

Ministry of Energy and Mines
BC Geological Survey

**BC Geological Survey
Assessment Report
37525**

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geochemical

TOTAL COST: \$7,831.99

AUTHOR(S): Andris Kikauka

SIGNATURE(S): A. Kikauka

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): _____ YEAR OF WORK: 2017

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5693913

PROPERTY NAME: Thunderbird

CLAIM NAME(S) (on which the work was done): 1052275 (Thunderbird)

COMMODITIES SOUGHT: Au (Ag-Cu)

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 092F 067 & 092F 449

MINING DIVISION: Alberni

NTS/BCGS: 092F 05 E, 092F.032

LATITUDE: 49 ° 22 ' 23 " LONGITUDE: 125 ° 35 ' 51 " (at centre of work)

OWNER(S):

1) Oakley Ventures Inc 2) _____

MAILING ADDRESS:

200-1238 Homer St
Vancouver, BC V6C 2Y5

OPERATOR(S) [who paid for the work]:

1) same 2) _____

MAILING ADDRESS:

same

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):

Property underlain by Mid-Upper Triassic Vancouver Group (Karmutsen Formation) basalt, andesite (local flow top breccia), cut by Early-Mid Jurassic Island Plutonic Suite granodiorite & quartz diorite cut by leucocratic granodiorite dykes. Junction Zone is a diorite host with 1-10 meter wide cataclastic deformation (mylonitic) trending ESE cut by late phase albitite dykes associated gold bearing silicified, quartz-calcite veins, 1% pyrite (Pezgold 1989 drill hole PGU-89-4 @205.1-205.5 m, 0.4 m interval 36.24 g/t Au)

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 9378, 12623, 16450, 19374, 20474, 24426, 26412

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			
Sismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil 20 ALS ME-ICP43, Au TL43 geochemical analysis		1052275	4,149.50
Silt			
Rock 8 ALS ME-ICP43, Au TL43 geochemical analysis		1052275	3,682.49
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other			
TOTAL COST:			7,831.99

Lat. 49 22' 23" N
Long. 125 35' 51" W
NTS 092 F/05 E
BCGS 092F.032
UTM 312,272 E, 5,471,756 N (NAD 83)

**GEOCHEMICAL REPORT
ON THE THUNDERBIRD CLAIM (1052275)
GOLD (SILVER-COPPER) BEARING MINERALIZATION**

**URSUS CREEK,
BEDWELL RIVER, BC
ALBERNI MINING DIVISION**

**Submitted by:
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37,525

April 19, 2018

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1.0 Summary

The Thunderbird mineral claim (tenure number 1052275), is located along Ursus Creek approximately 35 km northeast of the Tofino-Ucluelet Airport, NTS 92F/5E, BCGS 092F.033, coordinates 49 degrees 23' N, 125 degrees 37' W (Fig 1 & 2). The Thunderbird claim (tenure number 1052275, total area 483.86 hectares located in Alberni Mining Division), is owned 100% by Oakley Ventures Inc. Thunderbird mineral claim was recorded on May 31, 2017.

The area contains numerous gold showings which were first prospected in 1939 by B.H. Symns, J.W. Harvey, H.F. Martin, G.A. Williams and D.V. Evans at the junction of Ursus and Thunderbird Creeks. Previous work includes Eldorado Minerals and Petroleum in 1984, Pacific Sentinel & Baron Ventures Ltd in 1986-87. Some grid geochemical and geophysical work has been done in the vicinity of Thunderbird Creek, a small tributary (Camp Creek) from the south. This fieldwork included soil geochemistry, a magnetometer survey, and some VLF-EM work. Geochemistry of soil and rock chip samples shows several areas of anomalous precious and base metal values in the vicinity of Camp & Junction Creek. A large area of erratic anomalous values extends for a 5 kilometer strike length (centered at Junction Creek), along the south side of Ursus Creek and encompasses several gold, silver, and copper bearing quartz-sulphide veins, stockwork and breccia .

The claims are underlain by mainly altered fine grained Karmutsen Formation basalt-andesite volcanic rocks and coarse crystalline granodiorite, quartz diorite, and diorite intrusive rocks (minor leucocratic granodiorite dykes/sills, and rare mafic dykes) of the mid-Jurassic Island Plutonic Suite (Fig 3). The entire area is cut by a major 112 degree trending regional fault structure, and accompanying zone of cataclastic deformation. The cataclasis zones extend further east-southeast (Elmer Showing), and into the headwaters of the Taylor River. The main mineralized showings near Ursus Creek appear to be controlled by large scale faults or splays of the major regional-scale shear-fault zones. The fault-splay system is poorly mapped (due to thick vegetation), but it appears that areas of gold mineralization are associated with dilatant zones and an echelon spatial distribution.

The Ursus Creek showings on the Thunderbird claim appear to have 'geological setting' similarities to Banks Island 'Kim' (Golden Giant) gold deposit within the Skeena Mining Division, with respect to distribution of intrusion related Au with minor thermal metamorphism of older country rock (hornfels volcanics, minor carbonate) in contact zones with Jurassic intrusive rocks and septa of older & indurated volcanic country rock, as well as complex strike involving a dominant and sub-ordinate mineral trend with best gold-bearing mineralization related to intersection of faults. Ursus Creek cataclasis zone is interpreted as gold-bearing quartz-carbonate-minor pyrite vein-stockwork related to narrower, but laterally extensive cataclastic deformation zones.

Chlorite zones are developed in Triassic Karmutsen andesite-basalt that is characterized by finely disseminated pyrite and carbonate blebs, streaks and late-stage fracture fillings. Traces of sphalerite and galena have been observed. Trench 1 (camp showing) has exposed an altered zone 12 meters long and 11 meters wide. Assay values for channel samples across a 2.5 meter

sample interval, are 0.92 g/t Au (0.03 oz/ton Au). The Midpad Showing adjacent to Ursus Creek has grab sample assay values up to 25.9 g/t Au (0.76 oz/ton Au). The Junction showing appears to be a cataclastic deformation zone (subject to intense rotational tectonics), which lies along Ursus Creek which itself reflects a major regional fault structure extending east into the headwaters of Taylor River. Complexity of history is indicated by the quartz veins which have been brecciated and incorporated into the mylonite, by the foliation and siliceous nature of the mylonite, by the fracture set which may be superimposed on the mylonite, and by the disseminated pyrite mineralization. Gold values are related to late-phase albite enriched end phases of mid-Jurassic intrusive activity, and mineralization is considered to be of intrusion-related vein-stockwork-breccia type. The mineralization has similar geological settings and distribution as the Banks Island Golden Giant gold-bearing vein systems.

Selected samples from this zone assayed up to 26.67 g/t Au (0.778 troy ounces gold per ton). A program of stream geochemistry in the side drainages of Ursus Creek has also yielded a number of anomalies on which very little follow-up work has been done. Although outcrops are abundant along many of the streams there are extensive areas of no exposure. Some grid geochemical and geophysical work has been done in the vicinity of Thunderbird Creek, a small tributary from the south. This included soil geochemistry, a magnetometer survey, and some VLF-EM work. The geochemistry shows irregular areas of anomalous values in the vicinity of the Camp showing. This is included within a large area of erratic anomalous values that extends along the south side of Ursus Creek and encompasses several quartz veins.

Fieldwork performed in 2017 by Oakley Ventures Inc includes geochemical analysis of 8 rock chip and 20 soil samples that cover a 225 X 550 m area immediately south of Ursus Creek, and east of Junction Creek at elevations ranging from 220-350 meters above sea level (Fig 4). The objective of the fieldwork was to identify Junction Zone East precious metal mineralization, including Ursus Creek cataclastic deformation zone and Ridge Zone (Junction Creek) 100-200 meters south of Ursus Creek cataclastic. Previously described zones identified in the area of Junction showings include the 'Ursus Zone' that is related to cataclastic deformation in the Ursus Creek valley, as well as the 'Ridge Zone' related to fault-shear dilatant zones that are sub-parallel and conjugate to Ursus Creek. The eight rock chip samples returned low Au values from geochemical analysis. One of the rock chip samples (17Thun-3), that had a high content of pyrite and weak quartz stockwork texture developed, returned a value of 0.014 g/t Au (0.001 oz/t Au). Other rock samples taken for geochemical analysis contains a weak content of pyrite (<1%), trace amounts of an extremely fine grained silver coloured unknown sulphide mineral, and weak quartz stockwork texture developed in weakly altered granodiorite/quartz diorite host rock, however the Au content is near background values of 0.001 g/t Au. The soil sampling revealed a zone of anomalous Au in the Ursus Creek cataclastic zone. Soil samples taken along L 312,350 E at stn 5,471,800-900 N, returned geochemical analysis results ranging from 0.041 to 0.178 g/t Au (41 to 178 ppb Au). This zone represents a follow-up target over an interval of 125 meters located immediately south of Ursus Creek and approximately 200 meters east of the confluence of Junction and Ursus Creek. The soil survey also identified a secondary follow-up target interpreted as the Ridge Zone located just north of Junction Creek on L 312,350 E at stn 5,471,700 N that contains 0.043 g/t Au (Fig 5). Further work recommended includes follow-up

on previous work, including stream geochemical anomalies, detailed mapping, sampling, and magnetometer/VLF-EM geophysics on the Junction, Thunderbird and Midpad showings. 1989 drill holes at Junction Zone should have a fence of drill holes at 50 meter spacing intended to intersect Ursus Creek gold-bearing cataclasite (fractured/brecciated fault) approx 50 meters in elevation below known near surface drill intersections from DDH PGU-89-1 to 4 (Fig 12).

2.0 Introduction

A program of rock and soil geochemical sampling was carried out between June 29-July 2, 2017 by the writer. This report summarizes the results of geochemical sampling and correlation of previous work and recommendations for further exploration for precious and base metal targets.

3.0 Access, Physiography, Infrastructure

LOCATION AND ACCESS:

The claims are located along Ursus Creek which flows westward into Bedwell River 3 km above the head of Bedwell Sound. Access to the claims was via helicopter from Ucluelet-Tofino Airport a distance of 35 km. (Figure 1 and 2). A more direct flightpath can be used for access only on good weather days from a helicopter mobilization location on the Taylor River southwest of Port Alberni. The Thunderbird Creek Campsite is approximately 10 km west of the Taylor River road. Logging has taken place on the western edge of the claim group in the late 1960's although there are no roads present on the property. Access within the claims is by foot or helicopter. An old mining-logging road, Bedwell River FSR, several kilometers west of Thunderbird Claim, that occurs on the northwest side of the head of Bedwell Sound. The road and mineral claim are within Tree Farm Licence 20, south of the southern boundary of Strathcona Provincial Park. Timber cruising was done in 1986 around Thunderbird Creek (on Tree Farm 20). Logging road construction near Bedwell River and Ursus Creek would be a great aid in future mining-related development for the Thunderbird mineral property.

The Thunderbird Claim is covered by typical westcoast rainforest vegetation. In the grid area the forest is mainly mature Western Red Cedar, usually 2 to 3 meters in diameter, mixed with large Hemlock and a few Douglas Fir. The open forest floor vegetation consists of salal, ferns and minor immature Hemlock and Yew trees. Parts of the main Ursus Creek Valley bottom are a dense thicket of buck brush and devils club.

4.0 Property Status

The property consists of one MTO mineral claim registered 100% to FMC 284488 (Oakley Ventures Inc). The following table summarizes details of property status:

Title number	Claim Name	Issue Date	Expiry Date	Area (hectares)
1052275	Thunderbird	2017/MAY/31	2021/SEP/22	483.86

The total area of the Thunderbird mineral claim are 483.86 hectares (1,195.13 acres).

5.0 Property and Area History

This report presents and discusses the data collected in a format acceptable for Department of Mines assessment requirements. Claims were originally recorded in the Thunderbird Creek Area of the Ursus Creek Valley in May 1939. Several owners have in the past carried out a small amount of prospecting and trenching which outlined numerous showings containing low but consistent gold values.

The Ureka and Opus claims, owned by D.B. Forster, were staked in November 1986 to cover gold showings occurring mainly in altered granodiorite. An initial geological appraisal was completed between December 3 and December 14, 1986 by D.B. Forster, J. Shearer, D. Brown and S. Butler. Concurrently, a detail grid was established around Thunderbird Creek on Ureka 5, 6 and 8 claims by Chase & Associates Ltd. Ground magnetometer VLF Electromagnetic, geological mapping and soil geochemical surveys were conducted over the detail grid. Reconnaissance prospecting on the Opus and Ureka claims was done using a helicopter. The grid work was carried out from a tent camp near Thunderbird Creek. Subsequently a follow-up program of trenching, fill-in soil sampling, geological mapping and VLF-Electromagnetic surveying was completed in 1987.

Rock sample geochemical analysis highlights are summarized as follows (Shearer, 1987):

Thunderbird (Camp Ck) Trench 1: strike 094 degrees, dip -84 N,
quartz stockwork, 0.92 g/t Au across 2.5 meter interval

Mid-Pad (Ursus Ck), 3 grab samples 12.7 g/t Au,
23.8 g/t Au, & 25.9 g/t Au

Junction (Ursus Ck), 3 grab samples 5.7 g/t Au,
15.6 g/t Au, & 24.9 g/t Au

Drilling of 5 holes in the Junction Zone by Pezgold Res in 1989, indicated the gold-bearing cataclastic deformation zone is 8 to 17 m wide and persists to a depth of 145 m with a strike length of 220 m. Mineralized intersections include 1.7 m with a weighted average grade of 0.254 oz/t gold, and 1.8 m of 0.266 oz/t gold (8.71 & 9.12 g/t Au). DDH PGU-89-4 at depth of 205.1-205.5 meters, an interval length of 0.4 meters @ 36.24 g/t Au (1.057 oz/ton Au) was the best gold values from 5 drill holes, varying in length from 91.4-251.1 meters (total 783.9 meters).

Considerable underground exploration was completed on the Musketeer, Buccaneer, Avon and Trophy Crown Grants located 3 km north of Thunderbird claim. A small production of gold was realized in the 1940's from the narrow quartz-veins at the Musketeer and other Crown Grants.

6.0 General Geology

The central part of Vancouver Island is underlain by Triassic strata, including the Karmutsen basalt to andesite volcanic rocks, and the overlying Quatsino limestone. The Triassic volcanic and carbonate lithology units are intruded by Middle Jurassic age, irregular-shaped batholithic plutons, laccolith (sheeted) and diapiric stocks of the Island Intrusions (Plutonic Complex). The mid-Jurassic batholithic rocks in this area are responsible for regional scale faulting-shearing active during waning phases of intrusive emplacement. Late phases of Island Intrusions, including albite-rich dykes/sill are related to gold-bearing mineralization present on Ursus Creek. Previous geochemical surveys suggest best gold values are associated with anastomosing fault zones. The project area is structurally dominated by a large fault zone (east-southeast trending, steeply dipping), extending from Bedwell River to the west, and Sproat Lake to the east.

Previous fieldwork on the subject property reveals large scale shearing along Ursus Creek. The main direction of shearing observed in creek exposures was approximately 112 degrees with a steep north dip. This major regional shear zone cuts volcanic rocks of the Karmutsen Formation and granodiorite to quartz diorite and diorite stocks of the Island Intrusions. Several gold-bearing quartz veins, found in the Bedwell River batholith, have been explored in the past by trenches and/or underground workings. One of these, the Musketeer property, has produced gold. Many of the characteristics of the gold-bearing quartz veins along Bedwell River share geological similarities to Musketeer, Buccaneer, Trophy, and Prosper Crown Grants. The Musketeer Group veins occur within the batholith, are about a mile from its western margin and occur in two complementary sets of fractures along which there has been some shearing. The one group of fractures strikes 10 to 30 degrees azimuth and dips sub-vertical. In some places andesite dykes occur in fractures of similar attitude. The other group of fractures strikes northeast to east and dips northerly at angles from 45 to 75 degrees. At the Musketeer property, the Trail Vein strikes northerly and is offset by the fracture which contains the Musketeer Vein and which strikes easterly. The quartz veins have sections which exhibit ribbon texture and generally contain gouge along the walls. The veins are composed of quartz with some white carbonate and varying proportions of sulphides. The sulphides are distributed irregularly in the veins, comprising up to 15% combined sulphides including pyrite, galena, sphalerite, and chalcopyrite. Pyrite alone is not a reliable indicator of gold; galena and perhaps sphalerite are usually observed with pyrite in vein matter that assays well in gold. Also, the gold appears to be independent of the chalcopyrite content. One of the characteristics of these veins is their very narrow width and their high gold content. A number of samples from the 1000-level of the Musketeer Vein presented by Sargent (1941, p. 40) shows that the highest gold values are generally with the banded vein material and that a weighted average of ten samples, disregarding whether or not they are within ore shoots, is 1.48 oz/ton Au across 5.4 inches (14 cm), with values up to 4.95 oz/ton across 4.5 inches. Silver values are generally slightly less than the gold values. Buccaneer Mines Ltd. Two parallel veins have been explored at the Buccaneer property and both of these veins occur in branching fractures which are largely in or at the sides of altered, green andesite dykes. These dykes strike about N 250 E and dip steeply southeast. They have exposed widths

from a few centimeters up to 7 meters, generally averaging about 2.5 meters. The veins can occur along one side of a dyke and cross to the other side for an interval and in places can also cross to an adjacent dyke. The vein filling generally consists of quartz, in veins from 5 to 50 cm wide and generally having gouge at the walls. The quartz veins contain fragments of wall rock that are generally partly replaced by ankerite and chlorite. Some of the vein matter is ribboned by closely spaced fractures parallel to the walls. In places along the veins the quartz can replace sheared wall rocks forming lenticular masses or irregular stringer zones. These bodies are up to 1.3 meters wide but are generally barren of gold. The primary sulphides include chalcopyrite, pyrite, galena and sphalerite, generally forming less than 1% of the vein. The gold distribution is irregular; it occurs in the gangue and in contact with or close to the sulphides. Although the gold values are highest where base metals are present, gold does also occur where no base metals are detectable by assays. Widths of veins are again very narrow and gold values are quite high (Sargent, 1941). The best values reported are from the 1600-level of the Craig Vein and 18 of these samples, regardless of sample locality, have a weighted average of 2.34 oz/ton Au across 8.2 inches (21 cm). The Prosper property, lying near the northwest corner of Opus 1 mineral claim, is presently covered by the Bess claim acquired in June of 1975 by Mr. Walter Guppy of Tofino and transferred on September 30, 1985 to Bermuda Resources Ltd. The property has some old adits and open cuts were made about 1903. In 1939 a group of people, including Walter Guppy, recorded the Prosper 1 to 8 claims. The mineral showings exposed by and near the workings occur in the Karmutsen volcanics close to the Penny Creek batholith. Mineralization is associated with fractures that strike about 070° Az and dip 65° to 70° northerly. Shearing and chloritization has occurred along these fractures and at some points quartz stringers with disseminated pyrite have been formed. The quartz is mineralized with pyrite and chalcopyrite and some free gold (Sargent, 1940). Reports in Minister of Mines Report 1940, a number of samples taken in trenches over a length of about 200 feet (60 m). The weighted average of five sample sites is 0.38 oz/ton Au over 13.6 inches (35 cm).

7.0 Thunderbird Property Geology

The Thunderbird property is underlain by the following lithologies

EMJlgd Early-Middle Jurassic Island Plutonic Suite granodiorite, quartz diorite

uTrVK Middle-Upper Triassic Vancouver Group, Karmutsen Formation basalt, andesite

Karmutsen volcanics on the Thunderbird claim consist of fine grained, commonly fragmental andesite. Alteration is mainly chlorite. The intrusive rocks are mainly fresh, medium crystalline biotite-hornblende granodiorite and minor quartz diorite. Several large outcrops of grey weathering marble occur on the Thunderbird claim that are interpreted as Triassic Quatsino Formation. This intermittently occurring carbonate unit is not mapped and occurs higher in section than the Karmutsen Formation lavas. Intrusive rocks noted near the marble were mafic-rich quartz diorite which suggests the presence of an intrusive border phase related to assimilation of the country rocks. The area is characterized by numerous easterly trending fault zones (and shear zone zones) that are manifested as WNW to NNE trending linear depressions. Shear features such as; gouge filled fractures, re-healed brecciation and zones of shattered rock are abundant throughout the grid. The property includes four showings of quartz mineralization,

some of which carry gold values. 'Camp Creek' showings near Thunderbird Creek (Trench 1); the "Mid Pad" showing which occurs on the cliffs immediately south of Ursus Creek; the Junction (East) showing which occurs along the south side of Ursus Creek approximately 0.5 kms east of the Mid Pad. Trench #1 showing occurs adjacent to a strong shear zone which marks "Camp Creek". The main trends of the mineralized quartz stockwork range from 22 to 62 degrees with southeasterly dips. The main shearing in Camp Creek varies from 87 to 101 degrees with steep -83 dips to the north. There are nine quartz vein types present in Trench #1. Grab samples from Trench #1; the numerical average is 920 ppb Au. After additional trenching, a more detailed sampling program was undertaken for which the results average 550 ppb Au for five samples from the easterly vein. D. Woodcock took two chip samples across the northwesterly striking vein, some of which had abundant chalcopyrite. These samples, both 20 centimeters long and one meter apart, returned assays of 245 ppb (.007 oz/ton) and 780 ppb (.02 oz/ton). Basically, Trench 1 exposes a series of narrow quartz veins which have a wide (greater than 2.5 meter) thickness of disseminated pyrite in quartz stockwork in the footwall of the more defined quartz veins. Assays for similar type mineralization found elsewhere on the claims gave gold values up to 0.144 oz./ton Au. The host rock at Trench #1 is a highly altered (silicification, sericite and chlorite development) derivative of the surrounding granodiorite. The setting and style of mineralization is similar to the Kim (Golden Giant) Deposit on Banks Island (Shearer 1985). The mineralization at Trench #1 occurs within approximately 100 meters north of the intrusive contact between quartz monzonite and Karmutsen Volcanics. The channel cutting Ursus Creek is marked by steep walled canyons, and is about 100 north of Trench #1 which is characterized by stockwork and Cu-Ag-Au bearing quartz-sulphide veining occurs within a strongly silicified and pyritic quartz diorite/granodiorite. Mid-Pad area features lensy quartz vein in a carbonatized, pyritic quartz diorite that strikes 118 degrees and dips 90. This quartz vein is exposed on the south side of Ursus Creek.

Junction Creek is described as two parallel zones:

- 1) Ursus Cataclastic Zone, paralleling Ursus Creek
- 2) Ridge Cataclastic Zone, between Ursus and Junction Creeks

Cataclastic zones follow both the Ursus Ck valley and the ridge between Junction and Ursus Creeks. They strike 104-116 degrees, and vary in widths from 10-25m. The Ursus cataclastic zone has been invaded by a multiphase quartz veins and veinlets, collectively up to 60 m wide. Selected high quartz-sulphide surface rock chip samples returned gold values of 0.169, 0.496 and 0.778 oz/ton (Salmon, 1996). The Ursus zone is exposed in the cliffs along the south side of Ursus Creek. The rock is hard greenish cataclastic mylonite (the protolith is likely Vancouver Group, Karmutsen Formation andesite-basalt). Fine grained pyrite is dispersed in varying proportions through out much of the rock. These cataclastic zones seem to occur in the proximity of albitite dykes. This zone was drilled with a JKS 300 drill in 1989. The drill was set up at three locations, one on the north side of Ursus creek and two on a ridge between Junction and Ursus Creeks. Drilling was done over a strike length of 230m along the cataclastic zones. This is the only zone on the property that has been drilled. Drilling indicated the Ursus Creek zone dips 72 degrees north and maintains an 8- 17m width to a depth of 145m. The highest grade in this zone was 0.4m grading 1.05 troy ounces/short ton Au, this was a quartz vein within the cataclastic zone. With shear zones grading up to 0.25 oz/ton Au over 1.7m and 0.26 oz/ton Au over 1.8m in this zone.

The gold bearing mineralization is closely associated with a regional scale ENE trending contact between Triassic Karmutsen volcanic rocks to the south and Jurassic Island Plutonic Suite in the Ursus Creek valley and to the north. The intrusive contact is marked by a medium to fine grained dark, mafic-rich dioritic phase which is cut by many dykes of leucocratic granodiorite. The Karmutsen Volcanics are fine grained to aphanitic, dark green andesites. Fine grained volcanic rocks were observed in outcrop on the Thunderbird Claim, the creek bars at the mouth of Ursus Creek contained many examples of diverse, coarse pyroclastics, bedded aquagene tuffs, pillow breccias and amygdaloidal lavas (all typical of the Karmutsen Volcanics elsewhere on Vancouver Island).

Granodiorite: Light grey-buff weathering, greenish grey hypidomorphic granular texture, biotite and hornblende present. No potassium feldspars determined. **Altered Granodiorite:** Usually rusty weathering, sheared and shattered, light greenish brown, relict quartz grains abundant, commonly micro veined by secondary silica, alteration mainly sericite but also minor chlorite, no primary mafic minerals remain.

Quartz Diorite: Dark green coarse quartz grains, in a chloritic matrix, slight foliation. Some relict feldspars in most samples, commonly veined by calcite hairlines.

Karmutsen Volcanics: Andesite -Basalt composition, aphanitic to fine grained texture, dark green to black colour, occasionally layered - tuffaceous.

The Mid Pad Showing includes a lensey quartz vein with associated quartz stringers that strikes 118 degrees and dips 90 degrees (vertical). Midpad Showing is exposed on the south side of Ursus Creek and can also be seen in the cliffs along the north side of the creek. Three sets of samples have been taken and reported for this showing. Samples reported in Assessment Report 12,623 have been taken across the narrow quartz vein and the adjacent rock in three sites. Values and widths obtained are as follows:

Sample No.	Width inches	Width centimeters	Troy ounces/short ton Au	Grams/tonne Au
95606	20	50.8	0.027	0.93
95607	60	152.4	0.023	0.79
95603	26	66.0	0.020	0.69
95606	6	15.2	0.015	0.51

The westerly sample, (W87-13), taken over 53 centimeters, included mainly quartz vein but also some adjacent altered wall rock with a few quartz stringers. A second set of samples were taken 4.3 meters to the east of this. This included a small lens of quartz within a pinched part of the vein system sampled across five centimeters, listed as follows:

Sample No.	Width inches	Width centimeters	Troy ounces/short ton Au	Grams/tonne Au
W87-13	20.8	53	0.057	1.95
W87-14	39.4	100	Trace	0.01
W87-15	2.0	5	0.197	6.70
W87-16	15.0	38	0.216	7.35

The Junction (East) Showing About two kilometers above the mouth of Thunderbird Creek is a major junction in Ursus Creek. The Junction showing is about 50 meters up the north branch from this junction and is exposed in the cliffs along the south side of the creek. Natural scaling along major fractures that trend sub-parallel to the creek bed has created a cliff in which major fracture faces are interspersed with sharp small vertical steps or re-entrants. The fractures strike 120° azimuth and dip about 80 degrees NE. The rock is a hard greenish cataclasite, probably a mylonite, containing numerous sub-angular, elongate fragments of quartz ranging in size from five centimeters down to microscopic. Considerable calcite occurs in much of it. The hardness may be due to the fine-grained nature of the mylonite or due to some later silicification. The matrix is composed of quartz and sericite. The green colour may be imparted by a bright green muscovite and/or chlorite. The rock is probably a tectonically crushed granodiorite. Fine-grained pyrite is dispersed in varying portions throughout with much of this rock. In places fine-grained pyrite is of sufficient quantity to product limonite on oxidation. Selected samples returned gold values of 0.169, 0.496 and 0.778 oz/ton Au. These included one moiled channel sample (DF-123) across 1.2 meters which assayed 0.115 ounces over 0.5 meters and 0.065 ounces over 0.5 meters; several grab samples of the scaled rock debris that assayed 0.169, 0.142, 0.026, and 0.142 oz/ton and three chip samples were taken three to six meters easterly along the base of the cliff that returned values of 0.027, 0.014, and 0.015 oz/ton. D. Woodcock took a chip sample with a hammer across the site of DF-123 and got 1590 ppb (equivalent to 0.045 oz/ton). The reason for the difference is not apparent; possibly the gold occurs in scattered thin pyritic seams. Three specimens were also submitted for assays. A piece of spalled rock with abundant quartz fragments and fine disseminated pyrite assayed 5600 ppb (0.154 oz/ton) gold; a high sericite rock with scattered pyrite crystals but no quartz fragments assayed 365 ppb gold; and a silicified rock with scattered pyrite and a few quartz fragments assayed 435 ppb. In addition, a grab sample from two outcrops of similar rock, about 200 meters further to the east assayed 415 ppb Au. There are several discrete stages in a complex geological history. Certain structures were present for the initial quartz deposition which was subsequently brecciated and drawn out into parallel elongated fragments in a cataclastic deformation zone. The slight foliation may be related to this stage of the history. The fracturing was possibly superimposed on the mylonite. The gold mineralization was also superimposed on the mylonite, possibly controlled by the fracture zones. The Dyke showing is an exposure of buff-weathering granodiorite that occurs on the south side of Ursus Creek. A fracture zone, that strikes 116 degrees azimuth and dips 80° N, is silicified and cut by a few quartz stringers. This is mineralized with sparse disseminated pyrite and a few scattered specks of galena. A small grab sample of this altered rock analyzed 16 ppb Au. The alteration lies north of a vertical basic dyke that is ten meters wide and strikes 130°

azimuth. A grab sample of the altered rock adjacent to the dyke has 0.025 oz/ton Au. Fresh coarse grained granodiorite occurs on the south side of the dyke.

Several important, low-grade to moderate-grade gold occurrences have been located along a major shear structure in Ursus Creek. Pyrite and chalcopyrite containing gold values are found in discrete quartz veins but also in wide quartz stockworks in both the hangingwall and footwall of veins. Of the known showings, Trench #1 area now appears to be less important due to low gold content. The Mid Pad showing, where exposed, is of limited width. Based on success of core drilling in 1989 by Pezgold, the Junction Zone deserves additional detailed exploration.

8.0 2017 FIELDWORK

8.1 METHODS AND PROCEDURES

Navigation to fieldwork site was assisted by Garmin 60Cx GPS receiver. A total of 8 rock chip samples were collected, 7 out of 8 rock samples were taken as float grab samples, and 1 out of 8 rock samples was taken across a width of 28 centimeters. Rock chip sample material was taken with a maul and rock hammer (Appendix B). Approximately 1,500 grams of acorn sized rock chips were placed in poly ore bags and site was flagged with ID #. Samples were dried and shipped to ALS Global (Geochemical Analysis), North Vancouver for Prep-31, ME ICP43 and Au-TL43 Trace Level Au (see Appendix A for analysis results and detailed description of methods & procedures).

A total of 20 soil samples were collected 125-550 meters east of the junction of Ursus & Junction Creeks, at 50m intervals along north-south oriented grid lines. Soil sample material was taken with a tree planting shovel from the B Horizon (above C Horizon weathered bedrock, and below A Horizon high organic content), from a depth of 10-30 cm, below where soil changes colour (red-brown or brown colour, see Appendix C). Approximately 600 grams of B Horizon soil was placed in marked kraft envelopes and site was flagged with ID tags. Samples were dried and shipped to ALS Global (Geochemical Analysis), North Vancouver for standard soil prep drying, screening and pulverizing, and geochemical analysis using ME ICP43 and Au-TL43 Trace Level Au (see Appendix A for analysis results and detailed description of methods & procedures).

8.2 JUNCTION ZONE EAST ROCK GEOCHEMISTRY (2017 FIELDWORK)

The Junction showing is a different geological type, not the usual conspicuous quartz vein. It is a cataclastic deformation zone which lies along Ursus Creek, the trace of which is a major regional fault structure. Complex history is indicated by: the pre-cataclastic quartz veins which have been brecciated and incorporated into the mylonite, by the foliation and siliceous nature of the mylonite, by the fracture set which may be superimposed on the mylonite, and by the disseminated pyrite mineralization and associated gold which may be controlled by the fracture sets. This is a somewhat unusual geological type of gold showing and it warrants additional exploration. The area is of very steep topography and heavy forest with exposures largely limited to the sharp creek drainages. Although outcrops are abundant, there are extensive areas with no exposure.

2017 work by Oakley Ventures includes geochemical analysis of 8 rock chip & 20 soil samples that cover a 225 X 550 m area south of Ursus Creek, & east of Junction Creek at elevations ranging from 220-350 m. The objective of fieldwork was to identify Junction Zone mineralization. Junction 'Ursus Ck Zone' is related to cataclastic deformation in the Ursus Creek valley, as well as the 'Ridge Zone' related to fault-shear dilatant zones that are sub-parallel and conjugate to (and south of) Ursus Creek. 8 rock chip samples returned low Au values from geochemical analysis. One of the rock chip samples (17Thun-3), that had a high content of pyrite and weak quartz stockwork texture developed, returned a value of 0.014 g/t Au (0.001 oz/t Au). Other rock samples taken for geochemical analysis contains a weak content of pyrite (<1%), trace amounts of a silver coloured unknown sulphide mineral, and weak quartz-carbonate stockwork texture developed, and the Au content is near background values (0.001 g/t Au). 2017 rock chip sample descriptions are listed as follows (ALS VA18034572):

Sample ID	Tenure No	Easting NAD 83	Northing NAD 83	Elev (m)	Sample Type	Lithology
17thun-1	1052275	312494	5471756	266	angular float	c gr diorite-granodiorite
17thun-2	1052275	312526	5471787	281	angular float	c gr diorite-granodiorite
17thun-3	1052275	312272	5471911	243	angular float	c gr diorite-granodiorite
17thun-4	1052275	312728	5471442	336	outcrop	c gr diorite-granodiorite
17thun-5	1052275	312430	5471763	251	angular float	c gr diorite-granodiorite
17thun-6	1052275	312261	5471908	250	angular float	c gr diorite-granodiorite
17thun-7	1052275	312178	5471943	248	angular float	c gr diorite-granodiorite
17thun-8	1052275	312226	5471917	250	angular float	c gr diorite-granodiorite

Sample ID	Lith Alteration	Sulphides	Vein textures	Vein Strike	Vein Dip
17thun-1	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork		
17thun-2	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork		
17thun-3	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork		
17thun-4	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork	120	74 N
17thun-5	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork		
17thun-6	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork		
17thun-7	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork		
17thun-8	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork		

Sample ID	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Sb ppm	Bi ppm	Mn ppm	Ni ppm	Cr ppm	Co ppm	Fe %	Ca %	S %
17thun-1	0.003	<0.1	3.4	3.3	18	1.4	0.16	0.02	764	0.8	7	4.4	2.08	2.95	0.13
17thun-2	0.001	<0.1	1.5	2.5	12	6.6	0.38	0.01	901	3.7	5	4.3	1.99	4.19	0.04
17thun-3	0.014	<0.1	1	2.3	13	1	0.24	0.06	1030	<0.5	4	4.1	2.59	4.28	0.64
17thun-4	0.004	<0.1	2.8	3.3	31	0.9	0.98	0.08	598	<0.5	5	3.8	1.43	1.63	0.14
17thun-5	0.002	<0.1	3.8	3.3	63	4.4	0.26	0.02	1765	98.6	124	22.2	5.61	6.39	0.03
17thun-6	0.002	<0.1	4.4	8	32	6.8	0.39	4.1	489	1.9	3	7.5	9.51	1.24	9.08
17thun-7	<0.001	<0.1	1.2	0.7	31	0.9	0.14	0.01	524	1.6	9	10.6	2.94	0.94	0.06
17thun-8	0.006	<0.1	1.1	5.8	27	<8.5	0.14	0.08	1800	<0.5	6	3.1	2.01	6.92	0.19

8.3 JUNCTION ZONE EAST SOIL GEOCHEMISTRY (2017 FIELDWORK)

Junction Zone (East) soil sampling geochemical analysis reveals a relatively poorly-defined zone of anomalous Au in soil that reflects the Ursus Creek cataclastic deformation zone in the north portion of the grid area (Fig 5). This is close to area where previous surface rock chip sampling identified gold-bearing quartz-calcite-albite gangue near confluence of Junction and Ursus Creek, and coincides with area where drill hole intersections include 1.7 m with a weighted average grade of 0.254 oz/t gold (8.71 g/t Au), and 1.8 m of 0.266 oz/t gold (9.12 g/t Au), and the best intersection was from DDH PGU-89-4 from a depth of 205.1-205.5 meters, an interval length of 0.4 meters @ 36.24 g/t Au (1.057 oz/ton Au).

Soil samples taken along L 312,350 E at stn 5,471,800-900 N, returned geochemical analysis results ranging from 0.041 to 0.178 g/t Au (41 to 178 ppb Au). This zone represents a follow-up target over an interval of 125 meters located immediately south of Ursus Creek and approximately 200 meters east of the confluence of Junction and Ursus Creek. The soil survey also identified a follow-up target interpreted as the Ridge Zone located just north of Junction Creek on L 312,350 E at stn 5,471,700 N that contains 0.043 g/t Au. The Ridge Zone represents a sub-parallel exploration target approximately 100-200 m south of the main Ursus Creek Junction cataclastic deformation zone.

Soil sample analysis results are listed as follows (ALS VA18034570):

Eastings	Northing	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Mn ppm	Ni ppm	Co ppm	V ppm
312350	5471900	0.069	<0.1	3.2	4.2	15	5.1	141	3.2	2.4	25.9
312350	5471850	0.178	<0.1	1.1	1.4	4	1.7	39	5.3	2.3	12.9
312350	5471800	0.041	<0.1	0.9	0.9	3	0.8	45	3.7	0.6	7.4
312350	5471750	0.019	<0.1	1.4	1	2	0.7	15	2.6	0.5	12.3
312350	5471700	0.043	<0.1	5.1	3.4	10	3.7	98	4.8	1.9	82.9
312300	5471850	0.019	<0.1	0.6	1.7	3	<0.5	15	1.7	<0.5	2.9
312300	5471800	0.013	<0.1	1.1	1.2	5	1	48	5.9	1.4	10.7
312500	5471650	0.016	<0.1	0.9	1	3	0.5	19	1.4	0.6	20.3
312500	5471600	0.002	<0.1	1.7	2.2	5	1.2	49	2.9	1.4	51.1
312400	5471850	0.006	0.1	2.5	3	12	2.8	38	4.7	1.2	8.9
312400	5471750	0.023	<0.1	0.7	1.8	7	1.5	30	1.4	0.8	33.9
312400	5471700	0.007	<0.1	2	2.4	4	0.9	51	2.3	1.5	30.8
312400	5471650	0.02	<0.1	1.7	1.6	3	1.5	30	1.3	1.6	66.2
312400	5471600	0.005	<0.1	0.8	2.8	6	<0.5	68	2.7	0.6	14.6
312450	5471850	0.018	0.1	17.6	6.5	52	9.4	896	23.2	10.2	34.3
312450	5471800	0.001	<0.1	0.9	1.9	8	1	55	1	0.6	28.5
312450	5471700	0.001	<0.1	0.6	1.5	4	0.9	19	0.7	<0.5	4.2
312450	5471650	0.024	<0.1	0.7	1.3	4	1.1	31	0.9	<0.5	8.1
312550	5471600	0.003	<0.1	0.7	1.9	9	<0.5	53	0.9	1.1	11.7
312550	5471550	0.005	<0.1	0.8	2.4	2	1.5	11	1.7	0.6	23.6

Junction East soil sample analysis reveals low base metal (Cu-Pb-Zn), as well as low As-Sb (associated with sulphosalt minerals) values. The single soil sample (at 312450 E, 5471850 N) exhibits anomalous Mn-Ni-Co-V and may represent presence of a localized mafic dyke cutting the relatively coarse grained intrusive rocks that underlie the east portion of the Junction Zone.

The Junction (Ursus Cataclasite & Ridge Zones) showing are difficult to assess from surface due to steep topography and thick vegetation/overburden that masks underlying bedrock. Previous drilling in 1989 by Pezgold identified significant gold values in 4 out of 5 drill holes located 100-300 meters east of the confluence of Junction & Ursus Creeks.

9.0 Discussion of Results

Results from 2017 soil sampling identified elevated Au (with sub-ordinate Cu-Zn-As-Sb-Mn) in the Ursus Creek cataclastic deformation and albitite dyke zone, and to a lesser degree within the Ridge Zone located 50-200 meters south of the Ursus cataclasite. The Ridge Zone has a narrower zone of cataclastic deformation and albitite dyke zone. Data from 2017 fieldwork supports data from previous geochemical analysis results, suggesting that the Junction Zone is prospective for developing economic zones gold-bearing mineralization. Gold-bearing mineralization in the Junction Zone is related to cataclastic deformation (mylonitic texture), and late-phase albitite dykes. Follow-up lateral and depth exploration of 1989 DDH's PGU-89-1 to 4 located near the confluence of Junction and Ursus Creek is recommended.

10.0 RECOMMENDATIONS

Further drilling to intercept lateral and depth extensions of gold-bearing mineralization encountered in Junction Zone diamond drill holes PGU-89-1 to 4 are recommended. A list of recommendations are as follows:

1. The Junction showing should be mapped, trenched and sampled in detail with differentiated GPS survey control. Surrounding unaltered outcrops should also be included in the map to establish the extent of the mylonite zone.
2. It is important to determine the gold association by applying QEMSCAN and detailed petrographic analysis. If disseminated pyrite is associated with gold, induced polarization could be used to locate concentrations.
3. Further prospecting and mapping are necessary to determine the cause of the small stream anomalies. Detailed silt sampling along these drainages (samples at 100 meter intervals), will help pinpoint their sources.
4. Additional targets found in the prospecting, mapping, and detailed silt sampling should be explored by soil geochemistry and, if mineralized exposures are found, by trenching and geology defined interval sampling.
5. Due to steep topography and the heavy mature timber, access is difficult and any drill program using a standard drill machine, would involve costly drill site preparation and mobilization. Therefore, sufficient surface work should be done before mobilizing a drill. A staged mineral exploration program should be implemented that focuses on expanding the known intersections

of gold encountered in Junction drill holes PGU-89-1 to 4. An important initial area to explore would be deeper drilling the depth extension on section defined by DDH PGU-89 1 to 4. The 1989 drill holes at Junction Zone were carried out by Pezgold Res (Hudson, 1989). These drill holes represent an important understanding of the geology and results suggest there should be a fence of drill holes at 50 meter spacing intended to intersect Ursus Creek gold-bearing cataclasite (fractured/brecciated fault) below and laterally adjacent to known near surface drill intersections from DDH PGU-89-1 to 4 (Fig 12). The 5 proposed drill collar locations could be prepared for drilling 2 holes (-45 & -60 degree dip) at each site (total depth 2,500 meters).

11.0 REFERENCES

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STATEMENT OF QUALIFICATIONS

I, Andris Kikauka, of 4199 Highway 101, Powell R, BC V8A 0C7 am a self-employed professional geoscientist. I hereby certify that:

1. I am a graduate of Brock University, St. Catharines, Ont., with an Honours Bachelor of Science Degree in Geological Sciences, 1980.
2. I am a Fellow in good standing with the Geological Association of Canada.
3. I am registered in the Province of British Columbia as a Professional Geoscientist.
4. I have practiced my profession for thirty years in precious and base metal exploration in the Cordillera of Western Canada, U.S.A., Mexico, Central America, and South America, as well as for three years in uranium exploration in the Canadian Shield.
5. The information, opinions, and recommendations in the Geochemical Report are based on fieldwork carried out in my presence on the subject properties during June-July, 2017 during which time a technical evaluation consisting of systematic mapping, surveying and sampling of rock & soil from the subject property was carried out by the writer.
6. I have a direct interest in Oakley Ventures Inc.
7. As at the date hereof, to the best of my knowledge, information and belief, the Geochemical Report contains all scientific and technical information that is required to be disclosed to make it not misleading.
8. Recommendations in this report are guidelines. The recommendations contained within this report are not intended for public financing.

Andris Kikauka, P. Geo.,

A handwritten signature in black ink that reads "A. Kikauka". The signature is written in a cursive style with a long horizontal stroke at the end.

April 19, 2018

ITEMIZED COST STATEMENT-

THUNDERBIRD PROJECT-
GEOCHEMICAL FIELDWORK

Dates worked: June 29, 2017 - July 2, 2017

BCGS 092F.032, NTS 092 F/5 E, ALBERNI MINING DIVISION

Work carried out on MTO tenure number: 1052275

FIELD CREW:

A. Kikauka (Geologist) 4 days \$ 2,150.00

FIELD COST:

Preparation, Mob and Demob	\$ 355.20
Equipment, Supplies, Generator	73.90
Geochemical analysis 8 rock chip, 20 soil samples (& shipping to ALS Chemex Laboratories)	1,475.15
Helicopter charter Atleo Air Services (2.3 hours total)	2,320.54
Food	289.80
Fuel	326.95
Communication (sat phone, VHF radios)	90.45

Report 750.00

Total amount= \$ 7,831.99



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Page: 1
 Total # Pages: 2 (A - C)
 Plus Appendix Pages
 Finalized Date: 27-FEB-2018
 This copy reported on
 28-FEB-2018
 Account: KIKAND

APPENDIX A

CERTIFICATE VA18034572

Project: Thunderbird

This report is for 8 Rock samples submitted to our lab in Vancouver, BC, Canada on 14-FEB-2018.

The following have access to data associated with this certificate:

ANDRIS KIKAUKA		
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SAMPLE PREPARATION	
ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES		
ALS CODE	DESCRIPTION	INSTRUMENT
Au-TL43	Trace Level Au - 25g AR	ICP-MS
ME-MS43	Up to 11 elements 25g A/R MS	ICP-MS
ME-ICP43	Up to 18 element add-on AR Au	ICP-AES

To: **KIKAUKA, ANDRIS**
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This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:


 Colin Ramshaw, Vancouver Laboratory Manager



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 Account: KIKAND

Project: Thunderbird

CERTIFICATE OF ANALYSIS VA18034572

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg	Au-TL43 Au ppm	ME-MS43 Bi ppm	ME-MS43 Hg ppm	ME-MS43 Sb ppm	ME-MS43 Se ppm	ME-MS43 Sn ppm	ME-MS43 Te ppm	ME-MS43 Th ppm	ME-MS43 Tl ppm	ME-MS43 U ppm	ME-MS43 W ppm	ME-ICP43 Ag ppm	ME-ICP43 Al %	ME-ICP43 As ppm
17_THUN_1		0.80	0.003	0.02	<0.01	0.16	0.3	0.1	0.02	1.06	<0.02	0.14	0.10	<0.1	0.53	1.4
17_THUN_2		0.94	0.001	0.01	<0.01	0.38	0.4	0.1	0.02	0.96	0.03	0.10	0.12	<0.1	0.44	6.6
17_THUN_3		0.88	0.014	0.06	<0.01	0.24	0.5	0.1	0.03	0.71	0.02	0.07	0.11	<0.1	0.39	1.0
17_THUN_4		0.98	0.004	0.03	0.01	0.95	0.4	<0.1	<0.01	2.03	<0.02	0.31	0.12	<0.1	0.53	0.9
17_THUN_5		1.06	0.002	0.02	<0.01	0.26	0.6	0.1	0.03	0.43	<0.02	0.08	0.14	<0.1	1.42	4.4
17_THUN_6		1.06	0.002	4.10	0.03	0.39	0.5	1.0	1.61	2.13	0.04	0.26	0.80	<0.1	1.73	6.8
17_THUN_7		1.14	<0.001	0.01	<0.01	0.14	0.4	0.3	0.01	2.06	<0.02	0.34	0.14	<0.1	1.72	0.9
17_THUN_8		0.76	0.006	0.04	<0.01	0.14	0.6	<0.1	0.07	0.66	0.02	0.36	<0.05	<0.1	0.89	<0.5

***** See Appendix Page for comments regarding this certificate *****



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 Total # Pages: 2 (A - C)
 Plus Appendix Pages
 Finalized Date: 27-FEB-2018
 Account: KIKAND

Project: Thunderbird

CERTIFICATE OF ANALYSIS VA18034572

Sample Description	Method Analyte Units LOR	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	
		B ppm	Ba ppm	Be ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	K %	La ppm	Mg %	Mn ppm
		1	1	0.1	0.01	0.2	1	0.5	1	0.2	0.01	1	0.01	1	0.01	
17_THUN_1		2	24	0.1	2.95	<0.2	12	4.4	7	3.4	2.08	1	0.08	6	0.84	764
17_THUN_2		2	53	0.4	4.19	<0.2	16	4.3	5	1.5	1.99	1	0.22	8	1.11	901
17_THUN_3		2	30	0.2	4.28	<0.2	8	4.1	4	1.0	2.59	1	0.11	3	1.10	1030
17_THUN_4		3	20	0.1	1.63	0.2	12	3.8	5	2.8	1.43	2	0.06	6	0.22	598
17_THUN_5		2	38	0.2	6.39	<0.2	8	22.2	124	3.8	5.61	4	0.11	3	2.62	1765
17_THUN_6		<1	4	0.4	1.24	<0.2	6	7.5	3	4.4	9.51	4	0.01	2	0.90	489
17_THUN_7		1	57	0.2	0.94	<0.2	9	10.6	9	1.2	2.94	5	0.04	4	1.30	524
17_THUN_8		1	55	0.1	6.92	<0.2	10	3.1	6	1.1	2.01	2	0.10	4	0.55	1800

***** See Appendix Page for comments regarding this certificate *****



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Page: 2 - C
 Total # Pages: 2 (A - C)
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 Finalized Date: 27-FEB-2018
 Account: KIKAND

Project: Thunderbird

CERTIFICATE OF ANALYSIS VA18034572

Sample Description	Method Analyte Units LOR	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	
		Mo	Na	Ni	P	Pb	S	Sc	Sr	Ti	V	Zn
		ppm	%	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm
		0.5	0.01	0.5	10	0.5	0.01	0.1	1	0.01	0.5	1
17_THUN_1		1.0	0.05	0.8	500	3.3	0.13	3.2	72	<0.01	9.0	18
17_THUN_2		0.6	0.03	3.7	410	2.5	0.04	2.8	113	<0.01	8.4	12
17_THUN_3		0.7	0.05	<0.5	500	2.3	0.64	3.9	102	<0.01	8.3	13
17_THUN_4		0.7	0.05	<0.5	220	3.3	0.14	1.7	53	<0.01	7.1	31
17_THUN_5		0.6	0.03	98.6	430	3.3	0.03	13.6	133	<0.01	29.5	63
17_THUN_6		5.7	0.04	1.9	410	8.0	9.08	1.2	87	0.06	13.0	32
17_THUN_7		0.8	0.04	1.6	510	0.7	0.06	4.9	55	0.11	54.5	31
17_THUN_8		0.9	0.01	<0.5	120	5.6	0.19	0.9	364	<0.01	5.5	27

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Page: Appendix 1
Total # Appendix Pages: 1
Finalized Date: 27-FEB-2018
Account: KIKAND

Project: Thunderbird

CERTIFICATE OF ANALYSIS VA18034572

CERTIFICATE COMMENTS

LABORATORY ADDRESSES

Applies to Method:

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Au-TL43

CRU-31

CRU-QC

LOG-22

ME-ICP43

ME-MS43

PUL-31

PUL-QC

SPL-21

WEI-21



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Page: 1
 Total # Pages: 2 (A - C)
 Plus Appendix Pages
 Finalized Date: 5-MAR-2018
 This copy reported on
 6-MAR-2018
 Account: KIKAND

CERTIFICATE VA18034570

Project: Thunderbird

This report is for 20 Soil samples submitted to our lab in Vancouver, BC, Canada on 14-FEB-2018.

The following have access to data associated with this certificate:

ANDRIS KIKAUKA		
----------------	--	--

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SCR-41	Screen to -180um and save both

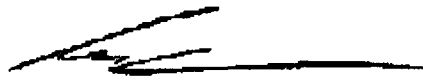
ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-TL43	Trace Level Au - 25g AR	ICP-MS
ME-MS43	Up to 11 elements 25g A/R MS	ICP-MS
ME-ICP43	Up to 18 element add-on AR Au	ICP-AES

To: **KIKAUKA, ANDRIS**
4199 HIGHWAY 101
POWELL RIVER BC V8A 0C7

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature: 
 Colin Ramshaw, Vancouver Laboratory Manager



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 Total # Pages: 2 (A - C)
 Plus Appendix Pages
 Finalized Date: 5-MAR-2018
 Account: KIKAND

Project: Thunderbird

CERTIFICATE OF ANALYSIS VA18034570

Sample Description	Method Analyte Units LOR	WEI-21	Au-TL43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-ICP43	ME-ICP43	ME-ICP43
		Recvd Wt. kg	Au ppm	Bi ppm	Hg ppm	Sb ppm	Se ppm	Sn ppm	Te ppm	Th ppm	Tl ppm	U ppm	W ppm	Ag ppm	Al %	As ppm
L312350E 5471900		0.22	0.069	0.16	0.12	0.38	0.4	0.3	0.02	1.91	0.02	0.40	0.19	<0.1	1.86	5.1
L312350E 5471850		0.20	0.178	0.05	0.02	0.16	0.2	0.2	<0.01	1.40	<0.02	0.17	0.06	<0.1	0.52	1.7
L312350E 5471800		0.20	0.041	0.01	0.03	0.08	0.2	0.2	<0.01	0.72	<0.02	0.24	<0.05	<0.1	0.52	0.8
L312350E 5471750		0.22	0.019	0.03	0.02	0.10	0.2	0.6	<0.01	0.41	<0.02	0.10	<0.05	<0.1	0.38	0.7
L312350E 5471700		0.22	0.043	0.14	0.02	0.47	0.3	0.8	0.02	1.03	0.04	0.19	0.09	<0.1	1.77	3.7
L312300E 5471850		0.22	0.019	0.02	0.04	0.06	0.2	0.2	<0.01	0.49	<0.02	0.17	<0.05	<0.1	0.43	<0.5
L312300E 5471800		0.14	0.013	0.03	0.02	0.15	<0.2	0.3	<0.01	0.97	<0.02	0.16	0.05	<0.1	0.44	1.0
L312500E 5471650		0.22	0.016	0.02	0.01	0.21	<0.2	0.2	<0.01	0.57	<0.02	0.12	<0.05	<0.1	0.66	0.5
L312500E 5471600		0.22	0.002	0.06	0.02	0.53	0.2	0.7	<0.01	0.85	0.03	0.15	0.09	<0.1	1.29	1.2
L312400E 5471850		0.18	0.006	0.07	0.21	0.12	0.8	0.4	<0.01	0.59	0.03	0.27	0.08	0.1	0.68	2.8
L312400E 5471700		0.24	0.023	0.07	0.04	0.19	0.2	0.3	<0.01	0.95	0.03	0.25	<0.05	<0.1	0.95	1.5
L312400E 5471750		0.24	0.007	0.05	0.01	0.29	0.2	0.3	<0.01	0.97	0.02	0.16	0.05	<0.1	0.88	0.9
L312400E 5471650		0.26	0.020	0.08	0.01	0.50	0.2	0.4	0.01	0.91	0.03	0.19	<0.05	<0.1	1.31	1.5
L312400E 5471800		0.20	0.005	0.04	0.03	0.17	0.2	0.5	0.01	0.58	<0.02	0.11	<0.05	<0.1	0.25	<0.5
L312450E 5471850		0.38	0.018	0.11	0.03	0.38	0.6	0.3	0.01	2.05	0.02	0.42	4.69	0.1	1.35	9.4
L312450E 5471800		0.20	0.001	0.08	0.05	0.22	0.3	0.4	0.01	1.65	0.03	0.29	0.09	<0.1	1.51	1.0
L312450E 5471700		0.20	0.001	0.01	0.03	0.05	0.2	0.2	<0.01	0.97	0.02	0.18	<0.05	<0.1	0.51	0.9
L312450E 5471650		0.12	0.024	0.05	0.05	0.08	0.5	0.3	<0.01	0.22	0.02	0.22	0.05	<0.1	0.80	1.1
L312550E 5471800		0.16	0.003	0.02	0.03	0.28	0.2	0.1	<0.01	1.73	0.02	0.21	0.06	<0.1	0.77	<0.5
L312550E 5471550		0.24	0.005	0.06	0.01	0.27	0.2	0.4	<0.01	0.70	0.04	0.13	0.19	<0.1	0.61	1.5

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 Total # Pages: 2 (A - C)
 Plus Appendix Pages
 Finalized Date: 5-MAR-2018
 Account: KIKAND

Project: Thunderbird

CERTIFICATE OF ANALYSIS VA18034570

Sample Description	Method Analyte Units LOR	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	
		B ppm	Ba ppm	Be ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	K %	La ppm	Mg %	Mn ppm
L312350E 5471900		1	19	0.2	0.02	<0.2	18	2.4	5	3.2	2.89	8	0.02	10	0.13	141
L312350E 5471850		2	5	<0.1	0.02	<0.2	19	2.3	8	1.1	0.51	4	0.01	10	0.03	39
L312350E 5471800		3	7	<0.1	0.03	<0.2	18	0.8	6	0.9	0.23	3	0.02	10	0.01	45
L312350E 5471750		3	10	<0.1	0.01	<0.2	15	0.5	10	1.4	0.32	2	0.02	8	0.01	15
L312350E 5471700		2	16	0.1	0.04	<0.2	11	1.9	14	5.1	3.81	12	0.02	6	0.11	98
L312300E 5471850		2	5	<0.1	0.02	<0.2	8	<0.5	3	0.6	0.09	2	0.02	5	0.01	15
L312300E 5471800		2	7	<0.1	0.02	<0.2	15	1.4	9	1.1	0.39	3	0.02	8	0.02	48
L312500E 5471650		3	5	<0.1	0.02	<0.2	14	0.6	2	0.9	0.30	5	0.01	8	0.02	19
L312500E 5471600		2	16	<0.1	0.04	<0.2	9	1.4	5	1.7	1.18	9	0.02	5	0.08	49
L312400E 5471850		6	39	0.1	0.11	0.2	9	1.2	6	2.5	0.38	3	0.03	8	0.03	38
L312400E 5471700		2	14	<0.1	0.03	<0.2	14	0.8	3	0.7	0.67	7	0.02	8	0.06	30
L312400E 5471750		2	13	<0.1	0.02	<0.2	21	1.5	4	2.0	0.80	6	0.01	11	0.02	51
L312400E 5471650		2	9	<0.1	0.01	<0.2	20	1.6	3	1.7	1.64	11	0.01	11	0.02	30
L312400E 5471800		3	10	<0.1	0.11	<0.2	7	0.6	4	0.8	0.38	2	0.03	4	0.02	68
L312460E 5471850		10	79	0.3	0.26	0.3	18	10.2	37	17.6	2.79	4	0.06	7	0.78	896
L312460E 5471800		2	26	0.1	0.04	<0.2	24	0.6	2	0.9	0.95	7	0.02	13	0.05	55
L312450E 5471700		3	8	<0.1	0.07	<0.2	25	<0.5	1	0.8	0.16	3	0.02	13	0.03	19
L312450E 5471650		5	10	<0.1	0.04	<0.2	11	<0.5	2	0.7	0.15	4	0.03	6	0.02	31
L312550E 5471800		2	13	<0.1	0.04	<0.2	16	1.1	1	0.7	0.91	4	0.02	9	0.03	53
L312550E 5471550		2	11	<0.1	0.02	<0.2	9	0.6	4	0.8	0.73	5	0.02	5	0.01	11

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 Total # Pages: 2 (A - C)
 Plus Appendix Pages
 Finalized Date: 5-MAR-2018
 Account: KIKAND

Project: Thunderbird

CERTIFICATE OF ANALYSIS VA18034570

Sample Description	Method Analyte Units LOR	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43
		Mo ppm 0.5	Na % 0.01	Ni ppm 0.5	P ppm 10	Pb ppm 0.5	S % 0.01	Sc ppm 0.1	Sr ppm 1	Ti % 0.01	V ppm 0.5	Zn ppm 1
L312350E 5471900		3.1	0.01	3.2	240	4.2	0.02	1.3	2	<0.01	25.9	15
L312350E 5471850		0.5	0.01	5.3	110	1.4	0.01	0.4	2	<0.01	12.9	4
L312350E 5471800		<0.5	0.01	3.7	140	0.9	0.01	0.4	3	<0.01	7.4	3
L312350E 5471750		0.5	0.01	2.6	100	1.0	0.01	0.2	2	<0.01	12.3	2
L312350E 5471700		1.0	<0.01	4.8	190	3.4	0.01	1.4	5	0.03	82.9	10
L312300E 5471850		<0.5	0.01	1.7	190	1.7	0.02	0.1	2	<0.01	2.9	3
L312300E 5471800		1.4	0.01	5.9	80	1.2	0.01	0.3	2	<0.01	10.7	5
L312500E 5471650		<0.5	0.01	1.4	60	1.0	0.01	0.4	2	<0.01	20.3	3
L312500E 5471600		0.5	0.01	2.9	60	2.2	0.01	1.0	4	0.02	51.1	5
L312400E 5471650		0.7	0.02	4.7	510	3.0	0.08	0.6	12	<0.01	8.9	12
L312400E 5471700		0.8	0.01	1.4	130	1.8	0.02	0.7	4	<0.01	33.9	7
L312400E 5471750		0.6	0.01	2.3	90	2.4	0.01	0.7	2	<0.01	30.8	4
L312400E 5471650		<0.5	<0.01	1.3	60	1.6	0.01	0.9	2	0.01	66.2	3
L312400E 5471600		<0.5	0.01	2.7	100	2.8	0.02	0.3	6	0.01	14.6	6
L312450E 5471850		3.3	<0.01	23.2	540	6.5	0.14	3.3	8	0.03	34.3	52
L312450E 5471800		5.4	0.01	1.0	220	1.9	0.02	1.0	4	<0.01	28.5	8
L312450E 5471700		<0.5	0.06	0.7	130	1.5	0.05	0.3	5	<0.01	4.2	4
L312400E 5471650		<0.5	0.12	0.9	230	1.3	0.13	0.3	2	<0.01	8.1	4
L312550E 5471600		<0.5	0.01	0.9	100	1.9	0.01	0.6	2	<0.01	11.7	9
L312550E 5471550		0.8	0.01	1.7	60	2.4	0.01	0.4	4	0.01	23.6	2

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Page: Appendix 1
Total # Appendix Pages: 1
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Account: KIKAND

Project: Thunderbird

CERTIFICATE OF ANALYSIS VA18034570

CERTIFICATE COMMENTS									
Applies to Method:	<p style="text-align: center;">LABORATORY ADDRESSES</p> <p>Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.</p> <table><tr><td>Au-TL43</td><td>LOG-22</td><td>ME-ICP43</td><td>ME-MS43</td></tr><tr><td>SCR-41</td><td>WEI-21</td><td></td><td></td></tr></table>	Au-TL43	LOG-22	ME-ICP43	ME-MS43	SCR-41	WEI-21		
Au-TL43	LOG-22	ME-ICP43	ME-MS43						
SCR-41	WEI-21								



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Total # Pages: 2 (A - C)
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Finalized Date: 27-FEB-2018
This copy reported on
28-FEB-2018
Account: KIKAND

QC CERTIFICATE VA18034572

Project: Thunderbird

This report is for 8 Rock samples submitted to our lab in Vancouver, BC, Canada on 14-FEB-2018.

The following have access to data associated with this certificate:

ANDRIS KIKAUKA

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
CRU-QC	Crushing QC Test
PUL-QC	Pulverizing QC Test
CRU-31	Fine crushing - 70% <2mm
SPL-21	Split sample - riffle splitter
PUL-31	Pulverize split to 85% <75 um

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-TL43	Trace Level Au - 25g AR	ICP-MS
ME-MS43	Up to 11 elements 25g A/R MS	ICP-MS
ME-ICP43	Up to 18 element add-on AR Au	ICP-AES

To: KIKAUKA, ANDRIS
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This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:



Colin Ramshaw, Vancouver Laboratory Manager



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QC CERTIFICATE OF ANALYSIS VA18034572

Sample Description	Method Analyte Units LOR	Au-TL43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43
		Au ppm	Bi ppm	Hg ppm	Sb ppm	Se ppm	Sn ppm	Te ppm	Th ppm	Tl ppm	U ppm	W ppm	Ag ppm	Al %	As ppm	B ppm
		0.001	0.01	0.01	0.05	0.2	0.1	0.01	0.05	0.02	0.05	0.05	0.1	0.01	0.5	1
STANDARDS																
LEA-16		0.517	0.20	0.01	0.38	0.5	0.7	0.02	10.60	0.08	3.23	0.26	0.2	0.83	3.7	2
Target Range - Lower Bound		0.425														
Upper Bound		0.577														
MRGeo08		0.005	0.69	0.07	3.14	1.8	3.4	0.05	22.8	0.84	5.84	2.25	4.6	2.70	33.3	4
Target Range - Lower Bound		0.002	0.59	0.04	2.30	0.9	2.9	<0.01	18.70	0.66	4.79	1.97	3.9	2.26	29.2	2
Upper Bound		0.006	0.78	0.10	3.07	1.9	3.9	0.05	24.1	0.90	6.27	2.65	5.0	2.79	36.8	6
OREAS 905		0.392	5.70	0.02	1.26	2.8	1.3	0.09	8.33	0.10	2.18	0.58	0.5	0.77	33.1	2
Target Range - Lower Bound		0.331	5.01	<0.01	0.93	1.7	1.0	0.04	7.72	0.06	2.02	<0.05	0.3	0.73	28.0	<1
Upper Bound		0.451	6.47	0.04	1.31	2.9	1.6	0.09	10.05	0.16	2.72	0.10	0.7	0.91	35.4	2
OREAS-906		0.050	11.20	0.01	1.67	5.4	1.6	0.14	8.33	0.10	2.22	0.68	0.7	0.77	21.2	2
Target Range - Lower Bound		0.042														
Upper Bound		0.060														
BLANKS																
BLANK		<0.001	<0.01	<0.01	<0.05	<0.2	<0.1	<0.01	<0.05	<0.02	<0.05	<0.05	<0.1	<0.01	<0.5	1
Target Range - Lower Bound		<0.001	<0.01	<0.01	<0.05	<0.2	<0.1	<0.01		<0.02	<0.05	<0.05	<0.1	<0.01	<0.5	<1
Upper Bound		0.002	0.02	0.02	0.10	0.4	0.2	0.02		0.04	0.10	0.10	0.2	0.02	1.0	2
DUPLICATES																
17_THUN_8		0.006	0.04	<0.01	0.14	0.6	<0.1	0.07	0.66	0.02	0.36	<0.05	<0.1	0.89	<0.5	1
DUP		0.032	0.04	<0.01	0.14	0.6	<0.1	0.08	0.64	0.02	0.33	<0.05	<0.1	0.88	0.6	2
Target Range - Lower Bound		0.017	0.03	<0.01	0.08	0.4	<0.1	0.06	0.55	<0.02	0.27	<0.05	<0.1	0.81	<0.5	<1
Upper Bound		0.021	0.05	0.02	0.20	0.8	0.2	0.09	0.75	0.04	0.42	0.10	0.2	0.96	1.0	2

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 Account: KIKAND

Project: Thunderbird

QC CERTIFICATE OF ANALYSIS VA18034572

Sample Description	Method Analyte Units LOR	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	
		Ba ppm	Be ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
		1	0.1	0.01	0.2	1	0.5	1	0.2	0.01	1	0.01	1	0.01	0.5	
STANDARDS																
LEA-16		189	0.6	1.03	0.4	75	2.5	17	11.7	1.90	4	0.26	37	0.13	304	3.7
Target Range - Lower Bound																
Upper Bound																
MRGeo08		138	0.7	1.00	2.0	69	20.2	89	644	3.74	9	1.30	33	1.19	389	13.7
Target Range - Lower Bound		144	0.6	0.87	1.7	58	16.6	75	568	3.22	7	1.12	27	1.01	341	12.6
Upper Bound		197	1.1	1.08	2.8	73	21.4	93	694	3.96	12	1.40	36	1.25	418	16.6
OREAS 905		249	0.9	0.32	0.2	72	14.4	17	1585	3.50	5	0.29	35	0.15	335	3.2
Target Range - Lower Bound		211	0.7	0.29	<0.2	71	12.0	15	1405	3.14	4	0.28	35	0.13	314	1.9
Upper Bound		287	1.2	0.38	0.8	89	15.8	20	1720	3.86	9	0.36	45	0.19	386	4.2
OREAS-906		246	0.9	0.31	0.3	74	23.5	9	3170	5.06	8	0.27	36	0.12	325	4.1
Target Range - Lower Bound																
Upper Bound																
BLANKS																
BLANK		<1	<0.1	<0.01	<0.2	<1	<0.5	<1	<0.2	<0.01	<1	<0.01	<1	<0.01	<1	<0.5
Target Range - Lower Bound		<1	<0.1	<0.01	<0.2	<1	<0.5	<1	<0.2	<0.01	<1	<0.01	<1	<0.01	<1	<0.5
Upper Bound		2	0.2	0.02	0.4	2	1.0	2	0.4	0.02	2	0.02	2	0.02	2	1.0
DUPLICATES																
17_THUN_8		55	0.1	6.92	<0.2	10	3.1	6	1.1	2.01	2	0.10	4	0.55	1800	0.9
DUP		54	0.1	6.92	0.2	9	3.2	6	1.1	1.99	2	0.10	4	0.54	1785	1.0
Target Range - Lower Bound		49	<0.1	6.39	<0.2	8	2.4	5	0.8	1.84	<1	0.08	3	0.49	1655	<0.5
Upper Bound		60	0.2	7.45	0.4	11	3.9	7	1.4	2.16	3	0.12	5	0.60	1930	1.0

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QC CERTIFICATE OF ANALYSIS VA18034572

Sample Description	Method Analyte Units LOR	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	
		Na %	Ni ppm	P ppm	Pb ppm	S %	Sc ppm	Sr ppm	Ti %	V ppm	Zn ppm
		0.01	0.5	10	0.5	0.01	0.1	1	0.01	0.5	1
STANDARDS											
LEA-16		0.08	8.9	230	12.7	<0.01	1.2	31	0.01	3.8	81
Target Range - Lower Bound											
Upper Bound											
MGeo08		0.32	722	1040	1095	0.30	7.0	80	0.34	101.5	754
Target Range - Lower Bound		0.29	621	870	959	0.27	5.9	71	0.28	84.2	674
Upper Bound		0.37	761	1080	1175	0.35	7.5	89	0.36	104.0	827
OREAS 905		0.08	9.7	220	16.5	0.06	1.5	13	0.02	5.6	61
Target Range - Lower Bound		0.07	7.5		14.9	0.04	1.6	10	<0.01	4.7	59
Upper Bound		0.12	10.3		19.3	0.09	2.2	15	0.04	7.4	75
OREAS-906		0.09	5.1	220	22.1	0.03	1.4	13	0.01	3.2	82
Target Range - Lower Bound											
Upper Bound											
BLANKS											
BLANK		<0.01	<0.5	<10	<0.5	<0.01	<0.1	<1	<0.01	<0.5	<1
Target Range - Lower Bound		<0.01	<0.5	<10	<0.5	<0.01	<0.1	<1	<0.01	<0.5	<1
Upper Bound		0.02	1.0	20	1.0	0.02	0.2	2	0.02	1.0	2
DUPLICATES											
17_THUN_8		0.01	<0.5	120	5.6	0.19	0.9	364	<0.01	5.5	27
DUP		0.01	<0.5	120	5.2	0.19	0.9	360	<0.01	5.4	27
Target Range - Lower Bound		<0.01	<0.5	100	4.5	0.17	0.7	334	<0.01	4.5	24
Upper Bound		0.02	1.0	140	6.3	0.21	1.1	390	0.02	6.4	30



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Account: KIKAND

Project: Thunderbird

QC CERTIFICATE OF ANALYSIS VA18034572

CERTIFICATE COMMENTS													
Applies to Method:	<p style="text-align: center;">LABORATORY ADDRESSES</p> <p>Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.</p> <table><tr><td>Au-TL43</td><td>CRU-31</td><td>CRU-QC</td><td>LOG-22</td></tr><tr><td>ME-ICP43</td><td>ME-MS43</td><td>PUL-31</td><td>PUL-QC</td></tr><tr><td>SPL-21</td><td>WEI-21</td><td></td><td></td></tr></table>	Au-TL43	CRU-31	CRU-QC	LOG-22	ME-ICP43	ME-MS43	PUL-31	PUL-QC	SPL-21	WEI-21		
Au-TL43	CRU-31	CRU-QC	LOG-22										
ME-ICP43	ME-MS43	PUL-31	PUL-QC										
SPL-21	WEI-21												



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Finalized Date: 5-MAR-2018
This copy reported on
6-MAR-2018
Account: KIKAND

QC CERTIFICATE VA18034570

Project: Thunderbird

This report is for 20 Soil samples submitted to our lab in Vancouver, BC, Canada on 14-FEB-2018.

The following have access to data associated with this certificate:

ANDRIS KIKAUKA

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
SCR-41	Screen to -180um and save both

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-TL43	Trace Level Au - 25g AR	ICP-MS
ME-MS43	Up to 11 elements 25g A/R MS	ICP-MS
ME-ICP43	Up to 18 element add-on AR Au	ICP-AES

To: **KIKAUKA, ANDRIS**
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This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Signature:



Colin Ramshaw, Vancouver Laboratory Manager



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QC CERTIFICATE OF ANALYSIS VA18034570

Sample Description	Method Analyte Units LOR	Au-TL43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-MS43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	
		Au ppm	Bi ppm	Hg ppm	Sb ppm	Se ppm	Sn ppm	Te ppm	Th ppm	Tl ppm	U ppm	W ppm	Ag ppm	Al %	As ppm	B ppm	
STANDARDS																	
LEA-16		0.516	0.19	0.02	0.38	0.5	0.6	<0.01	10.45	0.08	3.06	0.31	0.2	0.72	3.4	3	
Target Range - Lower Bound		0.425															
Upper Bound		0.577															
MRGeo08		0.004	0.71	0.06	2.92	1.7	3.4	0.03	22.0	0.84	6.04	2.47	4.4	2.62	31.1	5	
Target Range - Lower Bound		0.002	0.59	0.04	2.30	0.9	2.9	<0.01	18.70	0.66	4.79	1.97	3.9	2.26	29.2	2	
Upper Bound		0.006	0.78	0.10	3.07	1.9	3.9	0.05	24.1	0.90	6.27	2.65	5.0	2.79	36.8	6	
OREAS 905		0.406	6.10	0.01	1.31	2.8	1.3	0.08	8.71	0.11	2.17	0.70	0.4	0.70	29.6	4	
Target Range - Lower Bound		0.331	5.01	<0.01	0.93	1.7	1.0	0.04	7.72	0.06	2.02	<0.05	0.3	0.73	28.0	<1	
Upper Bound		0.451	6.47	0.04	1.31	2.9	1.6	0.09	10.05	0.16	2.72	0.10	0.7	0.91	35.4	2	
OREAS-906		0.050	11.15	0.01	1.63	4.9	1.6	0.12	7.93	0.09	2.02	0.75	0.7	0.68	18.8	4	
Target Range - Lower Bound		0.042															
Upper Bound		0.060															
BLANKS																	
BLANK		<0.001	<0.01	<0.01	<0.05	<0.2	<0.1	<0.01	<0.05		<0.02	<0.05	<0.05	<0.1	<0.01	<0.5	2
Target Range - Lower Bound		<0.001	<0.01	<0.01	<0.05	<0.2	<0.1	<0.01			<0.02	<0.05	<0.05	<0.1	<0.01	<0.5	<1
Upper Bound		0.002	0.02	0.02	0.10	0.4	0.2	0.02			0.04	0.10	0.10	0.2	0.02	1.0	2

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QC CERTIFICATE OF ANALYSIS VA18034570

Sample Description	Method Analyte Units LOR	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	
		Ba ppm	Be ppm	Ca %	Cd ppm	Ce ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm
		1	0.1	0.01	0.2	1	0.5	1	0.2	0.01	1	0.01	1	0.01	1	0.5
STANDARDS																
LEA-16		156	0.5	0.91	0.4	68	2.1	15	10.7	1.68	3	0.24	33	0.12	280	3.3
Target Range - Lower Bound																
Upper Bound																
MRGeo08		84	0.7	0.95	2.0	69	18.6	84	640	3.60	9	1.29	33	1.17	387	13.0
Target Range - Lower Bound		144	0.6	0.87	1.7	58	16.6	75	568	3.22	7	1.12	27	1.01	341	12.6
Upper Bound		197	1.1	1.08	2.8	73	21.4	93	694	3.96	12	1.40	36	1.25	418	16.6
OREAS 905		212	0.8	0.30	0.4	69	13.0	15	1455	3.17	5	0.27	32	0.14	317	2.8
Target Range - Lower Bound		211	0.7	0.29	<0.2	71	12.0	15	1405	3.14	4	0.28	35	0.13	314	1.9
Upper Bound		287	1.2	0.38	0.8	89	15.8	20	1720	3.86	9	0.36	45	0.19	386	4.2
OREAS-906		206	0.8	0.28	0.3	69	21.3	8	2910	4.58	7	0.25	33	0.11	306	3.4
Target Range - Lower Bound																
Upper Bound																
BLANKS																
BLANK		<1	<0.1	<0.01	<0.2	<1	<0.5	<1	<0.2	<0.01	<1	<0.01	<1	<0.01	<1	<0.5
Target Range - Lower Bound		<1	<0.1	<0.01	<0.2	<1	<0.5	<1	<0.2	<0.01	<1	<0.01	<1	<0.01	<1	<0.5
Upper Bound		2	0.2	0.02	0.4	2	1.0	2	0.4	0.02	2	0.02	2	0.02	2	1.0



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Project: Thunderbird

QC CERTIFICATE OF ANALYSIS VA18034570

Sample Description	Method Analyte Units LOR	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	ME-ICP43	
		Na %	Ni ppm	P ppm	Pb ppm	S %	Sc ppm	Sr ppm	Ti %	V ppm	Zn ppm
		0.01	0.5	10	0.5	0.01	0.1	1	0.01	0.5	1
STANDARDS											
LEA-16		0.06	7.6	210	11.3	0.01	1.0	28	0.01	3.1	77
Target Range - Lower Bound											
Upper Bound											
MRGeo08		0.31	707	960	1045	0.28	6.7	76	0.32	95.0	769
Target Range - Lower Bound		0.29	621	870	959	0.27	5.9	71	0.28	84.2	674
Upper Bound		0.37	761	1080	1175	0.35	7.5	89	0.36	104.0	827
OREAS 905		0.07	8.4	200	15.4	0.06	1.4	12	0.01	4.9	58
Target Range - Lower Bound		0.07	7.5		14.9	0.04	1.6	10	<0.01	4.7	59
Upper Bound		0.12	10.3		19.3	0.09	2.2	15	0.04	7.4	75
OREAS-906		0.07	4.5	210	20.4	0.03	1.2	12	0.01	2.8	78
Target Range - Lower Bound											
Upper Bound											
BLANKS											
BLANK		<0.01	<0.5	<10	<0.5	<0.01	<0.1	<1	<0.01	<0.5	<1
Target Range - Lower Bound		<0.01	<0.5	<10	<0.5	<0.01	<0.1	<1	<0.01	<0.5	<1
Upper Bound		0.02	1.0	20	1.0	0.02	0.2	2	0.02	1.0	2

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QC CERTIFICATE OF ANALYSIS VA18034570

CERTIFICATE COMMENTS									
Applies to Method:	<p style="text-align: center;">LABORATORY ADDRESSES</p> <p>Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.</p> <table><tr><td>Au-TL43</td><td>LOG-22</td><td>ME-ICP43</td><td>ME-MS43</td></tr><tr><td>SCR-41</td><td>WEI-21</td><td></td><td></td></tr></table>	Au-TL43	LOG-22	ME-ICP43	ME-MS43	SCR-41	WEI-21		
Au-TL43	LOG-22	ME-ICP43	ME-MS43						
SCR-41	WEI-21								

SAMPLE PREPARATION PACKAGE

PREP- 31

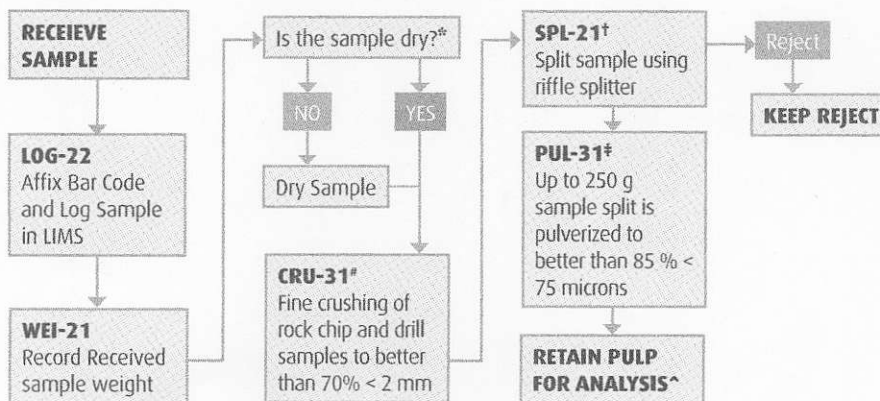
STANDARD SAMPLE PREPARATION: DRY, CRUSH, SPLIT AND PULVERIZE

Sample preparation is the most critical step in the entire laboratory operation. The purpose of preparation is to produce a homogeneous analytical sub-sample that is fully representative of the material submitted to the laboratory.

The sample is logged in the tracking system, weighed, dried and finely crushed to better than 70 % passing a 2 mm (Tyler 9 mesh, US Std. No.10) screen. A split of up to 250 g is taken and pulverized to better than 85 % passing a 75 micron (Tyler 200 mesh, US Std. No. 200) screen. This method is appropriate for rock chip or drill samples.

METHOD CODE	DESCRIPTION
LOG-22	Sample is logged in tracking system and a bar code label is attached.
DRY-21	Drying of excessively wet samples in drying ovens. This is the default drying procedure for most rock chip and drill samples.
CRU-31	Fine crushing of rock chip and drill samples to better than 70% of the sample passing 2 mm.
SPL-21	Split sample using riffle splitter.
PUL-31	A sample split of up to 250 g is pulverized to better than 85% of the sample passing 75 microns.

FLOW CHART - SAMPLE PREPARATION PACKAGE - PREP-31 STANDARD SAMPLE PREPARATION: DRY, CRUSH, SPLIT AND PULVERIZE



*If samples air-dry overnight, no charge to client. If samples are excessively wet, the sample should be dried to a maximum of 120°C. (DRY-21)

#QC testing of crushing efficiency is conducted on random samples (CRU-QC).

†The sample reject is saved or dumped pending client instructions. Prolonged storage (> 45 days) of rejects will be charged to the client.

‡QC testing of pulverizing efficiency is conducted on random samples (PUL-QC).

[^]Lab splits are required when analyses must be performed at a location different than where samples received.



GEOCHEMICAL PROCEDURE

ME-ICP41

TRACE LEVEL METHODS USING CONVENTIONAL ICP-AES ANALYSIS

NOTE: Procedure & elements similar to ME-ICP43
SAMPLE DECOMPOSITION

Nitric Aqua Regia Digestion (GEO-AR01)

ANALYTICAL METHOD

Inductively Coupled Plasma - Atomic Emission Spectroscopy (ICP - AES)

A prepared sample is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to 12.5 mL with deionized water, mixed and analyzed by inductively coupled plasma-atomic emission spectrometry. The analytical results are corrected for inter-element spectral interferences.

NOTE: In the majority of geological matrices, data reported from an aqua regia leach should be considered as representing only the leachable portion of the particular analyte.

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT	DEFAULT OVER-LIMIT METHOD
Silver	Ag	ppm	0.2	100	Ag-OG46
Aluminum	Al	%	0.01	25	
Arsenic	As	ppm	2	10,000	
Boron	B	ppm	10	10,000	
Barium	Ba	ppm	10	10,000	
Beryllium	Be	ppm	0.5	1,000	
Bismuth	Bi	ppm	2	10,000	
Calcium	Ca	%	0.01	25	
Cadmium	Cd	ppm	0.5	1,000	
Cobalt	Co	ppm	1	10,000	
Chromium	Cr	ppm	1	10,000	
Copper	Cu	ppm	1	10,000	Cu-OG46
Iron	Fe	%	0.01	50	
Gallium	Ga	ppm	10	10,000	
Mercury	Hg	ppm	1	10,000	
Potassium	K	%	0.01	10	
Lanthanum	La	ppm	10	10,000	

ME-ICP41

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT	DEFAULT OVER-LIMIT METHOD
Magnesium	Mg	%	0.01	25	
Manganese	Mn	ppm	5	50,000	
Molybdenum	Mo	ppm	1	10,000	
Sodium	Na	%	0.01	10	
Nickel	Ni	ppm	1	1,000	
Phosphorus	P	ppm	10	1,000	
Lead	Pb	ppm	2	1,000	Pb-OG46
Sulfur	S	%	0.01	10	
Antimony	Sb	ppm	2	1,000	
Scandium	Sc	ppm	1	1,000	
Strontium	Sr	ppm	1	1,000	
Thorium	Th	ppm	20	1,000	
Titanium	Ti	%	0.01	10	
Thallium	Tl	ppm	10	1,000	
Uranium	U	ppm	10	1,000	
Vanadium	V	ppm	1	1,000	
Tungsten	W	ppm	10	1,000	
Zinc	Zn	ppm	2	1,000	Zn-OG46

ELEMENTS LISTED BELOW ARE AVAILABLE UPON REQUEST

ELEMENT	SYMBOL	UNITS	LOWER LIMIT	UPPER LIMIT	DEFAULT OVER-LIMIT METHOD
Cerium	Ce	ppm	10	10,000	
Hafnium	Hf	ppm	10	10,000	
Indium	In	ppm	10	10,000	
Lithium	Li	ppm	10	10,000	
Niobium	Nb	ppm	10	10,000	
Rubidium	Rb	ppm	10	10,000	
Selenium	Se	ppm	10	10,000	
Silicon	Si	ppm	10	10,000	
Tin	Sn	ppm	10	10,000	
Tantalum	Ta	ppm	10	10,000	
Tellurium	Te	ppm	10	10,000	
Yttrium	Y	ppm	10	10,000	
Zirconium	Zr	ppm	5	10,000	

GEOCHEMICAL PROCEDURE

Au-TL43, Au-TL44

DETERMINATION OF TRACE LEVEL GOLD BY SOLVENT EXTRACTION – GRAPHITE FURNACE AAS OR ICPMS FINISH
SAMPLE DECOMPOSITION

Aqua regia gold digestion (GEO-AuAR01/02)

ANALYTICAL METHOD
Inductively coupled mass spectrometry (ICPMS) or Atomic absorption spectrometry (AAS)

A finely pulverised sample (25 – 50 g) is digested in a mixture of 3 parts hydrochloric acid and 1 part nitric acid (aqua regia). This acid mixture generates nascent chlorine and nitrosyl chloride, which will dissolve free gold and gold compounds such as calaverite, AuTe₂.

The dissolved gold is complexed and extracted with Kerosene/DBS and determined by graphite furnace AAS. Alternatively gold is determined by ICPMS directly from the digestion liquor. This method allows for the simple and economical addition of extra elements by running the digestion liquor through the ICPAES or ICPMS.

NOTE: Samples high in sulphide or carbon content may lead to low gold recoveries unless they are roasted prior to digestion.

METHOD CODE	ELEMENT	SYMBOL	UNITS	SAMPLE MASS (G)	LOWER LIMIT	UPPER LIMIT	DEFAULT OVERLIMIT METHOD
Au-TL43	Gold	Au	ppm	25	0.001	1	Au-OG43
Au-TL44	Gold	Au	ppm	50	0.001	1	Au-OG44

APPENDIX B Thunderbird 1052275 Rock Sample Descriptions

Sample ID	Tenure No	Easting NAD 83	Northing NAD 83	Elev (m)	Sample Type	Lithology
17thun-1	1052275	312494	5471756	266	angular float	c gr diorite-granodiorite
17thun-2	1052275	312526	5471787	281	angular float	c gr diorite-granodiorite
17thun-3	1052275	312272	5471911	243	angular float	c gr diorite-granodiorite
17thun-4	1052275	312728	5471442	336	outcrop	c gr diorite-granodiorite
17thun-5	1052275	312430	5471763	251	angular float	c gr diorite-granodiorite
17thun-6	1052275	312261	5471908	250	angular float	c gr diorite-granodiorite
17thun-7	1052275	312178	5471943	248	angular float	c gr diorite-granodiorite
17thun-8	1052275	312226	5471917	250	angular float	c gr diorite-granodiorite

Sample ID	Lith Alteration	Sulphides	texture	Vein Strike	Dip	Width
17thun-1	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-2	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-3	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-4	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork	120 74 N		28 cm
17thun-5	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-6	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-7	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-8	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			


Sample ID	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Mn ppm	Ni ppm	Cr ppm	Co ppm	Fe %	Ca %	S %
17thun-1	0.003	<0.1	3.4	3.3	18	1.4	764	0.8	7	4.4	2.88	2.95	0.13
17thun-2	0.001	<0.1	1.5	2.5	12	6.6	901	3.7	5	4.3	1.99	4.19	0.04
17thun-3	0.014	<0.1	1	2.3	13	1	1030	<0.5	4	4.1	2.59	4.28	0.64
17thun-4	0.004	<0.1	2.8	3.3	31	0.9	598	<0.5	5	3.8	1.43	1.63	0.14
17thun-5	0.002	<0.1	3.8	3.3	63	4.4	1765	98.8	124	22.2	5.81	6.39	0.03
17thun-6	0.002	<0.1	4.4	8	32	6.8	489	1.9	3	7.5	9.51	1.24	9.08
17thun-7	<0.001	<0.1	1.2	0.7	31	0.9	524	1.6	9	10.6	2.94	0.94	0.06
17thun-8	0.006	<0.1	1.1	5.6	27	<0.5	1800	<0.5	6	3.1	2.01	6.92	0.19


APPENDIX C Thunderbird 1052275 Soil Sample Descriptions

	Easting	Northing	texture	Depth cm	Colour
S7	312350	5471900	silt-sand	10 to 30	red-brown
S6	312350	5471850	silt-sand	10 to 30	red-brown
S5	312350	5471800	silt-sand	10 to 30	red-brown
S4	312350	5471750	silt-sand	10 to 30	red-brown
S3	312350	5471700	silt-sand	10 to 30	red-brown
S2	312300	5471850	silt-sand	10 to 30	red-brown
S1	312300	5471800	silt-sand-clay	10 to 30	beige-brown
S18	312500	5471650	silt-sand	10 to 30	red-brown
S17	312500	5471600	silt-sand	10 to 30	red-brown
S12	312400	5471850	silt-sand	10 to 30	red-brown
S11	312400	5471750	silt-sand-clay	10 to 30	beige-brown
S10	312400	5471700	silt-sand	10 to 30	brown
S9	312400	5471650	silt-sand	10 to 30	red-brown
S8	312400	5471600	silt-sand	10 to 30	red-brown
S16	312450	5471850	silt-sand	10 to 30	brown
S15	312450	5471800	silt-sand	10 to 30	brown
S14	312450	5471700	silt-sand	10 to 30	brown
S13	312450	5471650	silt-sand	10 to 30	red-brown
S20	312550	5471800	silt-sand	10 to 30	brown
S19	312550	5471850	silt-sand	10 to 30	brown

	Easting	Northing	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Mn ppm	Sb ppm	Ni ppm	Co ppm	V ppm
S7	312350	5471900	0.069	<0.1	3.2	4.2	15	5.1	141	0.38	3.2	2.4	25.9
S6	312350	5471850	0.178	<0.1	1.1	1.4	4	1.7	39	0.16	5.3	2.3	12.9
S5	312350	5471800	0.041	<0.1	0.9	0.9	3	0.8	45	0.08	3.7	0.6	7.4
S4	312350	5471750	0.019	<0.1	1.4	1	2	0.7	15	0.1	2.6	0.5	12.3
S3	312350	5471700	0.043	<0.1	5.1	3.4	10	3.7	98	0.47	4.8	1.9	82.9
S2	312300	5471850	0.019	<0.1	0.6	1.7	3	<0.5	15	0.06	1.7	<0.5	2.9
S1	312300	5471800	0.013	<0.1	1.1	1.2	5	1	48	0.15	5.9	1.4	10.7
S18	312500	5471650	0.016	<0.1	0.9	1	3	0.5	19	0.21	1.4	0.6	20.3
S17	312500	5471600	0.002	<0.1	1.7	2.2	5	1.2	49	0.53	2.9	1.4	51.1
S12	312400	5471850	0.006	0.1	2.5	3	12	2.8	38	0.12	4.7	1.2	8.9
S11	312400	5471750	0.023	<0.1	0.7	1.8	7	1.5	30	0.19	1.4	0.8	33.9
S10	312400	5471700	0.007	<0.1	2	2.4	4	0.9	51	0.29	2.3	1.5	30.8
S9	312400	5471650	0.02	<0.1	1.7	1.6	3	1.5	30	0.5	1.3	1.6	66.2
S8	312400	5471600	0.006	<0.1	0.8	2.8	6	<0.5	68	0.17	2.7	0.6	14.6
S16	312450	5471850	0.018	0.1	17.6	6.5	52	9.4	896	0.38	23.2	10.2	34.3
S15	312450	5471800	0.001	<0.1	0.9	1.9	8	1	55	0.22	1	0.6	28.5
S14	312450	5471700	0.001	<0.1	0.6	1.5	4	0.9	19	0.05	0.7	<0.5	4.2
S13	312450	5471650	0.024	<0.1	0.7	1.3	4	1.1	31	0.08	0.9	<0.5	8.1
S20	312550	5471600	0.003	<0.1	0.7	1.9	9	<0.5	53	0.28	0.9	1.1	11.7
S19	312550	5471550	0.005	<0.1	0.8	2.4	2	1.5	11	0.27	1.7	0.6	23.6

[MINFILE Home page](#) | [ARIS Home page](#) | [MINFILE Search page](#) | [Property File Search](#)
MINFILE Record Summary
MINFILE No 092F 067
APPENDIX D

Print Preview	PDF	-- SELECT REPORT --	 New Window
File Created:	24-Jul-85	by BC Geological Survey (BCGS)	
Last Edit:	30-Oct-14	by Laura deGroot(LDG)	

[XML Extract/Inventory Report](#)
SUMMARY
[Summary Help](#) 

Name	THUNDERBIRD, CAMP CREEK, MAIN, URSUS CREEK	NMI	092F5 Cu1
Status	Showing	Mining Division	Alberni
Latitude	49° 22' 29" N	BCGS Map	092F032
Longitude	125° 36' 43" W	NTS Map	092F05E
Commodities	Copper, Gold, Silver	UTM	10 (NAD 83)
Tectonic Belt	Insular	Northing	5472394
Capsule	The Thunderbird occurrence is located near the junction of Ursus and Thunderbird creeks.	Easting	310403
Geology	A major fault cuts volcanic rocks of the Upper Triassic Karmutsen Formation (Vancouver Group) and granodiorite to quartz diorite of the Early to Middle Jurassic Island Plutonic Suite. The volcanics are fine-grained to aphanitic, dark green andesite. The intrusive contact is marked by a medium to fine-grained dark, mafic rich diorite, which is cut by many dikes of leucocratic granodiorite.	Deposit Types	I06 : Cu+/-Ag quartz veins
	The main direction of shearing is about 112 degrees. Shear features such as gouge filled fractures, re-healed brecciation and zones of shattered rock are abundant throughout the area. A zone of mineralized quartz stockwork occurs adjacent to a strong shear zone.	Terrane	Wrangell

The Thunderbird occurrence is located near the junction of Ursus and Thunderbird creeks.

A major fault cuts volcanic rocks of the Upper Triassic Karmutsen Formation (Vancouver Group) and granodiorite to quartz diorite of the Early to Middle Jurassic Island Plutonic Suite. The volcanics are fine-grained to aphanitic, dark green andesite. The intrusive contact is marked by a medium to fine-grained dark, mafic rich diorite, which is cut by many dikes of leucocratic granodiorite.

The main direction of shearing is about 112 degrees. Shear features such as gouge filled fractures, re-healed brecciation and zones of shattered rock are abundant throughout the area. A zone of mineralized quartz stockwork occurs adjacent to a strong shear zone.

The Main or Camp Creek showing, examined by Trench #1, occurs in granodiorite within 100 metres to the north of the intrusive/volcanic contact. The main fault along Ursus Creek is 100 metres further to the north of the showing. Twelve grab samples from Trench #1 averaged 0.92 gram per tonne gold, with values up to 1.62 grams per tonne gold, 35.9 grams per tonne silver and 1.4 per cent copper (Assessment Report 16450).

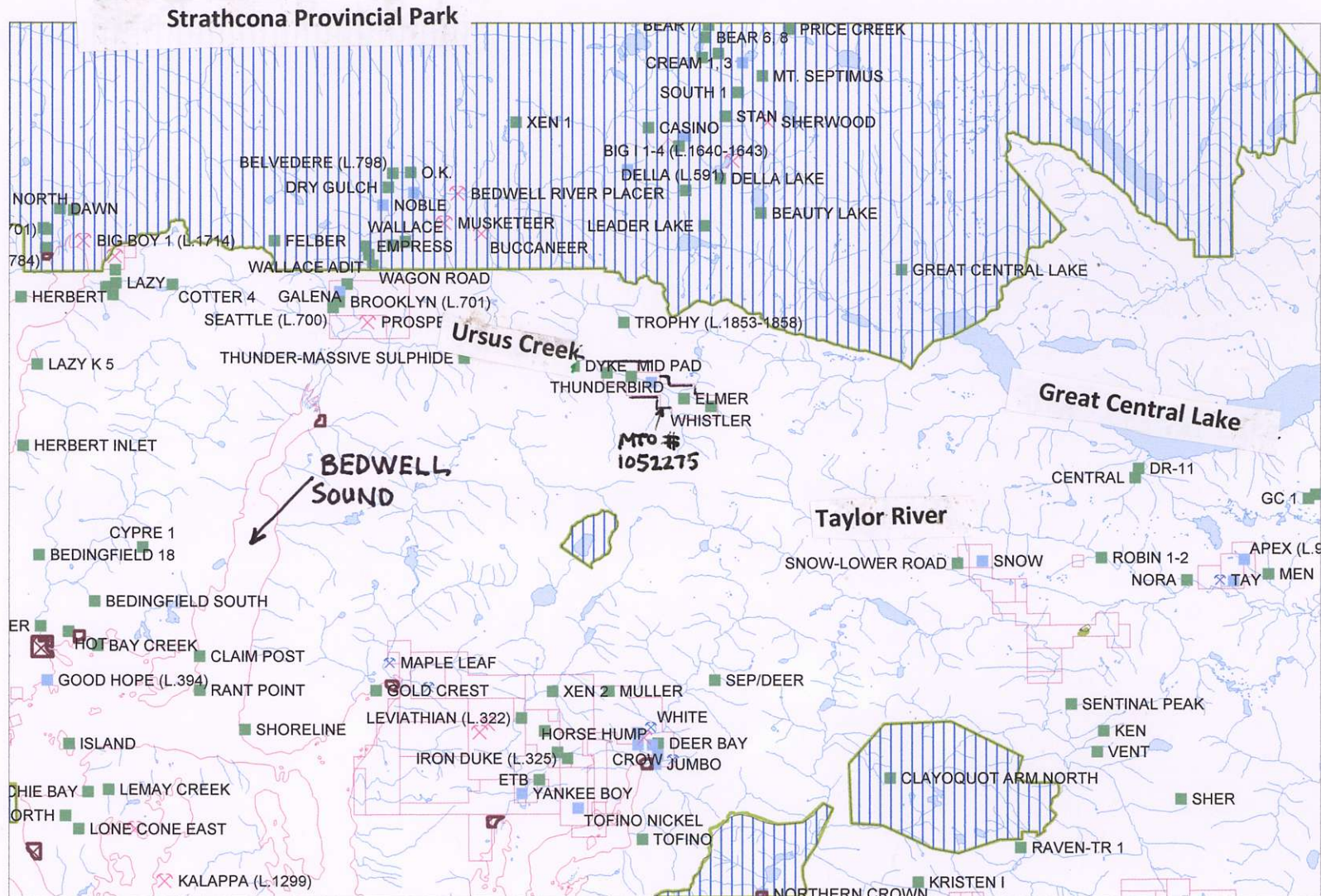
Camp Creek is a northwest flowing creek that joins Thunderbird Creek just before its confluence with Ursus Creek. The main shearing in Camp Creek varies from 87 to 101 degrees with steep (83 degrees) dips to the north. Several northeast trending, southeast dipping quartz veins, with widths to 11 centimetres, occur in strongly silicified, sericitized and pyritized granodiorite. Mineralization consists of disseminated pyrite and chalcopyrite. The altered zone measures 12 metres long and 11 meters wide.

About 200 metres west of the Camp Creek showing, west of Thunderbird Creek, are quartz veins with pyrite, minor galena and has been referred to as the Thunderbird Group.

The area was originally explored in 1939 with the discovery of float containing coarse gold near the junction of Ursus and Thunderbird creeks. In 1979, the property was acquired by S. Craig and later optioned to Eldorado Minerals and Petroleum as the Ureka and Opus claims. In 1984, Eldorado completed a program of trenching and geochemical sampling which identified the Camp Zone. From 1986 to 1987, Pacific Sentinel Gold completed programs of geochemical surveying, geological mapping and magnetometer and VLF surveys. This work identified three new zones, including the Junction (MINFILE 092F 450) and Mid-Pad (MINFILE 092F 449). From 1988 to 1989, Pezgold Resource optioned the property and completed a program of diamond drilling, on the Junction zone, and prospecting which led to the discovery of the Elmer zone to the east. In 1990, Pacific Sentinel Gold completed a program of geological mapping, rock sampling and trenching. In 1995, the area was prospected as the Thunderbird claims by S. Salmon. Trench sampling returned values up to 2.39 grams per tonne gold (Assessment Report 24426). In 1999, the area was claimed as part of the Thunder claims and a program of geological mapping, geochemical sampling and geophysical surveys were completed on the Elmer zone.

Bibliography EMPR ASS RPT [9378](#), [*12623](#), [*16450](#), [19374](#), [20474](#), [*24426](#), [26412](#)
 EMPR BULL *8, p. 67-68; 13
 EMPR EXPL 1980-171; 1984-162,163; 1987-C145
 EMPR PF (Prospectus: Pacific Sentinel Gold Corp., August 31, 1987; Filing Statement: Pacific Sentinel Gold Corp., May 9, 1988; District Geologist photos, 1995; Maps (various) (c.1995); Property Review Statement of Material Change, Pacific Sentinel Gold Corp., 1992; Woodcock, J.R. (1987): The Ursus Creek Project for Baron Ventures Ltd.; Prospectors Report 1995-24 by Simon Salmon)
 GSC MAP 17-1968; 1386A
 GSC MEM 204
 GSC OF 463
 GSC P 68-50; 72-44; 79-30; 80-16
 GCNL #67, 1984; #11, #13, #104, #227, 1988; #4, #31, 1989
 N MINER Jun.12, 1995
 V STOCKWATCH Jan.18, 1988
 Carson, D.J.T. (1968): Metallogenic Study of Vancouver Island With Emphasis on the Relationships of Mineral Deposits to Plutonic Rocks, Unpublished Ph.D. Thesis, Carleton University

Fig 1 Thunderbird General Location



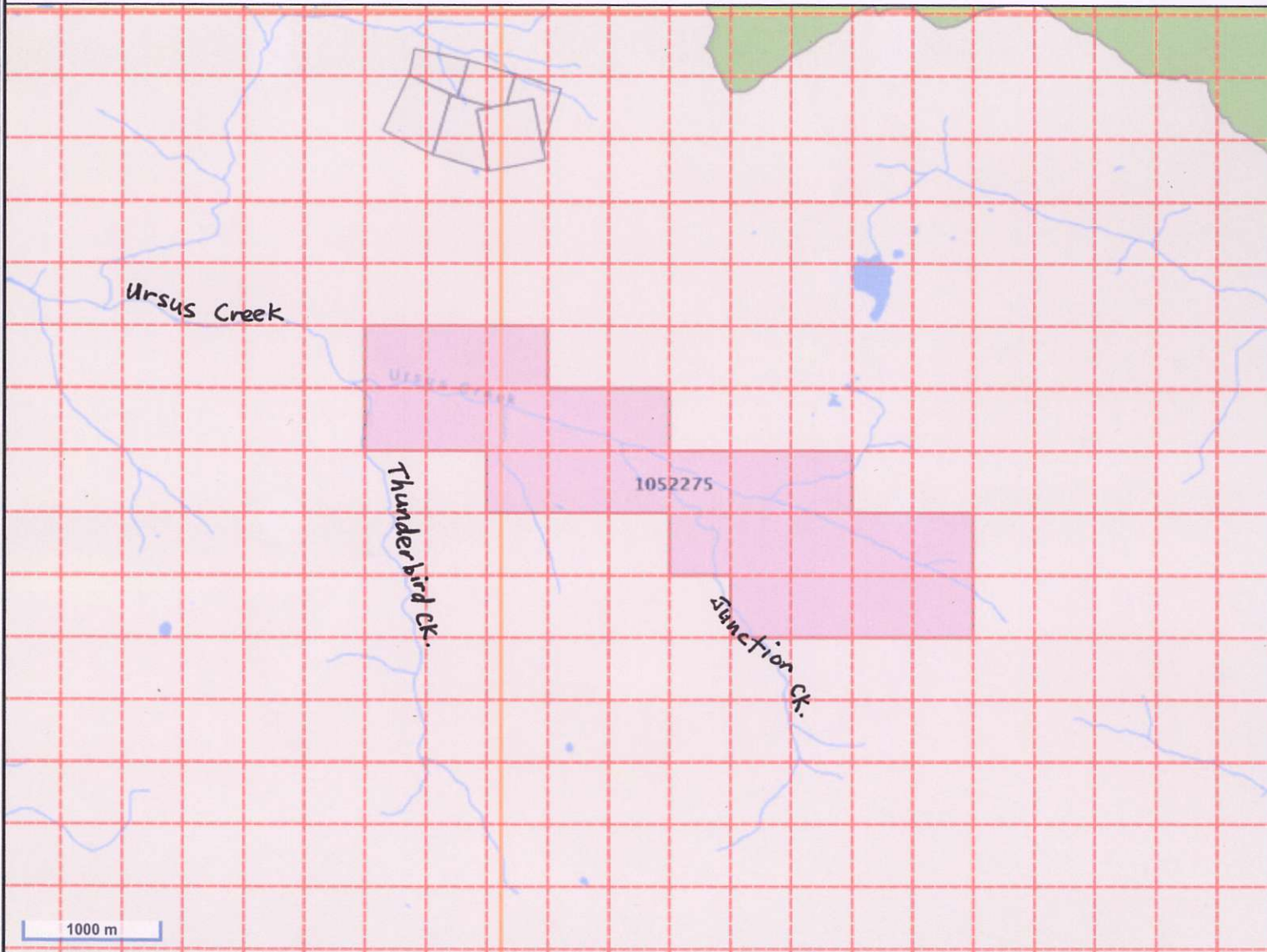
0 5 10km SCALE 1 : 250,000

2 0 2 4 6
MILES

☒ First Nations



Fig 2 MTO mineral tenure map



Legend

Mineral Titles (MTO)

MTO Grid



Title (current)

LEASE

CLAIM

Reserves

No Registration

Conditional

Heritage/Historic Site

Crown Land Layers (Tantalis)

Land Act Survey Parcels - Tantalis - Legal Descriptions

Label Text

Land Act Survey Parcels - Tantalis - Outlined



Administrative Boundaries

Federal Transfer Lands - Outlined



Federal Transfer Lands - Colour Filled



National Parks - Outlined



National Park

National Parks - Colour Filled



Conservancy Areas - Tantalis - Colour Filled



Conservancy Areas

Ecological Reserves - Tantalis - Colour Filled



1000 m

*This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION.*

Printed using the Mineral Titles Online (MTO) application. NTS 092 F 5/E, BCGS 092F.033, Alberni Mining Division

Center: 49°22'7", -125°35'8"

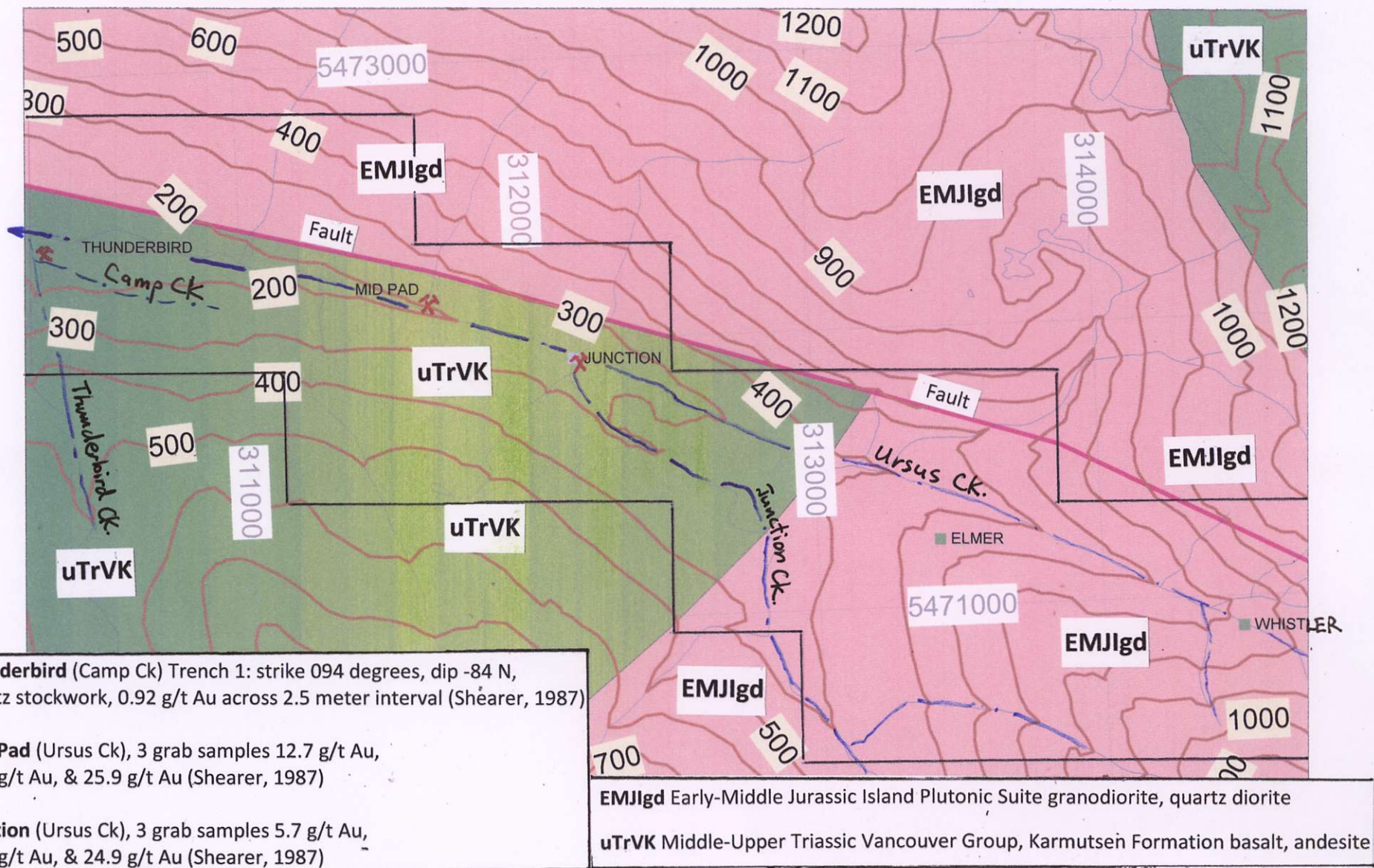
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UTM Zone: 10



Fig 3 Thunderbird General Geology



SCALE 1 : 20,000

NTS 092F 5E, BCGS 092F.032 Alberni Mining Division

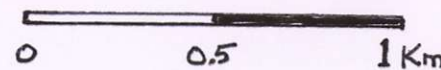
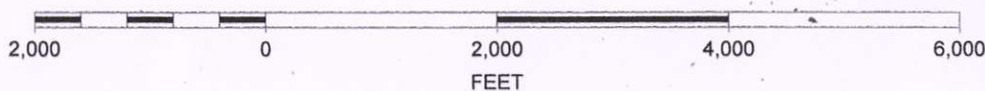
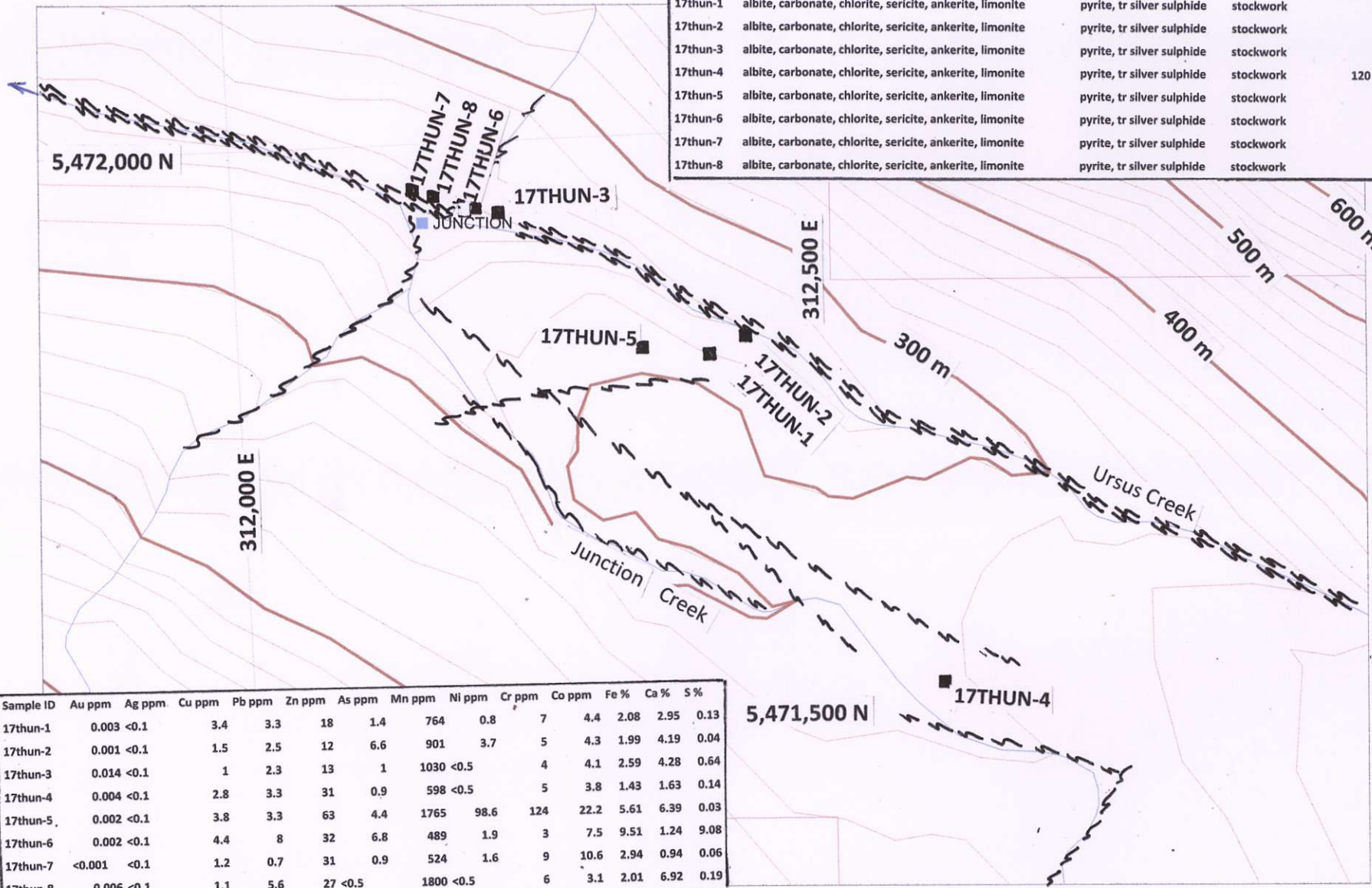


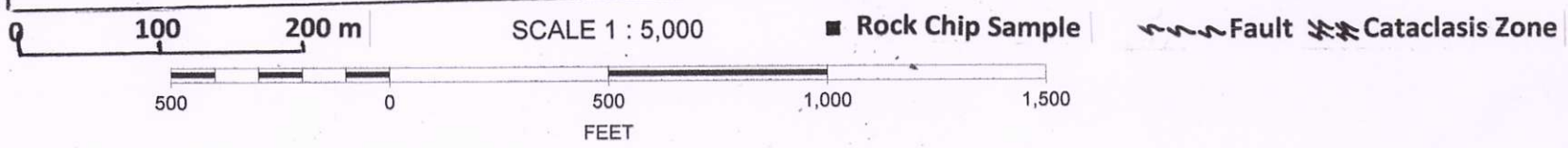
Fig 4 Thunderbird MTO 1052275 Rock Chip Geochemistry

NTS 092F 5E, BCGS 092F.032 Alberni Mining Division

Sample ID	Lith Alteration	Sulphides	texture	Vein Strike	Dip	Width
17thun-1	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-2	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-3	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-4	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork	120	74 N	28 cm
17thun-5	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-6	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-7	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			
17thun-8	albite, carbonate, chlorite, sericite, ankerite, limonite	pyrite, tr silver sulphide	stockwork			

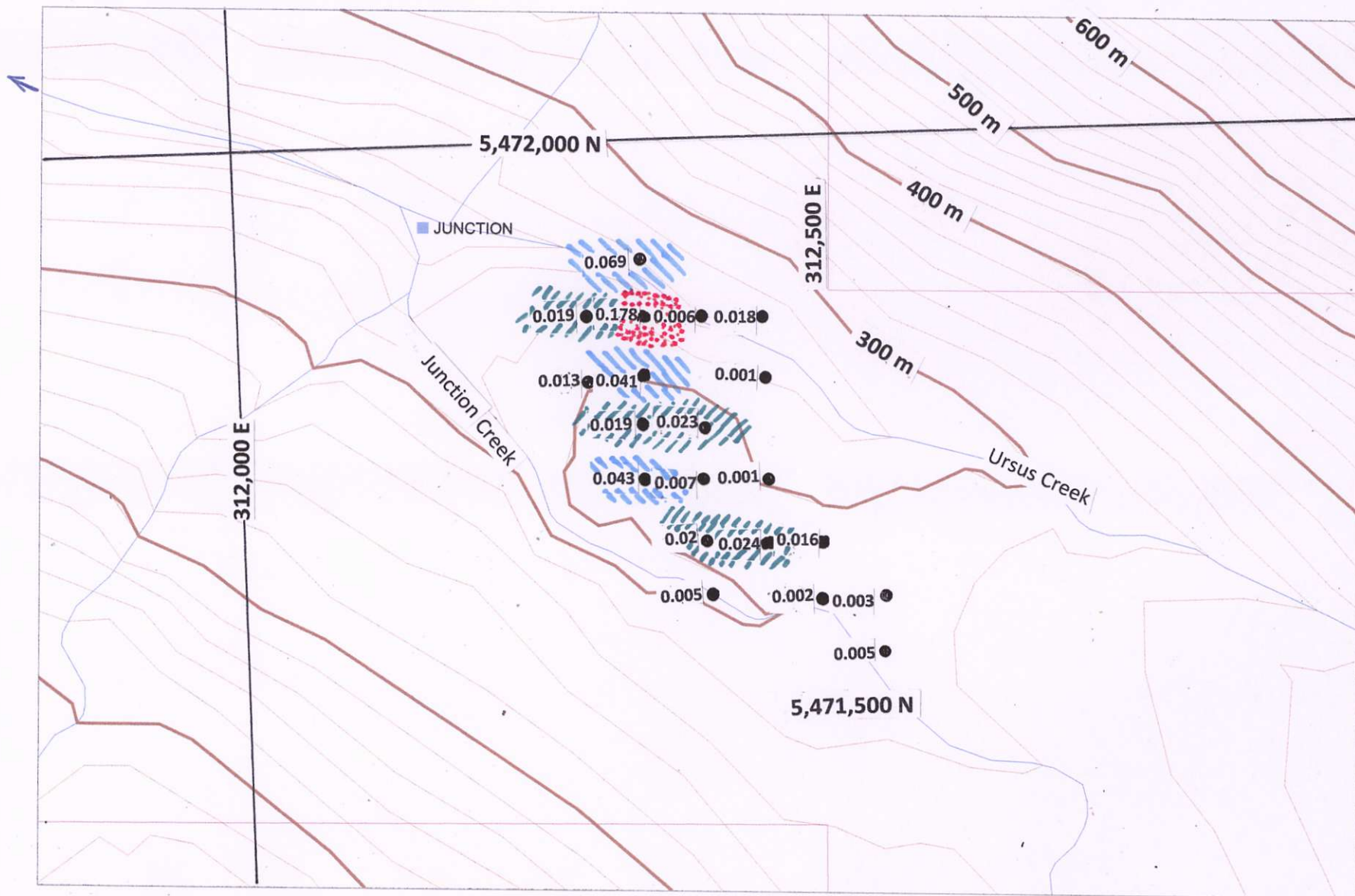


Sample ID	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Mn ppm	Ni ppm	Cr ppm	Co ppm	Fe %	Ca %	S %
17thun-1	0.003	<0.1	3.4	3.3	18	1.4	764	0.8	7	4.4	2.08	2.95	0.13
17thun-2	0.001	<0.1	1.5	2.5	12	6.6	901	3.7	5	4.3	1.99	4.19	0.04
17thun-3	0.014	<0.1	1	2.3	13	1	1030	<0.5	4	4.1	2.59	4.28	0.64
17thun-4	0.004	<0.1	2.8	3.3	31	0.9	598	<0.5	5	3.8	1.43	1.63	0.14
17thun-5	0.002	<0.1	3.8	3.3	63	4.4	1765	98.6	124	22.2	5.61	6.39	0.03
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17thun-7	<0.001	<0.1	1.2	0.7	31	0.9	524	1.6	9	10.6	2.94	0.94	0.06
17thun-8	0.006	<0.1	1.1	5.6	27	<0.5	1800	<0.5	6	3.1	2.01	6.92	0.19



Thunderbird MTO 1052275 Soil Geochemistry

NTS 092F 5E, BCGS 092F.032 Alberni Mining Division



0 100 200 m




SCALE 1 : 5,000

● Soil Sample

Fig 5

ppm Au in soil

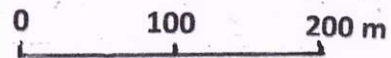
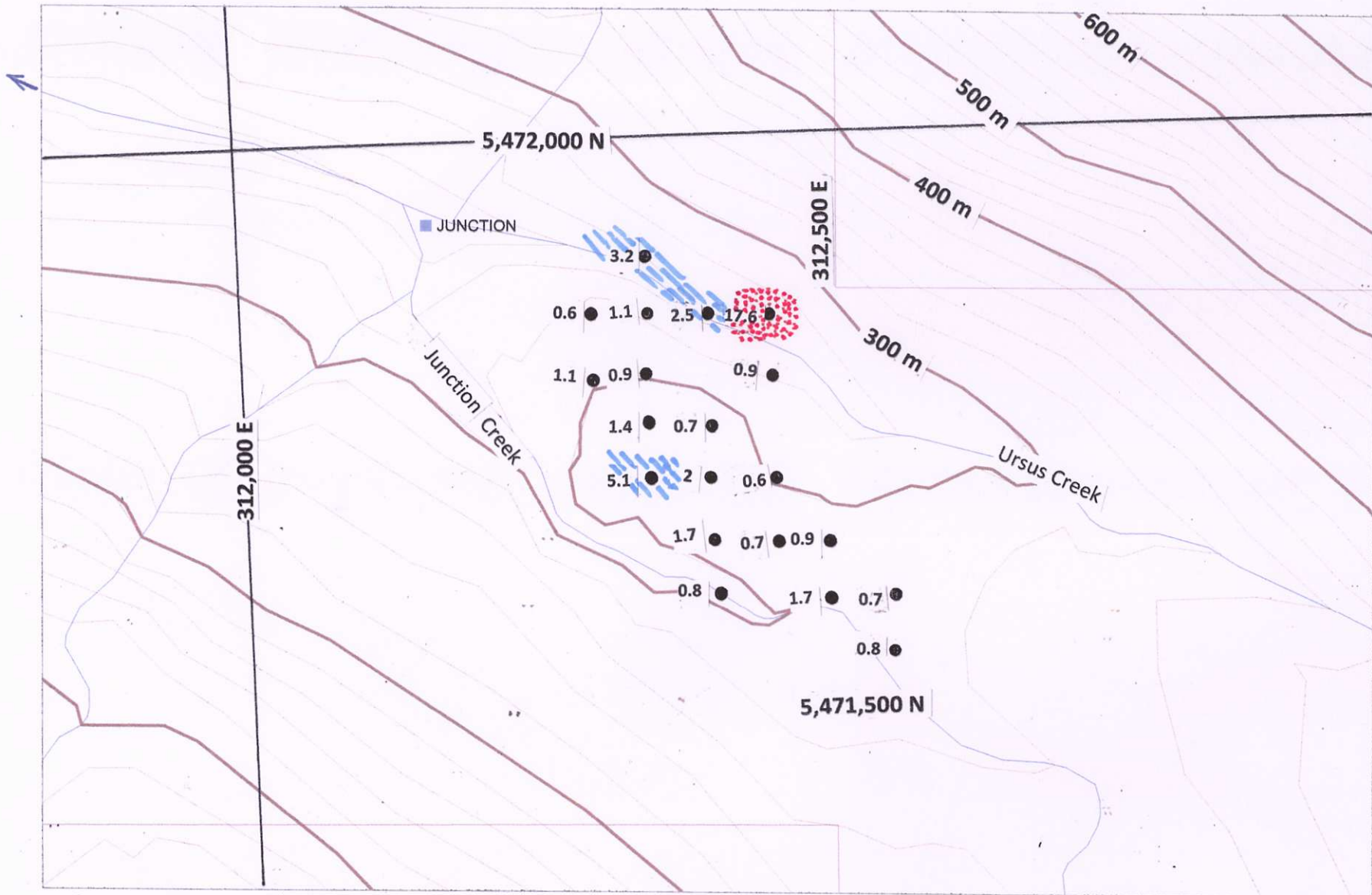
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FEET

-  0.019-0.025 ppm Au
-  0.026-0.100 ppm Au
-  >0.100 ppm Au



Thunderbird MTO 1052275 Soil Geochemistry

NTS 092F 5E, BCGS 092F.032 Alberni Mining Division



SCALE 1 : 5,000

● Soil Sample

Fig 6

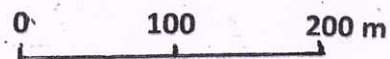
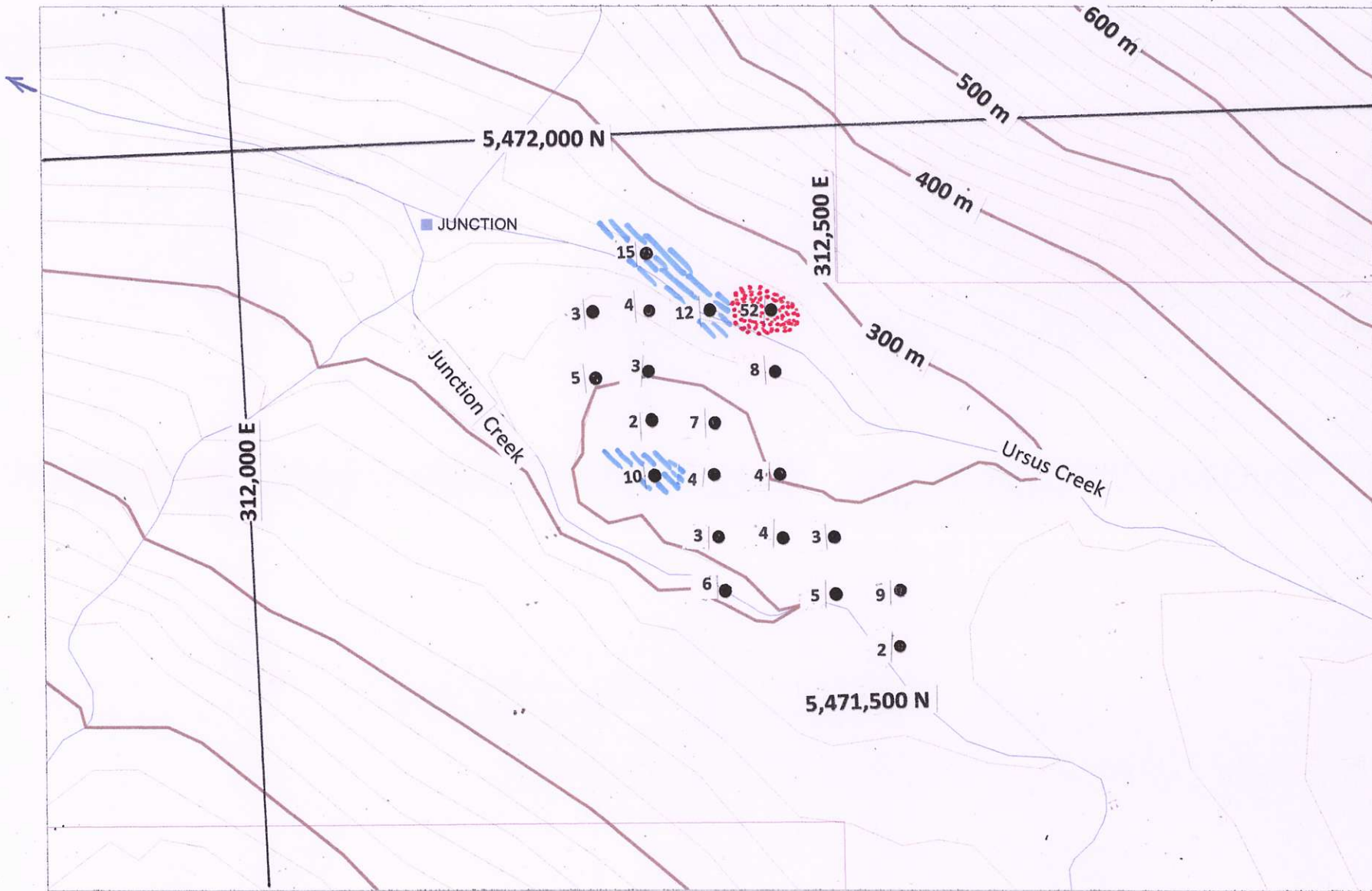
ppm Cu in soil

- 2.5-10 ppm Cu
- >10 ppm Cu



Thunderbird MTO 1052275 Soil Geochemistry

NTS 092F 5E, BCGS 092F.032 Alberni Mining Division

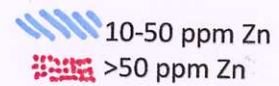


SCALE 1 : 5,000

● Soil Sample

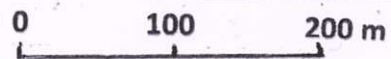
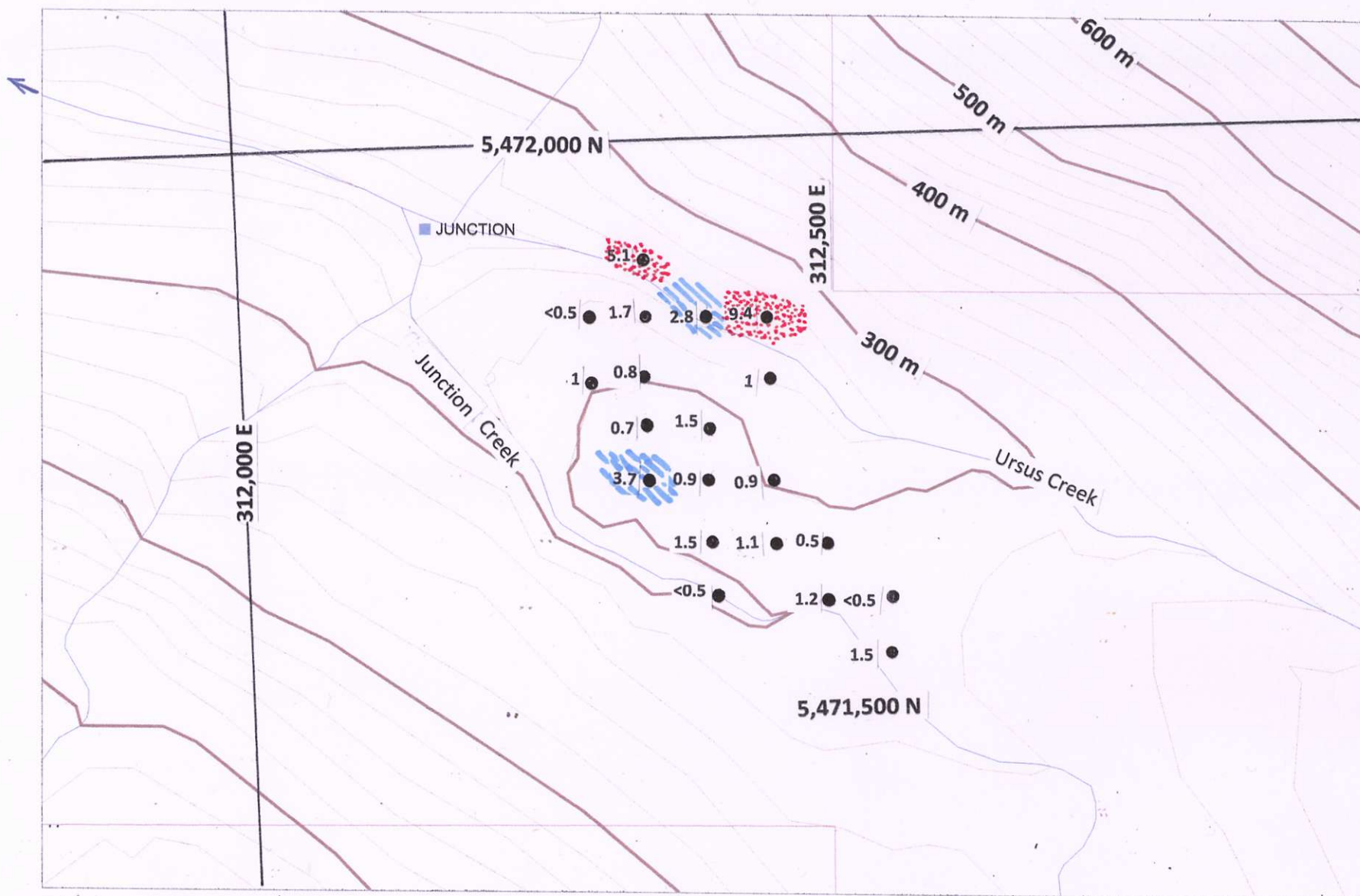
Fig 7

ppm Zn in soil



Thunderbird MTO 1052275 Soil Geochemistry

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SCALE 1 : 5,000

● Soil Sample

Fig 8

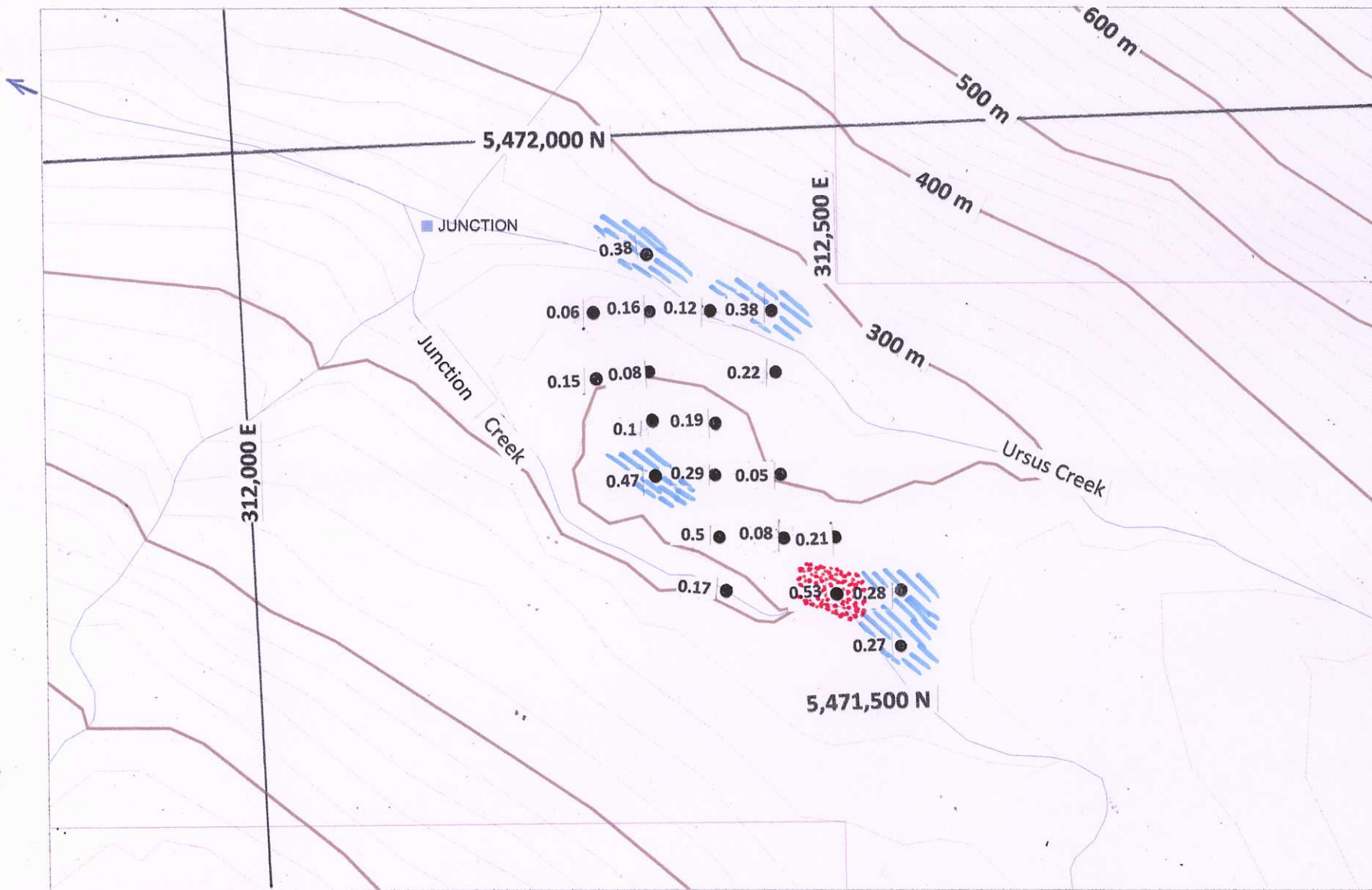
ppm As in soil

 2.5-5.0 ppm As
 >5.0 ppm As



Thunderbird MTO 1052275 Soil Geochemistry

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0 100 200 m

SCALE 1 : 5,000

● Soil Sample

Fig 9

500 0 500 1,000 1,500
FEET

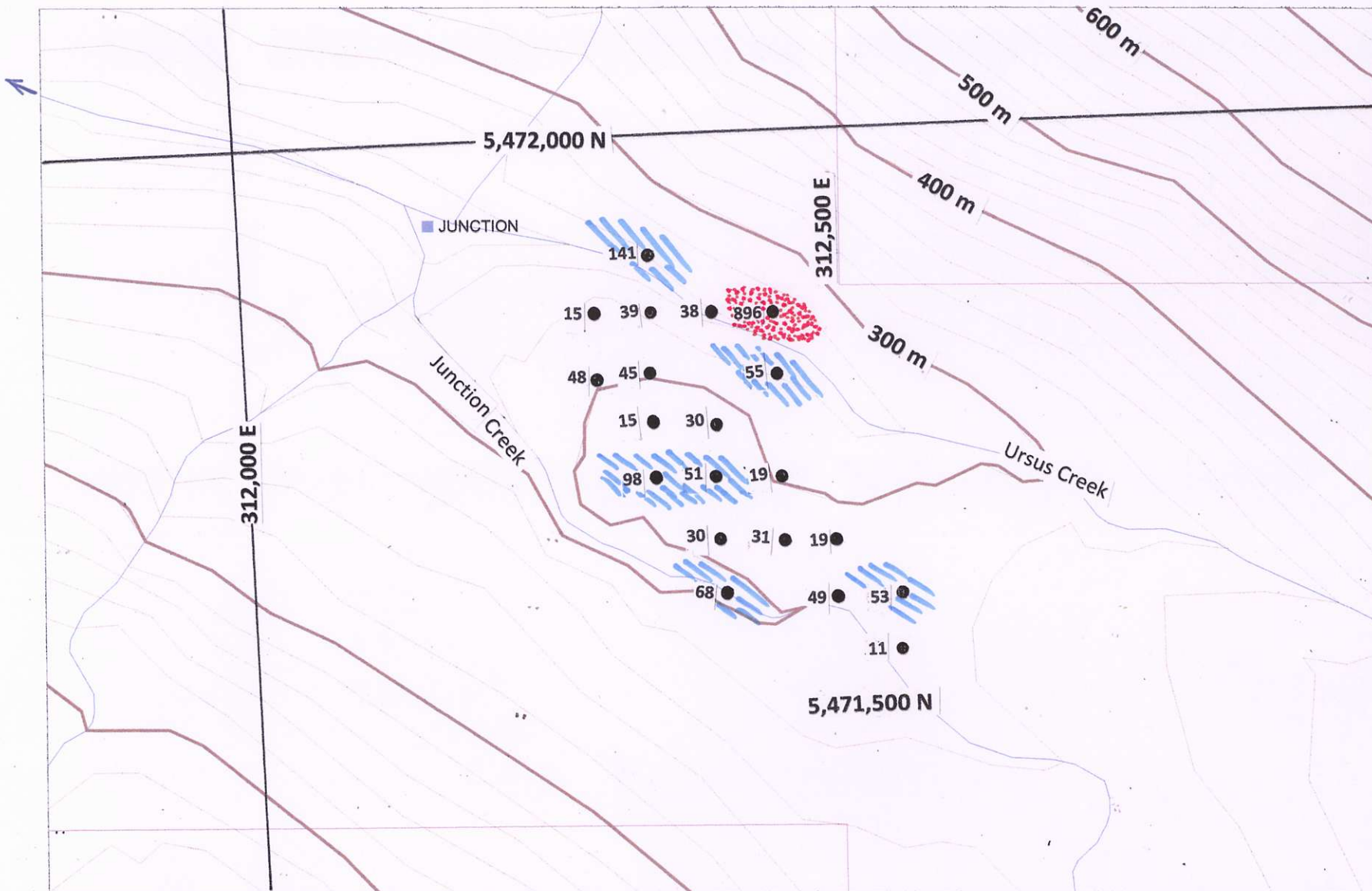
ppm Sb in soil

0.25-0.5 ppm Sb
>0.5 ppm Sb



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0 100 200 m

SCALE 1 : 5,000

● Soil Sample

Fig 10

ppm Mn in soil

500 0 500 1,000 1,500
FEET

50-150 ppm Mn
>150 ppm Mn



Google Earth Thunderbird
Junction Ck Rock, Soil &
Helipad Locations

5,472,000 N

312,000 E

Legend

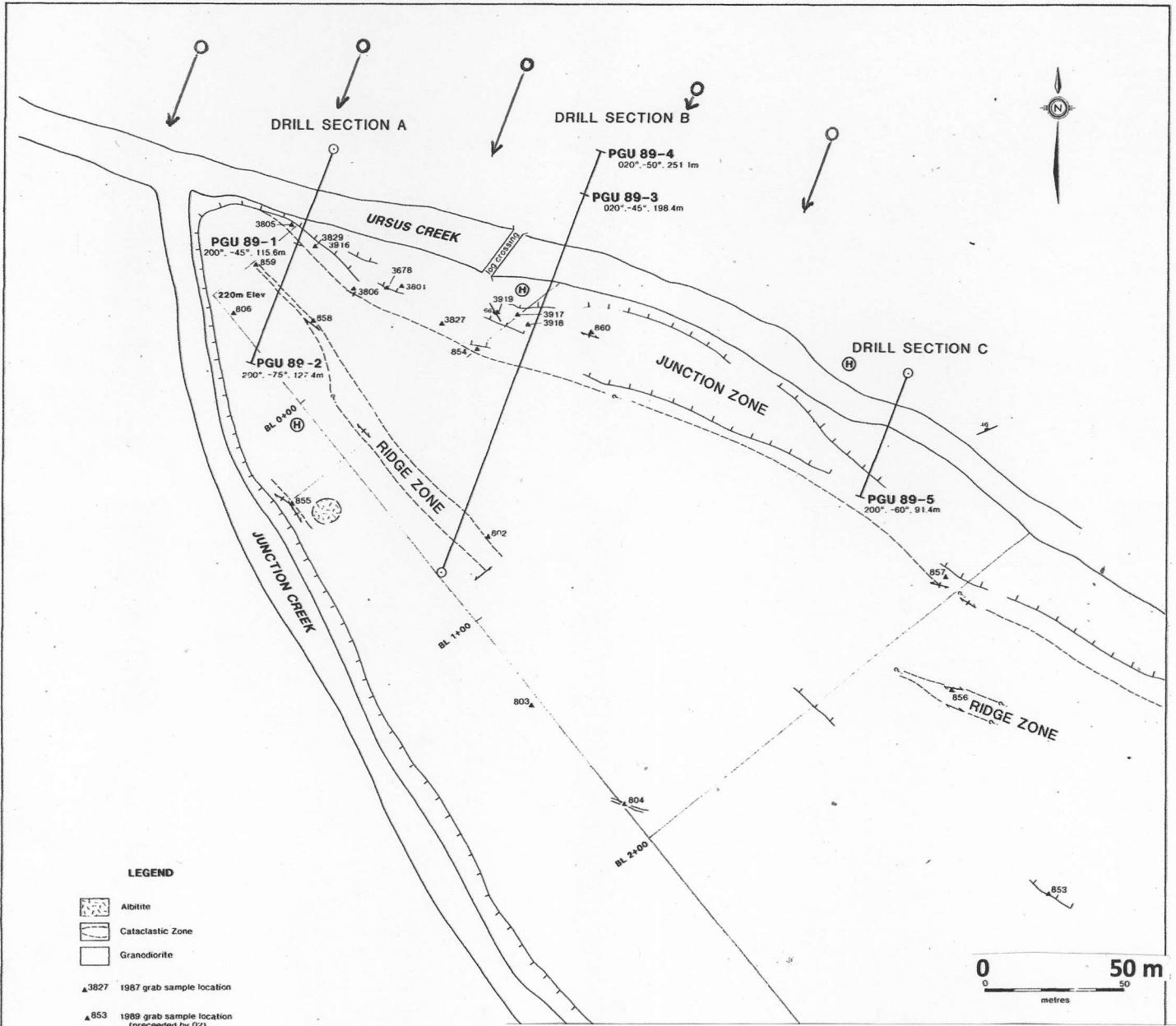
-  Rock Chip
-  Helipad
-  Soil Sample

SOIL	Easting	Northing	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Mn ppm	Ni ppm	Co ppm	V ppm
S7	312350	5471900	0.069	<0.1	3.2	4.2	15	5.1	141	3.2	2.4	25.9
S6	312350	5471850	0.178	<0.1	1.1	1.4	4	1.7	39	5.3	2.3	12.9
S5	312350	5471800	0.041	<0.1	0.9	0.9	3	0.8	45	3.7	0.6	7.4
S4	312350	5471750	0.019	<0.1	1.4	1	2	0.7	15	2.6	0.5	12.3
S3	312350	5471700	0.043	<0.1	5.1	3.4	10	3.7	98	4.8	1.9	82.9
S2	312300	5471850	0.019	<0.1	0.6	1.7	3	<0.5	15	1.7	<0.5	2.9
S1	312300	5471800	0.013	<0.1	1.1	1.2	5	1	48	5.9	1.4	10.7
S18	312500	5471650	0.016	<0.1	0.9	1	3	0.5	19	1.4	0.6	20.3
S17	312500	5471600	0.002	<0.1	1.7	2.2	5	1.2	49	2.9	1.4	51.1
S12	312400	5471850	0.006	0.1	2.5	3	12	2.8	38	4.7	1.2	8.9
S11	312400	5471750	0.023	<0.1	0.7	1.8	7	1.5	30	1.4	0.8	33.9
S10	312400	5471700	0.007	<0.1	2	2.4	4	0.9	51	2.3	1.5	30.8
S9	312400	5471650	0.02	<0.1	1.7	1.6	3	1.5	30	1.3	1.6	66.2
S8	312400	5471600	0.005	<0.1	0.8	2.8	6	<0.5	68	2.7	0.6	14.6
S16	312450	5471850	0.018	0.1	17.6	6.5	52	9.4	896	23.2	10.2	34.3
S15	312450	5471800	0.001	<0.1	0.9	1.9	8	1	55	1	0.6	28.5
S14	312450	5471700	0.001	<0.1	0.6	1.5	4	0.9	19	0.7	<0.5	4.2
S13	312450	5471650	0.024	<0.1	0.7	1.3	4	1.1	31	0.9	<0.5	8.1
S20	312550	5471600	0.003	<0.1	0.7	1.9	9	<0.5	53	0.9	1.1	11.7
S19	312550	5471550	0.005	<0.1	0.8	2.4	2	1.5	11	1.7	0.6	23.6

Rock	Au ppm	Ag ppm	Cu ppm	Pb ppm	Zn ppm	As ppm	Mn ppm	Ni ppm	Co ppm	Fe %	Ca %	S %
17thun-1	0.003	<0.1	3.4	3.3	18	1.4	764	0.8	4.4	2.08	2.95	0.13
17thun-2	0.001	<0.1	1.5	2.5	12	6.6	901	3.7	4.3	1.99	4.19	0.04
17thun-3	0.014	<0.1	1	2.3	13	1	1030	<0.5	4.1	2.59	4.28	0.64
17thun-4	0.004	<0.1	2.8	3.3	31	0.9	598	<0.5	3.8	1.43	1.63	0.14
17thun-5	0.002	<0.1	3.8	3.3	63	4.4	1765	98.6	22.2	5.61	6.39	0.03
17thun-6	0.002	<0.1	4.4	8	32	6.8	489	1.9	7.5	9.51	1.24	9.08
17thun-7	<0.001	<0.1	1.2	0.7	31	0.9	524	1.6	10.6	2.94	0.94	0.06
17thun-8	0.006	<0.1	1.1	5.6	27	<0.5	1800	<0.5	3.1	2.01	6.92	0.19

300 m





Oakley Ventures Inc Thunderbird Au Project

**Fig 12 Junction Zone Proposed DDH Collar Location
 NTS 092F 05/E, BCGS 092F.032, Alberni Mining Division
 After Hudson, 1989 (Orequest Consulting, AR 19,374)**

○ Proposed Diamond Drill Hole
 ↓ (-45 & -60 degree dip, 250 m depth)