	082E	2016/AUG/03	2018/MAR/31	21.0
1047875	TWIN CR S	145582 (100%)	082E	2016/NOV/15	2018/MAR/05	62.9
1047876	MT MCKINLEY	145582 (100%)	082E	2016/NOV/15	2018/MAR/05	838.5
1052520	IDA-DANE	145582 (100%)	082E	2017/JUN/14	2018/MAR/05	356.3
1052521	BULLION TWIN	145582 (100%)	082E	2017/JUN/14	2018/MAR/05	251.4
1057014	UNION	145582 (100%)	082E	2017/DEC/14	2018/MAR/05	167.7
1057213	BANNER	145582 (100%)	082E	2017/DEC/24	2018/DEC/25	21.0
Total:						1949.0

Regional Geology

The Franklin Project covers much of the historic Franklin mining camp. The area is defined by major north-south regional faults that form a graben structure. The Granby fault, which runs to the east of the property, can be traced for more than 100 km to the south, where it forms the eastern boundary of the Republic graben in Washington State. In the Franklin camp area, this fault separates older metamorphic rocks to the east from younger intrusive rocks that surround and partly underlie the Franklin property.

While plutonic rocks are dominant regionally, the geology of the Franklin camp is more complex (Figure 3). The oldest rocks are a sequence of sediments, volcanics and related intrusives known locally as the Franklin Group. These are mapped as part of the Carboniferous Harper Ranch Group, and show strong similarities to the Brooklyn formation in the Greenwood-Grand Forks area (Caron 2004). This group includes argillite, conglomerate, chert, tuffaceous siltstone, limestone and greenstone, often showing significant alteration. The Franklin rocks are intruded by several distinct bodies of plutonic rock, including diorite/granodiorite from the Jurassic aged Nelson batholith and related bodies, as well as Jurassic aged porphyry dikes, the Jurassic Averill complex and the Eocene Coryell suite, including syenite stocks and lamprophyre dikes. Overlying the Franklin rocks and much of the intrusive rock are Eocene clastic sediments and volcanics of the Kettle River formation. In addition to sandstones and conglomerates, these rocks include tuffs and some areas of rhyolite. These are in turn overlain by andesites and trachytes of the Eocene Marron formation, which mainly occur at higher elevations.

The Franklin rocks were the main focus of early exploration in the Mt McKinley and Mt Franklin areas, particularly for precious metal-bearing quartz veins and for silicified zones and skarn deposits with high base metal values along limestone contacts. Another type of mineralization identified in the early days of exploration was the so-called 'Black Lead' zones of shear hosted massive chalcopyrite with some PGM values. These tend to form small erratic pods along contact zones of the pyroxenite phase of the Averill plutonic complex. Rare Earth Element (REE) mineralization has also been reported in these rocks, but the style of the mineralization is unknown. The Averill complex was originally correlated to the Eocene Coryell intrusives, but recent dating suggests a Jurassic age. The complex covers much of the north end of the Franklin camp and is a concentrically zoned differentiated intrusion with pyroxenite at its centre,

grading outward through monzogabbro to monzonite, with trachytic syenite intruding the pyroxenite and monzogabbro along the axis of the pluton. The black lead mineralization generally occurs along the syenite-pyroxenite contacts.

Other possible styles of mineralization have been identified in more recent exploration programs, including epithermal gold and volcanogenic massive sulphide (VMS). Several areas of epithermal-style alteration and veining have been identified associated with intrusive contact zones but no significant economic mineralization has yet been identified in these areas. There are also intrusive contact zones resulting in extensive alteration that can carry base metal mineralization, but these have seen very limited exploration. The potential for VMS mineralization has also been suggested, based on the correlation of the Franklin rocks with similar formations along the Granby fault to the south, where economic VMS deposits have been discovered in the Belcher district in Washington State.

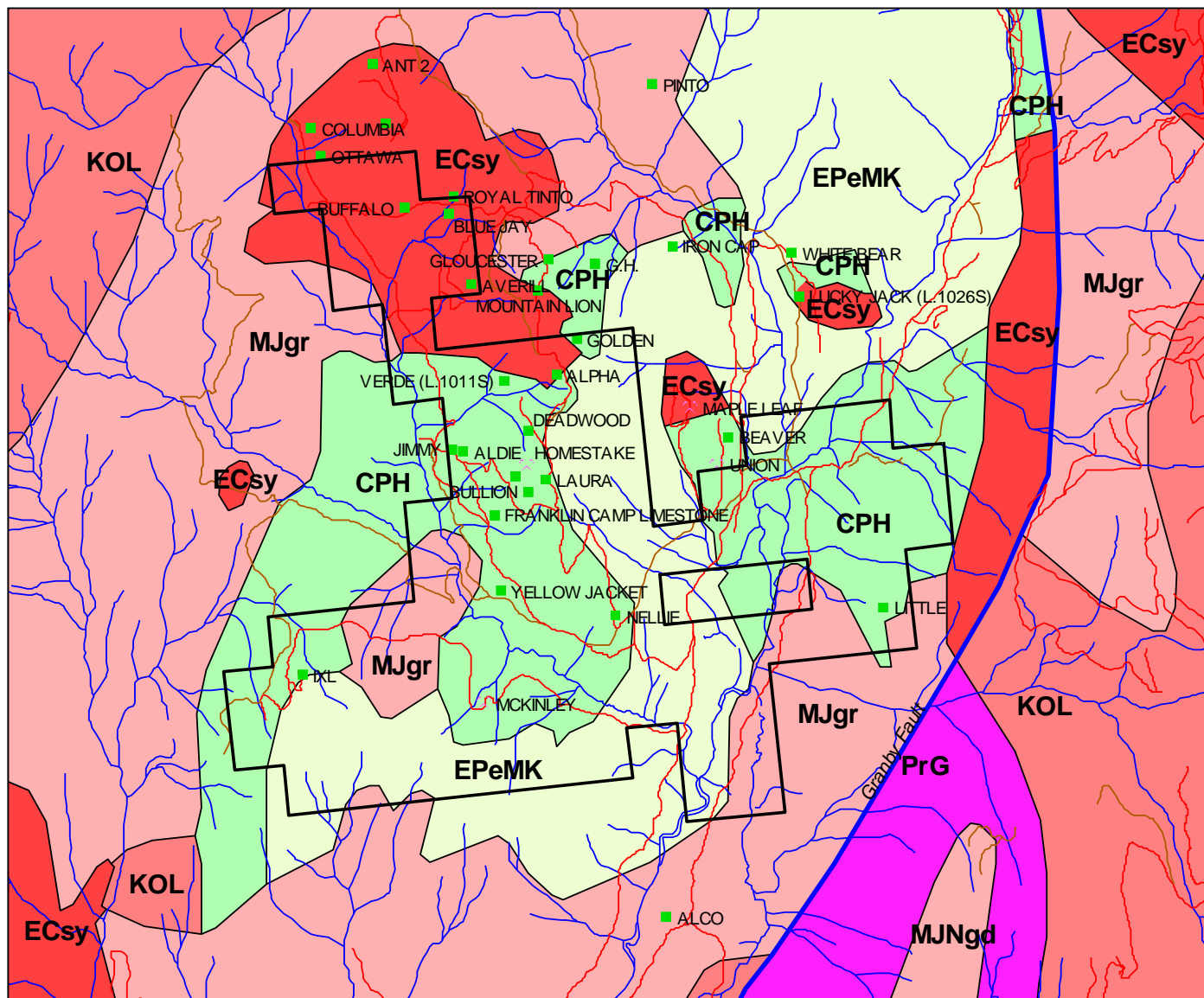
Local Geology

The Franklin Property is primarily underlain by Franklin group rocks and the overlying Eocene sediments and volcanic rocks of the Kettle River and Marron formations. The property also includes significant intrusive contact zones in and around the Franklin rocks. To the northwest the project area also covers part of the Averill complex, including several known occurrences of the 'Black Lead' mineralization and significant exposures of pyroxenite.

The project area partly overlaps the main historic producer in the camp, the Union mine, along with historical producers the McKinley and the Homestake. The other historic producer in the camp, the Maple Leaf, lies just outside the property boundary. While the actual mine workings are covered by active crown granted mineral claims, these are small and do not necessarily cover potential extensions or parallel zones.

By far the most important ore zones discovered to date were at the Union Mine (see Table 3, below). The ore was a relatively low sulphide replacement-style vein with some adjacent zones of higher base metal sulphide content. The mineralization consisted of a zone of almost complete replacement of a limestone horizon in Franklin sediments which was later fractured into small irregular sections by multiple faults. Precious metal grades were highest at the intersections of these faults, indicating that the faulting also played a role in later mineralization. The vein did not have clear margins, with ore zones being defined almost entirely by assay. Silver grades were highest in the upper levels, with gold grades increasing in the lower mine levels. Associated minerals consisted mainly of fine grained pyrite and other iron minerals, but in places also carried galena and sphalerite.

In its best sections, the Union mine produced some of the highest grade ore mined in BC. Ore grades were generally found to diminish with depth and to the east, and the vein was truncated by a larger fault to the west. More recent exploration has identified small ore remnants and unmined zones within the old workings, but no significant new extensions of the mineralization have been identified since active mining ceased in the 1940's. Recent drilling to the west of the western fault boundary identified a silicified zone carrying anomalous precious metal values, but it is not clear whether this is an extension of the Union structure. Mill tailings are deposited within the Franklin property boundaries in two separate locations, to the south and east of the mine, and parts of these have been reprocessed on two separate occasions.



CPH – Carboniferous to Permian Harper Ranch Group – volcanoclastic rocks

ECsy – Eocene Coryell Plutonic Suite – syenitic to monzonitic intrusive rocks

EPeMK – Eocene Penticton Group: Marron, Kettle River, Springbrook, Marama and Skaha Formations – undivided volcanic rocks

KOL – Cretaceous Okanogan Batholith: Ladybird and Valhalla Intrusions – undivided intrusive rocks

MJgr – Middle Jurassic – granite, alkali feldspar granite intrusive rocks

MJNgd – Middle Jurassic Nelson Batholith – granodioritic intrusive rocks

PrG – Proterozoic Grand Forks Gneiss/Monashee Complex – paragneiss metamorphic rocks

Figure 3 – Regional Geology, Franklin Camp Area

There are numerous other mineral occurrences on the property. A significant band of limestone runs through the Franklin Creek valley with a north-south orientation and is associated with the high grade skarn mineralization found at the McKinley mine. Other more poorly defined occurrences have also been identified along this trend and may indicate additional skarn mineralization. At the IXL showing to the west of the McKinley Mine, shallow zones of skarn-type mineralization have also been identified. This area has seen considerable modern exploration; including trenching and drilling, which has identified significant zones of copper-gold

surface mineralization in Franklin group rocks and altered porphyry intrusives in contact with small bodies of Franklin limestone. Drilling has shown that some of the best exposures of surface mineralization are cut off at shallow depths by intrusive rocks, however the mineralized rocks are covered by Eocene sediments to the east and potential thickening in this direction has not yet been tested. In addition, at least one hole has shown more significant depths of lower grade copper-gold mineralization in both Franklin volcanics and porphyry intrusives.

In the Mt Franklin area numerous smaller quartz veins have been identified in Franklin rocks, some carrying significant gold and/or base metals. The most developed occurrence in this area, the Homestake, lies within a crown grant, but several other important occurrences are also known within the project area. These include the Banner, North Banner, Bullion, Laura and Verde showings as well as some unnamed occurrences in the Twin Creek area, near the Alpha and Deadwood showings. On the southeast flank of Mt Franklin pyrite, chalcopyrite and copper carbonate mineralization occurs in Franklin rocks near the contact with Eocene volcanics at the Nellie showing. This area reportedly shows evidence of hydrothermal alteration associated with nearby intrusives. There is also reportedly copper mineralization at the Alpha showing, near the contact between the Franklin rocks and the Averill intrusives.

In the northwest part of the property the Franklin rocks are intruded by the Averill complex, and several occurrences of copper mineralization with platinum values were historically reported within the project boundaries. These include at least two styles of mineralization. The first type of occurrence is as shear zones along the pyroxenite contact at the Averill, Golden and Buffalo showings, which are typical of the Black Lead type of mineralization, while the second type consists of larger zones of pyroxenite carrying disseminated copper mineralization. This is the style at the Ottawa showing and may also be closely related to the Evening Star and Blue Jay showings, which are reported as disseminated copper in pyroxenite. The Buffalo showing may also include areas of this type of mineralization. The mineralization historically reported from the Averill complex has been primarily the Black Lead type, found in narrow and discontinuous shear zones along contact zones between pyroxenite and syenite, where copper, platinum and sometimes other precious metals appear to be concentrated by secondary hydrothermal enrichment. It has been suggested that the source of these values is enriched heavy mineral differentiated zones within the intrusive, likely within the pyroxenite phase. More recent work also points toward extensive low-grade copper mineralization within the pyroxenite, particularly where wider sections of pyroxenite are exposed in the northwest part of the complex.

To the east of Burrell Creek few mineral showings are reported, but recent work has identified a number of mineralized exposures, including at least one previously explored mineralized shear zone in Franklin volcanics not far from a contact with granodiorite intrusive rocks. The Dane showing includes significant gold values in addition to copper and silver values. The occurrence of zones carrying high copper and silver values with minor to significant gold values is a more common pattern of mineralization in the southern part of the camp, normally occurring in east-west striking veins or shear zones. The highest value veins in the Mt. Franklin area are more typically associated with lead and zinc mineralization, also often with high silver values. The Union veins themselves generally carried very low base metal values, with the main minerals of economic importance being gold and silver.

A short distance to the south of the property, in addition to the small east-west striking copper-bearing vein structures, there are showings of high grade contact mineralization, intrusive related copper-zinc and copper-molybdenum mineralization, as well as epithermal-style vein systems in granodiorite which are locally reported to carry some gold values.

A summary of the documented showings occurring within the Franklin project claim area is included in Table 2.

Table 2: Franklin Project - Documented Mineral Occurrences

Name	Minfile #	Location	Minerals	Reported Grades	Width (m)	Year
Minfile showings						
Ottawa	082ENE061	Franklin Crk	Pt, Cu	2.1 g/t Pt	grab	1918
Buffalo	082ENE008	McDonald Crk	Cu, Pt, Pd	6.5 g/t Pt	grab	1918
Blue Jay	082ENE054	McDonald Crk	Ag, Cu	2.7 g/t Ag, 0.24% Cu	grab	1988
Royal Tinto	082ENE010	McDonald Crk	Fe			
Averill	082ENE007	McDonald Crk	Cu, Pt, Pd	0.9 g/t Pt, 3.5 g/t Pd, 53 g/t Ag, 6.7% Cu	grab	1988
Verde	082ENE020	Twin Creek	Au, As, Co	2.98 g/t Au	grab	2003
Alpha	082ENE052	Mt. Franklin	Au, Ag, Cu	0.68 g/t Au, 3.42 g/t Ag, 0.8% Cu	1.5 m	1965
Golden	082ENE053	Mt. Franklin	Pt, Cu	2.1 g/t Pt	grab	1918
Banner	082ENE002	Mt. Franklin	Au, Ag, Pb, Zn, Cu	2.35 g/t Au, 19.25 g/t Ag, 3.16% Zn	4 m core	2003
Bullion	082ENE013	Mt. Franklin	Ag, Au, Cu, Pb, Zn	1.1 g/t Au, 100 g/t Ag, 2.5% Pb	grab	2003
Laura	082ENE066	Mt. Franklin	Ag, Au, Pb, Zn	141 g/t Ag	grab	1988
Jimmy	082ENE042	Mt. Franklin	Ag, Pb, Zn	20.0 g/t Ag, 1.94% Pb, 3.40% Zn	grab	1988
Yellow Jacket	082ENE021	Mt. Franklin	Cu, Pb, Zn			
Franklin Limestone	082ENE062	Mt. Franklin	Limestone			
Nellie	082ENE059	Mt. Franklin	Cu			
Little	082ENE004	Dinsmore Crk	Pb, Zn	1.82 g/t Au, 1.9 g/t Ag	0.07	2006
IXL	082ENE033	Mt. McKinley	Cu, Au, Pb, Zn	3.85 g/t Au, 0.8% Cu	5.5	2003
Non-minfile occurrences						
Dane/Ida		Burrell Crk East	Au, Ag, Cu	2.16 g/t Au, 162 g/t Ag, 5.7% Cu	grab	2006
United Verde		Mt. Franklin?	Au, Ag	5.5 g/t Au	shaft	1914
North Banner		Mt. Franklin	Au	9.27 g/t Au, 45 g/t Ag, 6.00% Zn, 2.12% Pb	grab	1988
Golden Zone		Gloucester Crk	Au			1914
Mary Ann		Gloucester Crk	Au			1914
Evening Star		Franklin Crk	Pt, Cu, Au, Ag	\$0.49 to \$14.35 in Au, Cu and Ag	2-400 m	1906
Last Chance		Mt. McKinley	Au, Ag	1.9 g/t Au, 13.5 g/t Ag, 0.1% Zn	grab	2005
Jack		Mt. McKinley	Zn, Ag, Cu	17.5 g/t Ag, 2.9% Pb, 6.5% Zn	grab	2005

Property History

The property has a long history of exploration, along with some limited development. None of the recorded past producing mines of the Franklin camp are directly covered by the property, although the principal ones are located on small active crown-granted mineral claims that are partly or fully overlain by MTO claims that are part of the property. The property covers much of the historical Franklin camp, which was actively explored beginning in the 1890's, and which was the source of both base metal and precious metal production (Table 3) in the first half of the last century.

Exploration in the Franklin camp area began around 1896, when the first claims were staked. The camp was very active in the early 1900's when most of the principal showings were discovered and developed with small shafts and adits. As early as 1901 the Banner vein had seen considerable development and test shipments had been made, although there is no record of the production from that property. During that same period considerable development occurred on the McKinley property and ore shipments may have been made during that period, although again there is no available record of the production.

Table 3. Historical Production from the Franklin Camp

Mine	Years of Operation	Production (tonnes)	Gold Production (ounces)	Historical Grades
Union	1913-89	122,555	55,525	14.1 g/t Au, 353 g/t Ag, 0.2% Zn, 0.1% Pb, 0.01% Cu
Maple Leaf	1915-16	36	2	1.7 g/t Au, 172 g/t Ag, 7.6% Cu
Homestake	1940-41	453	223	15.3 g/t Au, 30.0 g/t Ag, 0.12% Zn, 0.06% Pb
McKinley	1949	132	2	0.47 g/t Au, 215 g/t Ag, 17.1% Zn, 11.2% Pb

The first actual recorded production from the camp came from the Union property. The Union vein was discovered in 1913 when a silicified zone near earlier workings on an adjacent quartz vein carrying lead and zinc was found to be rich in gold and silver. Shipments of high grade ore began almost immediately from a large open cut, with adits later developed to access more of the ore. Development and small shipments continued from the Union vein until 1920, when operations were shut down due to the high cost of transporting ore to the smelter.

In 1914 a provincial government survey of the area included ore sampling and production data from the Union mine. The same report included sample assays from the Union and Banner claims, and also included assays from a shaft under development on the 'United Verde' claim which returned a value of 0.16 opt Au. The location of this claim has not been verified, but a search of available records from the time indicates that it was active from July 1913 to July 1922 but was never crown granted. The government report places it west of the Union mine on 'Banner Mountain' (Mt. Franklin), while contemporary news reports place it 'across the river' from the Union mine, which would presumably place it to the east.

In 1915 and 1916 two small shipments of copper ore were made from the Maple Leaf mine, lying just north of the Union mine. At the smelter this ore was found to carry an average of 8 g/t platinum, which resulted in new interest in the Franklin Camp for its PGM potential. Following this discovery, in 1918 the federal government's munitions department carried out an evaluation of the platinum potential of the entire camp. Numerous showings of copper from 'Black Lead' and pyroxenite zones were sampled, with grades ranging from less than 1 g/t to 13 g/t Pt, with the highest grades coming from the Maple Leaf workings. Samples from within the claim boundaries of the Franklin Project include a sample from a small shaft on the Golden claim, which assayed 2.1 g/t Pt, a sample from a shaft dump and an adit dump at the Averill showing that each assayed 3.1 g/t Pt, a sample from a shaft dump and from open cuts at the Buffalo showing, which assayed 6.5 g/t and 2.7 g/t Pt respectively, and a sample from large open cuts on the Ottawa claim that assayed 2.1 g/t Pt. While there is very limited information about any of the samples collected, the Ottawa showing has been described as consisting of open cuts exposing pyroxenite mineralized with disseminated copper. It is not known if the 1918 platinum sample came from a selected high grade zone or from the broader disseminated mineralization.

In 1927 Hecla Mining Company bonded the Union and Maple Leaf properties and began to develop milling ore on the Union vein. By 1929 a 145 ton per day concentrator had been constructed and milling operations began in 1930. Full mine production lasted until 1932, when most of the known ore had been mined out, and the mine closed in 1933. In that same year a cyanidation plant was constructed to retreat the tailings, which operated from 1934-36. Lease

operators produced a small amount of additional ore between 1937 and 1942. During the same period that the Union mine and mill were in operation, a small amount of ore was also produced from the nearby Homestake mine. Some ore from the Homestake was likely processed at the Union mill, but the recorded production relates only to direct ore shipments from 1941 and 1942.

In 1964 Franklin Mines Ltd acquired most of the Franklin camp and carried out geological and geophysical surveys along with limited sampling of old workings. This included sampling of the Alpha tunnel, within the current project area, which averaged 0.12% Cu and 1 g/t Ag over its entire 18 meter length, with the 3 meters before the face assaying 0.41% Cu, 5.1 g/t Ag and 0.69 g/t Au. They also mapped the Buffalo area and carried out detailed sampling of a 33 meter adit on the Buffalo claim. Samples showed minimal precious metals values, but there were copper values, including an average of 0.34% Cu over 12 meters of the tunnel toward the face. Sampling around the Averill showing returned minimal Pt assays (max. 0.14 g/t), but showed extensive low grade copper mineralization, including an average of 0.16% Cu along 16.8 meters of the Averill Tunnel.

In 1968 Newmont Exploration acquired part of the camp and carried out a work program which included airborne and ground geophysics, trenching and drilling of three holes at the IXL showing in 1969. Limited information is available regarding this work program, but in general, good mineralization was encountered in trenches but this same mineralization was not found in the drill core. One of the holes reportedly encountered ultramafic rocks with disseminated chalcopyrite, but this zone was not assayed.

In 1979 Pearl Resource acquired part of the camp, including the Union mine and surrounding area. Their work focused on the Union mine and included re-opening the lowest adit and a program of underground drilling in 1984.

In 1986 Longreach Resources Ltd acquired a large part of the Franklin camp and carried out an exploration program that included geochemical sampling, geophysical surveys and drilling of several targets, primarily aimed at platinum. The following year the property was renamed the Platinum Blonde property and optioned to Placer Development Limited who carried out additional drilling, prospecting and geochemical sampling over the entire property. This project was also focused mainly on PGM mineralization and the property primarily covered the northern part of the camp, overlapping much of the northern and north-western portions of the current Franklin project claims. This work identified several precious and base metal soil anomalies, some of which do not appear to have been fully investigated, including a strong and fairly extensive copper anomaly in the northwest, in an area likely underlain by a pyroxenite zone in the Averill complex rocks, and including areas covered by the historical Ottawa and Evening Star claims. Prospecting also resulted in several gold-bearing samples being collected in the Twin Creek area, including one assaying 16.8 g/t Au. No follow-up in this area is recorded.

From 1987 to 1989 Sumac Ventures ran a heap leach operation on the Union mine tailings, reportedly recovering 13,300 grams of gold and about 400,000 grams of silver from 42,500 tonnes of tailings and waste rock. The operation appears to have been terminated due to operational difficulties rather than depletion of the available values.

In 1991 Canamax conducted an airborne geophysical survey over the IXL area along with rock and soil sampling. A new zone of low-grade copper mineralization in diorite was identified about 1.5 km south of the main IXL showing.

In 1993 and 94 Sway Resources drilled up to 29 short diamond drill holes and 14 percussion holes in the Banner-Homestake area and carried out rock and silt sampling, and diamond drilled 900 meters in 8 holes at the IXL showing, but available results of this work are very limited and poorly documented. Some high grade drill intercepts were reported to the west of the Homestake

workings at the North Banner showing, as well as high grade surface samples from at least two separate locations on the Deadwood Crown Grant..

In 2001 Tuxedo Resources Ltd. acquired much of the south and west portions of the Franklin camp and an airborne geophysical survey was flown that year. In 2003 rock sampling, soil geochemistry, trenching and a small drill program were carried out in the IXL and Banner-Homestake areas. Good mineralization was encountered, but the extent was limited. In addition, there was at least one strong gold and base metal soil anomaly identified in the North Deadwood area that has not been fully explored. A single drill hole showed significant widths of low grade gold mineralization below the IXL trenches.

In 2004 Solitaire Minerals carried out trenching and a limited drill program in the Union and Maple Leaf areas. Drilling failed to clearly identify a western extension of the Union vein, but a promising silicified zone carrying anomalous precious metal values was intersected under a cap of overlying volcanic rocks. Work on the Maple Leaf crush zone, to the north of the old Maple Leaf workings, identified low grade gold mineralization with intermittent bands of high grade base metal mineralization that also carried higher gold grades.

Also in 2004, New Cantech Ventures conducted an 11 hole, 1741 meter drill program at the IXL showing, indicating that encouraging surface mineralization encountered in trenches was generally cut off at shallow depths by feldspar porphyry and syenite intrusions. Follow-up work in 2005 by Nanika Resources Inc. found evidence of new mineralized zones to the east, near the McKinley mine, mainly based on samples showing good zinc grades, but also occasional samples with good copper, silver and gold grades at the Jack and Last Chance showings. No follow-up work was reported.

In 2006 and 2007 Yankee Hat Minerals conducted limited rock sampling and prospecting in the Dane and Little area and conducted an airborne geophysical survey covering much of the Franklin camp, including some less-explored areas to the east of Burrell Creek. Few strong targets were identified with the exception of a relatively strong conductivity target to the south of the Dane showing. A small subcrop sample of gold in quartz was also found somewhat further to the south, a few hundred meters northwest of the probable location of the Little showing.

Sampling by Crucible Resources between 2012 and 2016 confirmed the presence of high grade copper-gold-silver mineralization at the Dane showing, while limited soil sampling showed only slightly anomalous base metal values in the area below the showings. Samples carrying gold and silver without base metals were found in the Ida area, a short distance north of the Dane showing. A small occurrence of copper-gold mineralization was identified near the Nellie showing, and in the northwest multiple occurrences of copper mineralization were located and sampled, with some showing minor gold and PGM values as well. The old Union tailings were sampled and some significant gold and silver values were found to remain despite previous reprocessing operations.

Summary of Work

A site visit was conducted in June 2017 to the Ida area and the Golden Zone area, on opposite sides of Burrell Creek, a short distance to the northwest of the Dane showing. One day was spent in these areas sampling and prospecting. At the Ida the work was focused on a recently discovered gold-silver showing, while at the Golden Zone a traverse was run between the Gloucester road and Burrell Creek, starting from a vein exposure in an old rock cut. A total of six rock chip samples were collected.

Based on some previous success with metallurgical testwork on low-grade composite samples of tailings from the Union mine, a new series of tests were completed using a new composite, also

based mainly on apparent low grade material. This follow-up work continued to define the best conditions for gold and silver extraction, but was also being used to give a better understanding of the true recoverable grade for confirming assays in low grade samples containing free milling gold.

Work Program

Sampling, Testing and Data Collection

A site visit was conducted on June 20th, 2017, which included work on the Ida showing, on the west side of Burrell Creek and in the area of the historical Golden Zone claim between Burrell and Gloucester Creeks. The main focus of the work was on the area of the old Golden Zone claim, presumed to lie between Gloucester and Burrell Creeks directly east of the Union Mine workings. An old east-west oriented cut lies just east of the Gloucester FSR, and was used as a starting point for a traverse along the ridge separating the road from Burrell Creek. Outcrops were limited, and consisted mainly of Franklin volcanics, with small sections of pink porphyritic intrusive rocks. Three rock chip samples and one float sample were collected in this area. In addition, the recently discovered occurrence on the old Ida claim, east of Burrell Creek was re-sampled and an attempt was made to trace the mineralization to the west, above the exposure. Two additional rock chip samples were collected. Sample locations are shown on the map in Appendix 1.

Metallurgical testing was carried out using a new composite sample prepared from previously assayed low-grade samples of historical Union Mine tailings, combined with a sample from a previously prepared composite of higher grade tailings. The composite was mainly (60%) made up of a low grade sample from the central part of the main tailings site, together with a slightly higher grade sample of tailings from the original impoundment near Gloucester Creek, along with small additions of material sampled near an old processing site and of a higher grade composite prepared earlier from sampling of the main tailings site. This new composite was used to conduct a grinding and pre-flotation test, followed by four comparative leach tests on splits of the flotation tails. Analytical results for the original samples and the new composite (FRT Comp #2B) are shown in Table 5. Due to past issues with cyanide use in re-processing at the site, all extraction test work has focused on non-cyanide gold and silver recovery methods.

All rock samples from site, as well as the flotation concentrate and leach residues from metallurgical testing were digested in aqua regia using a 0.5 gram sample. Samples were then analyzed with a 36 element scan by ICP-MS. Solution sample from Metallurgical testing were analyzed by ICP-ES. All solid samples were analysed by Bureau Veritas Commodities Canada Ltd (formerly Acme Analytical Laboratories Ltd.) in Vancouver, while solution samples were analyzed by Kemetco Research Inc. in Richmond.

Details of the site sampling and metallurgical testwork carried out are described below.

Golden Zone Area Rock Sampling

A total of 4 samples were collected from old workings and surrounding areas in the vicinity of the historical Golden Zone claim. This area, between Gloucester and Burrell Creeks, is approximately on strike with the Union Mine workings to the west and also immediately west of the recently identified Ida showing. An old cut was located just east of the Gloucester road, developed for several meters along an east-west striking zone of quartz. The zone was up to 4 meters wide and contained white and grey quartz/carbonate with considerable iron staining and limonitic fractures. Two chip samples were collected along the east face of the cut (CR170620-1 and -2) but neither sample returned significant values. In the same area some coarse float was found along the road showing narrow but well developed quartz veining in argillic volcanic rocks with some pyrite mineralization along the contacts. This sample (CR170620-6) also showed minimal values.

A small ridge rises between the two creeks, with outcrops mainly being Franklin volcanics, although sections of felsic porphyry intrusions are exposed on the east side of the ridge. To the north along the Gloucester road are oxidized rock piles that appear to also be from old workings. A short distance east of the road a small shear was sampled along an exposed rock face in a clearcut. A 0.3 meter section containing quartz and pyrite was sampled (CR170620-3), but again values were low, with only slightly anomalous gold and copper.

Ida Area Rock Sampling

Prospecting in this area in 2016 identified an exposure of silicified volcanics and quartz carrying significant values in gold and silver, but minimal base metal values, with small amounts of pyrite as the only notable sulphide mineralization. Like the historical descriptions of the Union mine mineralization, this occurrence includes a central quartz vein segment, but does not show clear contacts or strong mineralization, and attempts to trace it along strike have so far been unsuccessful assuming an east-west strike. As a part of this work program the occurrence was revisited and additional samples were collected. Sample CR170620-4 was a chip sample across the core zone of iron-stained and lightly pyritic quartz, with a width of 1 meter. This sample was considerably higher grade than previous samples taken over a wider exposure, with a silver value nearly 3 times that of the best previous value (304 g/t compared with 104 g/t over 2.5 meters previously). Even with the higher gold and silver grades, base metal values were minimal with only slightly anomalous copper levels. There is considerable silicification in the volcanics surrounding this exposure, adding to the difficulty in tracing the mineralized structure. A section of silicified material and fractured quartz was exposed at the top to the ridge just a few meters from the previous sampling. A chip sample was collected (CR170620-5) over about 0.5 meters, but despite the proximity values were low. The assay for this sample was sufficiently anomalous (0.06 g/t Au, 1.4 g/t Ag) that it is likely within the mineralized zone, possibly part of a lower grade margin. Adjacent rock was not exposed for sampling.

Table 4 – Rock Sample Descriptions and Analytical Results

Sample #	Date	Description	UTM East	UTM North	Width (m)	Au g/t	Ag g/t	Cu %	Pb %	Zn %
Ida and Golden Zone Areas - Rock										
CR170620-1	6/20/2017	Face of cut with pyritic quartz, south half	402727	5490549	2.0	0.020	0.4	0.014	0.001	0.007
CR170620-2	6/20/2017	Face of cut with pyritic quartz, north half	402727	5490549	2.0	0.001	0.9	0.008	0.002	0.009
CR170620-3	6/20/2017	Highly pyritic seam with qtz in volcanics	402865	5490832	0.3	0.032	0.5	0.015	0.001	0.007
CR170620-4	6/20/2017	Ida vein resampling of main qtz exposure	403335	5490685	1.0	6.20	304	0.021	0.019	0.010
CR170620-5	6/20/2017	Silicified Volcanics above vein	403332	5490683	0.5	0.064	1.4	0.025	0.001	0.004
CR170620-6	6/20/2017	Float bldr, narrow qtz veins in argillite	402710	5490545	-	0.022	0.8	0.003	0.001	0.003

Union Tails – Metallurgical Testing

Sampling of the tailings from the Union mine has shown that significant gold and silver values remain despite past reprocessing operations. Previous metallurgical work has shown promise using non-cyanide methods to extract gold, but silver extraction has been low. As a part of a previous test program, a test using a combination of flotation and leaching showed positive extraction results and also showed a significant elevation in the back-calculated head grade. If repeatable, this would provide valuable new information on the true grade of certain types of

precious metal bearing samples where segregation of values within the sample can result in underestimated grades with normal assay methods.

For the current work program a series of tests were conducted to follow up the positive result from adding the pre-float step, which targeted removal of organic material along with any naturally floating minerals. For this work a new low grade composite was prepared from samples collected in 2014 and 2015, as indicated in Table 5. These samples covered different tailings areas having assays less than 1 g/t Au and containing 30-40 g/t Ag. A small amount of a higher grade composite from the main tailings was also added to broaden the range of material included. The original sample grades and the calculated composite grade are both shown in Table 5.

Table 5 – Metallurgical Composite

Sample #	Date	Description	UTM East	UTM North	Au g/t	Ag g/t	Cu %	Pb %	Zn %
Union Area - Tailings Composite									
CR150709-T1	7/9/2015	Tailings Comp - middle shallow zone	401997	5489733	0.59	36.1	0.009	0.02	0.06
CR150709-T3	7/9/2015	Roadside tailings piles - composite	402300	5490400	0.42	41.0	0.005	0.01	0.05
CR151027-T1	10/27/2015	Composite - Gloucester Creek Pond Area	402450	5490450	0.72	31.5	0.007	0.02	0.06
<i>FRT Comp #1</i>	2014	<i>Previous Main Tailings Composite</i>			1.20	57.8	0.008	0.02	0.06
<i>FRT Comp #2B</i>	2017	<i>Weighted Composite of Above Samples</i>			0.66	37.8	0.008	0.02	0.06

Past reprocessing operations carried out on these tailings utilized cyanide leaching for gold and silver recovery. This included an operation in the 1980's which was closed due to environmental concerns, leading to a remediation program at the site. The approach in investigating the remaining recovery potential has therefore focused on alternatives to cyanide leaching. Previous testing showed that flotation and salt-based leaching both had potential as processing methods, and the most recent work has focused on a possible combination of the two methods. The testing began with a bulk pre-float test on a ground sample of the new composite using only a small addition of fuel oil and frother to promote flotation of organic material. The concentrate was cleaned and the float tails were composited and split into four test lots for leach testing. The flotation concentrate and each of the tails test lots were subjected to leaching to test gold and silver recovery under a range of conditions. Back-calculated head grades from each leach test were then used to calculate the had grade of the composite sample. Detailed reports for each test conducted are provided in Appendix 2.

In addition to testing the metal recovery potential, this work tests the grade variability and potential segregation or nugget effect in tailings composites by back-calculating sample head grades based on the recovered values from the metallurgical tests. Calculated gold grades have been consistently higher than the assayed grade, but the magnitude has varied from test to test. With lower grade composites the difference has generally been small, with the exception of the initial float-leach test. That test showed significantly elevated gold (0.94 g/t Au vs 0.60 g/t composite assay) from the back-calculation. This elevated grade was primarily the result of a high gold grade in the flotation concentrate, which would be consistent with gold concentrating in discrete hydrophobic particles or adsorbing onto floatable organic matter. The work reported here again showed elevated values in the concentrate. The gold value was not as high as the previous test, but silver recovery was more significant (the concentrate contained 4.99 g/t Au and 277 g/t Ag, representing more than 18% recovery for each). This resulted in an overall calculated composite grade of 0.71 g/t Au and 39.4 g/t Ag as compared with 0.66 g/t Au and 37.8 g/t Ag from the sample assays.

The leach tests carried out on the flotation products evaluated gold and silver recoveries under a range of leach conditions, resulting in a wide range of recoveries. The best results (Tests FL2 T1 and T2) gave recoveries of 74% for Au and 18% for Ag respectively. When combined with the

flotation concentrate this would result in overall recoveries of 79% for gold and 33% for silver. Applying the leach to the flotation concentrate also resulted in significant gold recovery (53%) but minimal silver extraction. This was significantly higher recovery than that obtained from previous testing with flotation concentrates.

Interpretation of Results

Site Work

Work in the Golden Zone area was not successful in identifying any significant values despite the presence of promising vein mineralization and historical workings. The presence of silicified and altered zones in the Franklin rock may be positive indication for the presence of gold and silver zones, but these zones are difficult to identify in the field so additional sampling appears to be justified to test for extensions of known occurrences to the west and east.

In the Ida area, on the east side of Burrell Creek, re-sampling the recently discovered vein outcrop returned a very positive result, indicating that the values obtained previously over a wider area appear to be concentrated mainly in a zone of fractured quartz with light pyrite mineralization, which is about 1 meter wide where exposed. This was the highest grade obtained from this occurrence and was notable for the high silver content and lack of significant base metal content, which are features similar to those reported for many of the ore zones in the nearby Union mine. A sample of similar looking rock only a few meters away had much lower grade, but the exposure is incomplete in this area and the vein orientation has not been firmly established. This sample may have been from the same system but may not represent the main trend of mineralization. Additional work is needed, particularly to confirm the vein orientation and to check for continuity.

Metallurgical Testing

The metallurgical testing continued to show encouraging results, with improved recoveries through a combination of pre-float and leaching, and a continued indication that the actual tailings grade is likely somewhat higher than that indicated by individual assay results. The intent of the pre-float was to isolate organic material (roots, needles, etc.) in the tailings that could interfere with precious metal leaching by adsorbing metals from solution. It is unclear if this material itself is elevated in precious metals (possibly due to adsorption during previous leaching operations) or if there is a fraction of naturally floating precious metal minerals in the tailings. Leach results on the concentrate suggest it is at least partly naturally floating free gold, and it would be useful to investigate this approach further, including use of selective gold and silver collectors to produce a high grade concentrate.

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Author's Qualifications

I, Douglas Warkentin, P.Eng., a professional engineer with a business address at 7069 McBride St., Burnaby, B.C., certify that:

I have been a Registered Member of the Association of Professional Engineers and Geoscientists of the Province of British Columbia since 1992.

I am a graduate of the University of British Columbia, Vancouver, B.C. and hold a degree of Bachelor of Applied Science in Mining and Mineral Process Engineering.

I have practiced my profession as a Metallurgist and Mineral Process Engineer for 29 years.

I am currently employed as a Metallurgical Engineer by Kemetco Research Inc., Vancouver B.C., and have previously been employed as a Mineral Process Engineer by Vista Mines Inc., Coastech Research Inc., NTBC Research Corp., Biomet Mining Ltd., Blue Sky Mines Ltd., and Vizon Scitec Inc. I have also served as a Director of Duncastle Gold Corp., a TSX-Venture listed company.

Since 2001 I have acted as an independent engineering consultant for a number of mining clients.

I am a qualified person for the purposes of National Instrument 43-101 in relation to metallurgical testing and evaluation programs.

I directly conducted or supervised all sampling, sample handling and preparation related to the Franklin Project that is described in this report.

I am the sole author of this report.

I am not aware of any material fact or material change with respect to the subject matter of this technical report that is not reflected in this report, the omission to disclose which would make this report misleading.

Dated at Vancouver, B.C., this 30th day of January 2018.

Doug Warkentin, PEng.
Metallurgical Engineer

Statement of Costs

Site Exploration, Research and Sampling

Logistics and Site Labour		
Doug Warkentin:	June 19-20, 2017 (16 hours @ \$55/hr)	\$880.00
Transportation (2 days vehicle rental, plus fuel)		\$213.35
Accommodation (1 night)		\$100.57
Food and Supplies (2 days)		\$22.85

Metallurgical Testwork

Laboratory Testing (6 tests @\$412.50/test)		\$2475.00
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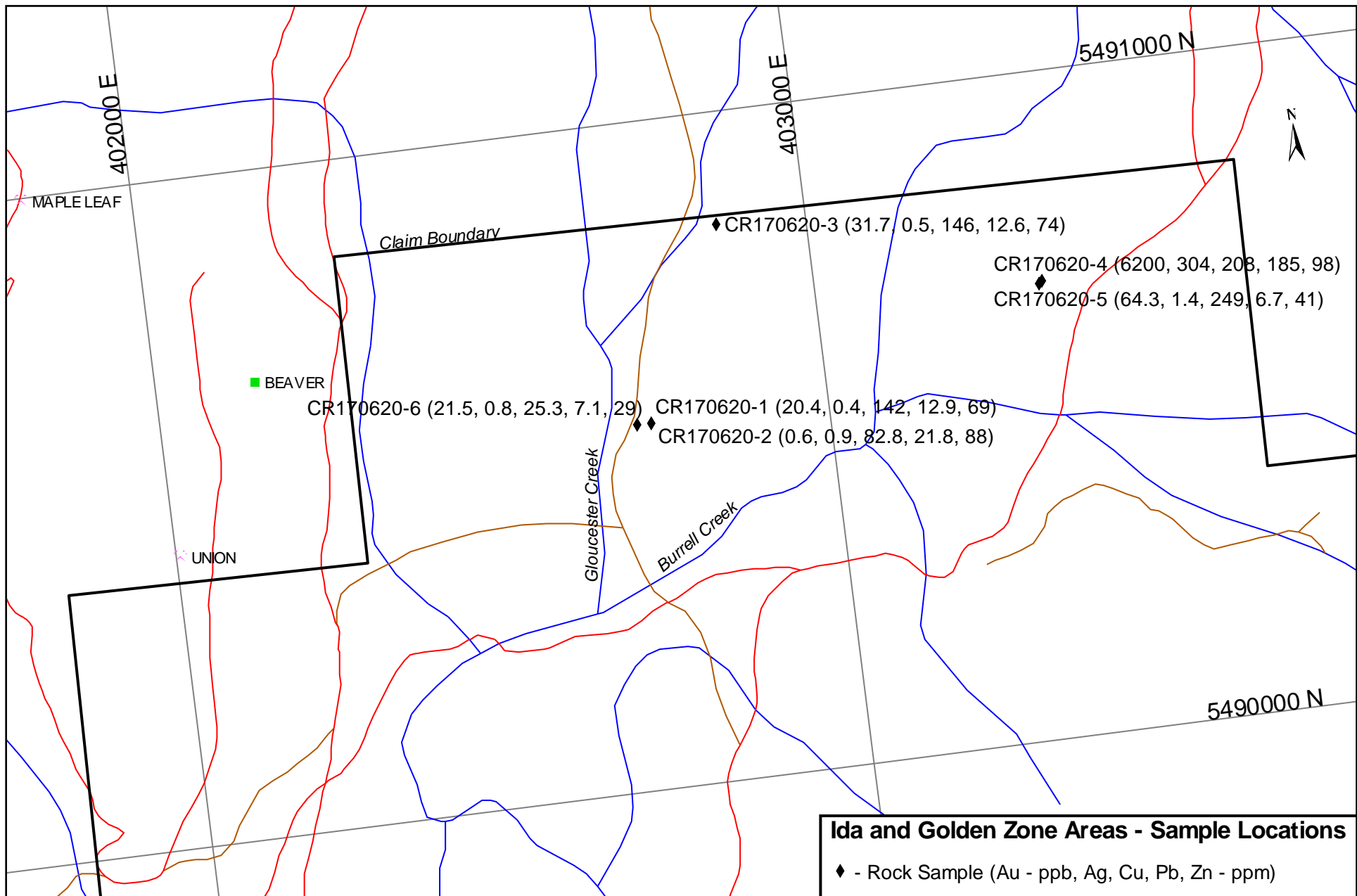
Sample Analysis

Sample Preparation	(6 samples @ \$13.53/sample)	\$81.17
	(4 samples @ \$8.13/sample)	\$32.52
Sample Assaying	(10 samples @ \$16.64/sample)	\$166.43
	(2 samples @ \$11.71/sample)	\$23.42
	(1 sample @ \$17.59/sample)	\$17.59
	(1 sample @ \$18.38/sample)	\$18.38
	(21 samples @\$35.00/sample)	\$735.00

Report Preparation		\$660.00
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Total Cost		\$5,426.28
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Appendix 1 – Sample Location Map



Scale 1:8,000

Appendix 2 – Metallurgical Test Reports

Flotation Test Report

Test: FL2

Date: 28 Sept-17

Feed: FRT Comp 2B (low grade materials with 10% higher grade tails)

Grind: 1 min in rod mill (50% charge)

Conditions:

Stage	Reagents added, grams per tonne							Time, minutes			pH
	Diesel						MIBC	Grind	Cond.	Froth	
Grind	40							1			
Condition							42		1		8.40
Rougher							70			12	8.43
Cleaner	20						56		2	10	
<i>Total</i>	<i>60</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>168</i>	<i>1</i>	<i>3</i>	<i>22</i>	

Metallurgical Balance

Product	Weight		Assays						% Distribution					
	g	%	Au (g/t)	Ag (g/t)	Cu (%)	Fe (%)	Pb (%)	Zn (%)	Au	Ag	Cu	Fe	Pb	Zn
Cleaned Concentrate	12.92	2.63	4.99	277	0.07	5.12	0.08	0.17	18.4	18.5	8.3	5.2	9.6	8.0
Combined Float Tails	477.8	97.37	0.60	33.0	0.02	2.55	0.02	0.05	81.6	81.5	91.7	94.8	90.4	92.0
Head (calc.)	490.7	100.0	0.71	39.4	0.02	2.62	0.02	0.06	100.0	100.0	100.0	100.0	100.0	100.0
Head (assay)			0.66	37.8	0.01	2.55	0.02	0.06						

Leach Extraction Test Report

Test: FL2 C1
Sample: FRT Comp #2B Float Concentrate

Date: 30-Sep-17
Project: I0603

Test Conditions

Solids: 12.92 g
Solution: 50 g
Solids Content: 20.53 %
Grind Size: 100% -1 mm
Temp: amb. (15 °C)
pH: alk
Duration: 24 hrs

Notes: Concentrate leach testing using $\text{NH}_4\text{Cl}/\text{NH}_4\text{OH}/\text{NaCl}$ w/ CuSO_4

Tare: 95.58 g

Head Grade

	Au	Ag	Pb	Zn
Calculated:	4.99	276.5	799	1708 g/t
Assayed:	0.60	35.5	190	559 g/t

Leach Solution Data

Time (hrs)	Gr. Wt. (g)	Slurry (g)	pH	CuSO_4 (g)	NH_4OH (g)	NH_4Cl (g)	NaCl (g)	Sol'n Vol. (mL)	Sample (mL)	Au (mg/L)	Ag (mg/L)	Pb* (mg/L)	Zn (mg/L)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
0	159.0	63.4		0.10	2.80	0.80											
0.7	158.5	62.9		0.10	3.50	2.00	5.84	51	5.0	0.00	0.00	0.0	26.1	0.000	0.01	0.02	1.33
24	202.5	106.9	10.47					87		0.33	0.81	0.0	42.3	0.035	0.081	0.03	3.86
Total				0.20	6.30	2.80	5.84										

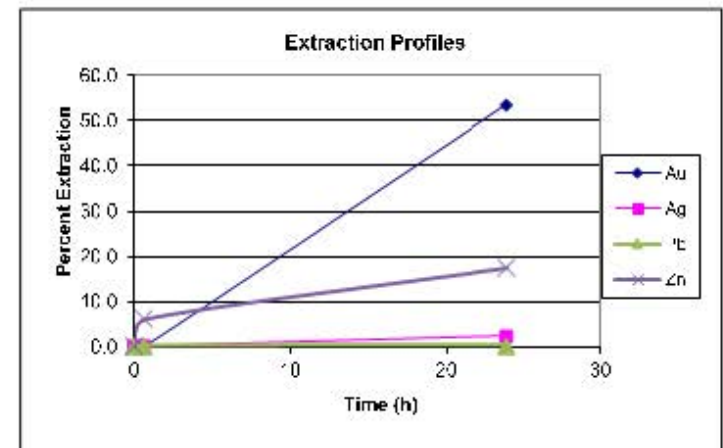
Solids

Time (hrs)	Wt (g)	Au (g/t)	Ag (g/t)	Pb (g/t)	Zn (g/t)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
24	12.79	2.34	273.0	805	1424	0.0	3.5	10.3	18.2

Leach Results

Time (hrs)	Au Dist. (%)	Ag Dist. (%)	Pb Dist. (%)	Zn Dist. (%)	CuSO_4 Cons. (kg/t)	NH_4OH Cons. (kg/t)	NH_4Cl Cons. (kg/t)	NaCl Cons. (kg/t)
0	0.0	0.0	0.0	0.0	7.74	216.72	61.92	0.0
0.67	0.0	0.3	0.2	6.0	15.48	487.62	216.72	452.0
24	53.5	2.3	0.3	17.5	15.48	487.62	216.72	452.0
Residue	46.5	97.7	99.7	82.5				
Total	100.0	100.0	100.0	100.0				

* Values below detection limit shown as zero



Leach Extraction Test Report

Test: FL2 T1
Sample: FRT Comp #2B Float Tails

Date: 7-Nov-17
Project: I0603

Test Conditions

Solids: 160.03 g
Solution: 100 g
Solids Content: 61.54 %
Grind Size: 100% -1 mm
Temp: amb. (15 °C)
pH: alk
Duration: 24 hrs

Notes: Tails leach optimization testing using NH₄Cl/NH₄OH/CaCl₂ wCuSO₄

Tare: 95.52 g

Head Grade

	Au	Ag	Pb	Zn	
Calculated:	0.79	32.9	212	557	g/t
Assayed:	0.60	35.5	190	559	g/t

Leach Solution Data

Time (hrs)	Gr. Wt. (g)	Slurry (g)	pH	CuSO ₄ (g)	NH ₄ OH (g)	NH ₄ Cl (g)	CaCl ₂ ·2H ₂ O (g)	Sol'n Vol. (mL)	Sample (mL)	Au (mg/L)	Ag (mg/L)	Pb* (mg/L)	Zn (mg/L)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
0	388.6	293.1		0.43	7.28	5.52											
0.5	388.1	292.6	10.46	0.15	3.50	3.00	30.25	131	5.0	0.00	1.58	0.0	62.4	0.010	0.21	0.01	8.19
24	526.3	430.7	10.47					254		0.33	1.75	0.0	58.0	0.094	0.57	0.13	15.06
Total				0.58	10.78	8.52	30.25										

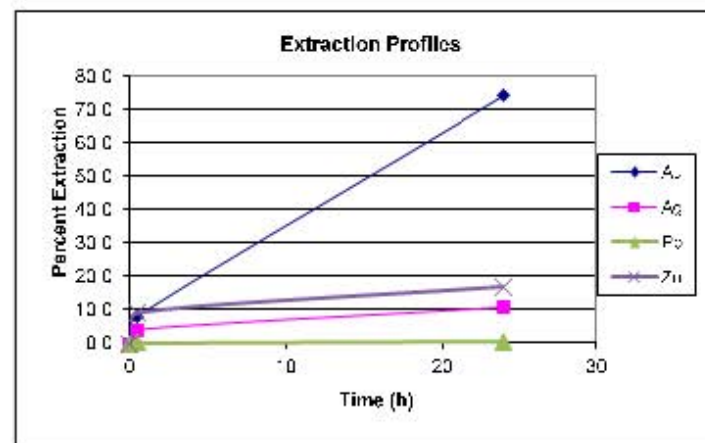
Solids

Time (hrs)	Wt (g)	Au (g/t)	Ag (g/t)	Pb (g/t)	Zn (g/t)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
24	161	0.20	29.2	210	460	0.0	4.7	33.9	74.1

Leach Results

Time (hrs)	Au Dist. (%)	Ag Dist. (%)	Pb Dist. (%)	Zn Dist. (%)	CuSO ₄ Cons. (kg/t)	NH ₄ OH Cons. (kg/t)	NH ₄ Cl Cons. (kg/t)	CaCl ₂ ·2H ₂ O Cons. (kg/t)
0	0.0	0.0	0.0	0.0	2.69	45.49	34.49	0.0
0.5	7.9	3.9	0.0	9.2	3.62	67.36	53.24	189.0
24	74.4	10.8	0.4	16.9	3.62	67.36	53.24	189.0
Residue	25.6	89.2	99.6	83.1				
Total	100.0	100.0	100.0	100.0				

* Values below detection limit shown as zero



Leach Extraction Test Report

Test: FL2 T2
Sample: FRT Comp #2B Float Tails

Date: 30-Nov-17
Project: I0603

Test Conditions

Solids: 120.25 g
Solution: 120.1 g
Solids Content: 50.03 %
Grind Size: 100% -1 mm
Temp: amb. (15 °C)
pH: alk
Duration: 24 hrs

Notes: Tails leach testing using $\text{NH}_4\text{Cl}/\text{Ca}(\text{OH})_2$ w CuSO_4

Tare: 95.67 g

Head Grade	Au	Ag	Pb	Zn
Calculated:	0.54	33.0	198	496 g/t
Assayed:	0.60	35.5	190	559 g/t

Leach Solution Data

Time (hrs)	Gr. Wt. (g)	Slurry (g)	pH	CuSO_4 (g)	NH_4OH (g)	NH_4Cl (g)	$\text{Ca}(\text{OH})_2$ (g)	Sol'n Vol. (mL)	Sample (mL)	Au (mg/L)	Ag (mg/L)	Pb* (mg/L)	Zn (mg/L)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
0	405.0	309.3	5.95	0.50		19.30	49.84										
3	474.3	378.6	9.93				0.50	209	10.0	0.29	4.63	0.0	10.7	0.061	0.97	0.02	2.23
24	510.7	415.0	9.96					246		0.00	0.53	0.0	5.2	0.033	0.74	0.08	1.43
Total				0.50	0.00	19.30	50.34										

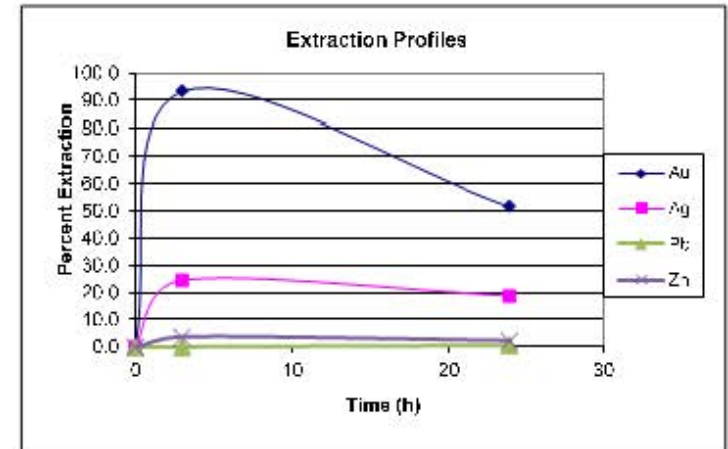
Solids

Time (hrs)	Wt (g)	Au (g/t)	Ag (g/t)	Pb (g/t)	Zn (g/t)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
24	158.1	0.20	20.4	150	368	0.0	3.2	23.7	58.2

Leach Results

Time (hrs)	Au Dist. (%)	Ag Dist. (%)	Pb Dist. (%)	Zn Dist. (%)	CuSO_4 Cons. (kg/t)	NH_4OH Cons. (kg/t)	NH_4Cl Cons. (kg/t)	$\text{Ca}(\text{OH})_2$ Cons. (kg/t)
0	0.0	0.0	0.0	0.0	4.16	0.00	160.50	414.5
3	93.6	24.4	0.1	3.7	4.16	0.00	160.50	418.6
24	51.5	18.6	0.3	2.4	4.16	0.00	160.50	418.6
Residue	48.5	81.4	99.7	97.6				
Total	100.0	100.0	100.0	100.0				

* Values below detection limit shown as zero



Leach Extraction Test Report

Test: FL2 T3
 Sample: FRT Comp #2B Float Tails

Date: 7-Dec-17
 Project: I0603

Test Conditions

Solids: 100.01 g
 Solution: 120.01 g
 Solids Content: 45.45 %
 Grind Size: 100% -1 mm
 Temp: amb. (15 °C)
 pH: alk
 Duration: 24 hrs

Notes: Tails leach testing using NH₄Cl/CaO wCuSO₄

Tare: 95.66 g

Head Grade

	Au	Ag	Pb	Zn	
Calculated:	0.42	32.4	201	532	g/t
Assayed:	0.60	35.5	190	559	g/t

Leach Solution Data

Time (hrs)	Gr. Wt. (g)	Slurry (g)	pH	CuSO ₄ (g)	NH ₄ OH (g)	NH ₄ Cl (g)	CaO (g)	Sol'n Vol. (mL)	Sample (mL)	Au (mg/L)	Ag (mg/L)	Pb* (mg/L)	Zn (mg/L)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
0	337.0	241.3	6.04	0.48		13.37	7.90										
2	347.6	252.0	11.65					140	10.0	0.00	2.24	0.0	10.8	0.002	0.31	0.04	1.51
24	424.5	328.9	11.52					219		0.00	0.00	0.0	3.0	0.006	0.23	0.07	0.77
Total				0.48	0.00	13.37	7.90										

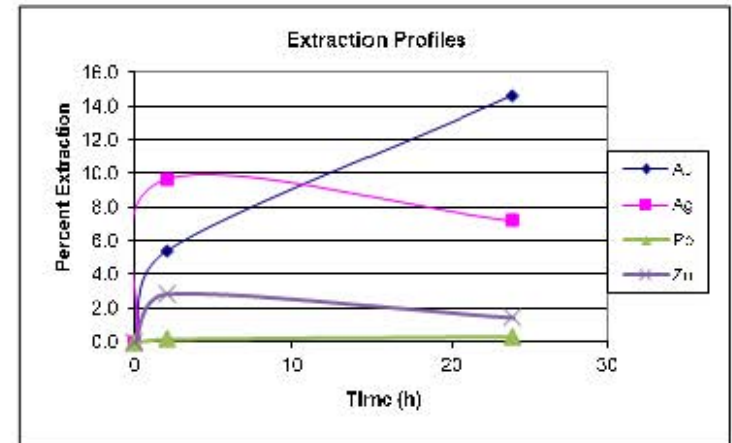
Solids

Time (hrs)	Wt (g)	Au (g/t)	Ag (g/t)	Pb (g/t)	Zn (g/t)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
24	101.01	0.35	29.8	199	519	0.0	3.0	20.1	52.4

Leach Results

Time (hrs)	Au Dist. (%)	Ag Dist. (%)	Pb Dist. (%)	Zn Dist. (%)	CuSO ₄ Cons. (kg/t)	NH ₄ OH Cons. (kg/t)	NH ₄ Cl Cons. (kg/t)	CaO Cons. (kg/t)
0	0.0	0.0	0.0	0.0	4.80	0.00	133.69	79.0
2	5.4	9.7	0.2	2.8	4.80	0.00	133.69	79.0
24	14.7	7.2	0.3	1.5	4.80	0.00	133.69	79.0
Residue	85.3	92.8	99.7	98.5				
Total	100.0	100.0	100.0	100.0				

* Values below detection limit shown as zero



Leach Extraction Test Report

Test: FL2 T4
Sample: FRT Comp #2B Float Tails

Date: 7-Dec-17
Project: I0603

Test Conditions

Solids: 97.5 g
Solution: 120 g
Solids Content: 44.83 %
Grind Size: 100% -1 mm
Temp: amb. (15 °C)
pH: alk
Duration: 24 hrs

Notes: Tails leach testing using $\text{NH}_4\text{Cl}/\text{CaO}$ w CuSO_4

Tare: 95.54 g

Head Grade	Au	Ag	Pb	Zn
Calculated:	0.55	34.4	200	553 g/t
Assayed:	0.60	35.5	190	559 g/t

Leach Solution Data

Time (hrs)	Gr. Wt. (g)	Slurry (g)	pH	CuSO_4 (g)	NH_4OH (g)	NH_4Cl (g)	CaO (g)	Sol'n Vol. (mL)	Sample (mL)	Au (mg/L)	Ag (mg/L)	Pb^+ (mg/L)	Zn (mg/L)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
0	333.6	238.1	5.72	0.60		20.00	13.06										
1	604.4	508.8	10.07	0.10			0.11	397	10.0	0.00	2.27	0.0	8.1	0.003	0.90	0.02	3.21
18	598.4	502.9	10.04					392	10.0	0.00	0.23	0.0	7.4	0.003	0.70	0.02	3.04
120	596.0	500.5	10.14					393		0.00	0.30	0.0	7.6	0.022	0.73	0.06	3.20
Total				0.70	0.00	20.00	13.17										

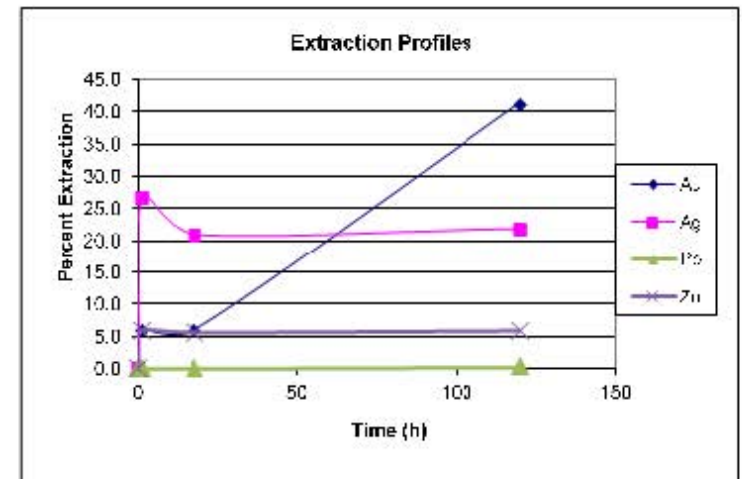
Solids

Time (hrs)	Wt (g)	Au (g/t)	Ag (g/t)	Pb (g/t)	Zn (g/t)	Au (mg)	Ag (mg)	Pb (mg)	Zn (mg)
24	97.74	0.32	26.8	199	519	0.0	2.6	19.4	50.7

Leach Results

Time (hrs)	Au Dist. (%)	Ag Dist. (%)	Pb Dist. (%)	Zn Dist. (%)	CuSO_4 Cons. (kg/t)	NH_4OH Cons. (kg/t)	NH_4Cl Cons. (kg/t)	CaO Cons. (kg/t)
0	0.0	0.0	0.0	0.0	6.15	0.00	205.13	133.9
1	6.1	26.9	0.1	6.0	7.18	0.00	205.13	135.1
18	6.1	21.0	0.1	5.6	7.18	0.00	205.13	135.1
120	41.2	21.8	0.3	5.9	7.18	0.00	205.13	135.1
Residue	58.8	78.2	99.7	94.1				
Total	100.0	100.0	100.0	100.0				

* Values below detection limit shown as zero



Appendix 3 – Assay Reports



BUREAU MINERAL LABORATORIES
VERITAS Canada

www.bureauveritas.com/um

Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Crucible Resources Ltd.**
745 East 30th Ave
Vancouver British Columbia V5V 2V8 Canada

Submitted By: Doug Warkentin
Receiving Lab: Canada-Vancouver
Received: August 08, 2017
Report Date: September 22, 2017
Page: 1 of 2

CERTIFICATE OF ANALYSIS

VAN17001670.1

CLIENT JOB INFORMATION

Project: Fr-Nv-CT
Shipment ID:
P.O. Number
Number of Samples: 18

SAMPLE DISPOSAL

PICKUP-PLP Client to Pickup Pulps
PICKUP-RJT Client to Pickup Rejects

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
PRP70-250	18	Crush, split and pulverize 250 g rock to 200 mesh			VAN
AQ200	18	1:1:1 Aqua Regia digestion ICP-MS analysis	0.5	Completed	VAN
DRPLP	18	Warehouse handling / disposition of pulps			VAN
DRRJT	18	Warehouse handling / Disposition of reject			VAN
AQ370	3	1:1:1 Aqua Regia digestion ICP-ES analysis	0.4	Completed	VAN
EN002	1	Environmental disposal charge-Fire assay lead waste			VAN
FA330-Au	1	Fire assay fusion Au by ICP-ES	30	Completed	VAN

ADDITIONAL COMMENTS

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Crucible Resources Ltd.
745 East 30th Ave
Vancouver British Columbia V5V 2V8
Canada

CC:



This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.

*** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



Bureau Veritas Commodities Canada Ltd.

9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada

PHONE (604) 253-3158

Client: **Crucible Resources Ltd.**
745 East 30th Ave
Vancouver British Columbia V5V 2V8 Canada

Project: Fr-Nv-CT
Report Date: September 22, 2017

Page: 2 of 2

Part: 1 of 2

CERTIFICATE OF ANALYSIS

VAN17001670.1

Method	Analyte	Unit	MDL	WGHT	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200
				Wgt	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi	V
		kg	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	%
		0.01	0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.5	0.1	1	0.1	0.1	0.1	2	0.01	0.001
CR170618-1	Rock	2.21	1.5	28.7	15.1	31	<0.1	10.7	10.8	539	2.38	1.9	1.3	3.4	69	<0.1	<0.1	0.5	28	1.45	0.078
CR170618-2	Rock	0.49	0.8	241.4	15.5	100	0.2	84.4	127.2	399	6.14	4.9	1.8	3.3	7	<0.1	<0.1	1.8	69	0.03	0.021
CR170619-1	Rock	0.80	0.4	18.8	20.3	29	1.1	5.4	1.9	349	0.72	11.8	0.5	20.6	26	0.3	0.1	3.4	6	0.79	0.055
CR170619-2	Rock	0.60	1.9	14.2	983.3	148	2.8	5.0	2.6	228	1.77	1.4	98.6	18.4	21	1.9	1.3	1.9	20	0.18	0.059
CR170619-3	Rock	3.16	0.2	7.4	713.7	1121	7.9	0.7	1.4	46	1.28	210.3	170.4	16.6	3	26.5	0.5	13.5	<2	0.03	<0.001
CR170619-4	Rock	0.36	0.4	13.0	37.3	106	1.5	0.7	0.4	57	1.29	8.5	6.5	8.2	2	1.0	<0.1	4.3	<2	0.01	0.007
CR170619-5	Rock	0.80	1.5	64.7	95.5	267	1.2	3.2	3.4	605	2.21	5.2	11.4	7.7	51	3.8	0.4	4.3	24	1.02	0.108
CR170619-6	Rock	1.77	0.3	29.4	5353.2	>10000	>100	6.3	3.8	111	4.64	108.5	192.8	0.3	1	897.3	2.3	746.4	<2	<0.01	0.002
CR170620-1	Rock	3.10	14.2	141.7	12.9	69	0.4	20.2	13.1	524	3.32	39.6	20.4	0.7	8	0.7	0.6	0.7	104	0.31	0.118
CR170620-2	Rock	2.28	13.2	82.8	21.8	88	0.9	17.1	12.9	704	4.72	38.0	31.7	0.6	5	1.2	0.7	2.3	135	0.16	0.068
CR170620-2A	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
CR170619-2A	Rock	0.72	1.5	31.9	752.4	153	8.4	6.8	3.6	244	2.33	6.9	9.7	15.2	14	2.2	0.7	14.8	14	0.11	0.033
CR170620-3	Rock	0.67	3.8	145.8	12.6	74	0.5	16.2	18.2	884	4.77	16.2	3.5	1.2	28	0.2	0.7	0.8	167	0.44	0.119
CR170620-4	Rock	2.24	8.8	208.3	185.4	98	>100	3.7	8.3	320	4.00	30.5	5682.4	0.5	8	0.1	5.7	0.9	88	0.11	0.105
CR170620-5	Rock	0.60	8.2	248.7	6.7	41	1.4	22.5	23.9	560	4.95	40.8	64.3	1.0	50	<0.1	1.3	0.3	246	0.46	0.135
CR170620-6	Rock	1.16	0.8	25.3	7.1	29	0.8	23.5	11.3	2178	2.73	35.4	21.5	0.2	480	0.3	0.5	0.3	56	17.18	0.017
CR170620-7	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.
CR170619-7	Rock	1.45	0.4	155.7	8137.7	>10000	>100	3.6	5.5	72	4.88	153.1	107.2	0.1	4	580.0	2.4	421.3	<2	0.04	0.001



Bureau Veritas Commodities Canada Ltd.

9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada

PHONE (604) 253-3158

Client: **Crucible Resources Ltd.**
745 East 30th Ave
Vancouver British Columbia V6V 2V8 Canada

Project: Fr-Nv-CT
Report Date: September 22, 2017

Page: 2 of 2 Part: 2 of 2

CERTIFICATE OF ANALYSIS

VAN17001670.1

Method	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ374	AQ374	FA330
Analyte	La	Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se	Te	Zn	Ag	Au	
Unit	ppm	ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	%	gm/t	ppb	
MDL	1	1	0.01	1	0.001	20	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5	0.2	0.01	2	2	
CR170618-1	Rock	7	8	0.63	37	0.017	<20	1.02	0.049	0.13	0.5	<0.01	2.8	<0.1	0.13	3	<0.5	<0.2			
CR170618-2	Rock	12	88	1.45	167	0.350	<20	3.57	0.055	1.99	<0.1	<0.01	11.2	0.8	1.45	11	1.1	0.3			
CR170619-1	Rock	8	7	0.19	37	0.023	<20	0.34	0.043	0.14	0.5	<0.01	1.0	0.1	<0.05	2	<0.5	<0.2			
CR170619-2	Rock	10	21	0.36	47	0.072	<20	0.86	0.030	0.41	2.9	0.01	2.1	0.2	0.13	4	2.1	0.4			
CR170619-3	Rock	<1	2	<0.01	11	<0.001	<20	0.18	0.005	0.17	7.1	<0.01	0.2	<0.1	1.06	<1	1.8	<0.2			
CR170619-4	Rock	<1	2	<0.01	22	<0.001	<20	0.28	0.004	0.19	9.5	<0.01	0.2	<0.1	<0.05	2	0.5	<0.2			
CR170619-5	Rock	9	5	0.55	25	0.056	<20	1.13	0.082	0.39	3.1	<0.01	2.5	0.3	0.22	5	0.9	<0.2			
CR170619-6	Rock	<1	3	0.01	2	<0.001	<20	0.03	<0.001	0.01	1.0	0.08	<0.1	0.2	5.86	2	23.5	12.0	4.00	238	
CR170620-1	Rock	11	29	0.99	48	0.021	<20	1.27	0.022	0.09	0.2	<0.01	9.8	<0.1	0.55	5	2.4	<0.2			
CR170620-2	Rock	5	30	1.60	60	0.026	<20	2.04	0.006	0.16	0.4	<0.01	12.2	0.1	0.52	6	1.7	<0.2			
CR170620-2A	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.			
CR170619-2A	Rock	5	11	0.31	28	0.055	<20	0.75	0.006	0.27	0.4	<0.01	1.4	0.2	0.20	3	2.0	<0.2			
CR170620-3	Rock	9	26	1.60	51	0.011	<20	1.90	0.030	0.11	0.1	<0.01	11.4	<0.1	0.18	8	<0.5	<0.2			
CR170620-4	Rock	5	8	0.51	62	0.007	<20	0.81	0.020	0.10	0.2	0.15	4.3	<0.1	0.29	4	36.9	1.1	0.01	304	
CR170620-5	Rock	7	60	0.88	98	0.073	<20	1.40	0.073	0.10	0.4	<0.01	15.6	<0.1	0.38	7	3.9	0.2			
CR170620-6	Rock	5	7	0.70	141	0.029	<20	0.61	0.002	0.01	1.1	0.02	6.3	<0.1	0.88	3	1.1	<0.2			
CR170620-7	Rock	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.	L.N.R.			
CR170619-7	Rock	<1	3	0.01	2	<0.001	<20	0.02	0.002	<0.01	11.2	0.13	<0.1	0.2	6.26	<1	42.8	11.0	2.28	173	



BUREAU VERITAS MINERAL LABORATORIES
Canada

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Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Crucible Resources Ltd.**
745 East 30th Ave
Vancouver British Columbia V5V 2V8 Canada

Submitted By: Doug Warkentin
Receiving Lab: Canada-Vancouver
Received: December 08, 2017
Report Date: January 17, 2018
Page: 1 of 2

CERTIFICATE OF ANALYSIS

VAN17002963.1

CLIENT JOB INFORMATION

Project: None Given
Shipment ID:
P.O. Number
Number of Samples: 23

SAMPLE DISPOSAL

PICKUP-PLP Client to Pickup Pulps

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
SLBHP	23	Sorting, labeling and boxing samples received as pulps			VAN
AQ200	23	1:1:1 Aqua Regia digestion ICP-MS analysis	0.5	Completed	VAN
AQ370	1	1:1:1 Aqua Regia digestion ICP-ES analysis	0.4	Completed	VAN
EN002	1	Environmental disposal charge-Fire assay lead waste			VAN
FA330-Au	1	Fire assay fusion Au by ICP-ES	30	Completed	VAN

ADDITIONAL COMMENTS

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Crucible Resources Ltd.
745 East 30th Ave
Vancouver British Columbia V5V 2V8
Canada

CC:



This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted. *** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



Bureau Veritas Commodities Canada Ltd.

9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Project: None Given
Report Date: January 17, 2018

Page: 2 of 2

Part: 1 of 2

CERTIFICATE OF ANALYSIS **VAN17002963.1**

Method	Analyte	AQ200																			
		Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La
Unit		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm
MDL		0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.5	0.1	1	0.1	0.1	0.1	2	0.01	0.001	1
CR170910-S1	Pulp	0.3	32.5	2.8	39	<0.1	97.1	15.4	226	1.74	5.7	6.0	0.3	7	0.1	0.2	0.1	40	0.27	0.052	1
KC171023-G1	Pulp	0.7	15.2	4.9	59	<0.1	452.9	43.1	611	4.48	80.6	17.2	0.6	10	0.3	0.7	0.2	70	0.19	0.020	3
KC171023-G2	Pulp	1.0	72.1	9.2	66	0.3	624.9	54.8	1241	4.60	820.5	36.1	1.6	41	0.4	2.8	0.3	107	1.25	0.030	8
KC171023-G3	Pulp	1.0	45.2	5.3	95	0.1	612.3	47.3	608	4.24	54.5	51.3	1.0	10	0.2	0.9	0.1	78	0.14	0.045	4
KC171023-G4	Pulp	1.1	20.6	7.7	85	<0.1	290.3	29.6	369	3.92	21.5	12.0	1.0	8	0.1	0.5	0.2	78	0.13	0.050	4
KC171023-G5	Pulp	1.0	18.2	6.9	89	<0.1	315.0	27.9	283	3.51	126.1	6.5	0.9	10	<0.1	0.4	0.2	78	0.17	0.034	4
KC171023-G6	Pulp	1.3	50.5	8.6	90	0.2	655.4	26.8	847	3.91	400.3	9.3	2.0	23	0.5	1.9	0.2	92	0.49	0.018	9
KC171023-G7	Pulp	0.9	32.5	8.4	65	0.2	655.5	24.1	792	3.46	312.8	7.9	1.8	24	0.3	1.5	0.2	78	0.55	0.015	8
KC171023-G8	Pulp	1.2	69.1	7.9	82	0.1	656.9	25.8	724	3.74	110.0	9.7	1.7	20	0.4	1.3	0.2	77	0.38	0.019	8
KC171023-G9	Pulp	0.7	34.5	10.0	112	<0.1	85.7	19.0	676	4.16	18.0	6.4	2.5	24	<0.1	0.5	0.2	81	0.42	0.020	6
KC171023-G10	Pulp	1.2	73.1	9.9	97	0.2	1306.3	28.9	1059	4.22	323.0	10.8	2.0	23	0.5	1.6	0.2	91	0.48	0.024	9
KC171023-G11	Pulp	0.7	49.6	7.6	79	0.1	1676.0	57.0	1320	3.74	49.7	5.8	1.4	16	0.2	0.7	0.1	71	0.23	0.022	11
KC171023-G12	Pulp	1.4	119.0	12.6	121	0.4	2061.3	56.9	2290	5.57	413.2	19.5	2.5	29	1.0	2.0	0.3	102	0.76	0.037	21
CR170910-G1	Pulp	0.8	63.9	2.6	63	0.1	86.9	12.3	147	2.50	12.0	1.6	0.9	5	0.2	0.1	<0.1	65	0.22	0.053	3
CR170910-G2	Pulp	1.4	84.7	2.9	90	<0.1	60.2	17.1	195	2.78	7.7	2.8	2.1	5	0.2	0.1	<0.1	68	0.15	0.057	4
CR170910-G3	Pulp	1.1	74.1	2.8	79	<0.1	58.7	14.4	198	2.53	7.6	1.7	2.0	5	0.2	0.1	0.1	64	0.15	0.065	4
CR170910-G4	Pulp	1.3	78.8	3.6	84	0.1	42.5	12.5	172	3.28	6.3	2.9	2.7	4	0.1	0.1	<0.1	84	0.09	0.061	5
CR170910-G5	Pulp	1.1	67.3	3.5	85	0.2	75.4	16.6	200	2.91	36.2	2.9	1.8	5	0.3	0.1	0.1	79	0.16	0.077	5
CR170910-G6	Pulp	1.1	63.0	2.8	88	0.1	43.0	14.5	178	3.10	6.2	1.4	2.2	4	0.2	0.1	<0.1	88	0.11	0.059	4
CR170910-G7	Pulp	0.9	84.6	2.3	109	<0.1	109.3	14.8	168	2.68	11.3	1.3	1.7	4	0.2	0.1	<0.1	75	0.13	0.073	3
FL2-C1 Res	Pulp	37.3	716.0	804.6	1424	>100	315.0	15.2	3115	5.12	71.6	2741.7	0.9	260	16.3	16.7	1.2	106	11.77	0.140	10
FL2-T1 Res	Pulp	19.2	205.4	210.3	460	29.2	141.8	7.3	1248	2.56	23.1	199.6	0.4	86	3.3	4.5	0.2	59	4.34	0.044	4
FL2-T2 Res	Pulp	14.2	254.0	150.2	368	20.4	111.4	5.8	970	1.97	16.6	198.5	0.4	74	2.3	3.3	0.1	47	7.64	0.036	4



CERTIFICATE OF ANALYSIS

VAN17002963.1

Method Analyte Unit MDL	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ374	FA330
	Cr ppm	Mg %	Ba ppm	Ti %	B ppm	Al %	Na %	K %	W ppm	Hg ppm	Sc ppm	Tl ppm	S %	Ga ppm	Se ppm	Te ppm	Ag gm/t	Au ppb
	1	0.01	1	0.001	20	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5	0.2	2	2
CR170910-S1	Pulp	74	0.82	58	0.077	<20	0.64	0.016	0.09	0.3	0.02	2.0	<0.1	<0.05	2	<0.5	<0.2	
KC171023-G1	Pulp	338	1.86	38	0.078	<20	1.30	0.008	0.03	0.4	0.02	3.6	<0.1	<0.05	6	<0.5	<0.2	
KC171023-G2	Pulp	350	1.36	52	0.071	<20	3.20	0.010	0.07	0.9	0.10	15.6	0.2	<0.05	8	1.7	<0.2	
KC171023-G3	Pulp	275	2.64	67	0.082	<20	2.38	0.007	0.04	0.3	0.03	5.3	0.1	<0.05	7	<0.5	<0.2	
KC171023-G4	Pulp	166	1.21	78	0.103	<20	2.13	0.007	0.04	0.2	0.03	3.6	<0.1	<0.05	9	<0.5	<0.2	
KC171023-G5	Pulp	131	0.88	53	0.119	<20	2.22	0.009	0.04	0.3	0.02	3.0	<0.1	<0.05	9	<0.5	<0.2	
KC171023-G6	Pulp	263	1.01	61	0.108	<20	3.01	0.015	0.10	1.8	0.06	9.6	0.2	<0.05	8	0.6	<0.2	
KC171023-G7	Pulp	257	0.88	54	0.087	<20	2.74	0.016	0.07	1.1	0.04	6.9	0.1	<0.05	7	0.6	<0.2	
KC171023-G8	Pulp	266	1.13	76	0.092	<20	2.76	0.016	0.08	0.3	0.05	10.2	0.2	<0.05	8	<0.5	<0.2	
KC171023-G9	Pulp	53	1.16	160	0.098	<20	3.35	0.015	0.21	<0.1	0.03	6.7	0.3	<0.05	10	<0.5	<0.2	
KC171023-G10	Pulp	407	1.22	89	0.091	<20	3.38	0.018	0.10	1.5	0.06	11.9	0.2	<0.05	8	0.6	<0.2	
KC171023-G11	Pulp	376	1.56	84	0.071	<20	2.70	0.018	0.07	3.8	0.04	13.8	0.2	<0.05	7	<0.5	<0.2	
KC171023-G12	Pulp	589	1.86	125	0.090	<20	4.26	0.018	0.12	2.3	0.12	26.6	0.2	<0.05	10	1.3	<0.2	
CR170910-G1	Pulp	74	0.77	60	0.109	<20	2.08	0.026	0.13	0.1	0.04	5.4	0.1	<0.05	4	0.5	<0.2	
CR170910-G2	Pulp	39	0.78	105	0.087	<20	1.90	0.019	0.21	0.1	0.01	5.6	0.2	<0.05	4	<0.5	<0.2	
CR170910-G3	Pulp	33	0.66	89	0.079	<20	1.60	0.016	0.20	0.1	0.02	5.0	0.2	<0.05	4	0.6	<0.2	
CR170910-G4	Pulp	47	0.98	123	0.109	<20	2.64	0.018	0.19	0.1	0.02	7.9	0.2	<0.05	6	<0.5	<0.2	
CR170910-G5	Pulp	57	0.80	92	0.101	<20	2.43	0.018	0.16	0.1	0.05	6.1	0.2	<0.05	6	<0.5	<0.2	
CR170910-G6	Pulp	48	0.97	111	0.109	<20	2.54	0.017	0.21	0.1	0.03	7.0	0.2	<0.05	6	<0.5	<0.2	
CR170910-G7	Pulp	65	0.86	57	0.090	<20	2.74	0.017	0.10	0.1	0.05	5.7	0.1	<0.05	4	0.8	<0.2	
FL2-C1 Res	Pulp	533	1.96	71	0.033	<20	2.37	0.132	0.12	1.6	0.54	7.8	0.2	0.32	9	8.3	1.3	273 2341
FL2-T1 Res	Pulp	269	1.06	22	0.026	<20	1.23	0.009	0.07	1.0	0.11	3.9	<0.1	0.09	5	1.6	0.3	
FL2-T2 Res	Pulp	206	5.58	27	0.024	<20	1.06	0.016	0.07	0.7	0.08	3.1	<0.1	0.07	4	1.2	<0.2	



BUREAU MINERAL LABORATORIES
VERITAS Canada

www.bureauveritas.com/um

Bureau Veritas Commodities Canada Ltd.
9050 Shaughnessy St Vancouver British Columbia V6P 6E5 Canada
PHONE (604) 253-3158

Client: **Crucible Resources Ltd.**
745 East 30th Ave
Vancouver British Columbia V5V 2V8 Canada

Submitted By: Doug Warkentin
Receiving Lab: Canada-Vancouver
Received: December 19, 2017
Report Date: January 17, 2018
Page: 1 of 2

CERTIFICATE OF ANALYSIS

VAN17003053.1

CLIENT JOB INFORMATION

Project: Fr-Nv-CT-He
Shipment ID:
P.O. Number:
Number of Samples: 12

SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

Procedure Code	Number of Samples	Code Description	Test Wgt (g)	Report Status	Lab
SLBHP	12	Sorting, labeling and boxing samples received as pulps			VAN
AQ200	12	1:1:1 Aqua Regia digestion ICP-MS analysis	0.5	Completed	VAN

SAMPLE DISPOSAL

PICKUP-PLP Client to Pickup Pulps

ADDITIONAL COMMENTS

Bureau Veritas does not accept responsibility for samples left at the laboratory after 90 days without prior written instructions for sample storage or return.

Invoice To: Crucible Resources Ltd.
745 East 30th Ave
Vancouver British Columbia V5V 2V8
Canada

CC:


JEFFREY CANNON
Geochemistry Department Supervisor

This report supersedes all previous preliminary and final reports with this file number dated prior to the date on this certificate. Signature indicates final approval; preliminary reports are unsigned and should be used for reference only. All results are considered the confidential property of the client. Bureau Veritas assumes the liabilities for actual cost of analysis only. Results apply to samples as submitted.
*** asterisk indicates that an analytical result could not be provided due to unusually high levels of interference from other elements.



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Project: Fr-Nv-CT-He
Report Date: January 17, 2018

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CERTIFICATE OF ANALYSIS

VAN17003053.1

Method	Analyte	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200
		Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Th	Sr	Cd	Sb	Bi	V	Ca	P	La
Unit		ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	%	ppm	
MDL		0.1	0.1	0.1	1	0.1	0.1	0.1	1	0.01	0.5	0.5	0.1	1	0.1	0.1	2	0.01	0.001	1	
CR171002-S1	Pulp	0.4	110.8	13.1	77	0.2	31.1	21.4	987	3.91	5.9	8.0	0.5	18	0.4	0.3	0.2	98	0.60	0.060	5
CR171002-G1	Pulp	0.6	90.4	8.4	70	0.3	25.7	20.2	797	3.98	6.1	2.3	0.6	9	0.2	0.3	0.2	89	0.28	0.079	4
CR171002-G2	Pulp	0.6	60.4	6.7	47	0.1	15.4	12.5	397	2.30	4.4	2.2	2.1	8	<0.1	0.2	0.1	50	0.11	0.110	8
CR171002-G3	Pulp	0.3	243.5	6.9	82	<0.1	44.4	35.3	756	6.14	7.7	2.9	1.3	11	<0.1	0.2	<0.1	152	0.30	0.109	5
CR171002-G4	Pulp	0.6	56.2	8.4	83	0.2	19.4	19.5	1400	3.50	4.3	17.0	1.9	6	0.2	0.2	0.2	72	0.10	0.215	6
CR171002-G5	Pulp	0.2	202.1	5.9	87	<0.1	48.4	36.0	980	6.75	5.2	74.1	1.0	14	<0.1	0.2	<0.1	169	0.49	0.114	5
CR171002-G6	Pulp	0.2	140.7	4.6	75	<0.1	42.5	32.6	897	5.97	5.0	2.3	1.2	14	<0.1	0.2	<0.1	137	0.42	0.122	5
CR171002-G7	Pulp	0.3	255.3	4.9	86	<0.1	57.1	37.2	837	6.69	6.1	4.8	1.0	11	<0.1	0.1	1.1	172	0.47	0.096	3
CR171002-G8	Pulp	0.3	165.2	7.2	91	<0.1	51.4	42.3	1042	7.63	6.5	5.1	1.0	16	0.1	0.1	<0.1	181	0.55	0.114	4
CR171002-G9	Pulp	0.4	193.5	6.3	84	<0.1	43.2	29.8	652	5.74	6.6	2.0	1.7	9	0.1	0.1	0.1	139	0.20	0.140	7
CR171002-G10	Pulp	0.7	253.0	10.0	96	0.1	43.3	35.7	1112	6.31	10.6	1.9	1.8	9	0.1	0.2	0.2	163	0.22	0.176	5
FL2 T-3 RES	Pulp	17.8	551.9	198.7	519	29.8	140.2	7.4	1227	2.57	21.8	353.6	0.4	79	2.7	4.3	0.2	58	4.32	0.044	3



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Project: Fr-Nv-CT-He
Report Date: January 17, 2013

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Part: 2 of 2

CERTIFICATE OF ANALYSIS

VAN17003053.1

Method	Analyte	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	AQ200	
		Cr	Mg	Ba	Ti	B	Al	Na	K	W	Hg	Sc	Tl	S	Ga	Se	Te
Unit		ppm	%	ppm	%	ppm	%	%	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm
MDL		1	0.01	1	0.001	20	0.01	0.001	0.01	0.1	0.01	0.1	0.1	0.05	1	0.5	0.2
CR171002-S1	Pulp	50	1.08	80	0.190	<20	2.27	0.004	0.08	<0.1	0.06	4.0	0.1	<0.05	8	<0.5	<0.2
CR171002-G1	Pulp	40	0.91	70	0.211	<20	2.27	0.003	0.09	0.1	0.05	3.1	<0.1	<0.05	9	<0.5	<0.2
CR171002-G2	Pulp	19	0.38	62	0.181	<20	3.42	0.014	0.05	0.2	0.08	4.5	<0.1	<0.05	9	<0.5	<0.2
CR171002-G3	Pulp	63	1.65	97	0.362	<20	3.21	0.001	0.24	0.1	0.02	6.8	0.1	<0.05	10	<0.5	<0.2
CR171002-G4	Pulp	30	0.53	73	0.207	<20	3.14	0.009	0.06	0.2	0.05	4.1	0.2	<0.05	11	<0.5	<0.2
CR171002-G5	Pulp	64	1.95	121	0.372	<20	3.27	0.002	0.34	0.1	0.02	7.5	0.1	<0.05	11	<0.5	<0.2
CR171002-G6	Pulp	54	1.61	99	0.322	<20	2.92	0.002	0.26	<0.1	0.01	6.2	0.1	<0.05	9	<0.5	<0.2
CR171002-G7	Pulp	102	1.93	145	0.400	<20	3.63	0.002	0.51	0.1	0.01	4.4	0.2	<0.05	10	<0.5	<0.2
CR171002-G8	Pulp	68	2.17	136	0.378	<20	3.71	0.003	0.48	0.1	<0.01	6.6	0.1	<0.05	12	<0.5	<0.2
CR171002-G9	Pulp	60	1.52	101	0.351	<20	3.38	0.003	0.22	0.1	0.03	6.2	0.1	<0.05	10	<0.5	<0.2
CR171002-G10	Pulp	62	1.50	117	0.373	<20	3.88	0.002	0.34	0.2	0.04	6.3	0.2	<0.05	11	<0.5	<0.2
FL2 T-3 RES	Pulp	281	1.04	24	0.022	<20	1.19	0.007	0.07	0.8	0.09	3.4	<0.1	0.13	5	1.8	<0.2



KEMETCO RESEARCH INC

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Sample ID	I0603 FL2	I0603 FL2	I0603 FL2	I0603 FL2	I0603 FL2	I0603 FL2	I0603 FL2	I0603 FL2	I0603 FL2	I0603 FL2	I0603 FL2
	C1-1 mg/L	C1-2 mg/L	T1-1 mg/L	T1-2 mg/L	T2-1 mg/L	T2-2 mg/L	T3-1 mg/L	T3-2 mg/L	T4-1 mg/L	T4-2 mg/L	T4-3 mg/L
ELEMENTS											
Ag Silver	<0.25	0.81	1.58	1.75	4.63	0.53	2.24	<0.25	2.27	0.23	0.30
Al Aluminium	<1.	<1.	<1.	1.71	1.51	1.38	1.79	1.25	0.49	0.46	0.47
As Arsenic	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<0.2	<0.2	<0.2
Au Gold	<0.25	0.33	<0.25	0.34	0.29	<0.25	<0.25	<0.25	<0.1	<0.1	<0.1
B Boron	3.19	4.02	4.05	<2.5	3.23	<2.5	<2.5	<2.5	0.60	0.88	<0.5
Ba Barium	0.30	0.29	0.84	3.05	3.26	2.50	0.86	0.66	0.91	0.85	0.85
Be Beryllium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01
Bi Bismuth	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<0.25	<0.25	<0.25
Ca Calcium	215	53.5	494	31810	28281	24247	33559	20590	14902	14656	14340
Cd Cadmium	0.69	0.49	0.81	0.51	0.61	0.50	0.82	0.43	0.31	0.30	0.30
Co Cobalt	<0.25	<0.25	<0.25	0.26	<0.25	<0.25	<0.25	<0.25	<0.05	<0.05	<0.05
Cr Chromium	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.36	<0.25	0.18	0.17	0.17
Cu Copper	397	428	747	489	504	369	527	216	310	306	296
Fe Iron	3.38	1.70	3.71	1.93	1.44	1.13	1.78	0.84	0.62	0.60	0.57
K Potassium	19.6	12.9	42.4	28.5	97.1	83.5	27.9	30.3	11.2	11.5	12.7
Li Lithium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1
Mg Magnesium	3.88	0.68	7.05	3.30	138	30.6	0.52	<0.5	17.7	26.7	21.8
Mn Manganese	<0.05	0.45	0.90	0.11	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01
Mo Molybdenum	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	0.13
Na Sodium	6.36	26292	N/A	N/A	N/A	N/A	N/A	71.6	6.54	60.0	58.0
Ni Nickel	1.30	2.19	2.62	1.93	0.80	0.74	0.93	0.69	0.35	0.37	0.44
Pb Lead	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<0.2	<0.2	<0.2
Sb Antimony	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<0.2	<0.2	<0.2
Se Selenium	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<0.2	<0.2	<0.2
Si Silicon	9.00	11.9	14.6	4.64	9.32	7.83	<2.5	<2.5	11.6	9.89	8.07
Sn Tin	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<0.2	<0.2	<0.2
Sr Strontium	1.36	0.58	3.54	20.8	10.3	9.41	17.4	9.67	7.10	7.14	7.03
Ti Titanium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1
Tl Thallium	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<1.	<0.2	<0.2	<0.2
U Uranium	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<0.5	<0.5	<0.5
V Vanadium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1
Zn Zinc	26.1	42.3	62.4	58.0	10.7	5.17	10.8	3.03	8.10	7.36	7.55