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Ministry of Energy and Mines
BC Geological Survey

Assessment Report
Title Page and Summary

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

TOTAL COST: $12,017.65

AUTHOR(S): Jacques Houle, Rebecca Stirling

SIGNATURE(S):

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S):

YEAR OF WORK: 2010

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 4809266 / November 11, 2010

PROPERTY NAME: Hawthorn Lake

CLAIM NAME(S) (on which the work was done): 705884, 708282, 708302, 708342, 722142, 820102, 820122, 831192, 831193, 831569
831570, 833438, 833440, 833443, 833444, 833445

COMMODITIES SOUGHT: Copper, Molybdenum, Gold

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN:

MINING DIVISION: Alberni

NTS/BCGS: 092F/02W

LATITUDE: 49 ° 03 ' " **LONGITUDE:** 124 ° 48 ' " **(at centre of work)**

OWNER(S):
1) Bruce Geleynse
2)

MAILING ADDRESS:
PO Box 923
Ucluelet, B.C. V0R 2A0

OPERATOR(S) [who paid for the work]:
1) Chile Gold & Copper Inc.
2)

MAILING ADDRESS:
11904-113 Ave NW
Edmonton, Alberta T5G 2C2

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
Jurassic, Triassic, granodiorite, volcanics, quartz-sulphide-chlorite veins

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:

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TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock	16 samples for multi-element and gold	705884, 820122, 831569, 833438	$685.68
Other	stream moss mat - 28 samples for multi-el. & Au	all claims	$1,025.98
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying	44 samples	all claims	$5,561.64
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	Research and reports		$4,744.35
		TOTAL COST:	$12,017.65

TECHNICAL REPORT

ON THE

HAWTHORN LAKE PROPERTY 2010

Hawthorn Lake Property: N.T.S. 092F/02W
LATITUDE *49^{0} 03' N,* LONGITUDE *124^{0} 48' W*
UTM ZONE 10 *5435000N 368000E*

Alberni Mining Division
British Columbia

Prepared for:

Chile Gold & Copper Inc.
11904-113 Ave NW
Edmonton, Alberta
Canada T5G 3C2

Co-authored by:

Jacques Houle, P.Eng.
and
Rebecca Stirling, B.Sc.

November 15, 2010

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SUMMARY

The Hawthorn Lake Property, 25 kilometres south of Port Alberni in south-central Vancouver Island, British Columbia, underwent a preliminary exploration program in September 2010, consisting of prospecting, stream moss mat and outcrop sampling and geochemistry. The Property hosts no previously documented MINFILE occurrences, but has appropriate geology, newly discovered copper occurrences and the potential to host both Porphyry Cu-Mo-Au and Cu-Ag Quartz Vein mineral deposit types. Chile Gold & Copper Inc. has an option to purchase 100% interest in the 16 contiguous mineral tenures held by Mr. Bruce Geleynse, which constitute the 3,500 hectare Hawthorn Lake Property.

The immediate area south of Port Alberni is mainly underlain by Triassic mafic volcanic rocks of the Karmutsen Formation of the Vancouver Group. These are intruded by large granodiorite sills, stocks and dikes of the Jurassic Island plutonic suite. Local inliers consist of Triassic Quatsino Formation sedimentary limestones of the Vancouver Group overlain by Jurassic volcanics of the Bonanza Group, and sandstones, shales and conglomerates of the Cretaceous Nanaimo Group. The Hawthorn Lake Property is underlain by Karmutsen mafic volcanics and Jurassic Island Intrusive Suite granodiorite.

Two primary target areas have been identified on the Hawthorn Lake Property. A single phase, three component mineral exploration program totaling $150,000 is recommended for the Property. This includes initial grid-based soil sampling and geological mapping in the Northeast Target Area, which hosts known copper-bearing quartz-sulphide-chlorite shear veins exposed in outcrop. Prospecting and follow-up stream moss mat sampling in both the Northeast and Southwest Target Areas are also recommended, followed up by mechanized trenching, mapping and sampling in both areas.

INTRODUCTION

The authors were retained in September, 2010 by Chile Gold & Copper Inc. to design and implement a prospecting and stream moss mat program, and to complete a technical report of the work and the property to the standards and guidelines of National Instrument 43-101. The main purposes of the report prepared for Chile Gold & Copper Inc. are to make recommendations for further exploration and to help obtain financing for exploration and development.

The sources of information and data contained in, or used in preparation of this report is based on the Qualified Person’s personal knowledge of the area, on a review of data from previous work in the surrounding area, and from published data including that from the British Columbia Ministry of Energy, Mines and Petroleum Resources and the Geological Survey of Canada. All information used to prepare this report is contained in the References section of the report.

Jacques Houle, P.Eng., an independent qualified person as defined by National Instrument 43-101, is independent of the issuer Chile Gold & Copper Inc. The authors have read NI 43-101, Companion Policy 43-101.CP, and Form 43-101F1. Mr. Houle visited and worked on the Property on Sept. 14, 2010 for the purpose of locating, examining and sampling exposed mineralization. Co-author Rebecca Stirling, B.Sc. managed the 2010 prospecting and stream moss mat sampling field program from Sept. 21 to Sept. 25, 2010.

RELIANCE ON OTHER EXPERTS

Ms. Stirling managed the 2010 field program under the supervision of Qualified Person Jacques Houle, P.Eng. No reliance on other experts was required.

PROPERTY DESCRIPTION AND LOCATION

The Hawthorn Lake Property is comprised of 16 mineral claims covering about 3,534 hectares with no previous documented MINFILE occurrences. Refer to Figure 1 and Table 1 showing the property location map and the claim status list, respectively. The Hawthorn Lake Property is located in NTS 092F02W, and is situated in the Alberni Mining Division. The Property is centred approximately 20 kilometres south of Port Alberni at latitude 49^0 03' north, longitude 124^0 48' west, or at UTM Zone 10N 5435000 north 368000 east. The Property is 100% owned by Bruce Geleynse, Free Miners License No. 109364, subject to an option agreement with Chile Gold & Copper Inc. to purchase 100% interest of all tenures listed in Table 1, which constitutes the Hawthorn Lake Property.

Table 1: Hawthorn Lake Property Mineral Tenures as of November 11, 2010

Tenure Number	Claim Name	Owner	Tenure Type	Tenure Sub Type	Map Number	Issue Date	Good To Date	Status	Area (ha)
705884	LIZZY	109364 (100%)	Mineral	Claim	092F	2010/feb/10	2012/may/15	GOOD	529.0787
708282	LIZZY 2	109364 (100%)	Mineral	Claim	092F	2010/feb/26	2012/may/15	GOOD	21.1599
708302	LIZZY 3	109364 (100%)	Mineral	Claim	092F	2010/feb/26	2012/may/15	GOOD	42.3149
708342	LIZZY 4	109364 (100%)	Mineral	Claim	092F	2010/feb/26	2012/may/15	GOOD	63.5063
722142	LIZZY5	109364 (100%)	Mineral	Claim	092F	2010/mar/11	2012/may/15	GOOD	21.1567
820102	LIZZY5	109364 (100%)	Mineral	Claim	092F	2010/jul/16	2012/may/15	GOOD	528.9843
820122	LIZZY6	109364 (100%)	Mineral	Claim	092F	2010/jul/16	2012/may/15	GOOD	486.7798
831192	LIZZY8	109364 (100%)	Mineral	Claim	092F	2010/aug/06	2012/may/15	GOOD	190.5267
831193	LIZZY9	109364 (100%)	Mineral	Claim	092F	2010/aug/06	2012/may/15	GOOD	84.6829
831569	HI-WATCHS	109364 (100%)	Mineral	Claim	092F	2010/aug/16	2012/may/15	GOOD	529.2539
831570	HI-WATCHS1	109364 (100%)	Mineral	Claim	092F	2010/aug/16	2012/may/15	GOOD	105.8458
833438	HI-WATCHA 3	109364 (100%)	Mineral	Claim	092F	2010/sep/13	2012/may/15	GOOD	529.4029
833440	HI-WATCHA 4	109364 (100%)	Mineral	Claim	092F	2010/sep/13	2012/may/15	GOOD	211.8118
833443	HI-WATCHA 5	109364 (100%)	Mineral	Claim	092F	2010/sep/13	2012/may/15	GOOD	63.5189
833444		109364 (100%)	Mineral	Claim	092F	2010/sep/13	2012/may/15	GOOD	84.6182
833445	HI-WATCHA 6	109364 (100%)	Mineral	Claim	092F	2010/sep/13	2012/may/15	GOOD	42.3145
Totals	**16 claims**								**3534.96**

The surface rights over the mineral claims of the Hawthorn Lake Property are held by the B.C. government as crown land. Crown timber licenses over much of the Property are held by Western Forest Products. Immediately northeast of the Property, situated along a major tributary of the Franklin River, is a No Staking Reserve that Hawthorn Lake Property overlaps.

The Hawthorn Lake Property is bounded by the Alberni Inlet to the west, No Staking reserves to the north and east, a gravel logging road to Bamfield to the south, and mineral claims 100% owned by Davis Mining & Exploration Corp. hosting the Kitchener past producer adjacent to the southwest. The Property surrounds Lizard Pond, which drains north off the Property into the Franklin River, and Hawthorn Lake, which drains south off the Property into a creek leading to the Alberni Inlet. Environmental diligence needs to be maintained by any exploration, development or mining project being contemplated in the area.

Similar to elsewhere in British Columbia, no permit is required for non-mechanized exploration, but a valid permit is required to undertake any mechanized work on the Hawthorn Lake Property. Such permits are issued by the Inspector of Mines, Health and Safety Branch, Mining and Minerals Division, B.C. Ministry of Energy Mines and Petroleum Resources. This requires the submission of a Notice of Work and Reclamation Program Application, which takes approximately one month to process, but commonly takes longer due to delays in receiving referral responses from local First Nations Bands. The preliminary exploration work completed in 2010 required no permits.

It is legislated under section 19 of the Mineral Tenure Act for explorationists working in British Columbia to notify anyone with overlapping tenure interest prior to undertaking any exploration programs. In the case of the Hawthorn Lake Property, this includes logging company Western Forest Products in Port Alberni, B.C., and local First Nations communities, including Hupacasath First Nations, Ucluelet First Nations, Huu-ay-aht First Nations, and Tseshaht First Nations. Any damages to the surface rights inflicted by the mineral tenure holder while undertaking exploration or mining activities must be compensated.

ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

The Hawthorn Lake Property is located 15 to 25 kilometres south of Port Alberni, British Columbia, along the eastern shore of Alberni Inlet and 115 kilometres west of Vancouver. Access to the Property is south from Ship Creek Rd, onto a well maintained 2-wheel drive all-weather logging road from Port Alberni (to Bamfield) for approximately twenty kilometres to reach the southeast corner of the Property, or 45 minutes driving time from Port Alberni.

The terrain over the properties consists of moderately steep-sided mountains covered by prime timber, second-growth forest and clear-cut logged areas. The areas of lower elevation along the creeks, rivers and coastlines generally have gentle relief and are free of snow during the winter. The climate is cool and wet, with windstorms in late fall. There are typically hot, dry spells during the summer when exploration work may be curtailed because of forest fire hazard. The western limit of the Property is bounded by the tidewaters of Alberni Inlet.

Port Alberni is a resource-based community of about 17,000 people with a sheltered deep sea port accessing the Pacific Ocean, and a paved highway accessing the rest of Vancouver Island. An underutilized railway network also exists between all the major communities on the island, including Port Alberni. Western Forest Products is actively logging portions of the Property area and manages timber rights overlying nearly all of the Property mineral tenures under the Tree Farm License 44. Western Forest Products and its sub-contractors maintain a logging road network that provides access to the Hawthorn Lake Property. There are four aboriginal bands including Tseshaht First Nations, Huu-ay-aht First Nations, Ucluelet First Nations and Hupacasath First Nations that have stated interests and unsettled land claims for traditional territories that cover portions of the Property.

HISTORY

No MINFILE occurrences exist on the Hawthorn Lake Property, and no records exist of assessment work having been filed on the area covered by the Property.

GEOLOGICAL SETTING

Vancouver Island consists of three tectonic terranes, the Wrangellia, Pacific Rim and Crescent terranes. Wrangellia covers the northern 90% of the island, which also extends to the coastal mainland and the Queen Charlotte Islands. The Pacific Rim and Crescent terranes each cover about 5% of the south end of Vancouver Island and are thought to represent exotic tectonic plates, which collided with and became attached to Vancouver Island. Narrow slivers of the Pacific Rim terrane also exist along the southwest coast of the island. The terrane boundaries are marked by pronounced, east-west trending and north-dipping regional fault structures that contain major river systems on the southern part of the island.

The rocks that make up Vancouver Island range in age from Palaeozoic to Pliocene and represent three major volcano-sedimentary events (Palaeozoic, Triassic and Jurassic), one major sedimentary event (Cretaceous) and four major intrusive events (Triassic, Jurassic, Tertiary and Miocene/Pliocene). Major structural features consist of northwest-trending, north-south trending and north-east trending faults and folds. This includes many northwest-trending, low-angle thrust faults and fold axes. The oldest rocks are generally the most structurally disrupted, and areas of high metamorphic grades occur within and locally near the Pacific Rim terrane in the south and along the southwest coast of the island.

Port Alberni is located in Wrangellia in south-central Vancouver Island and is surrounded by some of the most varied and structurally complex geology on the island. Port Alberni also sits between two major uplifts exposing the island's oldest Palaeozoic volcano-sedimentary rocks of the Sicker and Buttle Lake Groups, the Cowichan Uplift to the southeast and the Myra Falls Uplift to the northwest. Small stocks of the Triassic Mount Hall Gabbro suite occasionally intrude the Palaeozoic rocks southeast of Port Alberni.

The immediate Port Alberni area is mainly underlain by Triassic mafic volcanic rocks of the Karmutsen Formation of the Vancouver Group. These are commonly intruded by large granodiorite sills, stocks and dikes of the Jurassic Island plutonic suite. Local inliers consist of Triassic Quatsino Formation sedimentary limestones of the Vancouver Group that are overlain by Jurassic volcanics of the Bonanza Group, sandstones, shales and conglomerates of the Cretaceous Nanaimo Group. All units are occasionally intruded by small quartz diorite stocks and dikes of the Tertiary-Eocene Mount Washington plutonic suite. The geology of the Hawthorn Lake Property is taken from B.C. Ministry of Energy and Mines MapPlace appears in Figure 2, along with documented MINFILE occurrences and ARIS assessment reports for work done and filed in the area. Figure 3 shows the residual aeromagnetic response and regional geochemical survey data for copper and molybdenum, also taken from MapPlace. The geology legend and unit descriptions for the rock types in the area of the Hawthorn Lake Property is also taken from MapPlace, and is as follows:

- Early-Middle Jurassic Island Intrusive granodiorites (EMJIgd)
- Lower Jurassic Bonanza Group LeMare Lake calc-alkaline volcanics (lJBca)
- Upper Triassic Bonanza Group Parson Bay volcaniclastics (incl. in IJBca)
- Upper Triassic Vancouver Group Quatsino Formation limestones (uTrVQ)
- Upper Triassic Vancouver Group Karmutsen Formation volcanics (uTrVK)

DEPOSIT TYPES

The highly complex geology of Vancouver Island and the Port Alberni area specifically has resulted in the discovery of diverse mineral deposit types, containing varied metallic, industrial and energy minerals. According to the B.C. Ministry of Energy Mines and Petroleum Resources' MINFILE database, mineral deposits of economic significance on Vancouver Island are as follows:

- Porphyry copper-molybdenum-gold-silver
- Sedimentary coal
- Volcanic massive sulphide copper-zinc-lead-silver-gold
- Copper-gold-silver-iron skarns
- Gold-silver-copper quartz veins
- Sedimentary limestone

Other potentially significant mineral and energy deposit types in the region include magmatic copper-nickel-PGE deposits, volcanic redbed copper-silver deposits, dimension stone, coal bed methane and offshore oil and gas.

The Southwest Region of British Columbia region hosts one large underground base metal mine, one small underground thermal coal mine, and twenty major industrial mineral and aggregate quarries. Both underground mines are on Vancouver Island. Of the eight major exploration projects in the region in 2009, five were on Vancouver Island. The largest exploration project in 2009 was Raven Coal, operated by the Comox Joint Venture, led by Compliance Energy Corporation. Two large exploration projects on Vancouver Island are the Mineral Creek gold project located 15 kilometres northeast of Hawthorn Lake Property, and the other project is a peripheral drill program at the Myra Falls Base Metal Mine. Two smaller scale projects of significance include the Bonanza-Sitka gold project north of Port Hardy, and the construction of an access road at Catface Copper on the west coast of Vancouver Island. Table 2 outlines resources on Vancouver Island from developed prospects and past producers, and is not indicative of the mineralization on Hawthorn Lake Property.

Table 2: Selected Developed Prospects and Past Producers Documented on Vancouver Island

Vancouver Island Deposit	MINFILE Class	Deposit Type	Million Tonnes	Cu (%)	Pb (%)	Zn (%)	Mo (%)	Au (g/t)	Ag (g/t)	Fe (%)
Benson Lake	Past Producer	Cu skarn	0.064	1.92				0.97	7.59	
Blue Grouse	Past Producer	Cu skarn	0.249	2.73					10.1	
Brown Jug	Dev. Prospect	Fe skarn	1.000							35.0
Brynnor	Past Producer	Fe skarn, Tailings	4.481							67.2
Caledonia	Dev. Prospect	Pb-Zn skarn	0.068	6.10	0.60	7.45		0.34	704	
Crown Prince	Dev. Prospect	Fe skarn	0.067							50.0
Glengarry	Past Producer	Fe skarn	0.057							40.0
Hep	Dev. Prospect	Por.Cu-Mo-Au	0.045	0.80						
Hushamu	Dev. Prospect	Porphyry Cu +/- Mo +/- Au; Epithermal Au-Ag-Cu: high sulphidation; Subvolcanic Cu-Ag-Au (As-Sb)	173.2	0.27			0.01	0.34		

Vancouver Island Deposit	MINFILE Class	Deposit Type	Million Tonnes	Cu (%)	Pb (%)	Zn (%)	Mo (%)	Au (g/t)	Ag (g/t)	Fe (%)
Indian Chief	Past Producer	Cu skarn; Fe skarn	0.074	1.50				0.30	23.2	
Iron Chief	Dev. Prospect	Fe skarn	0.181							72.0
Iron Crown	Past Producer	Fe skarn	2.176							58.6
Iron Hill	Past Producer	Fe skarn	3.657							54.4
Iron Mike	Past Producer	Fe skarn	0.169							66.8
Iron Mountain	Dev. Prospect	Fe skarn	0.250							50.0
Island Copper	Past Producer	Porphyry Cu +/- Mo +/- Au	363.4	0.34			0.01	0.10	0.81	
Little Lake	Dev. Prospect	Fe skarn	2.846	0.03						47.8
Merry Widow	Past Producer	Fe skarn; Polymetallic veins Ag-Pb-Zn+/-Au	3.372							49.7
Old Sport	Past Producer	Cu skarn	2.621	1.57				1.47	4.48	19.3
Pilgrim	Dev. Prospect	Pb-Zn skarn	0.096			8.86		0.03	32.6	
Red Dog	Dev. Prospect	Por.Cu-Mo-Au	25.00	0.44			0.01	0.44		
Rob	Past Producer		0.005	1.33						
Shamrock	Dev. Prospect	Fe skarn	0.180							26.0
Smith Copper	Dev. Prospect	Pb-Zn skarn	0.084	1.69	3.70	12.5			64.4	
Steele Creek	Past Producer		0.005	2.48					8.72	
Yreka	Past Producer	Cu skarn	0.145	2.71				0.34	31.2	

Most of the mineral resource estimates quoted in MINFILE and displayed in Table 2 above were compiled prior to the implementation of NI-43-101 and CIM guidelines. However, many of these developed prospects have changed ownership in recent times, and are being reviewed by their new owners.

Hawthorn Lake Property is using the past producing Island Copper Mine combined with the developed prospects Hushamu, Red Dog and Hep as a Vancouver Island mineral deposit model (Porphyry Cu-Mo-Au) for the Hawthorn Lake Property. Both the Island Copper district and the Port Alberni district are underlain by rocks of many of the same formations and host mineralization of similar types. Major tectonic structures are also present in both areas.

The northeast portion of the Hawthorn Lake Property partially covers a large (5 by 2 km.) N-S elongated pendant of Triassic Karmutsen Formation mafic volcanics which is surrounded by, and probably underlain by, a much larger 10-15 kilometres wide dike-shaped body of Jurassic Island Intrusive Suite granodiorite. The mafic volcanic pendant is shattered and hornfelsed, particularly along the intrusive margin, and often contains a fine network of probable zeolite stringers, and occasionally contains intrusive dikes 5 to 15 metres in thickness. Locally, the volcanics are intensely brecciated, with chlorite and/or epidote alteration.

MINERALIZATION

Several sites within an area of 1 square kilometre in the mafic volcanics in the Northeast Target Area of the Property contained thin (0.05 to 0.5 metre thick) quartz-sulphide-chlorite shear veins exposed mainly in logging road cuts over short (up to 10 metre) strike lengths. The veins have variable strike orientations, are generally steeply-dipping, and occasionally splay into diverging veins. The veins contain occasional short (0.5 to 1 metre) long dilation zones with clots of sulphides including chalcopyrite, pyrite, bornite and possibly sphalerite. Secondary malachite is common in road cut exposures along the shears containing the veins, and most intense in the sulphidic dilation zones. The veins are also visible in natural outcrops as vuggy and sheared quartz, probably due to weathering of the sulphide minerals.

One outcrop was sampled in the Southwest Target Area of the Property. The outcrop was blasted during the construction of the old rail-bed along the Alberni Canal and contains various sized sulphide-bearing veins (less than 1 metre thick) exposed over 30 metres in outcrop with variable strike orientations. The veins contain pyrite and chalcopyrite with minor bornite and possible sphalerite. The outcrop is very weathered and rusty.

EXPLORATION

In the September 2010 field program, Qualified Person Jacques Houle, P.Eng. accompanied experienced prospector Bruce Geleynse to the Property. Seven sites with copper mineralization exposed in road cuts or outcrops were visited and selectively grab sampled in duplicate, located by GPS, and marked in the field with metal tags and flagging tape. R. Stirling, B.Sc, and B. Geleynse subsequently conducted a stream moss mat sampling program and prospected streams and road cuts with suspected copper mineralization over the accessible areas of the Property. During the field program, 16 rock samples were taken and 28 moss mat samples were taken in total for geochemical analysis. Figure 4a and 4b shows the location of all rock and stream moss mat sample sites taken on the Property, respectively. Each field site was GPS located, tagged with a unique identifying number and flagged for future visits. All field data recorded on pre-printed forms was input nightly onto a MS Excel spreadsheet and appear in Appendix 1. Included are separate sample data tables for each media including locations, descriptions (only for rocks), geochemistry, and summary tables with significant geochemistry values highlighted for rocks and moss mats. Analytical certificates from the rock and moss mat samples appear in Appendix 2.

Secure custody was maintained for samples from the Hawthorn Lake Property. From the time the samples were taken in the field to the receipt of final analyses, all samples were in the custody of one of the authors.

Mr. Houle used Geosoft's Geochemistry software to plot and contour rock and moss mat geochemistry data on property sample location scale maps with UTM grid backgrounds. The Property rock sample maps show posted sample numbers and colour range contoured values and numerical values for 5 select elements: Au, As, Co, Cu, Mo, which appear as Figures 5a - 5e respectively. The Property moss mat sample maps show posted sample numbers and colour range contoured values for the same 5 select elements: Au, As, Co, Cu, Mo, which appear as Figures 6a - 6e respectively. From these, Rock and Stream Moss Mat Anomaly/Target maps were generated and appear as Figures 7a and 7b, respectively.

DRILLING

There is no evidence of any diamond drilling programs having been conducted on the Property.

SAMPLING METHOD AND APPROACH

Rock Sampling

The rock sampling program was conducted by the authors and Mr. Geleynse. Sixteen select rock grab samples were taken from mineralized outcrop exposures in logging road or rail-bed cuts or stream channels for geochemical analyses and microscopic examination. Figure 3 shows rock sample locations on the Property. All rock samples were taken in duplicate pairs using a rock hammer, geotul, or small sledge hammer and a hardened steel moil, and placed in poly bags secured with cable ties each with one part of identically numbered 3-part tyvek tags. Grab sample pairs consisted of similar, 1-5 kilogram rock samples taken from the same outcrop location, one for geochemical analysis and one as a reference specimen. At each location, a GPS reading was taken, and a metal tag inscribed with the same sample number was attached to a nearby tree or shrub using a cable tie and flagged with fluorescent pink ribbon. Sample locations, outcrop descriptions and sample measurements and orientations were described on pre-printed field forms for systematic data collection. The plastic bags containing rock samples were collected in poly rice bags and transported daily to the temporary field accommodations in Port Alberni and secured in a locked vehicle until the end of the field program. The samples intended for geochemical analysis were collected in a poly rice bag and transported to the bus depot in Nanaimo by J. Houle, and shipped via Greyhound Bus Parcel Express to ALS Chemex Lab's Vancouver facility for preparation and analysis. The reference specimen rock samples were kept secure at all times and cut at the home/office of Jacques Houle, P.Eng. using a rock saw. Samples were then examined using a binocular microscope and detailed descriptions were recorded. Reference specimens have been retained for future use.

Stream Moss Mat Sampling

Stream moss mat sampling was completed over the Hawthorn Lake Property by R. Stirling and B. Geleynse in the 2010 field program under the direction of Jacques Houle, P.Eng. Sample sites were selected on as many as possible accessible stream locations on the Property using a calibrated, hand-held Garmin GPS for 3-D location control. Figure 4b shows moss mat sample locations distributed over the Property. At each of the 28 sample sites, sediment-laden moss was gathered by ungloved hands, to prevent contamination. Moss samples were collected from the surfaces of boulders or outcrop across the stream bed between high and low water marks, and site characteristics recorded systematically on pre-printed forms. The timing of the sampling program coincided with the lowest stream flow conditions of the year, allowing safe and effective access to the stream beds, some of which were actually dry. At each of the sample sites where water was available stream water pH readings were taken using a calibrated, hand-held digital pH meter in order to establish local acid/base characteristics, which could affect the stream water's metal carrying capacities. All sample sites were flagged using florescent pink flagging tape and tagged with metal tags inscribed with the sample number affixed as close as possible to the sample site. The moss mat samples were taken in duplicate, and both sample pairs were tied together and sent to ALS Chemex Labs in North Vancouver for preparation and analysis.

SAMPLE PREPARATION, ANALYSES AND SECURITY

All rock and stream moss mat samples taken from the Hawthorn Lake Property and intended for analyses were kept secure under the supervision of the authors, from the time they were taken from the temporary field accommodations to the time they were sent from Nanaimo via bus parcel express to ALS Chemex, independent commercial laboratory, in North Vancouver. ALS Chemex is ISO 9001:2000 certified. Sample security was maintained at all times during the field program as detailed in the Exploration section and Sampling Method and Approach section.

The initial 7 rock samples were taken by Mr. Houle. The remaining 9 rock samples and 28 stream moss mat samples from the Hawthorn Lake Property were taken by Ms. Stirling, and Mr. Geleynse. The 16 reference rock specimen samples intended for cutting and microscopic observation were cut by the authors at the home/office of J. Houle. The duplicate rock samples sent for analysis were maintained in strict custody at all times. There was no reason to believe that either sampling integrity or security was jeopardized at any time during the project.

Rock samples were finely crushed, pulverized and split before weighing. Then a 51 elements by aqua regia digestion and a combination of ICP-MS and ICP-AES was performed. This procedure quantitatively dissolved base metals for the majority of geological materials. Major rock forming elements and more resistive metals were only partially dissolved. Determination of trace level gold was by solvent extraction. Detailed analytical procedures appear in Appendix 3.
The analytical process for stream moss mats is similar; however, sample preparation differs. Samples were first dried in drying ovens at a maximum of 60 degrees Celsius before screening the sediment.

Duplicates and blanks were run to check analytical and testing procedures in addition to the internal QA/QC measures employed by ALS Chemex. These procedures are considered adequate for the non-representative rock samples and moss mat samples taken to date. ALS Chemex detailed Minerals Quality Control information sheet is also included in Appendix 3.

DATA VERIFICATION

Everything done in the field can be re-located and verified. All 16 select rock grab samples were taken in duplicate with reference samples cut into slabs and analyzed by the authors with a microscope. Generally, the correlation was very good between visual estimates of minerals and major elements iron and copper in reference specimens and the results received from the corresponding sample pairs sent for analyses. Specimens have been retained of all rock samples and have been securely stored.

ADJACENT PROPERTIES

Adjacent properties include the Kitchener Property to the southwest and the Eagle Rock Quarry Project to the northwest of the Hawthorn Lake Property. The Kitchener Property (MINFILE 092F 138) is 100% owned by the Davis Mining and Exploration Corp. The Kitchener Property (past producer) covers a copper skarn deposit that produced 168 tonnes with 3% copper, 3.89 g/t silver, and 0.74 g/t gold reported. A construction aggregate quarry (Eagle Rock Quarry Project MINFILE 092F 567) is proposed on the west side of the Alberni Inlet. Mineral resources include 238.0 millions of tonnes measured, 448.9 millions of tonnes indicated, and 23.0 millions of tonnes of inferred construction aggregate. The property is 100% owned by Polaris Minerals Corporation Ltd. Environmental Assessment certification and a feasibility study were completed in 2003 and an NI 43-101 Technical Report was submitted in 2005.

Nearby properties, Macktush to the northwest and Nahmint to the southwest, were both explored by Qualified Person Jacques Houle, P.Eng. as an independent consultant for their respective owners. Macktush (MINFILE 092F 012) 100% owned by G4G Resources Ltd., is a developed prospect with indicated mineral resources on several Cu-Ag Quartz Vein deposits. An airborne geophysical survey (2005) and two documented drilling programs (2005, 2006) have been conducted on the property. The Nahmint Property (including Three Jays MINFILE 092F 140) is 100% owned by Nahminto Resources Ltd. As a past producer 1,981 tonnes were mined at Three Jays averaging 7.5 % copper, 37.96 g/t silver and 0.97 g/t gold between 1898 and 1902. In 2008 and 2009, prospecting, mapping, soil grid sampling, stream moss mat sampling, and ground magnetic surveys were conducted in the Three Jays area at Nahmint.

Mineral Creek Property, formerly known as the Debbie Property was a significant gold exploration project in 2009. It is located 15 kilometres northeast of the Hawthorn Lake Property. The Mineral Creek Property is held by Bitterroot Resources Ltd, who has not yet updated their historic mineral resource estimate of 471,956 tonnes mined with 6.23 g/t gold recovered in the MINFILE records.

MINERAL PROCESSING AND METALLURGICAL TESTING

No mineral processing or metallurgical testing has been conducted on any of the samples of copper mineralization taken from the Hawthorn Lake Property.

MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

No mineral resource or mineral reserve estimates have been made for the mineralized zones located on the Hawthorn Lake Property.

OTHER RELEVENT DATA AND INFORMATION

No new metal mining and milling operation has been permitted on Vancouver Island since the 1970's, and mineral exploration activity on the island has increased over the last ten years. The only currently operating metal mining and milling operation on Vancouver Island is Myra Falls, which faces constant struggles against anti-mining organizations. If one or more major mineral deposits are discovered on the Property, the installation of a large mining and processing facility in the Port Alberni area has an unknown social and environmental context.

Natural disasters such as earthquakes and related tsunamis occur periodically on Vancouver Island. Port Alberni is susceptible to tsunamis due to the shape of the Alberni Inlet, as evidenced by the last significant tsunami that impacted the community in the 1960's. Such a tsunami could adversely impact exploration and mining operations near tidewater if located along the Alberni Inlet, which bounds the western side of Hawthorn Lake Property. This is a risk that can be mitigated by standard insurance policies, if and when deemed appropriate.

INTERPRETATIONS AND CONCLUSIONS

Rock Sample Results

- 16 samples collected and analyzed in 2010 with GPS coordinates (geo-referenced)
- 10 (62%) of samples had copper values above 500 ppm, of which 4 (25%) contained high copper values exceeding 1%; copper occurred mainly as chalcopyrite and bornite
- High copper samples generally contained 10-50% iron
- High copper samples often contained elevated values of silver (>5 ppm), cobalt (>125 ppm), gallium (>10 ppm), and selenium (>25 ppm), zinc (>250 ppm)
- High copper samples occasionally contained elevated values of arsenic (>150 ppm), molybdenum (>10 ppm), sulphur (>10%), and tellurium (>5 ppm)

The majority of rock samples were taken in the Northeast Target Area of the Property. These samples had the highest values of copper, silver, gold and zinc in rock samples taken on the Property to date, as well as elevated values of arsenic and molybdenum. Two samples were taken in the Southwest Target Area of the Property from the same outcrop, and had the highest values of arsenic and cobalt in rock samples taken on the Property to date, as well as elevated values of copper, molybdenum and gold. The select rock grab samples taken in 2010 should not be assumed as representative of the in-situ grades, but rather as character samples of the local mineralization exposed.

Stream Moss Mat Sample Results

- 28 samples collected and analyzed in 2010, with stream pH values collected for 25 of 28 stream sample sites
- 7 (25%) contained elevated values in at least one of the target or indicator metals: copper (>100 ppm), gold (>0.7 ppm), molybdenum (>4.9 ppm), arsenic (>23 ppm), or cobalt (>60 ppm), using lower thresholds than for rock samples to reflect dilution from mineralized sources
- 1 (3%) contained elevated values in two of the target and indicator metals

The presence of elevated values in metals of potential economic interest and/or indicator elements (gold, copper, molybdenum, arsenic and cobalt) in multiple moss mat samples is considered positive. Highlights are as follows:

- **21257** – in tributary flowing northwest downstream of occurrence on western aspect of Hawthorne Mountain in the northeast corner of the

Property - 0.737 ppm gold. Rock sample 17978 taken on outcrop in creek near this location did not exhibit elevated values of gold

- **21262** – in northwest flowing creek at the northern boundary of the Property – 14.9 ppm molybdenum
- **21264** – in northeast flowing creek leading from showing area on the eastern aspect of Hawthorne Mt. forms confluence with 21265. Sample taken in the no staking reserve, outside the eastern boundary of the Property – 1 ppm gold – highest value of gold in any site. Rock sample 17980 taken on outcrop in creek near this location did not exhibit elevated values of gold. Creek bed contained an abundance of quartz stringers
- **21265** - in dry creek initiating from the eastern aspect of Hawthorne Mt. forms a confluence with 21264. Sample taken in the no staking reserve, outside the eastern boundary of the Property - 23.9 ppm arsenic
- **21273** – in northeast flowing creek, the headwaters of Lizard Lake in the centre of the Property - 6.17 ppm molybdenum
- **21277** – in western flowing creek directly emptying into the Alberni Inlet in the western portion of the Property - 4.92 ppm molybdenum
- **21280** – in a western flowing small creek directly emptying into the Alberni Inlet in the western portion of the Property - 61.6 ppm cobalt, 108.5 ppm copper – only site with two elevated element values

Moss mat geochemistry results documented in this report suggest surficial dispersion from copper-molybdenum-gold mineralization, along with arsenic and cobalt pathfinder elements from one or more sites in the Northeast Target Area. In the Southwest Target Area, cobalt-copper-molybdenum mineralization may be related to known copper skarn mineralization on the adjacent property to the southwest held by Davis Mining & Exploration. The Kitchener past producer yielded an average of 3% copper in168 tonnes mined from a Copper Skarn deposit. The major east-west trending faults could displace favourable host rocks and mineralization between the Davis Property the Hawthorn Lake Property.

The geochemistry results to date are positive and considered to be significant because they are consistent with the geochemical signature of the Porphyry Cu-Mo-Au volcanic type deposit model. The geological setting, both structural and lithological, is also consistent with the Porphyry deposit model. The presence of nearby Copper Skarn, Porphyry Copper and Cu-Ag Quartz Vein deposits confirm this favourable geological setting. The alteration found in rock samples from the Property are also consistent with those found peripheral to porphyry copper deposits elsewhere. The aeromagnetic signature over the Property is suggestive of pervasive alteration as well. The Hawthorn Lake Property is of a sufficient size to host an economic mineral deposit. Further exploration work is clearly warranted on the Property.

RECOMMENDATIONS

Two areas of the Property have been primarily targeted for further exploration, the Northeast and Southwest Targets areas. These two areas are outlined in target exploration maps in Figures 7a and 7b, respectively.

Soil Sampling and Geological Mapping

Soil sampling, geological mapping and mechanized trenching in the Northeast Target Area are warranted, using a GPS-controlled grid. The soil grid area should cover approximately 1.5 kilometres by 1.5 kilometres, requiring from 225 to 900 samples depending on sample spacing. This work can be done during the spring immediately following snow melt.

Prospecting and Stream Moss Mat Sampling

The northwest corner of the Property was not sampled during the preliminary program due to time constraints and access limitations. Two creeks on the northwest corner of the Property have not yet been prospected nor have stream moss mat samples been obtained from them.

Stream moss mat sampling follow-up includes collecting moss mat samples at the upstream confluences of stream sample points that contained elevated geochemistry values of target minerals. Prospecting up the creeks to the upstream confluence is recommended.

Stream moss mat sample sites to be followed-up draining the Northeast Target Area are as follows:

- 21257 (Au)
- 21264 (Au)
- 21265 (As)

Stream moss mat sample sites to be followed-up in the Southwest Target Area are as follows:

- 21277 (Mo)
- 21280 (Cu, Co)

Stream moss mat sample sites to be followed-up in the central portion of the Property are as follows:

- 21262 (Mo)
- 21273 (Mo)

Prospecting along the rail-bed in the western portion of the Property was not performed due to time constraints. Two rock samples were obtained from an outcrop in the Southwest Target Area and yielded elevated values of target minerals copper and molybdenum. The southwest corner is adjacent a past producing property with copper skarn mineralization. Follow up prospecting is recommended for the surrounding area. Stream moss mat sampling and prospecting of creeks is best done during the summer and low creek flow levels.

Trenching

Trenching is recommended to increase exposures of known copper mineralization and anticipated soil geochemistry targets generated in the Northeast Target Area. Additional sites may be generated by the prospecting program in either Target Area or possibly other areas. Detailed geological mapping and chip sampling should be completed in each of the trenched areas prior to reclamation of the trenches. Trenching can be done immediately following the results from the soil sampling and prospecting programs.

Table 3: Phase 1 Proposed Work Program:

Item	Unit Cost	Schedule	Item Cost
Grid-base Soil Sampling and Mapping in the Northeast Target Area	$2,500/day	20 days - Spring	$50,000
Prospecting and Stream Moss Mat Follow-up in the Southwest Target Area and other areas	$2,500/day	20 days - Summer	$50,000
Trenching, Mapping, Sampling in both Target or other areas	$5,000/day	10 days - Summer	$50,000
Totals		**50 days**	**$150,000**

Phase 2 Work Program may follow pending results from Phase 1.

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CERTIFICATE OF QUALIFICATIONS

I, Rebecca Stirling, B.Sc., do hereby certify that:

1. I am periodically supervised as a junior geologist by:
Jacques Houle, P.Eng. Mineral Exploration Consulting
6552 Peregrine Road, Nanaimo, British Columbia, Canada V9V 1P8
2. I graduated with a Bachelor of Science degree in Earth Science and Geography with specialization in Environmental Geology from Vancouver Island University in 2010.
3. I am a member in good standing with the Association for Mineral Exploration British Columbia, the Association of BC Forest Professionals, and the Canadian Institute of Forestry,
4. I have worked under the supervision of a geologist for less than two years.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 (“NI 43-101”) and co-author this report with Qualified Person Jacques Houle, P.Eng.
6. I assisted in the preparation of the technical report entitled “TECHNICAL REPORT ON THE HAWTHORN LAKE PROPERTY 2010” (the Technical Report). I visited the mineral property in September 2010.
7. I have had no prior involvement with the property that is the subject of the Technical Report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all the tests in NI 43-101.
10. I have read National Instrument NI43-101, Companion Policy 43-101.CP and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument, policy and form.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the company public files on their websites accessible to the public of the Technical Report.

Dated this 15th day of November, 2010.

Signature of Co-author

Rebecca Stirling, B.Sc.

Print name of Co-author

CERTIFICATE OF QUALIFICATIONS

I, Jacques Houle, P.Eng., do hereby certify that:

1. I am currently employed as a consulting geologist by:
   Jacques Houle, P.Eng. Mineral Exploration Consulting
   6552 Peregrine Road, Nanaimo, British Columbia, Canada V9V 1P8
2. I graduated with a Bachelor of Applied Science degree in Geological Engineering with specialization in Mineral Exploration from the University of Toronto in 1978.
3. I am a member in good standing with the Association of Professional Engineers and Geoscientists of British Columbia, the Society of Economic Geologists, and the Association for Mineral Exploration British Columbia, and the Vancouver Island Exploration Group; I am also a member of the Technical Advisory Committee for Geoscience B.C.
4. I have worked as a geologist for 32 years since graduating from university, including 5 years as a mine geologist in underground gold and silver mines, 15 years as an exploration manager, 3 years as a government geologist and 7 years as a mineral exploration consultant.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, membership in a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. I am responsible for the preparation of the technical report entitled "TECHNICAL REPORT ON THE HAWTHORN LAKE PROPERTY 2010" (the Technical Report). I visited the mineral property once in September 2010.
7. I have had no prior involvement with the property that is the subject of the Technical Report.
8. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
9. I am independent of the issuer applying all the tests in NI 43-101.
10. I have read National Instrument NI43-101, Companion Policy 43-101.CP and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument, policy and form.
11. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the company public files on their websites accessible to the public of the Technical Report.

Dated this 15th day of November, 2010.

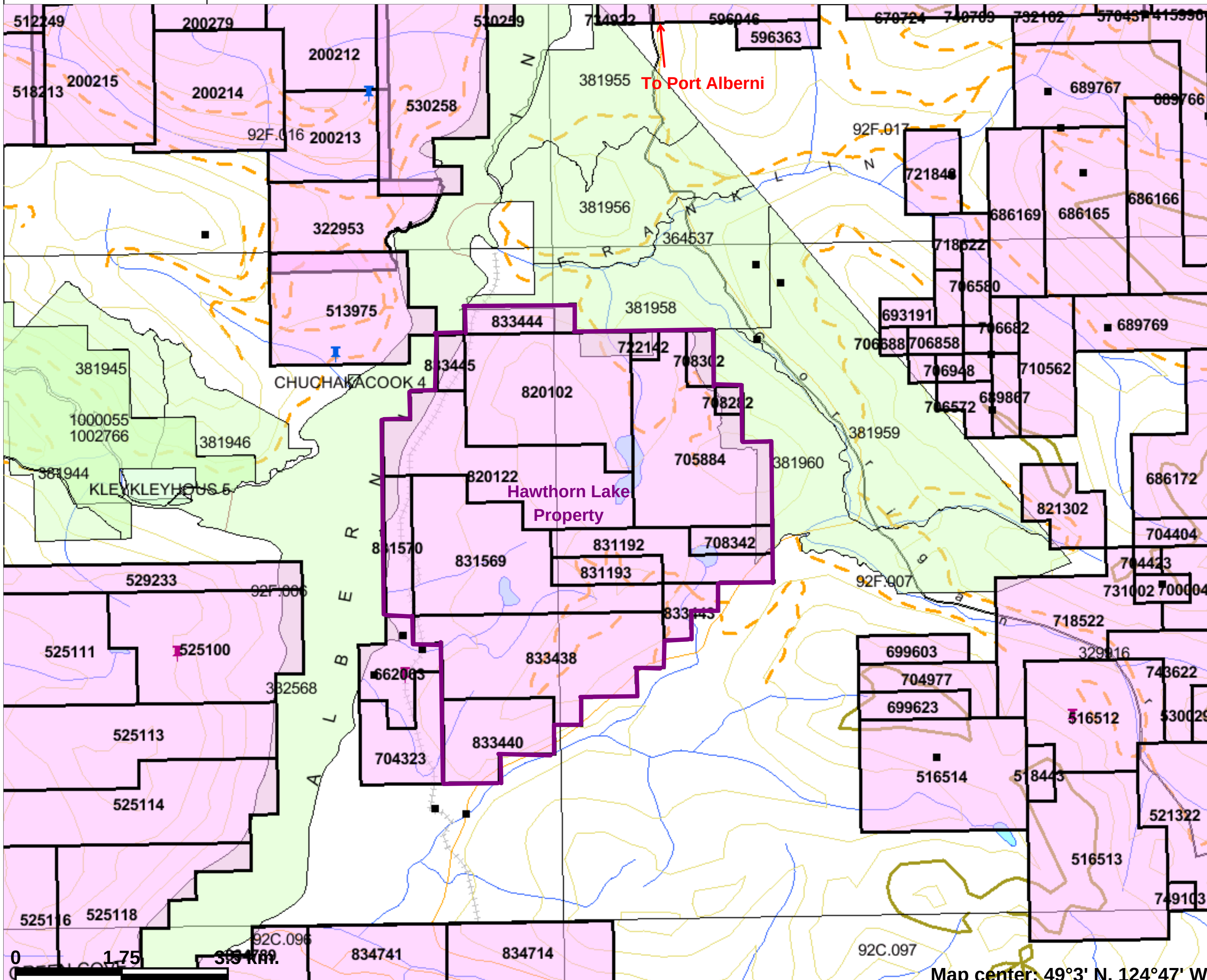
Signature of Qualified Person

PROFESSIONAL ENGINEER
J. HOULE
25107
15/11/2010

Jacques Houle, P.Eng.
Print name of Qualified Person

Seal of Qualified Person

Hawthorn Lake Property



Legend

MINFILE Status
- Producer
- Past Producer
- Developed Prospect
- All others

- Indian Reserves
- National Parks
- Conservancy Areas
- Parks

Mineral Tenure (current)
- Mineral Claim
- Mineral Lease

Mineral Reserves (current)
- Placer Claim Designation
- Placer Lease Designation
- No Staking Reserve
- Conditional Reserve
- Release Required Reserve
- Surface Restriction
- Recreation Area
- Others

- BCGS Grid

Contours (1:250K)
- Contour - Index
- Contour - Intermediate
- Areaof Exclusion
- Areaof Indefinite Contours

Annotation (1:250K)

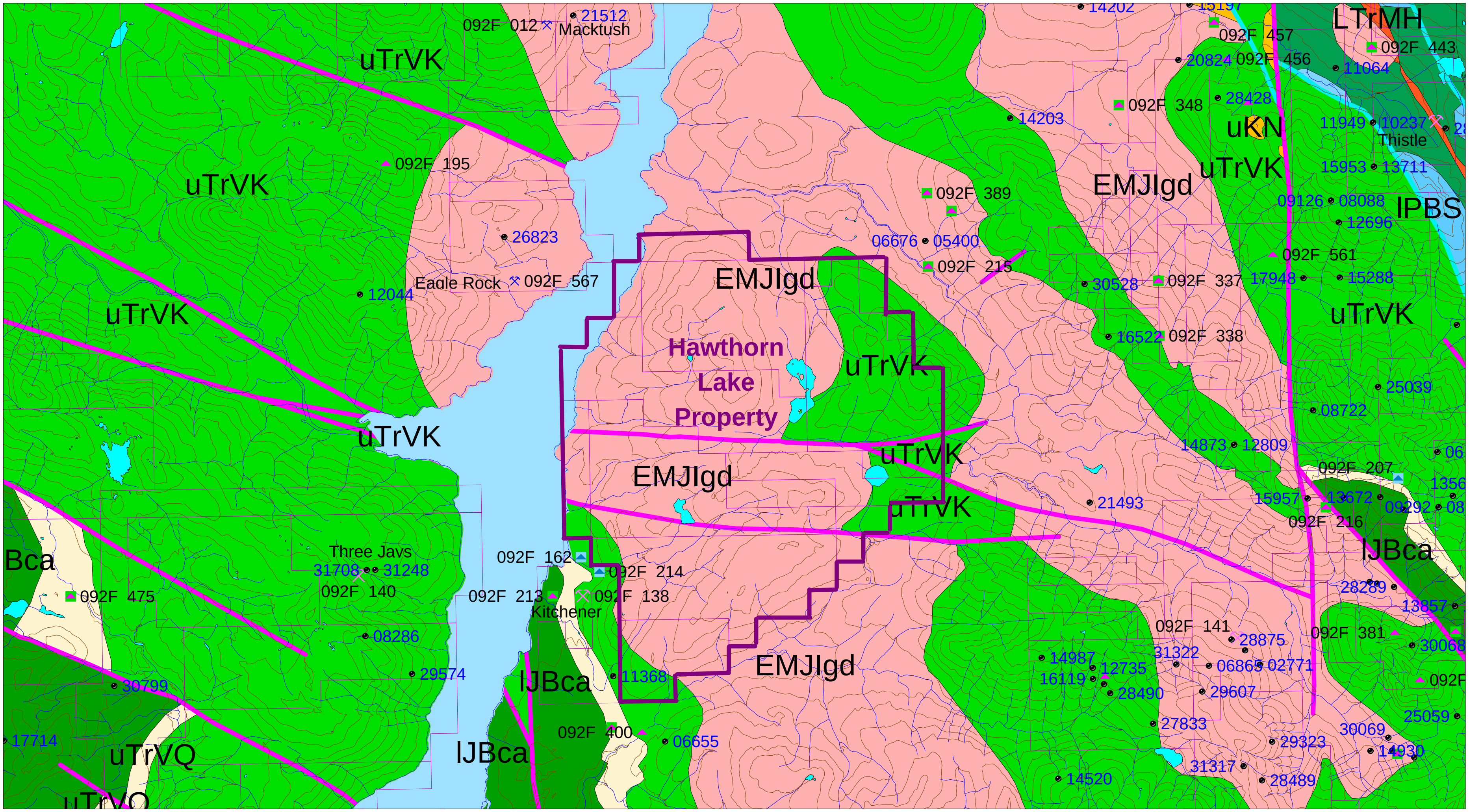
Transportation - Points (1:250K)
- Airfield
- Anchorage - Seaplane
- Ferry Route
- Heliport

N

Scale: 1:100,000

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.

Figure 1 - Hawthorn Lake Property Location Map



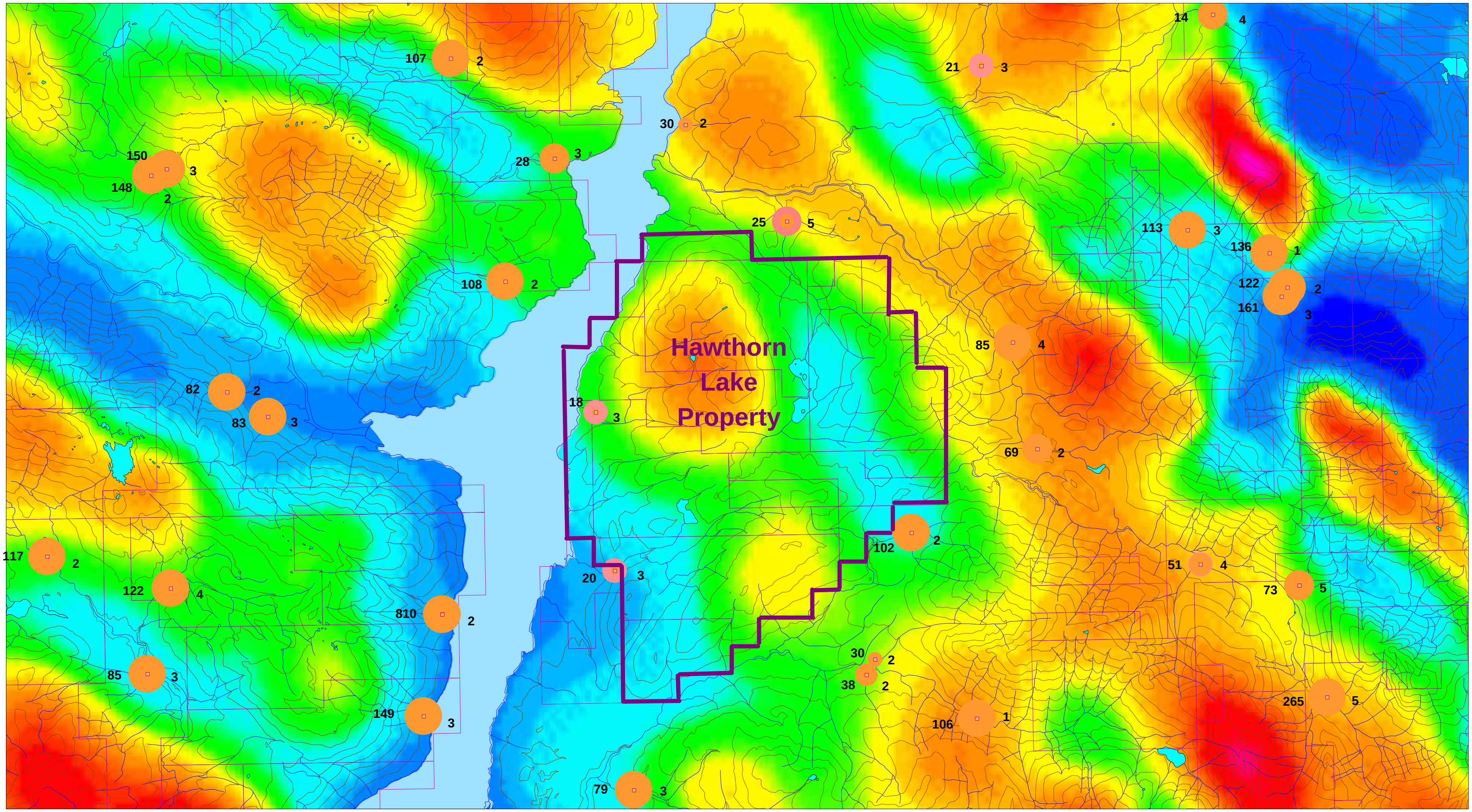
See BC MapPlace for
Map Legend & Report
Text for Geological
Unit Descriptions

SCALE 1 : 100,000

2 0 2 4 6

KILOMETERS

Figure 2 - Hawthorn Lake Property
Geology, MINFILE and ARIS



RGS Cu ppm

RGS Mo ppm

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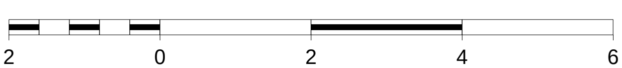

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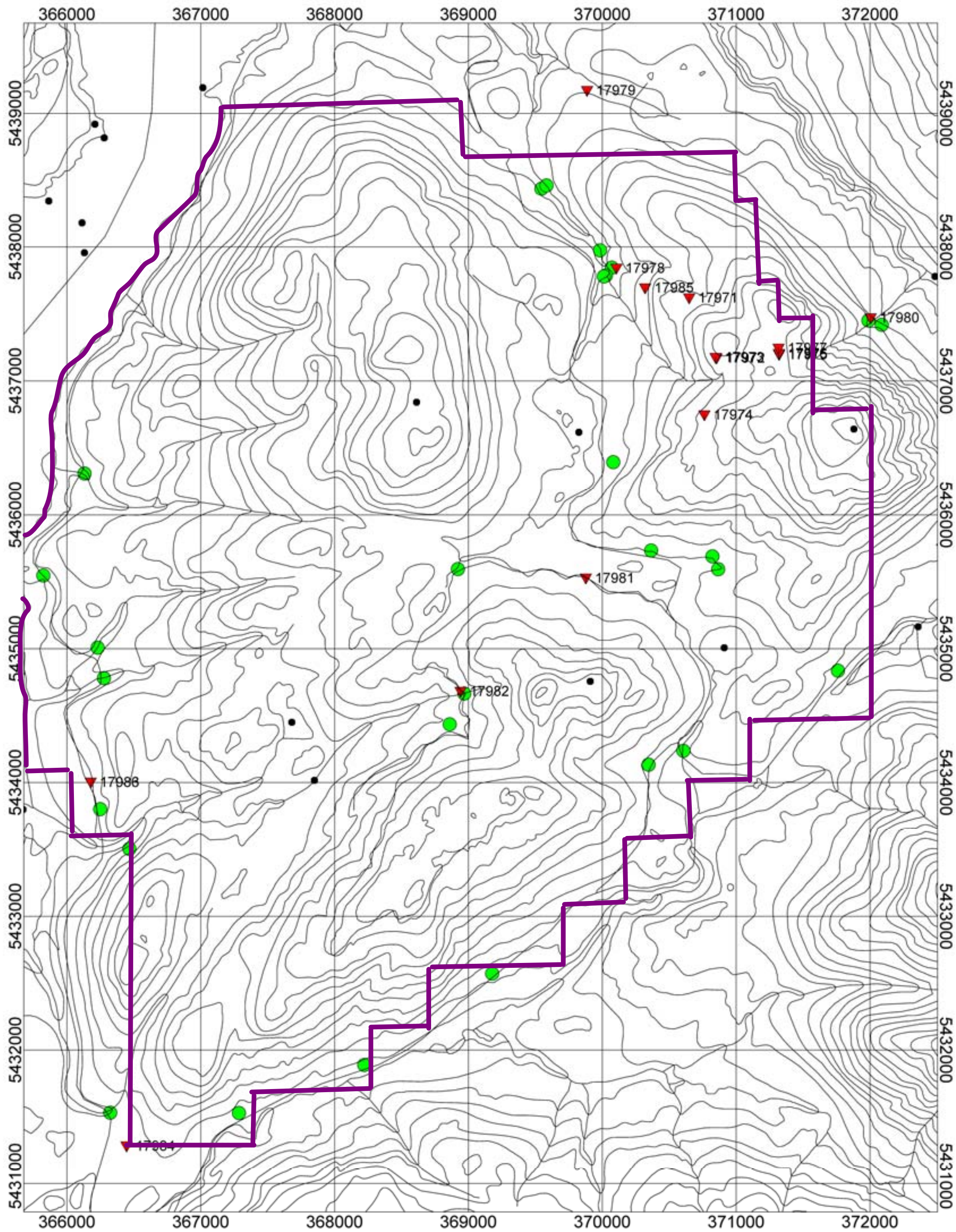
Figure 3 - Hawthorn Lake Property
Residual Aeromagnetics & RGS Cu, Mo



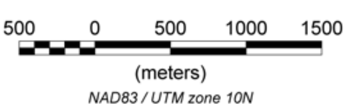
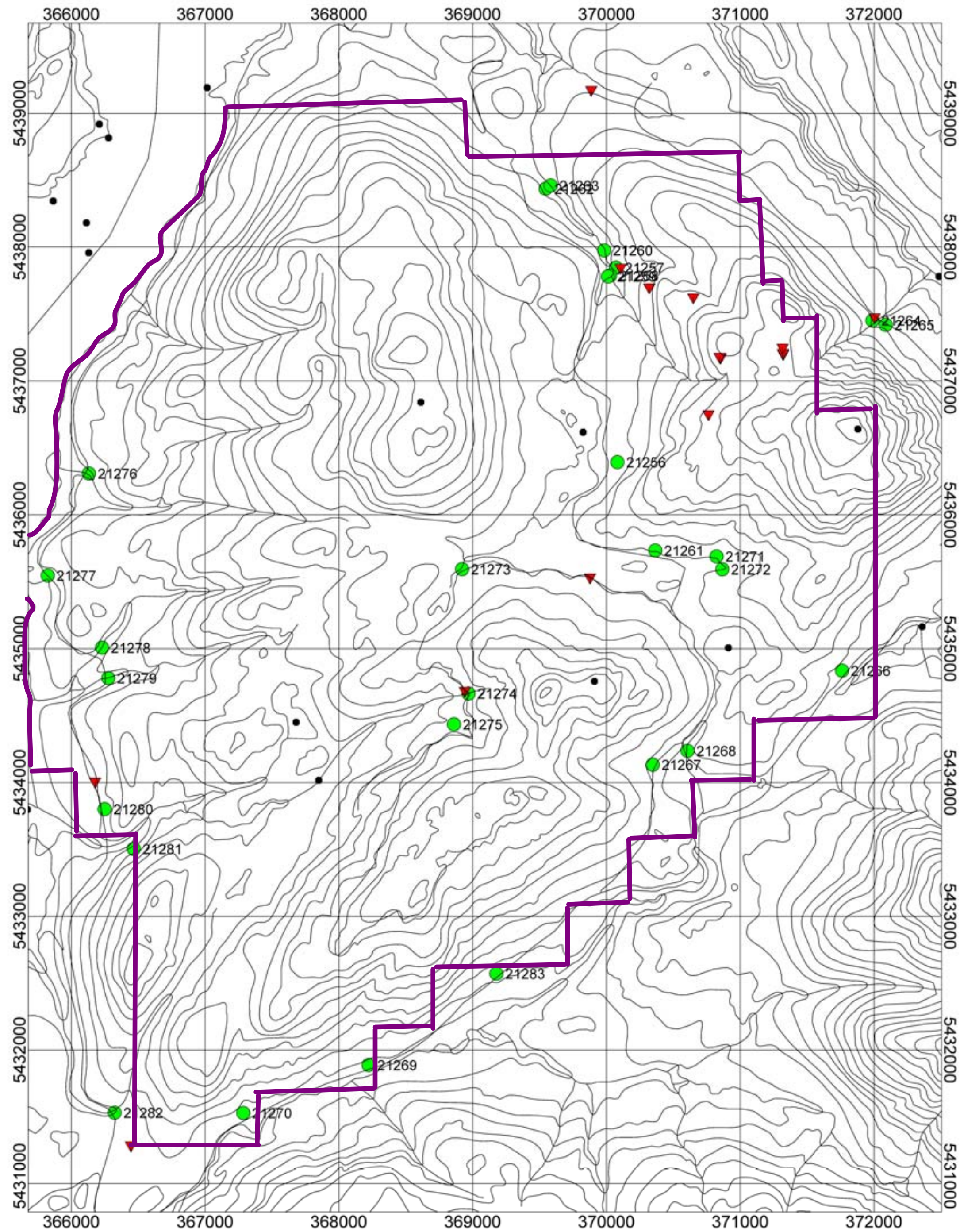


Figure 4a

Hawthorn Lake Property

2010 Rock Sample Locations



500 0 500 1000 1500
(meters)
NAD83 / UTM zone 10N

Figure 4b

Hawthorn Lake Property

2010 Stream Moss Mat Sample Locations

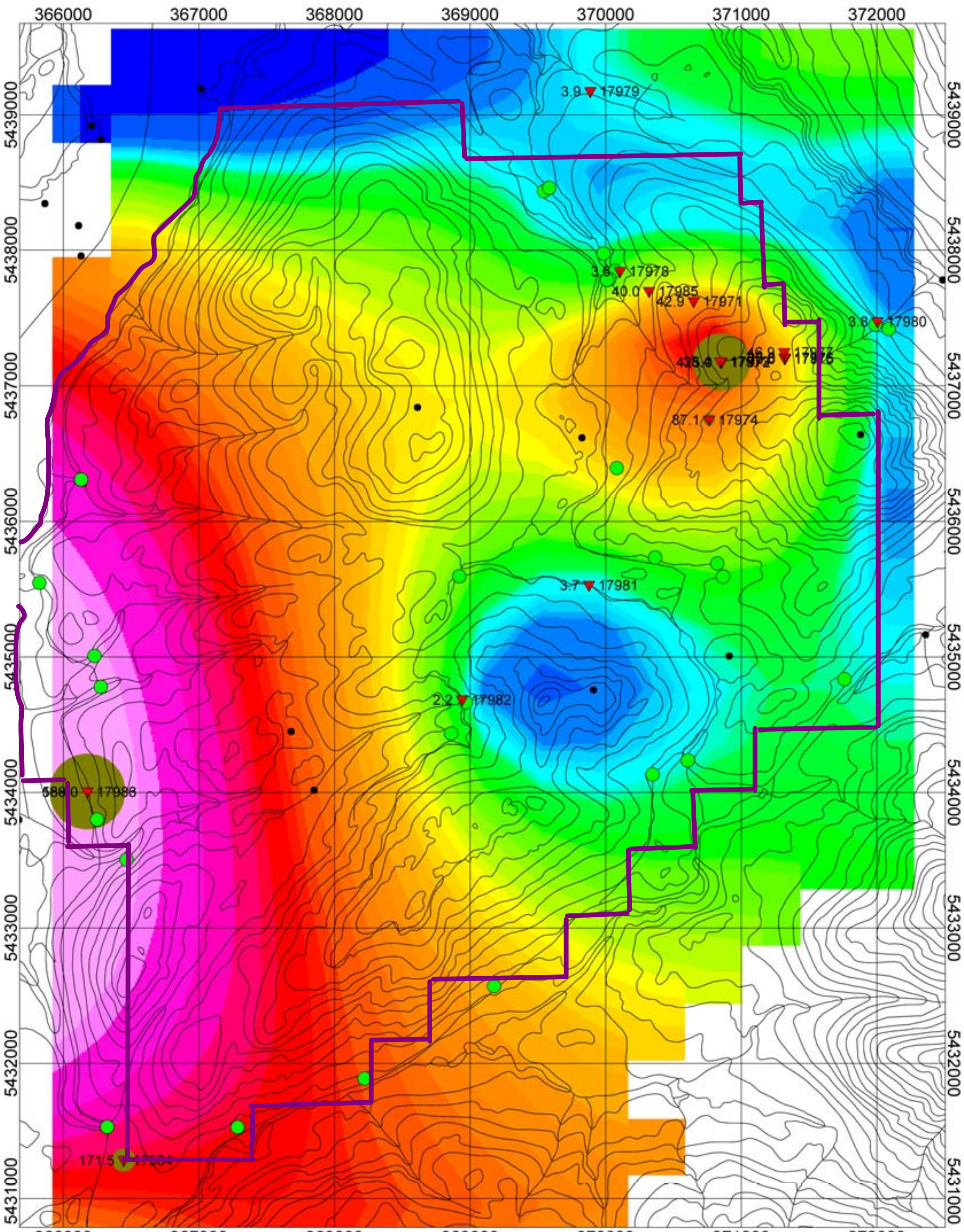


Figure 5a

Hawthorn Lake Property

Arsenic ppm in Rocks

2010 Sampling

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 10N

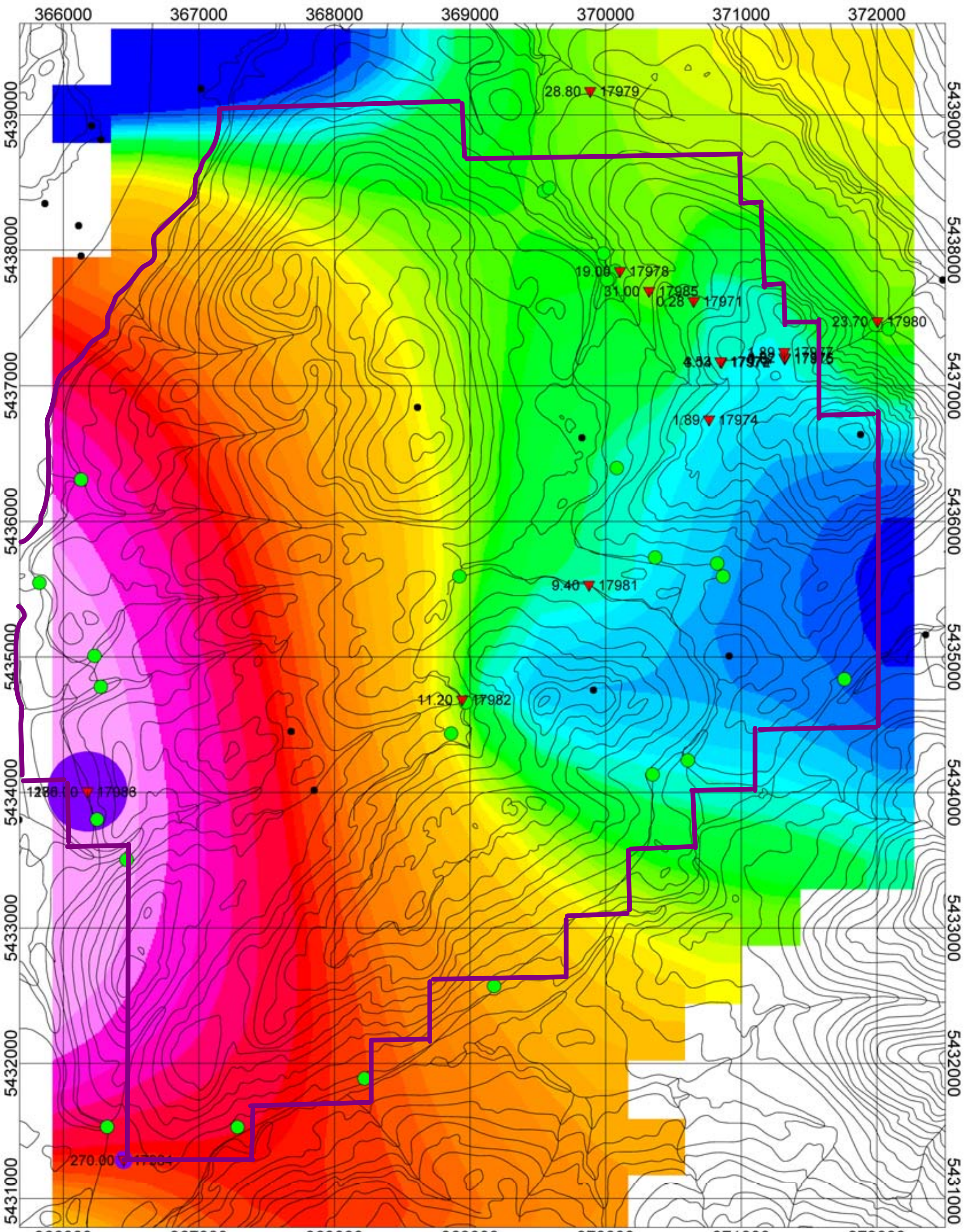


Figure 5b

Hawthorn Lake Property

Cobalt ppm in Rocks

2010 Sampling

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(meters)

NAD83 / UTM zone 10N

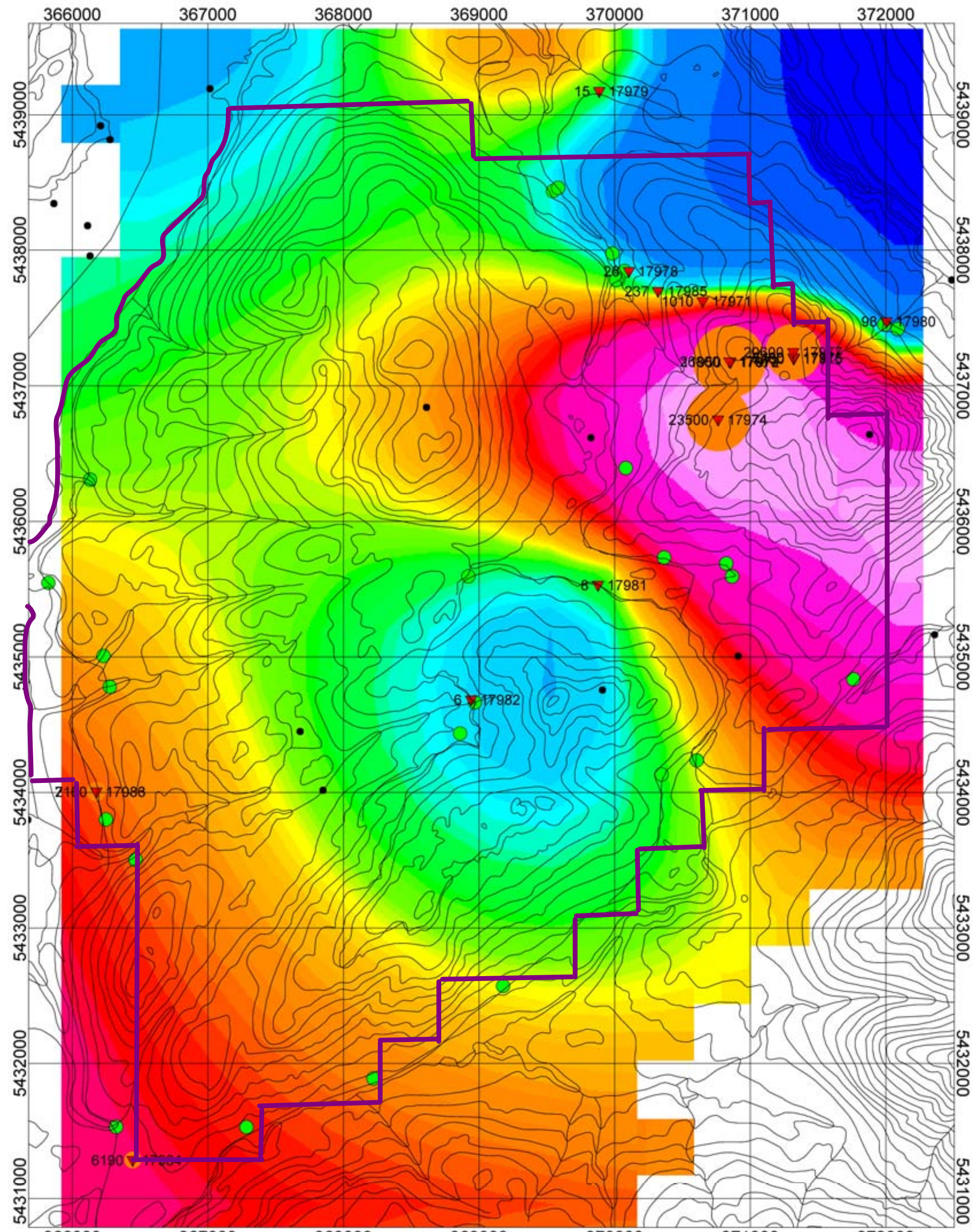

Figure 5c

Hawthorn Lake Property

Copper ppm in Rocks

2010 Sampling

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(meters)

NAD83 / UTM zone 10N

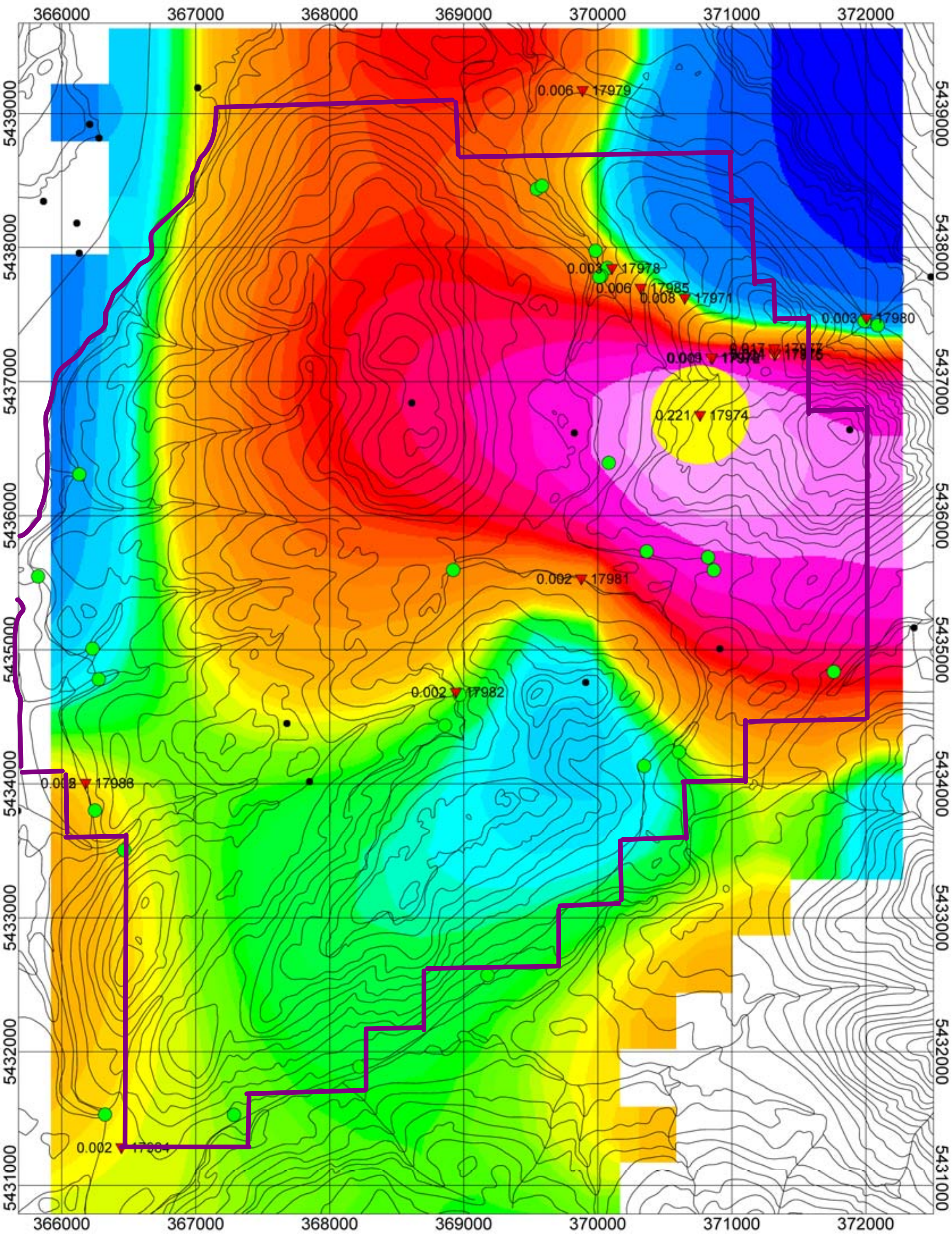

Figure 5d

Hawthorn Lake Property

Gold ppm in Rocks

2010 Sampling

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(meters)

NAD83 / UTM zone 10N

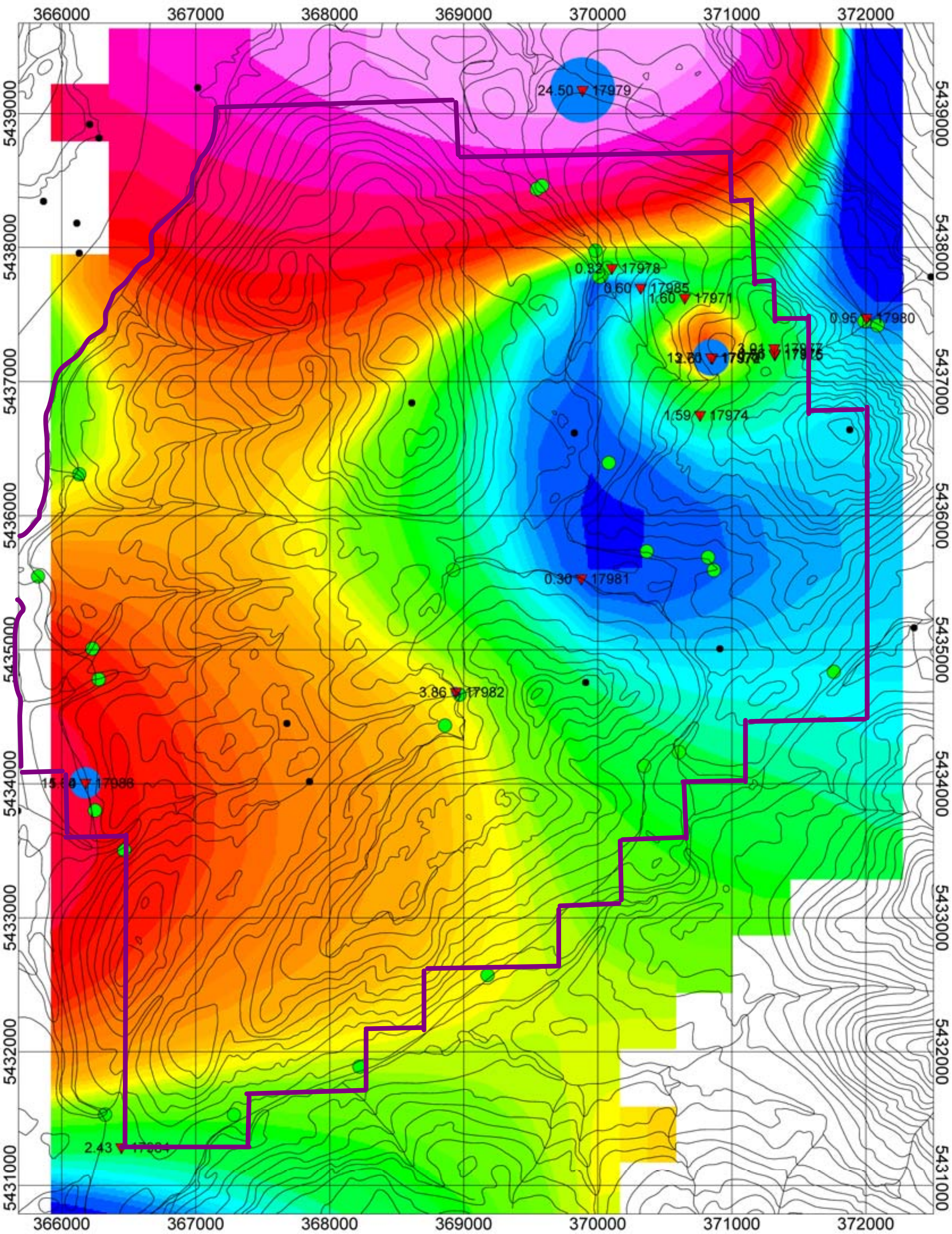

Figure 5e
Hawthorn Lake Property
Molybdenum ppm in Rocks
2010 Sampling

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(meters)
NAD83 / UTM zone 10N

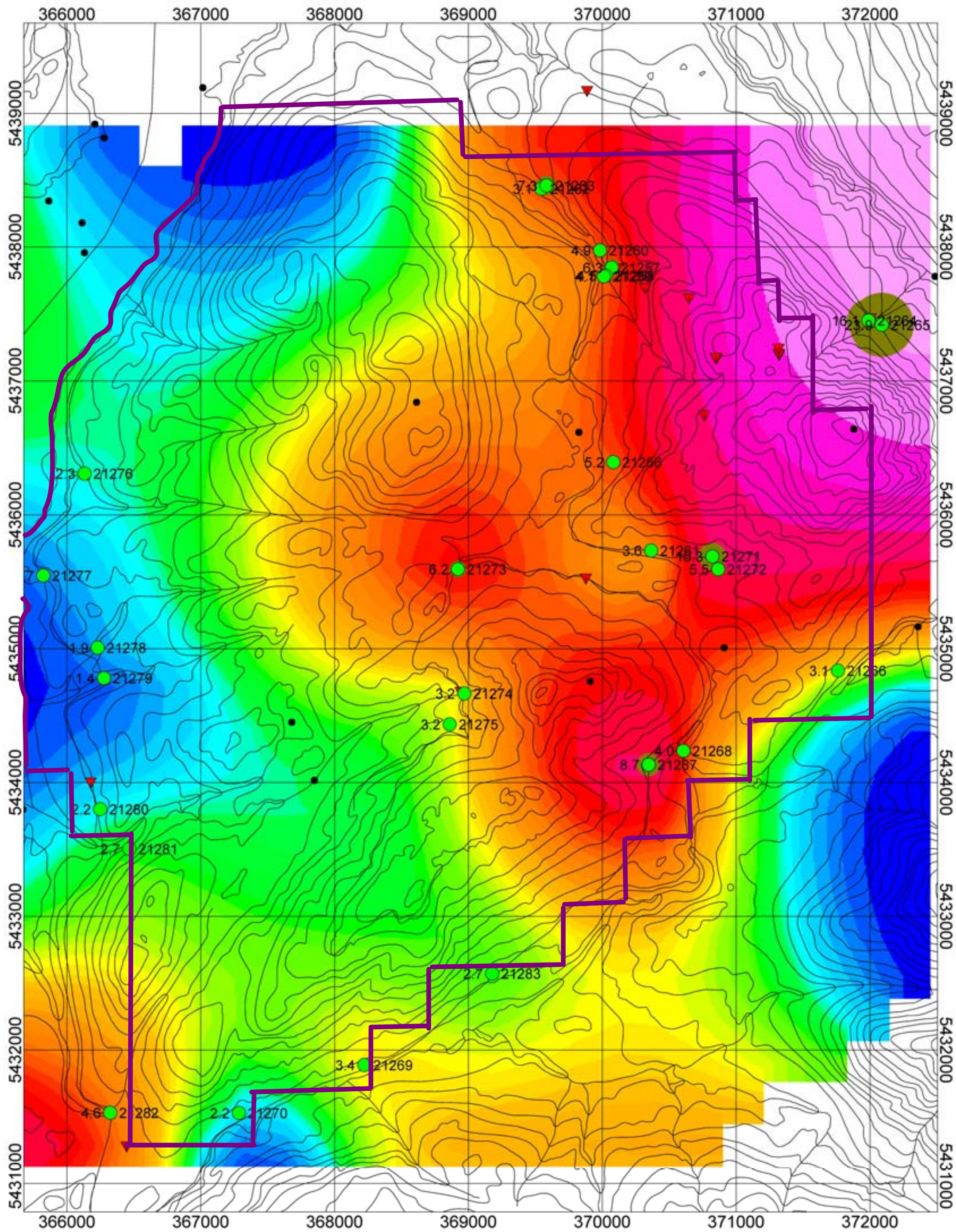


Figure 6a

Hawthorn Lake Property

Arsenic ppm in Stream Moss Mats

2010 Sampling

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 10N

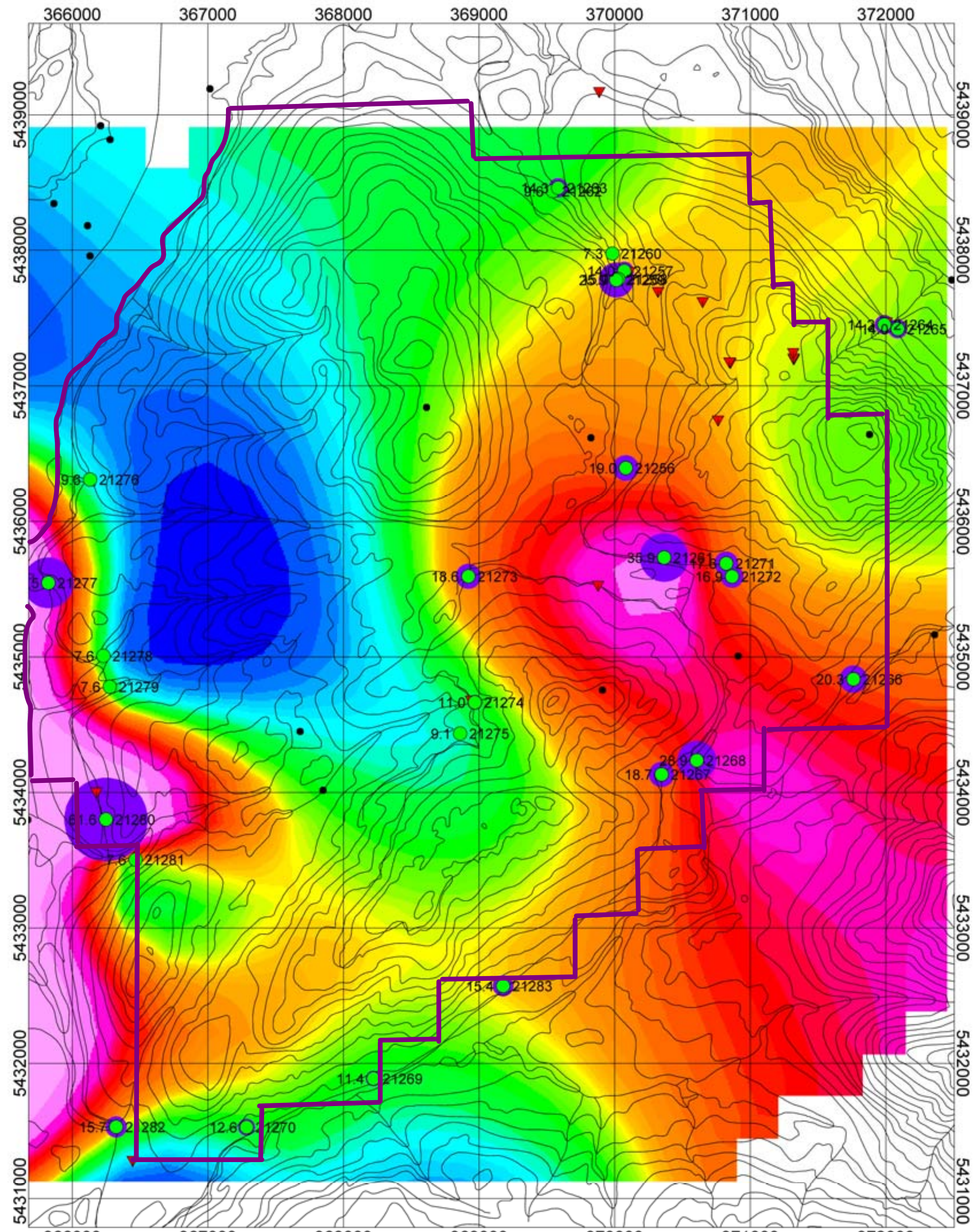


Figure 6b

Hawthorn Lake Property

Cobalt ppm in Stream Moss Mats

2010 Sampling

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 10N

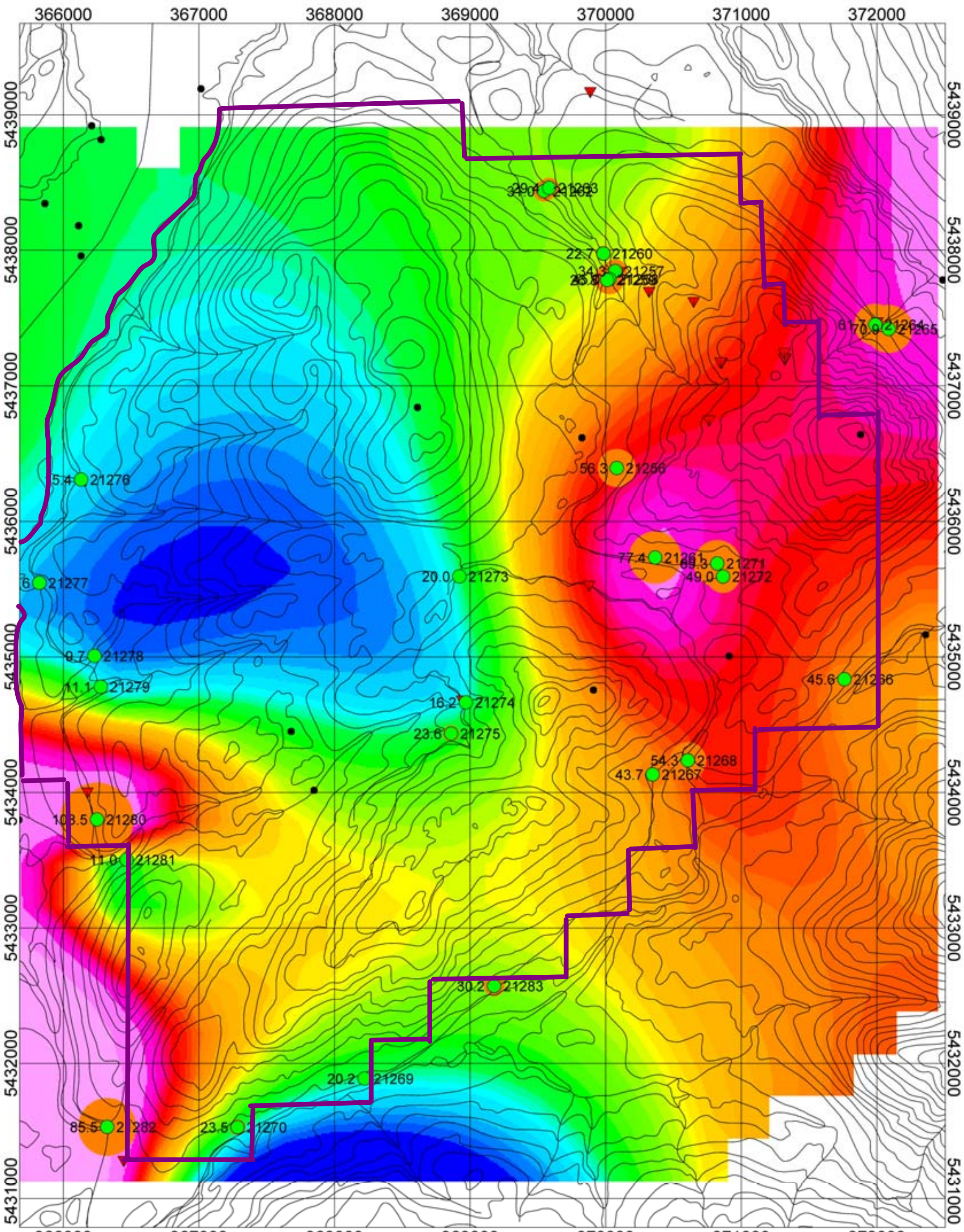


Figure 6c

Hawthorn Lake Property

Copper ppm in Stream Moss Mats

2010 Sampling

500 0 500 1000 1500

(meters)

NAD83 / UTM zone 10N

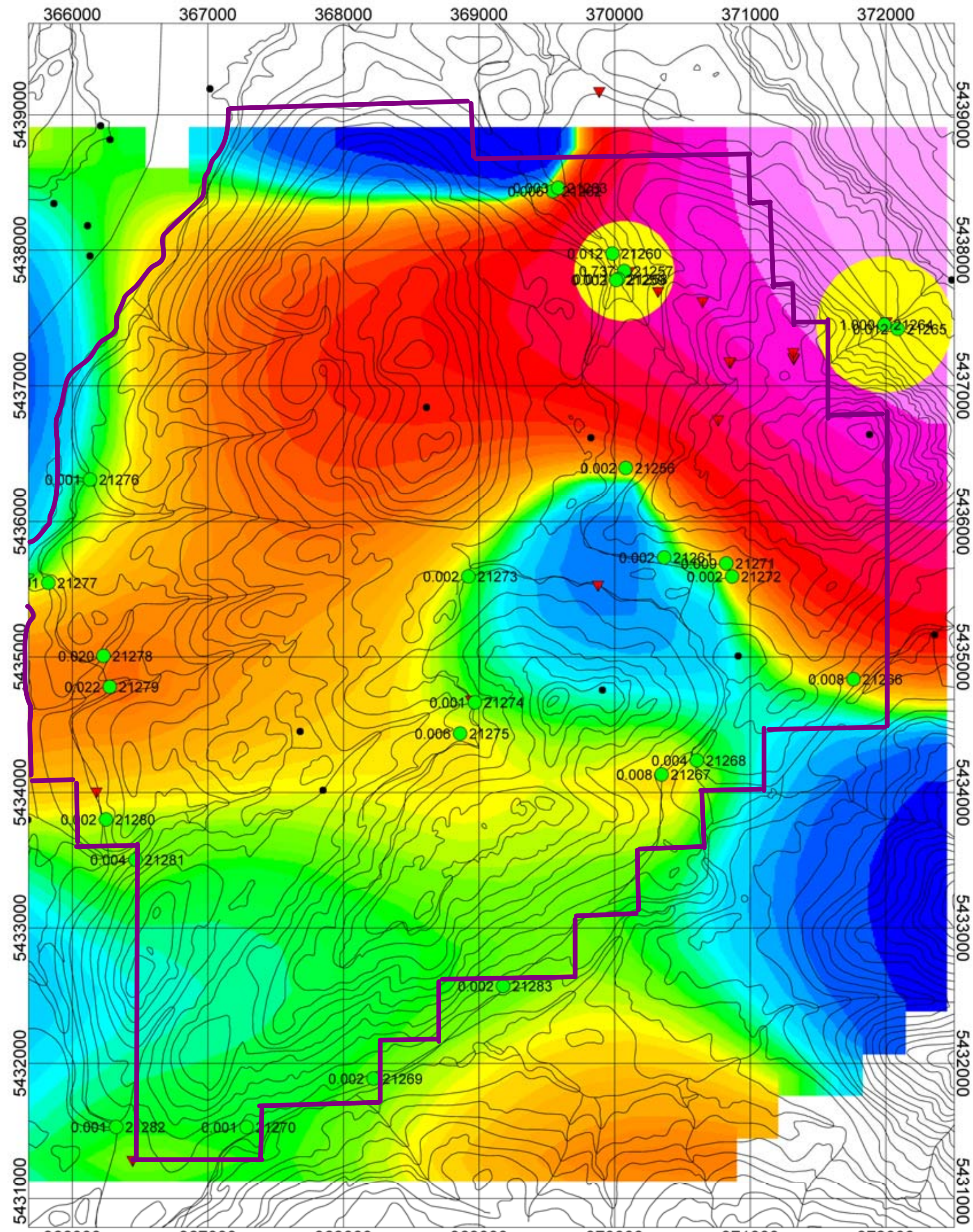
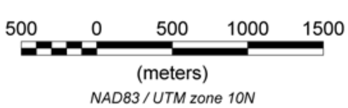


Figure 6d

Hawthorn Lake Property

Gold ppm in Stream Moss Mats

2010 Sampling



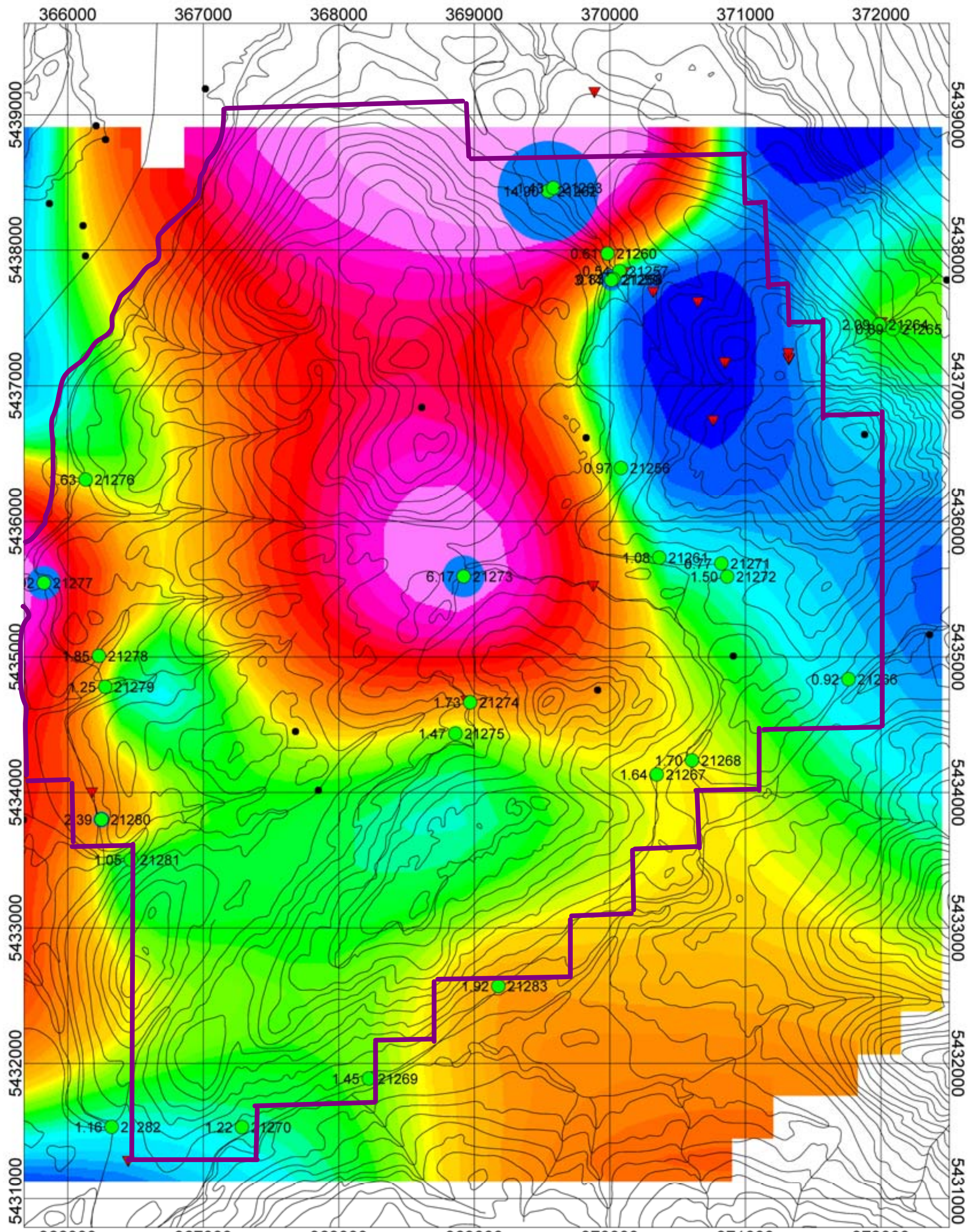


Figure 6e
Hawthorn Lake Property
Molybdenum ppm in Stream Moss Mats
2010 Sampling

500 0 500 1000 1500
(meters)
NAD83 / UTM zone 10N

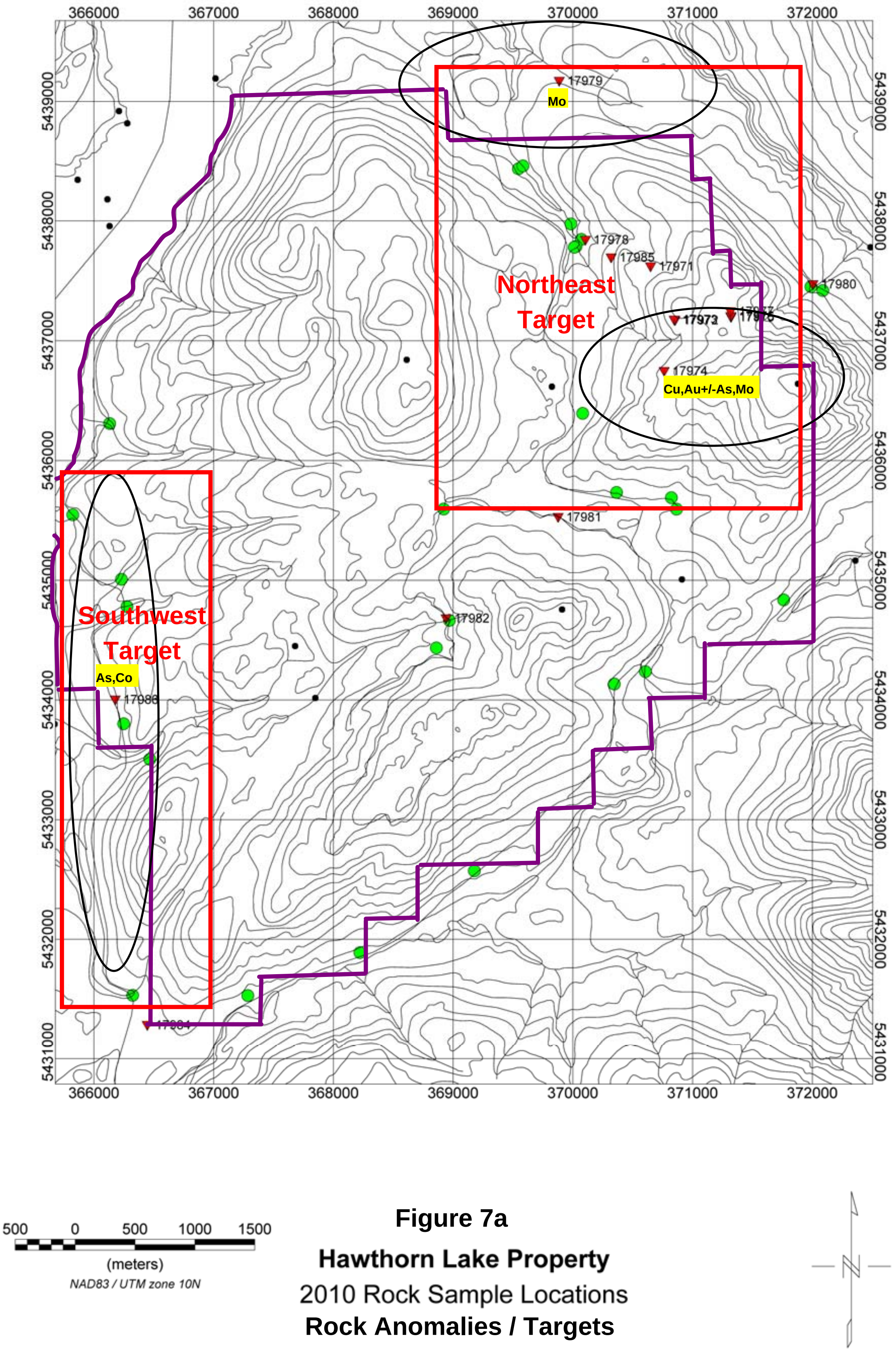


Figure 7a

Hawthorn Lake Property

2010 Rock Sample Locations

Rock Anomalies / Targets

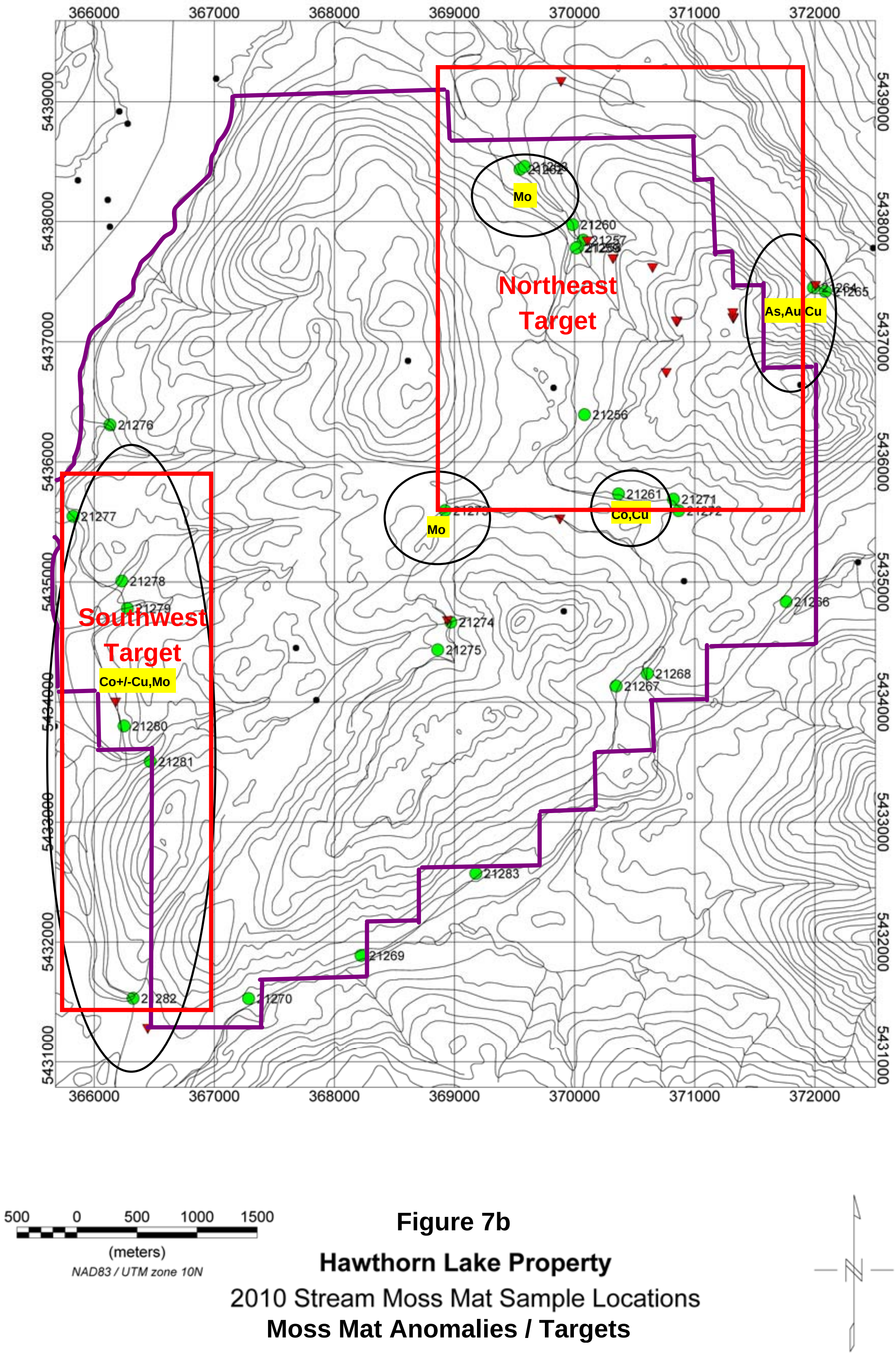


Figure 7b

Hawthorn Lake Property

2010 Stream Moss Mat Sample Locations

Moss Mat Anomalies / Targets

Appendix 1

2010 Sample Data Sheets

2010 Rock Sample Locations

2010 Rock Sample Descriptions

2010 Rock Sample Geochemistry

2010 Rock Sample Highlights

2010 Moss Mat Sample Locations

2010 Moss Mat Sample Geochemistry

2010 Moss Mat Highlights

2010 Rock Sample Locations for Hawthorn Lake Property									
Sample #	**Date**	**Sampler**	**Property**	**Location**	**Details**	**UTM Zone**	**Easting**	**Northing**	**Elevation**
17971	14-Sep-10	J.Houle	Hawthorn Lake Property	Bottom Vein - new roadcut - select outcrop grab from 1 of 2+ shears within 3.0 m. thick shear zone	0.05 m. thick sheared quartz-sulphide-zeolite vein @ 0/90 in mafic volcanics - 25% Py	10N	370649	5437625	430
17972	14-Sep-10	J.Houle	Hawthorn Lake Property	Rock Vein SE - end of new logging road - select outcrop grab from SE of 2 veins 6.0 m. apart	0.05 m. thick sheared quartz-sulphide vein @ 250/65 in mafic volcanics - 10%Py, 5%Cpy, Sph?	10N	370854	5437176	590
17973	14-Sep-10	J.Houle	Hawthorn Lake Property	Rock Vein NW - end of new logging road - select outcrop grab from NW of 2 veins 6.0 m. apart	0.5 m. thick sheared Qtz-S stckwk vein intersection @ 055/80, 090/90 in MVO - 5%Cpy, 2%Bo,Sph?	10N	370846	5437180	588
17974	14-Sep-10	J.Houle	Hawthorn Lake Property	Last Vein - old roadcut - select outcrop grab shear parallel to roadcut	0.1 m. thick quartz-sulphide-chlorite stringer @ 090/90 sheared @ 020/90 in mafic volcanics - 5% Cpy	10N	370763	5436752	581
17975	14-Sep-10	J.Houle	Hawthorn Lake Property	Large Vein - north side old roadcut quarry - select outcrop grab of vein exposed 10m. W. in outcrop	0.05 m. thick quartz-sulphide-chlorite vein @ 265/75 in mafic volcanics - Cpy,Py,Sph?	10N	371321	5437202	631
17976	14-Sep-10	J.Houle	Hawthorn Lake Property	North of Large Vein - select outcrop grab 10 m. west of old road	0.05 m. thick sheared quartz-sulphide-chlorite vein @ 075/80 in	10N	371320	5437210	628
17977	14-Sep-10	J.Houle	Hawthorn Lake Property	Snag Vein - select outcrop grab from old roadcut	0.10? M. thick quartz-sulphide-chlorite stringers @ 335/60 in	10N	371317	5437249	623
17978	21-Sep-10	R. Stirling, Geleyse, B.	Hawthorn Lake Property	Near moss mat38 confluence, NE corner of property - stream -	4m thick qtz sulphide vein stringers @ ~090/82 in gdr - cpy, py,	10N	370105	5437846	281
17979	22-Sep-10	R. Stirling, Geleyse, B.	Hawthorn Lake Property	Near moss mat42 confluence - road cut - select outcrop grab	8 m wide rusty sulphide vein. - gdr? -py, cpy, bo?	10N	369866	5439176	195
17980	22-Sep-10	Geleynse, B, Stirling, R	Hawthorn Lake Property	On creek at moss mat 43 NE top of property on creek - select grab	fine grained disseminated py in int int matrix	10N	372005	5437476	343
17981	23-Sep-10	Geleynse, B, Stirling, R	Hawthorn Lake Property	SE of Lizard Pond. Select grab, outcrop on roadside	Gdr w/ FeOx and minor disseminated py.	10N	369877	5435532	357
17982	23-Sep-10	R. Stirling, Geleyse, B.	Hawthorn Lake Property	Near moss mat15 SE of Lizard Pond. Select grab from quarry.	1m thick qtz sulphide vein - disseminated py, cpy?	10N	368941	5434686	424
17983	24-Sep-10	R. Stirling, Geleyse, B.	Hawthorn Lake Property	On railgrade 150 m from property line (south) select grab from outcrops	various size sulphide veinsin outcrop over 30 m in mafic volcanics - py, cpy?, (sooty, heavy, dark grey) heavy smell of	10N	366177	5434007	105
17984	25-Sep-10	R. Stirling, Geleyse, B.	Hawthorn Lake Property	Spur road at SE corner of property - select grab from outcrop	0.1-0.3 m thick rusty sheared epidote sulphide vein@ 113/43 in mafic volcanics - py, cpy, Bo	10N	366445	5431288	158
17985	25-Sep-10	R. Stirling, Geleyse, B.	Hawthorn Lake Property	Downslope of main showing on roadside - select grab from outcrop	0.1 m thick qtz epidote vein @ 082/80 in mafic volcanic. - py,	10N	370320	5437699	383
17986	25-Sep-10	Geleyse, B.	Hawthorn Lake Property	On railgrade 150 m from property line (south) select grab from	Black, sooty rock with minor sulphides	10N	366177	5434007	105

2010 Rock Sample Descriptions for Hawthorn Lake Property

Sample #	Descriptions
17971	Green, white and bronze, f.g., sheared, epidotic, chloritic mafic volcanics with 20% vuggy and rusty zeolite?/anhydrite?-sulphide stringers including 5% sulphide aggregates consisting of pyrite
17972	Grey, green and bronze, f.g., rusty, highly silicified, choritic mafic volcanics with 30% stockwork to zoned aggregate of sulphides consisting of 25% m.g. pyrite, 3% f.g. arsenopyrite?, 2% f.g. chalcopyrite
17973	Green and grey, f.g., silicified, weakly chloritic mafic volcanics with 15% vuggy and rusty quartz stockwork stringers including 1% black, f.g. mineral (chalcocite?), trace v.f.g. sulphide aggregates, trace malachite
17974	Green and bronze, m.g. weakly chloritic mafic volcanic breccia with 15% stockwork to semi-massive sulphides consisting of 14% f.g. chalcopyrite and containing 1% stringers or blebs of bornite
17975	90% grey, orange and bronze, massive quartz-sulphide vein, and 10% green, f.g. chloritic mafic volcanic selvidge; vein is fractured and vuggy with 5% sulphide aggregates consisting 2% chalcopyrite, 1% black f.g. mineral, 1% pyrite
17976	Grey, white and green, m.g., highly silicified, weakly chloritic, locally rusty and vuggy, mafic volcanic breccia containing 30% quartz-calcite stringers and quartz eyes including trace v.f.g. chalcopyrite clusters
17977	Grey and green, m.g., pervasively silicified, weakly chloritic, mafic volcanic breccia with 10% very thin, cross-cutting quartz-sulphide stringers including trace v.f.g. chalcopyrite clusters
17978	White, grey and green m.g. silicified 20% chlorotic intermediate to felsic volcanics with 8% disseminated clusters of pyrite
17979	White and rusty m.g. silicified, minor chlorite, hematite, felsic to intermediate volcanics with 20% pyrite and minor metallic dark grey with purple red blue hue with a rounded form
17980	Grey and white m.g. mafic volcanics with 2% thin quartz stringers and 3% disseminated f.g. pyrite
17981	White, orangy, grey, green m.g., slightly chlorotic, rusty intermediate volcanics with 15% thin quartz veins containing hematite and v.f.g. disseminated pyrite 2%
17982	White, grey and green m.g. silicified, 15% chlorotic, intermediate to felsic volcanics with disseminated sulphide clusters containing 5% pyrite and minor chalcopyrite
17983	Grey, rusty f.g. intermediate to mafic volcanics with rusty veins and 35% semi-massive pyrite and minor chalcopyrite
17984	White, green, grey m.g. silicified slightly chlorotic intermediate volcanics sulphide vein with semi-massive 50% sulphide containing pyrite and chalcopyrite
17985	Green, white, grey m.g. silicified, hornfelsed quartz epidote volcanic breccia with 5% pyrite in rusty epidote zone only and thin quartz-calcite stringers throughout
17986	Grey and white f.g. quartz 50% sulphide volcanics with massive pyrite, chalcopyrite, minor boronite and sylvanite? A secondary mineral quickly forms (hours) after exposure to water and air into long transparent vitreous fibrous curly ended twisted crystals over entire sample, perhaps related to primary yellowy transparent mineral with low hardness and massive habit.

Rock Geochemistry		WEI-21	Au-TL44	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
REPORT NO	SAMPLE NO	Recvd Wt.	Au	Ag	Al	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu
		kg	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
VA10132826	17971	1.14	0.008	1.02	3.48	42.9	<0.2	<10	10	0.31	0.75	2.87	0.28	1.54	138.5	39	0.08	1010
VA10132826	17972	0.68	0.001	7.66	2.06	425	<0.2	<10	10	0.08	7.73	0.11	3.14	5.33	309	13	0.18	>10000
VA10132826	17973	0.9	0.019	7.29	4.13	38.4	<0.2	<10	20	0.09	6.49	0.42	4.53	2.21	71.8	71	0.06	>10000
VA10132826	17974	0.92	0.221	2.2	5.6	87.1	0.2	<10	<10	0.08	5.56	0.34	1.89	3.07	128	102	0.17	>10000
VA10132826	17975	0.96	0.021	6.04	2.33	20.5	<0.2	<10	<10	0.06	10.1	0.3	0.87	1.56	19.9	45	<0.05	5760
VA10132826	17976	1.08	0.014	8.56	3.31	33	<0.2	<10	<10	0.06	5.73	0.43	4.02	1.93	34.7	57	<0.05	7460
VA10132826	17977	0.88	0.017	13.75	5.86	46.9	<0.2	<10	<10	0.27	7.74	0.59	1.89	5.6	47.5	86	0.19	>10000
VA10138496	17978	0.62	0.003	0.03	1.79	3.6	<0.2	<10	120	0.32	0.28	0.45	0.02	7.19	19	7	0.12	25.9
VA10138496	17979	1.32	0.006	0.04	0.63	3.9	<0.2	<10	20	0.13	0.21	0.07	<0.01	15.2	28.8	2	0.21	14.8
VA10138496	17980	0.38	0.003	0.05	3.75	3.8	<0.2	<10	100	0.46	0.06	3.25	0.05	19.1	23.7	3	0.1	98.4
VA10138496	17981	0.52	0.002	0.03	3.72	3.7	<0.2	<10	40	0.5	0.01	2.23	0.01	8.21	9.4	3	0.13	8.1
VA10138496	17982	1.48	0.002	0.03	1.33	2.2	<0.2	<10	50	0.45	0.12	1.92	0.04	18.35	11.2	5	1.19	5.5
VA10138496	17983	1.48	0.005	0.35	1.39	188	<0.2	<10	30	0.13	1.81	0.62	0.15	2.75	270	8	0.14	2160
VA10138496	17984	0.62	0.002	2.42	3.26	171.5	<0.2	<10	10	<0.05	1.06	0.1	0.18	6.33	270	55	<0.05	6190
VA10138496	17985	0.96	0.006	0.16	3.84	40	<0.2	<10	<10	0.39	0.09	10.4	0.07	4.77	31	77	<0.05	237
VA10138496	17986	0.24	0.002	0.86	0.26	559	<0.2	<10	10	<0.05	2.72	0.35	0.33	0.84	1185	2	0.07	7100

		ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
REPORT NO	SAMPLE NO	Fe	Ga	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S
		%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%
VA10132826	17971	17.5	15.55	0.55	0.36	0.65	0.036	0.01	0.6	4.3	1.51	482	1.6	0.01	0.36	67.6	200	4.6	0.3	<0.001	>10.0
VA10132826	17972	26.7	10.85	0.78	0.06	0.23	3.06	<0.01	2.2	3.2	0.52	488	2.61	0.01	0.22	18.6	100	77.4	0.3	<0.001	>10.0
VA10132826	17973	10.1	10.4	0.28	0.11	0.22	0.505	<0.01	0.8	6.1	2.46	1440	13.7	0.01	0.11	42.6	260	7.2	0.1	<0.001	1.17
VA10132826	17974	17	16.9	0.44	0.37	0.32	1.83	<0.01	1.2	2	2.86	1420	1.59	0.01	0.16	64.7	360	5.5	0.1	0.001	3.32
VA10132826	17975	5.16	6.36	0.14	0.2	0.23	0.399	<0.01	0.5	3.4	1.34	891	1.51	0.01	0.12	20.6	120	31.1	0.1	<0.001	0.16
VA10132826	17976	7.56	8.88	0.2	0.29	0.59	0.24	<0.01	0.6	4.2	1.87	1590	0.76	0.01	0.2	30.5	220	18	0.1	<0.001	0.71
VA10132826	17977	14.8	15.4	0.35	0.65	0.16	0.605	0.01	2.2	7.3	2.95	1940	3.01	0.02	0.24	46.5	500	18.3	0.5	<0.001	2.13
VA10138496	17978	3.91	5.64	0.1	0.08	0.01	0.011	0.12	4	3.3	1.3	683	0.32	0.02	0.29	2.8	530	4.1	4.5	0.003	1.61
VA10138496	17979	9.87	1.57	0.19	0.02	0.04	0.006	0.09	7.1	0.9	0.12	38	24.5	0.03	0.33	1.5	250	3	3.3	0.063	8.97
VA10138496	17980	4.13	11.4	0.2	0.34	0.02	0.042	0.05	9	2.7	0.97	562	0.95	0.08	0.21	3	1490	1.1	1.7	0.001	0.53
VA10138496	17981	2.83	10.85	0.2	0.09	0.06	0.015	0.02	4.8	3	0.83	447	0.3	<0.01	0.31	2.1	480	3.7	1.2	<0.001	0.81
VA10138496	17982	2.82	4.9	0.06	0.06	0.05	0.019	0.14	10.2	4.7	0.9	490	3.86	0.01	0.12	2	450	2.9	5.7	0.001	1.11
VA10138496	17983	14.15	4.76	0.35	0.22	0.06	0.031	0.01	1.3	1.3	0.89	302	5.34	<0.01	0.29	24.4	600	8.1	0.5	0.013	>10.0
VA10138496	17984	35	13.9	0.58	0.29	0.27	0.49	<0.01	2.7	3.8	1.81	1260	2.43	<0.01	0.68	44.7	140	23.4	0.2	0.001	>10.0
VA10138496	17985	4.08	13.1	0.47	0.29	0.05	0.046	<0.01	1.9	3.3	1.57	713	0.6	<0.01	0.26	47.8	290	3.9	0.1	0.001	0.82
VA10138496	17986	26.2	1.4	0.94	0.08	0.07	0.017	<0.01	0.4	0.3	0.14	62	11.6	<0.01	0.47	33.9	240	11.8	0.2	0.011	>10.0

		ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	Cu-OG46
REPORT NO	SAMPLE NO	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr	Cu
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
VA10132826	17971	1.37	5	4.9	0.3	110.5	<0.01	0.02	<0.2	0.244	1.06	<0.05	76	0.34	4.34	48	10.6	
VA10132826	17972	2.87	7.7	42.4	0.7	8	<0.01	1.23	<0.2	0.044	0.25	<0.05	48	0.16	4.01	255	1.3	1.195
VA10132826	17973	0.18	14.7	25.9	0.4	6.6	<0.01	2.97	<0.2	0.176	0.02	<0.05	145	0.28	5.18	404	2.5	2.68
VA10132826	17974	0.3	23.2	38.2	0.5	2.6	<0.01	2.22	0.2	0.307	0.03	<0.05	209	0.22	8.61	246	10	2.35
VA10132826	17975	0.22	8	5.1	0.4	2.7	<0.01	5.36	<0.2	0.147	<0.02	<0.05	80	0.14	3.96	255	5.1	
VA10132826	17976	0.2	14.1	5.9	0.4	4.3	0.01	1.36	<0.2	0.217	<0.02	<0.05	112	0.22	6.43	1200	7.6	
VA10132826	17977	0.26	18.9	28.4	0.7	14.6	0.01	2.86	0.3	0.416	0.06	0.08	196	0.34	10.25	343	19.7	2.06
VA10138496	17978	0.06	7.3	1.9	0.3	21.3	0.01	0.09	3.8	0.111	<0.02	0.71	97	0.37	7.1	45	1.4	
VA10138496	17979	0.08	1.5	23.3	0.3	5.9	<0.01	0.08	7	0.005	<0.02	0.81	9	0.09	4.34	2	0.7	
VA10138496	17980	0.07	14.3	0.9	0.4	54	0.01	0.14	1.9	0.22	<0.02	0.29	113	0.21	15.15	34	9.1	
VA10138496	17981	0.23	7.7	0.2	0.3	97.8	<0.01	<0.01	3.4	0.093	0.02	0.44	81	0.2	3.96	32	2.5	
VA10138496	17982	0.14	6.5	0.2	0.3	19.4	<0.01	<0.01	4.7	0.019	0.03	1.31	41	0.27	10.85	26	1.2	
VA10138496	17983	0.64	2.4	33.7	0.2	46.8	<0.01	1.76	0.2	0.091	0.16	0.34	18	0.13	4.57	11	6.1	
VA10138496	17984	6.05	6.1	18.1	0.4	7.8	0.01	0.24	<0.2	0.157	1.7	0.05	83	0.24	5.32	114	11.2	
VA10138496	17985	0.45	14.3	0.9	0.4	229	0.01	0.11	0.2	0.313	0.04	0.07	114	0.86	8.1	68	10.6	
VA10138496	17986	0.38	0.8	135	<0.2	5.5	<0.01	5.34	<0.2	0.027	0.09	0.11	8	0.2	1.35	6	2.6	

2010 Rock Sample Geochemistry Highlights - Hawthorn Lake Property

Sample #	Easting	Northing	Elevation	Au(ppm)	Ag(ppm)	Bi(ppm)	Ca(%)	Co(ppm)	Cu(ppm)	Fe(%)	Ga(ppm)	In(ppm)	Mo(ppm)	Pb(ppm)	S (%)	Se(ppm)	Te(ppm)	Zn(ppm)
17971	370649	5437625	430	0.008	1.02	0.75	2.87	0.28	1010	17.5	15.55	0.036	1.6	4.6	>10.0	4.9	0.02	48
17972	370854	5437176	590	0.001	7.66	7.73	0.11	3.14	11950	26.7	10.85	3.06	2.61	77.4	>10.0	42.4	1.23	255
17973	370846	5437180	588	0.019	7.29	6.49	0.42	4.53	26800	10.1	10.4	0.505	13.7	7.2	1.17	25.9	2.97	404
17974	370763	5436752	581	0.221	2.2	5.56	0.34	1.89	23500	17	16.9	1.83	1.59	5.5	3.32	38.2	2.22	246
17975	371321	5437202	631	0.021	6.04	10.1	0.3	0.87	5760	5.16	6.36	0.399	1.51	31.1	0.16	5.1	5.36	255
17976	371320	5437210	628	0.014	8.56	5.73	0.43	4.02	7460	7.56	8.88	0.24	0.76	18	0.71	5.9	1.36	1200
17977	371317	5437249	623	0.017	13.75	7.74	0.59	1.89	20600	14.8	15.4	0.605	3.01	18.3	2.13	28.4	2.86	343
17978	370105	5437846	281	0.003	0.03	0.28	0.45	19	25.9	3.91	5.64	0.011	0.32	4.1	1.61	1.9	0.09	45
17979	369866	5439176	195	0.006	0.04	0.21	0.07	28.8	14.8	9.87	1.57	0.006	24.5	3	8.97	23.3	0.08	2
17980	372005	5437476	343	0.003	0.05	0.06	3.25	23.7	98.4	4.13	11.4	0.042	0.95	1.1	0.53	0.9	0.14	34
17981	369877	5435532	357	0.002	0.03	0.01	2.23	9.4	8.1	2.83	10.85	0.015	0.3	3.7	0.81	0.2	<0.01	32
17982	368941	5434686	424	0.002	0.03	0.12	1.92	11.2	5.5	2.82	4.9	0.019	3.86	2.9	1.11	0.2	<0.01	26
17983	366177	5434007	105	0.005	0.35	1.81	0.62	270	2160	14.15	4.76	0.031	5.34	8.1	>10.0	33.7	1.76	11
17984	366445	5431288	158	0.002	2.42	1.06	0.1	270	6190	35	13.9	0.49	2.43	23.4	>10.0	18.1	0.24	114
17985	370320	5437699	383	0.006	0.16	0.09	10.4	31	237	4.08	13.1	0.046	0.6	3.9	0.82	0.9	0.11	68
17986	366177	5434007	105	0.002	0.86	2.72	0.35	1185	7100	26.2	1.4	0.017	11.6	11.8	>10.0	135	5.34	6

2010 Stream Moss Mat and Silt Sample Locations for Hawthorn Lake Property

Sample #	Date	Sampler	Property	Location	Widt h(m)	Depth (m)	Inclination (Degrees)	Flow Rate (m.p.s)	pH of water	Sediment Colour	Sediment Texture	Organic s %	Bedrock	Float	UTM Zone	Easting	Northing	Elevation	Details/Observations/Remarks
21256	21-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	35	0.5	0.05	1	0.1	6.46	dk brn - grey br	coarse sand	70	-	gdr, maf vol, some sulphides	10N	370082	5436394	299	Adjacent cutblock (2 yrs old)
21257	21-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	38	1	0.1	9	0.5	7.63	grey brn	silt sand	60	gdr	gdr, qtz porphory, some disseminated sulphides	10N	370071	5437846	283	
21258	21-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	37	0.5	0.2	30	1	7.28	grey brn	sand silt clay	60	gdr	gdr	10N	370027	5437787	311	
21259	21-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	36	2	0.4	20	0.5	6.78	brn	silt sand	70	gdr, qtz veins, volcanic dykes (0.4 m width)	gdr, some FeOx	10N	370012	5437780	286	
21260	21-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	39	-	-	35	-	-	brn	sand silt clay	75	-	gdr	10N	369983	5437975	256	No water present
21261	21-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	31	0.1	0.01	15	0.05	6.69	dk brn	silt sand	80	maf vol w/ qtz veinlets	maf vol w/ qtz veinlets, some culphides (incl. chpy)	10N	370365	5435734	380	
21262	22-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	41	0.5	0.001	6	-	6.32	dk brn	silt sand	90	-	gdr	10N	369545	5438435	199	Intermittent creek. Conifer needles in small pools. Depth of stream just covered sensor.
21263	22-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	42	4	0.1	6	0.75	7.26	grey brn	sand silt	50	gdr	gdr	10N	369583	5438459	213	
21264	22-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	43	0.3	0.01	20	0.75	7.15	med-dk brn	silt sand	50	int int disseminated sulphides	gdr, maf vol, some sulphides	10N	371989	5437451	311	Streambed full of qtz stringers above rd.
21265	22-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	44	-	-	20	-	-	brn	silt sand	80	-	gdr	10N	372088	5437419	318	No water present. Creek within reserve in cutblock
21266	22-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	26	-	-	5	-	-	lt grey	silt sand	80	-	int int	10N	371761	5434836	284	Sample taken 30 m upstream of road, but road dust still on vegetation. Sample taken as far upstream as possible. Scoured chanel is 1 m wide.
21267	22-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	24	2	0.2	3	0.2	7.18	brn	silt sand	60	fine grained int int (south side of creek) int int w/ chlorite (north side of creek) qtz stringers between both rock types in creek bed	int int	10N	370346	5434133	356	
21268	22-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	25	2	0.1	1	0.3	7.06	rd grey brn	silt sand	60	int int w/ epidote and hematite alteration	int int w/ chlorite. Int int w/chlorite and sulphides	10N	370606	5434237	329	Road influence (runs alongside creek)
21269	22-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	22	1	0.1	15	0.1	6.68	brn	silt sand	70	gdr	gdr	10N	368221	5431889	166	
21270	22-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	21	1	0.2	13	0.1	6.61	brn	sand silt	75	gdr	gdr	10N	367285	5431530	171	
21271	23-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	29	0.5	0.2	6	0.1	7.43	brn	silt sand	60	-	int int w/ chlorite. Gdr w. sulphides (lots of qtz veins). Jasper. Qtz porphory	10N	370823	5435690	406	
21272	23-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	28	0.75	0.01	0	0	6.49*st	brn	sand silt	50	-	gdr. Maf vol (gravel size)	10N	370866	5435594	406	Samples taken primarily from logs
21273	23-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	33	1.5	0.15	8	0.5	7.14	brn	silt sand	80	gdr. FeOx. Minor disseminated sulphides	gdr w/ FeOx, some minor sulphides	10N	368921	5435595	382	Adjacent cutblock
21274	23-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	15	0.1	0.1	15	0.75	7.12	brn	silt sand	60	-	gdr	10N	368969	5434665	428	
21275	23-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	16	0.5	0.15	3	0.5	6.76	med-lt brn	silt sand	80	gdr	gdr	10N	368860	5434435	407	Samples also taken from logs
21276	24-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	5	3	1	8	1	6.78	tan brn	sand silt	70	gdr	gdr	10N	366131	5436309	63	Heavy rain
21277	24-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	8	2	0.5	35	2	5.75	dk brn	sand silt	60	gdr	gdr	10N	365823	5435547	75	Heavy rain. Took pH reading in fast moving water
21278	24-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	10	2	0.2	1	0.5	6.4	grey brn	coarse sand s	50	-	gdr	10N	366229	5435008	55	Heavy rain. Some moss taken from logs
21279	24-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	11	4	0.4	14	40	6.74	brn	coarse sand s	70	-	gdr some FeOx	10N	366276	5434780	169	Heavy rain.
21280	24-Sep-10	Stirling, R.	Hawthorn Lake	45	1	0.3	25	1.5	6.35	brn	silt sand	60	-	gdr, maf vol	10N	366248	5433801	139	Heavy rain.
21281	24-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	12	6	0.3	3	2	6.79	grey brn	silt sand	70	gdr	gdr, maf vol	10N	366466	5433504	144	Heavy rain.
21282	25-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	20	3	0.2	5	1.25	6.62	brn	silt sand	70	gdr, int int /w chlorite	Maf vol w/ zinc oxide? Or hematite. Mafic volcanic w/ chlorite, minor sulphides, qtz veins. Gdr	10N	366323	5431532	151	
21283	25-Sep-10	Stirling, R., Geleynse, B.	Hawthorn Lake	23	0.75	0.15	12	0.6	6.53	brn	silt sand	70	gdr	gdr	10N	369177	5432572	236	25 m upstream of road

Rock Geochemistry		WEI-21	Au-TL44	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
REPORT NO	SAMPLE NO	Recvd Wt.	Au	Ag	Al	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga
		kg	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm
VA10138403	21256	1.54	0.002	0.08	2.82	5.2	<0.2	<10	60	0.52	0.08	1.08	0.21	18.9	19	30	0.4	56.3	2.75	6.16
VA10138403	21257	1.3	0.737	0.04	2.37	6.3	<0.2	<10	80	0.33	0.08	1.08	0.08	11.55	14	32	0.24	34.3	3.43	6.25
VA10138403	21258	1.82	0.011	0.04	2.34	4.5	<0.2	<10	60	0.4	0.08	0.8	0.1	16.85	15	31	0.33	45	3.36	5.85
VA10138403	21259	1.26	0.002	0.06	2.33	4.1	<0.2	<10	100	0.44	0.15	0.96	0.46	12.65	25.9	18	0.27	26.8	2.77	5.37
VA10138403	21260	1.28	0.012	0.03	1.7	4.9	<0.2	<10	70	0.29	0.07	0.84	0.08	11.6	7.3	34	0.22	22.7	2.43	3.56
VA10138403	21261	1.22	0.002	0.08	2.52	3.6	<0.2	<10	60	0.58	0.07	1.23	0.36	22.6	35.9	28	0.31	77.4	1.65	3
VA10138403	21262	1.3	0.006	0.06	2.17	3.1	<0.2	<10	120	0.5	0.07	1	0.14	17.6	9.6	17	0.37	31	2.29	5
VA10138403	21263	1.68	0.003	0.05	2.21	7.3	<0.2	<10	60	0.34	0.18	0.91	0.14	13	14.3	21	0.32	29.4	3.65	5.53
VA10138403	21264	1.36	>1.00	0.1	2.62	16.1	<0.2	10	80	0.44	0.06	1.41	0.29	12	14.2	43	0.34	61.7	2.49	5.09
VA10138403	21265	1.24	0.012	0.06	2.86	23.9	<0.2	10	60	0.38	0.11	1.31	0.14	10.6	14	30	0.53	70.9	2.42	5.43
VA10138403	21266	1.14	0.008	0.04	2.14	3.1	<0.2	<10	20	0.29	0.04	0.73	0.09	11.95	20.3	46	0.2	45.6	2.93	5.28
VA10138403	21267	1.48	0.008	0.06	2.28	8.7	<0.2	<10	90	0.47	0.05	1.13	0.1	14.95	18.7	28	0.35	43.7	2.33	4.79
VA10138403	21268	1.2	0.004	0.04	2.14	4	<0.2	<10	40	0.37	0.07	0.63	0.17	11.95	28.9	34	0.32	54.3	2.82	5.36
VA10138403	21269	1.22	0.002	0.03	1.7	3.4	<0.2	<10	80	0.53	0.05	0.69	0.09	21.3	11.4	16	0.29	20.2	2.12	3.94
VA10138403	21270	0.94	0.001	0.02	1.93	2.2	<0.2	<10	100	0.61	0.04	0.9	0.12	19.65	12.6	20	0.28	23.5	2.22	4.45
VA10138403	21271	1.04	0.009	0.07	2.07	10.3	<0.2	<10	80	0.37	0.07	1.15	0.59	14.2	17.6	30	0.34	69.3	2.16	3.76
VA10138403	21272	1.82	0.002	0.09	2.16	5.5	<0.2	<10	50	0.48	0.05	0.79	0.18	12.55	16.9	29	0.52	49	2.42	5.29
VA10138403	21273	1.18	0.002	0.04	2.87	6.2	<0.2	<10	150	0.47	0.06	1.32	0.17	15.6	18.6	11	0.38	20	2.8	6.58
VA10138403	21274	1.74	0.001	0.03	2.43	3.2	<0.2	<10	100	0.8	0.05	0.94	0.12	19.9	11	9	0.47	16.2	2.19	4.99
VA10138403	21275	1.12	0.006	0.02	1.97	3.2	<0.2	<10	140	0.28	0.07	0.63	0.05	10.95	9.1	19	0.33	23.6	3.06	5.56
VA10138403	21276	1.28	0.001	0.03	1.54	2.3	<0.2	<10	60	0.36	0.09	0.47	0.08	16	9.6	12	0.34	15.4	3.09	4.77
VA10138403	21277	1.24	0.001	0.03	3.03	1.7	<0.2	<10	130	1.43	0.05	0.56	0.39	32.1	37.5	10	0.26	12.6	1.32	2.5
VA10138403	21278	1.72	0.02	0.02	1.46	1.9	<0.2	<10	100	0.41	0.05	0.48	0.09	12.8	7.6	10	0.37	9.7	2.12	4.17
VA10138403	21279	1.86	0.022	0.01	1.56	1.4	<0.2	<10	70	0.38	0.07	0.39	0.05	12.25	7.6	10	0.45	11.1	2.22	4.54
VA10138403	21280	1.42	0.002	0.04	2.33	2.2	<0.2	<10	50	0.93	0.07	0.8	0.27	25.2	61.6	14	0.4	108.5	1.59	3.34
VA10138403	21281	1.88	0.004	0.01	1.55	2.7	<0.2	<10	50	0.31	0.05	0.48	0.04	11.4	7.6	9	0.3	11	2.28	5.03
VA10138403	21282	1.22	0.001	0.05	1.86	4.6	<0.2	<10	60	0.33	0.09	0.63	0.1	12.25	15.7	24	0.29	85.5	2.88	4.87
VA10138403	21283	1.7	0.002	0.04	1.78	2.7	<0.2	<10	90	0.49	0.1	0.66	0.09	18.2	15.4	25	0.33	30.2	2.49	4.31

		ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
REPORT NO	SAMPLE NO	Ge	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S
		ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%
VA10138403	21256	0.06	0.05	0.14	0.018	0.03	7.2	6.7	0.47	1060	0.97	0.01	1.12	20.7	620	3.4	2.8	0.001	0.06
VA10138403	21257	0.08	0.07	0.06	0.015	0.04	6.3	7.7	1.02	615	0.54	0.01	1.53	22.3	450	3	2.9	<0.001	0.13
VA10138403	21258	0.06	0.04	0.09	0.017	0.04	8.2	7.4	0.69	724	0.83	0.01	1.13	20.9	580	3.4	3.8	0.001	0.04
VA10138403	21259	0.06	0.02	0.11	0.016	0.07	6.5	5.3	0.63	3220	3.14	0.01	0.9	14.6	750	7.7	4	<0.001	0.17
VA10138403	21260	<0.05	0.02	0.07	0.014	0.05	7.1	5.7	0.57	583	0.61	0.01	0.68	17	540	2.5	3.7	<0.001	0.06
VA10138403	21261	0.06	0.02	0.22	0.016	0.05	9.8	5.1	0.26	1690	1.08	0.02	0.67	29.4	990	4.8	2.7	<0.001	0.16
VA10138403	21262	<0.05	0.02	0.15	0.016	0.04	8.8	6.3	0.34	1120	14.9	0.01	0.99	11.1	660	4.7	4.8	0.001	0.09
VA10138403	21263	0.08	0.03	0.06	0.017	0.05	6.8	6.1	0.78	1100	1.43	0.01	1.02	13.1	600	4.7	3.4	<0.001	0.29
VA10138403	21264	0.05	0.03	0.15	0.017	0.05	7.5	6.5	0.65	1090	2.09	0.02	0.9	32.2	870	4.6	3.4	<0.001	0.12
VA10138403	21265	<0.05	0.02	0.19	0.019	0.06	5	7.3	0.55	1070	0.89	0.02	0.83	20	940	5.5	4.5	<0.001	0.11
VA10138403	21266	0.07	0.05	0.07	0.017	0.04	5.8	9	1.1	635	0.92	0.02	1.34	29	720	5	2.6	<0.001	0.04
VA10138403	21267	<0.05	0.02	0.11	0.017	0.04	8.3	7	0.5	967	1.64	0.02	0.98	19.2	720	7.8	3.5	0.001	0.11
VA10138403	21268	0.06	0.03	0.1	0.018	0.03	5.9	7.1	0.74	1770	1.7	0.02	1.09	24.5	600	6.2	2.6	<0.001	0.07
VA10138403	21269	<0.05	0.02	0.12	0.012	0.05	9.9	6.3	0.44	866	1.45	0.01	0.99	12.2	610	5.8	4	<0.001	0.11
VA10138403	21270	0.05	0.02	0.12	0.015	0.04	10.6	6.3	0.55	1080	1.22	0.02	1.03	15	650	4.3	2.7	<0.001	0.08
VA10138403	21271	<0.05	0.02	0.18	0.015	0.05	7.4	6.4	0.52	1190	0.77	0.02	0.79	22.7	750	4.4	3.4	<0.001	0.13
VA10138403	21272	0.05	0.02	0.09	0.018	0.03	6.7	8.1	0.56	982	1.5	0.01	0.97	19.8	460	3	3.4	0.001	0.07
VA10138403	21273	0.05	0.02	0.17	0.016	0.05	7.9	5.5	0.61	3260	6.17	0.01	0.98	8.4	700	10.3	3.4	<0.001	0.12
VA10138403	21274	<0.05	0.02	0.1	0.013	0.04	11.9	6.8	0.45	1020	1.73	0.01	0.99	7.1	570	4.8	3.9	<0.001	0.07
VA10138403	21275	0.05	0.03	0.06	0.016	0.04	5.3	6.4	0.69	529	1.47	0.01	1.07	9.9	360	9.2	3	<0.001	0.03
VA10138403	21276	<0.05	0.02	0.08	0.014	0.05	8.4	6.4	0.54	908	1.63	0.01	0.74	7.8	430	4.9	4	<0.001	0.12
VA10138403	21277	<0.05	0.02	0.25	0.013	0.06	13.1	4.7	0.11	3920	4.92	0.02	0.58	11.2	1130	9.2	2.5	<0.001	0.13
VA10138403	21278	<0.05	0.02	0.05	0.011	0.04	7.1	7.5	0.43	769	1.85	0.01	1.18	6.8	330	3.8	4.5	<0.001	0.06
VA10138403	21279	<0.05	0.02	0.04	0.012	0.04	6.2	7.5	0.62	476	1.25	0.01	1.31	7.5	300	3.2	5.1	<0.001	0.04
VA10138403	21280	0.05	0.02	0.2	0.012	0.03	8.7	5.3	0.23	1810	2.39	0.01	0.63	26	790	6.9	2	0.002	0.11
VA10138403	21281	0.05	0.03	0.04	0.013	0.03	6.1	6	0.66	498	1.05	0.01	1.38	6.3	340	3.5	3.3	<0.001	0.07
VA10138403	21282	0.05	0.02	0.09	0.017	0.03	5.5	5.4	0.52	939	1.16	0.01	0.93	16.1	470	3.2	2	<0.001	0.08
VA10138403	21283	<0.05	0.02	0.08	0.015	0.05	8.9	8.2	0.59	755	1.92	0.01	0.85	19.2	640	4.8	5.1	<0.001	0.08

		ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	Cu-OG46
REPORT NO	SAMPLE NO	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr	Cu
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
VA10138403	21256	0.28	6.2	2	0.3	43.8	0.02	0.04	0.2	0.137	0.03	0.34	89	0.17	11.55	34	1.2	
VA10138403	21257	0.31	7.9	0.7	0.3	51.5	0.01	0.04	1.4	0.189	0.02	0.53	100	0.18	7.24	44	1.8	
VA10138403	21258	0.29	6.4	1	0.3	34.3	0.01	0.04	0.8	0.131	0.02	0.7	110	0.15	8.74	44	1	
VA10138403	21259	0.21	6.2	1.5	0.9	42	0.01	0.06	0.8	0.08	0.05	1.74	73	0.31	7.05	83	<0.5	
VA10138403	21260	0.22	3	1	0.2	27.6	<0.01	0.01	0.3	0.074	<0.02	1.35	69	0.12	7.43	33	0.5	
VA10138403	21261	0.25	4.2	2.7	2.5	39.1	0.01	0.18	<0.2	0.073	0.03	0.25	47	0.11	16.5	69	<0.5	
VA10138403	21262	0.28	3.4	1.3	0.5	37.6	0.02	0.12	0.4	0.065	0.04	2.63	67	0.69	10.55	87	<0.5	
VA10138403	21263	0.34	5.2	0.9	0.3	43.9	0.01	0.09	2.2	0.107	0.03	0.78	95	0.24	7.05	52	0.7	
VA10138403	21264	0.37	5.9	2.6	1.6	51.9	0.01	0.15	0.2	0.105	0.03	0.29	74	0.19	13	53	0.6	NSS
VA10138403	21265	0.67	4.6	1.8	0.4	46.4	0.01	0.15	<0.2	0.081	0.04	0.32	67	0.17	9.03	43	<0.5	
VA10138403	21266	0.29	6.1	0.5	0.5	34.2	0.01	0.04	0.8	0.179	0.02	0.22	85	0.15	7.95	45	1.7	
VA10138403	21267	0.41	4.9	2.2	1.2	37.6	0.01	0.11	0.3	0.103	0.03	2.42	72	0.13	11.8	74	0.6	
VA10138403	21268	0.39	5.7	1.2	1.1	32.6	0.01	0.11	0.4	0.147	0.04	0.25	87	0.22	8.87	62	0.9	
VA10138403	21269	0.19	3	0.9	0.3	30.6	0.01	0.1	0.4	0.074	0.03	2.09	58	0.12	9.34	34	<0.5	
VA10138403	21270	0.21	4.2	1.2	0.3	42.6	0.01	0.12	0.4	0.105	0.03	1.05	68	0.11	12.45	31	0.6	
VA10138403	21271	0.42	4.4	2.3	0.3	38.8	0.01	0.13	0.2	0.094	0.03	0.24	62	0.16	10.55	75	0.5	
VA10138403	21272	0.31	5	1.5	0.3	33.3	0.01	0.11	0.3	0.12	0.04	0.23	73	0.13	10.4	33	0.7	
VA10138403	21273	0.3	5.2	1.2	0.4	62.7	0.01	0.14	1.2	0.079	0.06	5.33	72	0.36	7.73	70	<0.5	
VA10138403	21274	0.21	5.1	1.3	0.3	38.1	0.02	0.13	1.2	0.06	0.03	6	64	0.18	12.1	51	<0.5	
VA10138403	21275	0.32	5.2	0.4	0.3	41.3	0.01	0.04	1.7	0.104	<0.02	0.94	98	0.17	5.44	38	1	
VA10138403	21276	0.41	3.8	0.5	0.7	22	0.01	0.06	1.8	0.054	0.03	1.04	84	0.18	6.05	37	<0.5	
VA10138403	21277	0.28	2.8	2.2	0.7	28.7	0.01	0.23	0.6	0.027	0.08	2.49	22	0.07	12.05	45	<0.5	
VA10138403	21278	0.15	3.3	0.5	0.3	24.3	0.02	0.06	1.7	0.058	0.03	1.8	59	0.16	6.16	26	<0.5	
VA10138403	21279	0.17	3.5	0.4	0.5	21.7	0.02	0.05	2.2	0.064	0.02	1.27	62	0.13	5.38	29	0.5	
VA10138403	21280	0.19	3.2	2.4	0.3	43.6	0.01	0.2	<0.2	0.052	0.04	0.29	44	0.11	15.05	33	<0.5	
VA10138403	21281	0.17	4.7	0.3	0.3	31.7	0.01	0.04	2.2	0.075	0.02	0.73	55	0.18	5.26	28	0.7	
VA10138403	21282	0.18	4.8	1	0.4	29.4	0.01	0.09	0.6	0.113	0.02	0.53	94	0.09	7.42	40	0.7	
VA10138403	21283	0.27	3.6	0.6	0.3	33.1	<0.01	0.06	0.5	0.084	0.03	1.12	72	0.13	8.92	37	<0.5	

2010 Stream Moss Mat Geochemistry Highlights - Hawthorn Lake Property								
Sample #	**Easting**	**Northing**	**Elevation**	**Au(ppm)**	**As(ppm)**	**Co(ppm)**	**Cu(ppm)**	**Mo(ppm)**
21256	370082	5436394	299	0.002	5.2	19	56.3	0.97
21257	370071	5437846	283	0.737	6.3	14	34.3	0.54
21258	370027	5437787	311	0.011	4.5	15	45	0.83
21259	370012	5437780	286	0.002	4.1	25.9	26.8	3.14
21260	369983	5437975	256	0.012	4.9	7.3	22.7	0.61
21261	370365	5435734	380	0.002	3.6	35.9	77.4	1.08
21262	369545	5438435	199	0.006	3.1	9.6	31	14.9
21263	369583	5438459	213	0.003	7.3	14.3	29.4	1.43
21264	371989	5437451	311	1	16.1	14.2	61.7	2.09
21265	372088	5437419	318	0.012	23.9	14	70.9	0.89
21266	371761	5434836	284	0.008	3.1	20.3	45.6	0.92
21267	370346	5434133	356	0.008	8.7	18.7	43.7	1.64
21268	370606	5434237	329	0.004	4	28.9	54.3	1.7
21269	368221	5431889	166	0.002	3.4	11.4	20.2	1.45
21270	367285	5431530	171	0.001	2.2	12.6	23.5	1.22
21271	370823	5435690	406	0.009	10.3	17.6	69.3	0.77
21272	370866	5435594	406	0.002	5.5	16.9	49	1.5
21273	368921	5435595	382	0.002	6.2	18.6	20	6.17
21274	368969	5434665	428	0.001	3.2	11	16.2	1.73
21275	368860	5434435	407	0.006	3.2	9.1	23.6	1.47
21276	366131	5436309	63	0.001	2.3	9.6	15.4	1.63
21277	365823	5435547	75	0.001	1.7	37.5	12.6	4.92
21278	366229	5435008	55	0.02	1.9	7.6	9.7	1.85
21279	366276	5434780	169	0.022	1.4	7.6	11.1	1.25
21280	366248	5433801	139	0.002	2.2	61.6	108.5	2.39
21281	366466	5433504	144	0.004	2.7	7.6	11	1.05
21282	366323	5431532	151	0.001	4.6	15.7	85.5	1.16
21283	369177	5432572	236	0.002	2.7	15.4	30.2	1.92

Appendix 2

ALS Laboratory Minerals Group Data

Analytical Certificate VA10132826

Analytical Certificate VA10138403

Analytical Certificate VA10138496

ALS Minerals
ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: **HOULE, JACQUES**
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 5-OCT-2010
This copy reported on 6-OCT-2010
Account: HOUJAC

CERTIFICATE VA10132826

Project:
P.O. No.:
This report is for 7 Rock samples submitted to our lab in Vancouver, BC, Canada on 16-SEP-2010.
The following have access to data associated with this certificate:

BRUCE GELEYSE	JACQUES HOULE	

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
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
ME-OG46	Ore Grade Elements - AquaRegia	ICP-AES
Cu-OG46	Ore Grade Cu - Aqua Regia	VARIABLE
Au-TL44	Trace Level Au - 50 g AR	ICP-MS
ME-MS41	51 anal. aqua regia ICPMS	

To: **HOULE, JACQUES**
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Minerals

ALS Canada Ltd.
2103 Dollarton Hwy
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Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: HOULE, JACQUES
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 5-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10132826

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	Au-TL44 Au ppm 0.001	ME-MS41 Ag ppm 0.01	ME-MS41 Al % 0.01	ME-MS41 As ppm 0.1	ME-MS41 Au ppm 0.2	ME-MS41 B ppm 10	ME-MS41 Ba ppm 10	ME-MS41 Be ppm 0.05	ME-MS41 Bi ppm 0.01	ME-MS41 Ca % 0.01	ME-MS41 Cd ppm 0.01	ME-MS41 Ce ppm 0.02	ME-MS41 Co ppm 0.1	ME-MS41 Cr ppm 1
17971		1.14	0.008	1.02	3.48	42.9	<0.2	<10	10	0.31	0.75	2.87	0.28	1.54	138.5	39
17972		0.68	0.001	7.66	2.06	425	<0.2	<10	10	0.08	7.73	0.11	3.14	5.33	309	13
17973		0.90	0.019	7.29	4.13	38.4	<0.2	<10	20	0.09	6.49	0.42	4.53	2.21	71.8	71
17974		0.92	0.221	2.20	5.60	87.1	0.2	<10	<10	0.08	5.56	0.34	1.89	3.07	128.0	102
17975		0.96	0.021	6.04	2.33	20.5	<0.2	<10	<10	0.06	10.10	0.30	0.87	1.56	19.9	45
17976		1.08	0.014	8.56	3.31	33.0	<0.2	<10	<10	0.06	5.73	0.43	4.02	1.93	34.7	57
17977		0.88	0.017	13.75	5.86	46.9	<0.2	<10	<10	0.27	7.74	0.59	1.89	5.60	47.5	86

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

ALS Canada Ltd.
2103 Dollarton Hwy
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To: HOULE, JACQUES
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 5-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10132826

Sample Description	Method Analyte Units LOR	ME-MS41 Cs ppm 0.05	ME-MS41 Cu ppm 0.2	ME-MS41 Fe % 0.01	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01
17971		0.08	1010	17.50	15.55	0.55	0.36	0.65	0.036	0.01	0.6	4.3	1.51	482	1.60	0.01
17972		0.18	>10000	26.7	10.85	0.78	0.06	0.23	3.06	<0.01	2.2	3.2	0.52	488	2.61	0.01
17973		0.06	>10000	10.10	10.40	0.28	0.11	0.22	0.505	<0.01	0.8	6.1	2.46	1440	13.70	0.01
17974		0.17	>10000	17.00	16.90	0.44	0.37	0.32	1.830	<0.01	1.2	2.0	2.86	1420	1.59	0.01
17975		<0.05	5760	5.16	6.36	0.14	0.20	0.23	0.399	<0.01	0.5	3.4	1.34	891	1.51	0.01
17976		<0.05	7460	7.56	8.88	0.20	0.29	0.59	0.240	<0.01	0.6	4.2	1.87	1590	0.76	0.01
17977		0.19	>10000	14.80	15.40	0.35	0.65	0.16	0.605	0.01	2.2	7.3	2.95	1940	3.01	0.02

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

ALS Canada Ltd.
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ALS Minerals

To: HOULE, JACQUES
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 5-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10132826

Sample Description	Method / Analyte / Units / LOR	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001	ME-MS41 S % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc ppm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS41 Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2
17971		0.36	67.6	200	4.6	0.3	<0.001	>10.0	1.37	5.0	4.9	0.3	110.5	<0.01	0.02	<0.2
17972		0.22	18.6	100	77.4	0.3	<0.001	>10.0	2.87	7.7	42.4	0.7	8.0	<0.01	1.23	<0.2
17973		0.11	42.6	260	7.2	0.1	<0.001	1.17	0.18	14.7	25.9	0.4	6.6	<0.01	2.97	<0.2
17974		0.16	64.7	360	5.5	0.1	0.001	3.32	0.30	23.2	38.2	0.5	2.6	<0.01	2.22	0.2
17975		0.12	20.6	120	31.1	0.1	<0.001	0.16	0.22	8.0	5.1	0.4	2.7	<0.01	5.36	<0.2
17976		0.20	30.5	220	18.0	0.1	<0.001	0.71	0.20	14.1	5.9	0.4	4.3	0.01	1.36	<0.2
17977		0.24	46.5	500	18.3	0.5	<0.001	2.13	0.26	18.9	28.4	0.7	14.6	0.01	2.86	0.3

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

ALS Minerals
ALS Canada Ltd.
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To: HOULE, JACQUES
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 5-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10132826

Sample Description	Method / Analyte / Units / LOR	ME-MS41 Ti % 0.005	ME-MS41 Tl ppm 0.02	ME-MS41 U ppm 0.05	ME-MS41 V ppm 1	ME-MS41 W ppm 0.05	ME-MS41 Y ppm 0.05	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5	Cu-OG46 Cu % 0.001
17971		0.244	1.06	<0.05	76	0.34	4.34	48	10.6	
17972		0.044	0.25	<0.05	48	0.16	4.01	255	1.3	1.195
17973		0.176	0.02	<0.05	145	0.28	5.18	404	2.5	2.68
17974		0.307	0.03	<0.05	209	0.22	8.61	246	10.0	2.35
17975		0.147	<0.02	<0.05	80	0.14	3.96	255	5.1	
17976		0.217	<0.02	<0.05	112	0.22	6.43	1200	7.6	
17977		0.416	0.06	0.08	196	0.34	10.25	343	19.7	2.06

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ALS Canada Ltd.
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6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 5-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10132826

Method	CERTIFICATE COMMENTS
ME-MS41	Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).

ALS Canada Ltd.

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North Vancouver BC V7H 0A7
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To: **HOULE, JACQUES**
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 29-OCT-2010
Account: HOUJAC

CERTIFICATE VA10138403

Project:
P.O. No.:
This report is for 28 Other samples submitted to our lab in Vancouver, BC, Canada on 28-SEP-2010.
The following have access to data associated with this certificate:

BRUCE GELEYSE	JACQUES HOULE	REBECCA STIRLING

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
DRY-22	Drying - Maximum Temp 60C

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-OG44	Ore Grade Au - 50g AR	ICP-MS
Au-TL44	Trace Level Au - 50 g AR	ICP-MS
ME-MS41	51 anal. aqua regia ICPMS	

To: **HOULE, JACQUES**
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Minerals

ALS Canada Ltd.
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To: HOULE, JACQUES
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 29-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10138403

Sample Description / Method	WEI-21	Au-TL44	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
Analyte	Recvd Wt.	Au	Ag	Al	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr
Units	kg	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
LOR	0.02	0.001	0.01	0.01	0.1	0.2	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1
21256	1.54	0.002	0.08	2.82	5.2	<0.2	<10	60	0.52	0.08	1.08	0.21	18.90	19.0	30
21257	1.30	0.737	0.04	2.37	6.3	<0.2	<10	80	0.33	0.08	1.08	0.08	11.55	14.0	32
21258	1.82	0.011	0.04	2.34	4.5	<0.2	<10	60	0.40	0.08	0.80	0.10	16.85	15.0	31
21259	1.26	0.002	0.06	2.33	4.1	<0.2	<10	100	0.44	0.15	0.96	0.46	12.65	25.9	18
21260	1.28	0.012	0.03	1.70	4.9	<0.2	<10	70	0.29	0.07	0.84	0.08	11.60	7.3	34
21261	1.22	0.002	0.08	2.52	3.6	<0.2	<10	60	0.58	0.07	1.23	0.36	22.6	35.9	28
21262	1.30	0.006	0.06	2.17	3.1	<0.2	<10	120	0.50	0.07	1.00	0.14	17.60	9.6	17
21263	1.68	0.003	0.05	2.21	7.3	<0.2	<10	60	0.34	0.18	0.91	0.14	13.00	14.3	21
21264	1.36	>1.00	0.10	2.62	16.1	<0.2	10	80	0.44	0.06	1.41	0.29	12.00	14.2	43
21265	1.24	0.012	0.06	2.86	23.9	<0.2	10	60	0.38	0.11	1.31	0.14	10.60	14.0	30
21266	1.14	0.008	0.04	2.14	3.1	<0.2	<10	20	0.29	0.04	0.73	0.09	11.95	20.3	46
21267	1.48	0.008	0.06	2.28	8.7	<0.2	<10	90	0.47	0.05	1.13	0.10	14.95	18.7	28
21268	1.20	0.004	0.04	2.14	4.0	<0.2	<10	40	0.37	0.07	0.63	0.17	11.95	28.9	34
21269	1.22	0.002	0.03	1.70	3.4	<0.2	<10	80	0.53	0.05	0.69	0.09	21.3	11.4	16
21270	0.94	0.001	0.02	1.93	2.2	<0.2	<10	100	0.61	0.04	0.90	0.12	19.65	12.6	20
21271	1.04	0.009	0.07	2.07	10.3	<0.2	<10	80	0.37	0.07	1.15	0.59	14.20	17.6	30
21272	1.82	0.002	0.09	2.16	5.5	<0.2	<10	50	0.48	0.05	0.79	0.18	12.55	16.9	29
21273	1.18	0.002	0.04	2.87	6.2	<0.2	<10	150	0.47	0.06	1.32	0.17	15.60	18.6	11
21274	1.74	0.001	0.03	2.43	3.2	<0.2	<10	100	0.80	0.05	0.94	0.12	19.90	11.0	9
21275	1.12	0.006	0.02	1.97	3.2	<0.2	<10	140	0.28	0.07	0.63	0.05	10.95	9.1	19
21276	1.28	0.001	0.03	1.54	2.3	<0.2	<10	60	0.36	0.09	0.47	0.08	16.00	9.6	12
21277	1.24	0.001	0.03	3.03	1.7	<0.2	<10	130	1.43	0.05	0.56	0.39	32.1	37.5	10
21278	1.72	0.020	0.02	1.46	1.9	<0.2	<10	100	0.41	0.05	0.48	0.09	12.80	7.6	10
21279	1.86	0.022	0.01	1.56	1.4	<0.2	<10	70	0.38	0.07	0.39	0.05	12.25	7.6	10
21280	1.42	0.002	0.04	2.33	2.2	<0.2	<10	50	0.93	0.07	0.80	0.27	25.2	61.6	14
21281	1.88	0.004	0.01	1.55	2.7	<0.2	<10	50	0.31	0.05	0.48	0.04	11.40	7.6	9
21282	1.22	0.001	0.05	1.86	4.6	<0.2	<10	60	0.33	0.09	0.63	0.10	12.25	15.7	24
21283	1.70	0.002	0.04	1.78	2.7	<0.2	<10	90	0.49	0.10	0.66	0.09	18.20	15.4	25

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

ALS Canada Ltd.
2103 Dollarton Hwy
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Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: HOULE, JACQUES
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 29-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10138403

Sample Description	Method Analyte Units LOR	ME-MS41 Cs ppm 0.05	ME-MS41 Cu ppm 0.2	ME-MS41 Fe % 0.01	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01
21256		0.40	56.3	2.75	6.16	0.06	0.05	0.14	0.018	0.03	7.2	6.7	0.47	1060	0.97	0.01
21257		0.24	34.3	3.43	6.25	0.08	0.07	0.06	0.015	0.04	6.3	7.7	1.02	615	0.54	0.01
21258		0.33	45.0	3.36	5.85	0.06	0.04	0.09	0.017	0.04	8.2	7.4	0.69	724	0.83	0.01
21259		0.27	26.8	2.77	5.37	0.06	0.02	0.11	0.016	0.07	6.5	5.3	0.63	3220	3.14	0.01
21260		0.22	22.7	2.43	3.56	<0.05	0.02	0.07	0.014	0.05	7.1	5.7	0.57	583	0.61	0.01
21261		0.31	77.4	1.65	3.00	0.06	0.02	0.22	0.016	0.05	9.8	5.1	0.26	1690	1.08	0.02
21262		0.37	31.0	2.29	5.00	<0.05	0.02	0.15	0.016	0.04	8.8	6.3	0.34	1120	14.90	0.01
21263		0.32	29.4	3.65	5.53	0.08	0.03	0.06	0.017	0.05	6.8	6.1	0.78	1100	1.43	0.01
21264		0.34	61.7	2.49	5.09	0.05	0.03	0.15	0.017	0.05	7.5	6.5	0.65	1090	2.09	0.02
21265		0.53	70.9	2.42	5.43	<0.05	0.02	0.19	0.019	0.06	5.0	7.3	0.55	1070	0.89	0.02
21266		0.20	45.6	2.93	5.28	0.07	0.05	0.07	0.017	0.04	5.8	9.0	1.10	635	0.92	0.02
21267		0.35	43.7	2.33	4.79	<0.05	0.02	0.11	0.017	0.04	8.3	7.0	0.50	967	1.64	0.02
21268		0.32	54.3	2.82	5.36	0.06	0.03	0.10	0.018	0.03	5.9	7.1	0.74	1770	1.70	0.02
21269		0.29	20.2	2.12	3.94	<0.05	0.02	0.12	0.012	0.05	9.9	6.3	0.44	866	1.45	0.01
21270		0.28	23.5	2.22	4.45	0.05	0.02	0.12	0.015	0.04	10.6	6.3	0.55	1080	1.22	0.02
21271		0.34	69.3	2.16	3.76	<0.05	0.02	0.18	0.015	0.05	7.4	6.4	0.52	1190	0.77	0.02
21272		0.52	49.0	2.42	5.29	0.05	0.02	0.09	0.018	0.03	6.7	8.1	0.56	982	1.50	0.01
21273		0.38	20.0	2.80	6.58	0.05	0.02	0.17	0.016	0.05	7.9	5.5	0.61	3260	6.17	0.01
21274		0.47	16.2	2.19	4.99	<0.05	0.02	0.10	0.013	0.04	11.9	6.8	0.45	1020	1.73	0.01
21275		0.33	23.6	3.06	5.56	0.05	0.03	0.06	0.016	0.04	5.3	6.4	0.69	529	1.47	0.01
21276		0.34	15.4	3.09	4.77	<0.05	0.02	0.08	0.014	0.05	8.4	6.4	0.54	908	1.63	0.01
21277		0.26	12.6	1.32	2.50	<0.05	0.02	0.25	0.013	0.06	13.1	4.7	0.11	3920	4.92	0.02
21278		0.37	9.7	2.12	4.17	<0.05	0.02	0.05	0.011	0.04	7.1	7.5	0.43	769	1.85	0.01
21279		0.45	11.1	2.22	4.54	<0.05	0.02	0.04	0.012	0.04	6.2	7.5	0.62	476	1.25	0.01
21280		0.40	108.5	1.59	3.34	0.05	0.02	0.20	0.012	0.03	8.7	5.3	0.23	1810	2.39	0.01
21281		0.30	11.0	2.28	5.03	0.05	0.03	0.04	0.013	0.03	6.1	6.0	0.66	498	1.05	0.01
21282		0.29	85.5	2.88	4.87	0.05	0.02	0.09	0.017	0.03	5.5	5.4	0.52	939	1.16	0.01
21283		0.33	30.2	2.49	4.31	<0.05	0.02	0.08	0.015	0.05	8.9	8.2	0.59	755	1.92	0.01

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

ALS Minerals

ALS Canada Ltd.

2103 Dollarton Hwy
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Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: **HOULE, JACQUES**
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 29-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10138403

Sample Description	Method / Analyte / Units / LOR	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001	ME-MS41 S % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc ppm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS41 Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2
21256		1.12	20.7	620	3.4	2.8	0.001	0.06	0.28	6.2	2.0	0.3	43.8	0.02	0.04	0.2
21257		1.53	22.3	450	3.0	2.9	<0.001	0.13	0.31	7.9	0.7	0.3	51.5	0.01	0.04	1.4
21258		1.13	20.9	580	3.4	3.8	0.001	0.04	0.29	6.4	1.0	0.3	34.3	0.01	0.04	0.8
21259		0.90	14.6	750	7.7	4.0	<0.001	0.17	0.21	6.2	1.5	0.9	42.0	0.01	0.06	0.8
21260		0.68	17.0	540	2.5	3.7	<0.001	0.06	0.22	3.0	1.0	0.2	27.6	<0.01	0.01	0.3
21261		0.67	29.4	990	4.8	2.7	<0.001	0.16	0.25	4.2	2.7	2.5	39.1	0.01	0.18	<0.2
21262		0.99	11.1	660	4.7	4.8	0.001	0.09	0.28	3.4	1.3	0.5	37.6	0.02	0.12	0.4
21263		1.02	13.1	600	4.7	3.4	<0.001	0.29	0.34	5.2	0.9	0.3	43.9	0.01	0.09	2.2
21264		0.90	32.2	870	4.6	3.4	<0.001	0.12	0.37	5.9	2.6	1.6	51.9	0.01	0.15	0.2
21265		0.83	20.0	940	5.5	4.5	<0.001	0.11	0.67	4.6	1.8	0.4	46.4	0.01	0.15	<0.2
21266		1.34	29.0	720	5.0	2.6	<0.001	0.04	0.29	6.1	0.5	0.5	34.2	0.01	0.04	0.8
21267		0.98	19.2	720	7.8	3.5	0.001	0.11	0.41	4.9	2.2	1.2	37.6	0.01	0.11	0.3
21268		1.09	24.5	600	6.2	2.6	<0.001	0.07	0.39	5.7	1.2	1.1	32.6	0.01	0.11	0.4
21269		0.99	12.2	610	5.8	4.0	<0.001	0.11	0.19	3.0	0.9	0.3	30.6	0.01	0.10	0.4
21270		1.03	15.0	650	4.3	2.7	<0.001	0.08	0.21	4.2	1.2	0.3	42.6	0.01	0.12	0.4
21271		0.79	22.7	750	4.4	3.4	<0.001	0.13	0.42	4.4	2.3	0.3	38.8	0.01	0.13	0.2
21272		0.97	19.8	460	3.0	3.4	0.001	0.07	0.31	5.0	1.5	0.3	33.3	0.01	0.11	0.3
21273		0.98	8.4	700	10.3	3.4	<0.001	0.12	0.30	5.2	1.2	0.4	62.7	0.01	0.14	1.2
21274		0.99	7.1	570	4.8	3.9	<0.001	0.07	0.21	5.1	1.3	0.3	38.1	0.02	0.13	1.2
21275		1.07	9.9	360	9.2	3.0	<0.001	0.03	0.32	5.2	0.4	0.3	41.3	0.01	0.04	1.7
21276		0.74	7.8	430	4.9	4.0	<0.001	0.12	0.41	3.8	0.5	0.7	22.0	0.01	0.06	1.8
21277		0.58	11.2	1130	9.2	2.5	<0.001	0.13	0.28	2.8	2.2	0.7	28.7	0.01	0.23	0.6
21278		1.18	6.8	330	3.8	4.5	<0.001	0.06	0.15	3.3	0.5	0.3	24.3	0.02	0.06	1.7
21279		1.31	7.5	300	3.2	5.1	<0.001	0.04	0.17	3.5	0.4	0.5	21.7	0.02	0.05	2.2
21280		0.63	26.0	790	6.9	2.0	0.002	0.11	0.19	3.2	2.4	0.3	43.6	0.01	0.20	<0.2
21281		1.38	6.3	340	3.5	3.3	<0.001	0.07	0.17	4.7	0.3	0.3	31.7	0.01	0.04	2.2
21282		0.93	16.1	470	3.2	2.0	<0.001	0.08	0.18	4.8	1.0	0.4	29.4	0.01	0.09	0.6
21283		0.85	19.2	640	4.8	5.1	<0.001	0.08	0.27	3.6	0.6	0.3	33.1	<0.01	0.06	0.5

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

ALS Canada Ltd.
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To: HOULE, JACQUES
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

CERTIFICATE OF ANALYSIS VA10138403

Sample Description	Method Analyte Units LOR	ME-MS41 Ti % 0.005	ME-MS41 Tl ppm 0.02	ME-MS41 U ppm 0.05	ME-MS41 V ppm 1	ME-MS41 W ppm 0.05	ME-MS41 Y ppm 0.05	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5	Au-OG44 Au ppm 0.01
21256		0.137	0.03	0.34	89	0.17	11.55	34	1.2	
21257		0.189	0.02	0.53	100	0.18	7.24	44	1.8	
21258		0.131	0.02	0.70	110	0.15	8.74	44	1.0	
21259		0.080	0.05	1.74	73	0.31	7.05	83	<0.5	
21260		0.074	<0.02	1.35	69	0.12	7.43	33	0.5	
21261		0.073	0.03	0.25	47	0.11	16.50	69	<0.5	
21262		0.065	0.04	2.63	67	0.69	10.55	87	<0.5	
21263		0.107	0.03	0.78	95	0.24	7.05	52	0.7	
21264		0.105	0.03	0.29	74	0.19	13.00	53	0.6	NSS
21265		0.081	0.04	0.32	67	0.17	9.03	43	<0.5	
21266		0.179	0.02	0.22	85	0.15	7.95	45	1.7	
21267		0.103	0.03	2.42	72	0.13	11.80	74	0.6	
21268		0.147	0.04	0.25	87	0.22	8.87	62	0.9	
21269		0.074	0.03	2.09	58	0.12	9.34	34	<0.5	
21270		0.105	0.03	1.05	68	0.11	12.45	31	0.6	
21271		0.094	0.03	0.24	62	0.16	10.55	75	0.5	
21272		0.120	0.04	0.23	73	0.13	10.40	33	0.7	
21273		0.079	0.06	5.33	72	0.36	7.73	70	<0.5	
21274		0.060	0.03	6.00	64	0.18	12.10	51	<0.5	
21275		0.104	<0.02	0.94	98	0.17	5.44	38	1.0	
21276		0.054	0.03	1.04	84	0.18	6.05	37	<0.5	
21277		0.027	0.08	2.49	22	0.07	12.05	45	<0.5	
21278		0.058	0.03	1.80	59	0.16	6.16	26	<0.5	
21279		0.064	0.02	1.27	62	0.13	5.38	29	0.5	
21280		0.052	0.04	0.29	44	0.11	15.05	33	<0.5	
21281		0.075	0.02	0.73	55	0.18	5.26	28	0.7	
21282		0.113	0.02	0.53	94	0.09	7.42	40	0.7	
21283		0.084	0.03	1.12	72	0.13	8.92	37	<0.5	

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ALS Minerals

To: HOULE, JACQUES
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 29-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10138403

Method	CERTIFICATE COMMENTS
ALL METHODS	NSS is non-sufficient sample.
ME-MS41	Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).

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To: **HOULE, JACQUES**
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 7-OCT-2010
Account: HOUJAC

CERTIFICATE VA10138496

Project:
P.O. No.:
This report is for 9 Rock samples submitted to our lab in Vancouver, BC, Canada on 28-SEP-2010.

The following have access to data associated with this certificate:

BRUCE GELEYSE	JACQUES HOULE	REBECCA STIRLING

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI-21	Received Sample Weight
LOG-22	Sample login - Rcd w/o BarCode
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-TL44	Trace Level Au - 50 g AR	ICP-MS
ME-MS41	51 anal. aqua regia ICPMS	

To: **HOULE, JACQUES**
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

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.

Signature:
Colin Ramshaw, Vancouver Laboratory Manager

ALS Canada Ltd.

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To: **HOULE, JACQUES**
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 7-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10138496

Sample Description	WEI-21	Au-TL44	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41	ME-MS41
Analyte	Recvd Wt.	Au	Ag	Al	As	Au	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr
Units	kg	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
LOR	0.02	0.001	0.01	0.01	0.1	0.2	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1
17978	0.62	0.003	0.03	1.79	3.6	<0.2	<10	120	0.32	0.28	0.45	0.02	7.19	19.0	7
17979	1.32	0.006	0.04	0.63	3.9	<0.2	<10	20	0.13	0.21	0.07	<0.01	15.20	28.8	2
17980	0.38	0.003	0.05	3.75	3.8	<0.2	<10	100	0.46	0.06	3.25	0.05	19.10	23.7	3
17981	0.52	0.002	0.03	3.72	3.7	<0.2	<10	40	0.50	0.01	2.23	0.01	8.21	9.4	3
17982	1.48	0.002	0.03	1.33	2.2	<0.2	<10	50	0.45	0.12	1.92	0.04	18.35	11.2	5
17983	1.48	0.005	0.35	1.39	188.0	<0.2	<10	30	0.13	1.81	0.62	0.15	2.75	270	8
17984	0.62	0.002	2.42	3.26	171.5	<0.2	<10	10	<0.05	1.06	0.10	0.18	6.33	270	55
17985	0.96	0.006	0.16	3.84	40	<0.2	<10	<10	0.39	0.09	10.40	0.07	4.77	31.0	77
17986	0.24	0.002	0.86	0.26	559	<0.2	<10	10	<0.05	2.72	0.35	0.33	0.84	1185	2

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NANAIMO BC V9V 1P8

Finalized Date: 7-OCT-2010
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CERTIFICATE OF ANALYSIS VA10138496

Sample Description	Method Analyte Units LOR	ME-MS41 Cs ppm 0.05	ME-MS41 Cu ppm 0.2	ME-MS41 Fe % 0.01	ME-MS41 Ga ppm 0.05	ME-MS41 Ge ppm 0.05	ME-MS41 Hf ppm 0.02	ME-MS41 Hg ppm 0.01	ME-MS41 In ppm 0.005	ME-MS41 K % 0.01	ME-MS41 La ppm 0.2	ME-MS41 Li ppm 0.1	ME-MS41 Mg % 0.01	ME-MS41 Mn ppm 5	ME-MS41 Mo ppm 0.05	ME-MS41 Na % 0.01
17978		0.12	25.9	3.91	5.64	0.10	0.08	0.01	0.011	0.12	4.0	3.3	1.30	683	0.32	0.02
17979		0.21	14.8	9.87	1.57	0.19	0.02	0.04	0.006	0.09	7.1	0.9	0.12	38	24.5	0.03
17980		0.10	98.4	4.13	11.40	0.20	0.34	0.02	0.042	0.05	9.0	2.7	0.97	562	0.95	0.08
17981		0.13	8.1	2.83	10.85	0.20	0.09	0.06	0.015	0.02	4.8	3.0	0.83	447	0.30	<0.01
17982		1.19	5.5	2.82	4.90	0.06	0.06	0.05	0.019	0.14	10.2	4.7	0.90	490	3.86	0.01
17983		0.14	2160	14.15	4.76	0.35	0.22	0.06	0.031	0.01	1.3	1.3	0.89	302	5.34	<0.01
17984		<0.05	6190	35.0	13.90	0.58	0.29	0.27	0.490	<0.01	2.7	3.8	1.81	1260	2.43	<0.01
17985		<0.05	237	4.08	13.10	0.47	0.29	0.05	0.046	<0.01	1.9	3.3	1.57	713	0.60	<0.01
17986		0.07	7100	26.2	1.40	0.94	0.08	0.07	0.017	<0.01	0.4	0.3	0.14	62	11.60	<0.01

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Finalized Date: 7-OCT-2010
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CERTIFICATE OF ANALYSIS VA10138496

Sample Description	Method Analyte Units LOR	ME-MS41 Nb ppm 0.05	ME-MS41 Ni ppm 0.2	ME-MS41 P ppm 10	ME-MS41 Pb ppm 0.2	ME-MS41 Rb ppm 0.1	ME-MS41 Re ppm 0.001	ME-MS41 S % 0.01	ME-MS41 Sb ppm 0.05	ME-MS41 Sc ppm 0.1	ME-MS41 Se ppm 0.2	ME-MS41 Sn ppm 0.2	ME-MS41 Sr ppm 0.2	ME-MS41 Ta ppm 0.01	ME-MS41 Te ppm 0.01	ME-MS41 Th ppm 0.2
17978		0.29	2.8	530	4.1	4.5	0.003	1.61	0.06	7.3	1.9	0.3	21.3	0.01	0.09	3.8
17979		0.33	1.5	250	3.0	3.3	0.063	8.97	0.08	1.5	23.3	0.3	5.9	<0.01	0.08	7.0
17980		0.21	3.0	1490	1.1	1.7	0.001	0.53	0.07	14.3	0.9	0.4	54.0	0.01	0.14	1.9
17981		0.31	2.1	480	3.7	1.2	<0.001	0.81	0.23	7.7	0.2	0.3	97.8	<0.01	<0.01	3.4
17982		0.12	2.0	450	2.9	5.7	0.001	1.11	0.14	6.5	0.2	0.3	19.4	<0.01	<0.01	4.7
17983		0.29	24.4	600	8.1	0.5	0.013	>10.0	0.64	2.4	33.7	0.2	46.8	<0.01	1.76	0.2
17984		0.68	44.7	140	23.4	0.2	0.001	>10.0	6.05	6.1	18.1	0.4	7.8	0.01	0.24	<0.2
17985		0.26	47.8	290	3.9	0.1	0.001	0.82	0.45	14.3	0.9	0.4	229	0.01	0.11	0.2
17986		0.47	33.9	240	11.8	0.2	0.011	>10.0	0.38	0.8	135.0	<0.2	5.5	<0.01	5.34	<0.2

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

ALS Canada Ltd.
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North Vancouver BC V7H 0A7
Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

To: HOULE, JACQUES
6552 PEREGRINE ROAD
NANAIMO BC V9V 1P8

Finalized Date: 7-OCT-2010
Account: HOUJAC

CERTIFICATE OF ANALYSIS VA10138496

Sample Description	Method Analyte Units LOR	ME-MS41 Ti % 0.005	ME-MS41 Tl ppm 0.02	ME-MS41 U ppm 0.05	ME-MS41 V ppm 1	ME-MS41 W ppm 0.05	ME-MS41 Y ppm 0.05	ME-MS41 Zn ppm 2	ME-MS41 Zr ppm 0.5
17978		0.111	<0.02	0.71	97	0.37	7.10	45	1.4
17979		0.005	<0.02	0.81	9	0.09	4.34	2	0.7
17980		0.220	<0.02	0.29	113	0.21	15.15	34	9.1
17981		0.093	0.02	0.44	81	0.20	3.96	32	2.5
17982		0.019	0.03	1.31	41	0.27	10.85	26	1.2
17983		0.091	0.16	0.34	18	0.13	4.57	11	6.1
17984		0.157	1.70	0.05	83	0.24	5.32	114	11.2
17985		0.313	0.04	0.07	114	0.86	8.10	68	10.6
17986		0.027	0.09	0.11	8	0.20	1.35	6	2.6

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

ALS Minerals

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Method	CERTIFICATE COMMENTS
ME-MS41	Interference: Ca>10% on ICP-MS As,ICP-AES results shown.
ME-MS41	Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5g).

Appendix 3

ALS Laboratory Minerals Group Data

ALS Chemex Laboratory Procedures

ALS Chemex Quality Control Guide

Analytical Procedures from ALS Chemex Lab

Geochemical Procedure – ME-MS41
Ultra-Trace Level Methods Using ICP-MS and ICP-AES

Sample Decomposition: Aqua Regia Digestion (GEO-AR01)
Analytical Method: Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES) Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)

A prepared sample (0.50 g) is digested with aqua regia in a graphite heating block. After cooling, the resulting solution is diluted to with deionized water, mixed and analyzed by inductively coupled plasma-atomic emission spectrometry. Following this analysis, the results are reviewed for high concentrations of bismuth, mercury, molybdenum, silver and tungsten and diluted accordingly. Samples are then analysed by ICP-MS for the remaining suite of elements. The analytical results are corrected for inter-element spectral interferences.

Element	Symbol	Units	Lower Limit	Upper Limit
Silver	Ag	ppm	0.01	100
Aluminum	Al	%	0.01	25
Arsenic	As	ppm	0.1	10 000
Gold	Au	ppm	0.2	25
Boron	B	ppm	10	10 000
Barium	Ba	ppm	10	10 000
Beryllium	Be	ppm	0.05	1 000
Bismuth	Bi	ppm	0.01	10 000
Calcium	Ca	%	0.01	25
Cadmium	Cd	ppm	0.01	1 000
Cerium	Ce	ppm	0.02	500
Cobalt	Co	ppm	0.1	10 000
Chromium	Cr	ppm	1	10 000
Cesium	Cs	ppm	0.05	500
Copper	Cu	ppm	0.2	10 000

Element	Symbol	Units	Lower Limit	Upper Limit
Iron	Fe	%	0.01	50
Gallium	Ga	ppm	0.05	10 000
Germanium	Ge	ppm	0.05	500
Hafnium	Hf	ppm	0.02	500
Mercury	Hg	ppm	0.01	10 000
Indium	In	ppm	0.005	500
Potassium	K	%	0.01	10
Lanthanum	La	ppm	0.2	10 000
Lithium	Li	ppm	0.1	10 000
Magnesium	Mg	%	0.01	25
Manganese	Mn	ppm	5	50 000
Molybdenum	Mo	ppm	0.05	10 000
Sodium	Na	%	0.01	10
Niobium	Nb	ppm	0.05	500
Nickel	Ni	ppm	0.2	10 000
Phosphorus	P	ppm	10	10 000
Lead	Pb	ppm	0.2	10 000
Rubidium	Rb	ppm	0.1	10 000
Rhenium	Re	ppm	0.001	50
Sulphur	S	%	0.01	10
Antimony	Sb	ppm	0.05	10 000
Scandium	Sc	ppm	0.1	10 000
Selenium	Se	ppm	0.2	1 000
Tin	Sn	ppm	0.2	500
Strontium	Sr	ppm	0.2	10 000
Tantalum	Ta	ppm	0.01	500
Tellurium	Te	ppm	0.01	500
Thorium	Th	ppm	0.2	10000
Titanium	Ti	%	0.005	10
Thallium	Tl	ppm	0.02	10 000

Element	Symbol	Units	Lower Limit	Upper Limit
Uranium	U	ppm	0.05	10 000
Vanadium	V	ppm	1	10 000
Tungsten	W	ppm	0.05	10 000
Yttrium	Y	ppm	0.05	500
Zinc	Zn	ppm	2	10 000
Zirconium	Zr	ppm	0.5	500

Geochemical Procedure –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 (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, $AuTe_2$.

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.

Minerals Quality Control

ALS Laboratory Group's Mineral Division, ALS, has developed and implemented at each of its locations a Quality Management System (QMS) designed to ensure the production of consistently reliable data. The system covers all laboratory activities and takes into consideration the requirements of ISO standards.

The QMS operates under global and regional Quality Control (QC) teams responsible for the execution and monitoring of ALS's various Quality Assurance (QA) and Quality Control programs in each department, on a regular basis. Audited both internally and by outside parties, these programs include, but are not limited to, proficiency testing of a variety of parameters, ensuring that all key methods have standard operating procedures (SOPs) that are in place and being followed properly, and ensuring that quality control standards are producing consistent results.

The Quality Assurance program at ALS is a multi-level program involving every area of our operations that is enhanced by a corporate culture dedicated to the encouragement of excellence in measurement techniques. The program involves clearly defined quality control procedures for sample preparation and analysis, plus a quality assessment stage that includes data review and statistical analysis. QA/QC reports are available with every Certificate of Analysis and we can provide custom reports at any time.

More details on our Quality Assurance program are available on request.

Accreditation

Perhaps the most important aspect of the QMS is the process of external auditing by recognized organizations and the maintaining of ISO registrations and accreditations. ISO registration and accreditation provides independent verification for our clients that a QMS is in operation at the location in question. Most ALS laboratories are registered or are pending registration to ISO 9001:2000, and a number of analytical facilities have received ISO 17025 accreditations for specific laboratory procedures.

For certificates and scopes of accreditations for individual locations, please refer to the laboratory locations section of this site and navigate to the appropriate laboratory's Quality page.

Aside from laboratory registration, ALS has been a leader in participating in and sponsoring the Assayer Certification program in the Canadian province of British Columbia, one of the few jurisdictions that maintains a rigorous assayer registration program. We have on staff a number of Registered Assayers who have undergone extensive theoretical and practical training and passed comprehensive examinations prior to receiving their certificates.

Proficiency Testing

As part of our ISO 17025 accreditation ALS laboratories participate in a number of international proficiency tests, such as those managed by CANMET and Geostats. Both of these agencies circulate samples for analysis twice a year and evaluate the performance of participating laboratories.

Documentation

All sample preparation and analytical procedures have been assigned unique code numbers so that we always know exactly which procedure is to be followed. Each code is fully documented by written procedures that contain unique filenames and a revision number. Senior technical staff and the Quality Assurance Manager must approve any new revision. All new methods must go through a process of method validation that ensures the proposed procedure conforms to reasonable standards with respect to such critical parameters as accuracy, precision and detection limit.

Assessment Procedures

Quality Assessment is the system of activities we employ to assure our clients and ourselves that our quality control procedures are effective in providing accurate data. Part of this assessment involves a continuing evaluation of the performance of our analytical systems, primarily through statistical analysis. There are, however, other aspects to our quality assessment program:

Evaluation of Routine Quality Control Data

ALS standard operating procedures require the analysis of quality control samples (reference materials, duplicates and blanks) with all sample batches. As part of the assessment of every data set, results from the control samples are evaluated to ensure they meet set standards determined by the precision and accuracy requirements of the method.

In the event that any reference material or duplicate result falls outside the established control limits, an Error Report is automatically generated. This ensures the person evaluating the sample set for data release is made aware that a problem may exist with the data set and investigation can be initiated.

All data generated from quality control samples is automatically captured and retained in a separate database used for Quality Assessment. Control charts for in-house reference materials from frequently used analytical methods are regularly generated and evaluated by senior technical staff to ensure internal specifications for precision and accuracy are being met.

Quality Control Reports

Quality control data for reference materials and duplicates are routinely reported to clients so that they may monitor laboratory data independently. These reports are generated at no charge to the client and are issued together with the Certificates of Analysis. QC data summaries and customised QC reports are also available. Please contact our Quality Assurance Department to request custom QC reports.

Round Robin Exchanges

Quality Assurance staff control monthly inter-laboratory test programs covering both gold and base metal determinations to monitor the quality of data generated by our network of laboratories. The Quality Assurance group selects and circulates the samples and then evaluates the performance of each laboratory through statistical analysis.

Quality Control

Sample Preparation

As part of our routine procedures, ALS uses barren wash material between sample preparation batches and, where necessary, between highly mineralised samples. This cleaning material is tested before use to ensure no contaminants are present and results are retained for reference. In addition, logs are maintained for all sample preparation activities. In the event a problem with a prep batch is identified, these logs can be used to trace the sample batch preparation and initiate appropriate action.

Monitoring of sample preparation tasks to ensure size specifications is done at every location. Results are automatically collected on-line and control charts done as we would for any analytical test. Results are available on-line for clients and managements to review.

Prepared sample pulps are sent to the appropriate analytical department to be assayed. The following are some of the standard quality control protocols that are in effect throughout all our analytical facilities:

Sample Classification and Separation

Material, which is expected to contain higher levels of metals, such as panning concentrates, ores and mineralised samples, is routed through separate high-grade areas to minimise the chance of contamination.

Equipment and Layout

Separate analytical departments have been established to specialise in certain areas of analysis; for example, fire assay, ICPAES and ICPMS spectroscopy services, geochemical analysis, and high-grade assays. Even within a specific department, we have physically separated facilities to handle the classified samples. For example, the fire assay department is subdivided into different areas that handle trace gold, assay-level gold and concentrates and bullion. Each area has its own dedicated equipment such as furnaces, crucibles and glassware. The main objective is of course contamination control.

Supplies and Materials

For most of our analyses, we use only reagents and chemicals that are certified reagent grade or better. Because of the volume of supplies that we purchase, we are able to insist upon extremely stringent requirements to our suppliers. For example, the litharge (lead oxide) that we purchase for fire assay measurements must have a negligible gold content according to contractual obligations with the supplier. Similarly, the acids that we purchase must not contain any levels of metal impurities that could affect trace or ultratrace measurements. We devote a considerable amount of time and energy to testing of supplies and reagents to verify that they do meet our specifications.

Cleanliness

Wherever possible we use disposable test tubes to eliminate carryover from previous use. All other glassware is rigorously cleaned prior to re-use. Glassware that has contained samples with very high metal concentrations is flagged for special cleaning (typically acid-leaching) in addition to the normal procedure. In the fire assay department, we have an automated system to flag any crucible found to have contained a sample with elevated gold content. The crucible is automatically discarded rather than re-used. In addition, crucible logs are maintained for all fusion batches so crucible use can be tracked.

Analysis of Blanks, Standards and Duplicates

Our routine quality control testing includes the analysis of blanks, reference materials and duplicates. All results from quality control samples become part of a separate database that we use for Quality Assessment. All reference materials used at ALS are either primary, certified reference, or in-house reference materials that have undergone a rigorous validation process.

Accuracy and Precision

Accuracy is generally defined as the degree of agreement of a measured value with the true or certified value. Usually we can ascertain the accuracy of our methods by measuring certified reference materials, if they are available. Accuracy is also monitored by participation in proficiency tests and internal round robin exchanges as well as comparison of results against different analytical techniques.

Precision is generally defined as the degree of agreement of repeated measurements of the same parameter and is expressed quantitatively as the standard deviation. The precision (standard deviation) of a method varies as a function of concentration and must therefore be measured throughout the concentration range of the analytical procedure. We use statistical analysis of duplicate pairs data to establish precision for particular analytical procedures. Our specification for the precision of trace metal measurements is that it should be +/- 10% of the mean value at a concentration 50 times the detection limit. Our specification for assay measurements is that the precision should be +/- 5% of the mean value at a concentration 50 times the detection limit. Plots describing precision as a function of concentration are available for frequently used assay and trace metal parameters.

Check Analyses

In addition to our routine quality control analyses, check analyses are sometimes initiated by analytical department managers in order to confirm data for anomalous samples. Further review and requests for confirmatory analyses can be made by QA staff as a result of the Quality Assessment step.

Data Processing

As much as possible, analytical data is generated using computer-controlled instrumentation so that data is transferred electronically to our LIMS. This avoids data transcription errors. If manual data entry into the LIMS is required, all data is double checked by an independent reviewer to verify that the data is correct.

Additional Specific Quality Control Procedures

In addition to the universal QC procedures outlined above, we have a number of additional QC procedures that are carried out according to the measurement technique to be used:

- Fire Assay: Our assayers take numerous additional steps in the fire assay process. Fusion crucibles are carefully checked to ensure that no boilovers have occurred in the furnace. A boilover requires re-analysis of not just that sample but also of all its nearest neighbours in the furnace. We do visual checks of the fusion mixture to make sure that there has been a clean fusion with no lead "shotting". The size of the lead button is assessed and if it is either too small or too large, the fusion will be repeated. After cupellation, the precious metal bead is checked for size, colour and surface texture. A large bead or a gold hue will indicate a sample high in silver or gold, or both, and it must be handled with special care to control possible contamination. A pebbled bead surface can indicate the presence of platinum metals. A 'color de rosa' in the cupel can indicate the presence of tellurium, in which case the analysis will have to be repeated.
- ICP-AES: Our analysts review all of the data generated and will take particular note of samples with high concentrations of elements such as Fe and Al, which give significant interelement interferences. Similarly, they closely watch the concentrations of those elements such as thallium, tungsten and uranium, which are most affected by interelement interferences. Concentrations of elements in these situations are verified by examining the spectra in detail and by alternative methods such as AA when possible.
- XRF: For Whole Rock Analysis the XRF department uses a library of internationally certified reference materials, which cover the entire spectrum of geological host matrices. Cross checks between the XRF, ICP and Assay whole rock element procedures are done routinely. Anomalous samples are verified by duplicate fusions and checks by other procedures.
- ICP-MS: The combination of an inductively-coupled plasma source with a mass detector requires not just calibration of the response function for different concentrations of each element, but also the use of a number of internal standards covering the entire mass range, thus correcting for variations in the efficiency of the transport system that moves the sample from the plasma to the mass detector.
- AAS: All atomic absorption spectrometers (as well as all our other spectrometers) are, as part of our daily operations, tested for light throughput and stability and this information is maintained as part of the instrument software. If preset limits are exceeded the instrument will be optimised or repaired before it is operated again.
- Balance Maintenance Program: Balances are routinely tested by our laboratory technicians using certified weights. This confirms that balances are functioning properly. In addition, service technicians perform routine balance maintenance on a regular basis. This helps to improve our level of service by making certain that the balances are accurate and by minimising the number of breakdowns.

Appendix 4

BC Mineral Deposit Profiles

Porphyry Cu-Mo-Ag – L04

Cu-Ag Quartz Veins – I06

PORPHYRY Cu ± Mo ± Au   L04

by Andre Panteleyev[1]

IDENTIFICATION

SYNONYM: Calcalkaline porphyry Cu, Cu-Mo, Cu-Au.

COMMODITIES (*BYPRODUCTS*): Cu. Mo and Au are generally present but quantities range from insufficient for economic recovery to major ore constituents. *Minor Ag in most deposits; rare recovery of Re from Island Copper mine.*

EXAMPLES (British Columbia - *Canada/International*):

- Volcanic type deposits (Cu + Au ± Mo) - Fish Lake (092O041), Kemess (094E021,094), Hushamu (EXPO, 092L240), Red Dog (092L200), Poison Mountain (092O046), Bell (093M001), Morrison (093M007), Island Copper (092L158); *Dos Pobres (USA); Far Southeast (Lepanto/Mankayan), Dizon, Guianaong, Taysan and Santo Thomas II (Philippines), Frieda River and Panguna (Papua New Guinea).*
- Classic deposits (Cu + Mo ± Au) - Brenda (092HNE047), Berg (093E046), Huckleberrry (093E037), Schaft Creek (104G015); *Casino (Yukon, Canada), Inspiration, Morenci, Ray, Sierrita-Experanza, Twin Buttes, Kalamazoo and Santa Rita (Arizona, USA), Bingham (Utah, USA),El Salvador, (Chile), Bajo de la Alumbrera (Argentina).*
- Plutonic deposits (Cu ± Mo) - Highland Valley Copper (092ISE001,011,012,045), Gibraltar (093B012,007), Catface (092F120); *Chuquicamata, La Escondida and Quebrada Blanca (Chile).*

GEOLOGICAL CHARACTERISTICS

CAPSULE DESCRIPTION: Stockworks of quartz veinlets, quartz veins, closely spaced fractures and breccias containing pyrite and chalcopyrite with lesser molybdenite, bornite and magnetite occur in large zones of economically bulk-mineable mineralization in or adjoining porphyritic intrusions and related breccia bodies. Disseminated sulphide minerals are present, generally in subordinate amounts. The mineralization is spatially, temporally and genetically associated with hydrothermal alteration of the hostrock intrusions and wallrocks.

TECTONIC SETTINGS: In orogenic belts at convergent plate boundaries, commonly linked to subduction-related magmatism. Also in association with emplacement of high-level stocks during extensional tectonism related to strike-slip faulting and back-arc spreading following continent margin accretion.

DEPOSITIONAL ENVIRONMENT / GEOLOGICAL SETTING: High-level (epizonal) stock emplacement levels in volcano-plutonic arcs, commonly oceanic volcanic island and continent-margin arcs. Virtually any type of country rock can be mineralized, but commonly the high-level stocks and related dikes intrude their coeval and cogenetic volcanic piles.

Pantleyev, A. (1995): Porphyry Cu±Mo±Au; *in* Selected British Columbia Mineral Deposit Profiles, Volume 1, D.V. Lefebure and G.E. Ray, Editors, *British Columbia Ministry of Energy, Mines and Petroleum Resources*, pages 87-91.

[1] British Columbia Geological Survey, Victoria, B.C., Canada

PORPHYRY Cu ± Mo ± Au L04

AGE OF MINERALIZATION: Two main periods in the Canadian Cordillera: the Triassic/Jurassic (210-180 Ma) and Cretaceous/Tertiary (85-45 Ma). Elsewhere deposits are mainly Tertiary, but range from Archean to Quaternary.

HOST/ASSOCIATED ROCK TYPES: Intrusions range from coarse-grained phaneritic to porphyritic stocks, batholiths and dike swarms; rarely pegmatitic. Compositions range from calcalkaline quartz diorite to granodiorite and quartz monzonite. Commonly there is multiple emplacement of successive intrusive phases and a wide variety of breccias. Alkalic porphyry Cu-Au deposits are associated with syenitic and other alkalic rocks and are considered to be a a distinct deposit type (see model L03).

DEPOSIT FORM: Large zones of hydrothermally altered rock contain quartz veins and stockworks, sulphide-bearing veinlets; fractures and lesser disseminations in areas up to 10 km^2 in size, commonly coincident wholly or in part with hydrothermal or intrusion breccias and dike swarms. Deposit boundaries are determined by economic factors that outline ore zones within larger areas of low-grade, concentrically zoned mineralization. Cordilleran deposits are commonly subdivided according to their morphology into three classes - classic, volcanic and plutonic (see Sutherland Brown, 1976; McMillan and Panteleyev, 1988):

- Volcanic type deposits (e.g. Island Copper) are associated with multiple intrusions in subvolcanic settings of small stocks, sills, dikes and diverse types of intrusive breccias. Reconstruction of volcanic landforms, structures, vent-proximal extrusive deposits and subvolcanic intrusive centres is possible in many cases, or can be inferred. Mineralization at depths of 1 km, or less, is mainly associated with breccia development or as lithologically controlled preferential replacement in hostrocks with high primary permeability. Propylitic alteration is widespread and generally flanks early, centrally located potassic alteration; the latter is commonly well mineralized. Younger mineralized phyllic alteration commonly overprints the early mineralization. Barren advanced argillic alteration is rarely present as a late, high-level hydrothermal carapace.
- Classic deposits (e.g., Berg) are stock related with multiple emplacements at shallow depth (1 to 2 km) of generally equant, cylindrical porphyritic intrusions. Numerous dikes and breccias of pre, intra, and post-mineralization age modify the stock geometry. Orebodies occur along margins and adjacent to intrusions as annular ore shells. Lateral outward zoning of alteration and sulphide minerals from a weakly mineralized potassic/propylitic core is usual. Surrounding ore zones with potassic (commonly biotite-rich) or phyllic alteration contain molybdenite ± chalcopyrite, then chalcopyrite and a generally widespread propylitic, barren pyritic aureole or 'halo'.
- Plutonic deposits (e.g., the Highland Valley deposits) are found in large plutonic to batholithic intrusions immobilized at relatively deep levels, say 2 to 4 km. Related dikes and intrusive breccia bodies can be emplaced at shallower levels. Hostrocks are phaneritic coarse grained to porphyritic. The intrusions can display internal compositional differences as a result of differentiation with gradational to sharp boundaries between the different phases of magma emplacement. Local swarms of dikes, many with associated breccias, and fault zones are sites of mineralization. Orebodies around silicified alteration zones tend to occur as diffuse vein stockworks carrying chalcopyrite, bornite and minor pyrite in intensely fractured rocks but, overall, sulphide minerals are sparse. Much of the early potassic and phyllic alteration in central parts of orebodies is restricted to the margins of mineralized fractures as selvages. Later phyllic-argillic alteration forms envelopes on the veins and fractures and is more pervasive and widespread. Propylitic alteration is widespread but unobtrusive and is indicated by the presence of rare pyrite with chloritized mafic minerals, saussuritized plagioclase and small amounts of epidote.

PORPHYRY Cu ± Mo ± Au L04

TEXTURE/STRUCTURE: Quartz, quartz-sulphide and sulphide veinlets and stockworks; sulphide grains in fractures and fracture selvages. Minor disseminated sulphides commonly replacing primary mafic minerals. Quartz phenocrysts can be partially resorbed and overgrown by silica.

ORE MINERALOGY (Principal and *subordinate*): Pyrite is the predominant sulphide mineral; in some deposits the Fe oxide minerals magnetite, and rarely hematite, are abundant. Ore minerals are chalcopyrite; molybdenite, lesser bornite and rare (primary) chalcocite. Subordinate minerals are *tetrahedrite/tennantite, enargite and minor gold , electrum and arsenopyrite*. In many deposits late veins commonly contain galena and sphalerite in a gangue of quartz, calcite and barite.

GANGUE MINERALOGY (Principal and *subordinate*): Gangue minerals in mineralized veins are mainly quartz with lesser *biotite, sericite, K-feldspar, magnetite, chlorite, calcite, epidote, anhydrite and tourmaline*. Many of these minerals are also pervasive alteration products of primary igneous mineral grains.

ALTERATION MINERALOGY: Quartz, sericite, biotite, K-feldspar, albite, anhydrite/gypsum, magnetite, actinolite, chlorite, epidote, calcite, clay minerals, tourmaline. Early formed alteration can be overprinted by younger assemblages. Central and early formed potassic zones (K-feldspar and biotite) commonly coincide with ore. This alteration can be flanked in volcanic hostrocks by biotite-rich rocks that grade outward into propylitic rocks. The biotite is a fine-grained, 'shreddy' looking secondary mineral that is commonly referred to as an early developed biotite (EDB) or a 'biotite hornfels'. These older alteration assemblages in cupriferous zones can be partially to completely overprinted by later biotite and K-feldspar and then phyllic (quartz-sericite-pyrite) alteration, less commonly argillic, and rarely, in the uppermost parts of some ore deposits, advanced argillic alteration (kaolinite-pyrophyllite) .

WEATHERING: Secondary (supergene) zones carry chalcocite, covellite and other $Cu_{\sim 2}S$ minerals (digenite, djurleite, etc.), chrysocolla, native copper and copper oxide, carbonate and sulphate minerals. Oxidized and leached zones at surface are marked by ferruginous 'cappings' with supergene clay minerals, limonite (goethite, hematite and jarosite) and residual quartz.

ORE CONTROLS: Igneous contacts, both internal between intrusive phases and external with wallrocks; cupolas and the uppermost, bifurcating parts of stocks, dike swarms. Breccias, mainly early formed intrusive and hydrothermal types. Zones of most intensely developed fracturing give rise to ore-grade vein stockworks, notably where there are coincident or intersecting multiple mineralized fracture sets.

ASSOCIATED DEPOSIT TYPES: Skarn Cu (K01), porphyry Au (K02), epithermal Au-Ag in low sulphidation type (H05) or epithermal Cu-Au-Ag as high-sulphidation type enargite-bearing veins (L01), replacements and stockworks; auriferous and polymetallic base metal quartz and quartz-carbonate veins (I01, I05), Au-Ag and base metal sulphide mantos and replacements in carbonate and non-carbonate rocks (M01, M04), placer Au (C01, C02).

COMMENTS: Subdivision of porphyry copper deposits can be made on the basis of metal content, mainly ratios between Cu, Mo and Au. This is a purely arbitrary, economically based criterion, an artifact of mainly metal prices and metallurgy. There are few differences in the style of mineralization between deposits although the morphology of calcalkaline deposits does provide a basis for subdivision into three distinct subtypes - the 'volcanic, classic, and plutonic' types. A fundamental contrast can be made on the compositional differences between calcalkaline quartz-bearing porphyry copper deposits and the alkalic (silica undersaturated) class. The alkalic porphyry copper deposits are described in a separate model - L03.

PORPHYRY Cu ± Mo ± Au L04

EXPLORATION GUIDES

GEOCHEMICAL SIGNATURE: Calcalkalic systems can be zoned with a cupriferous (± Mo) ore zone having a 'barren', low-grade pyritic core and surrounded by a pyritic halo with peripheral base and precious metal-bearing veins. Central zones with Cu commonly have coincident Mo, Au and Ag with possibly Bi, W, B and Sr. Peripheral enrichment in Pb, Zn, Mn, V, Sb, As, Se, Te, Co, Ba, Rb and possibly Hg is documented. Overall the deposits are large-scale repositories of sulphur, mainly in the form of metal sulphides, chiefly pyrite.

GEOPHYSICAL SIGNATURE: Ore zones, particularly those with higher Au content, can be associated with magnetite-rich rocks and are indicated by magnetic surveys. Alternatively the more intensely hydrothermally altered rocks, particularly those with quartz-pyrite-sericite (phyllic) alteration produce magnetic and resistivity lows. Pyritic haloes surrounding cupriferous rocks respond well to induced polarization (I.P.) surveys but in sulphide-poor systems the ore itself provides the only significant IP response.

OTHER EXPLORATION GUIDES: Porphyry deposits are marked by large-scale, zoned metal and alteration assemblages. Ore zones can form within certain intrusive phases and breccias or are present as vertical 'shells' or mineralized cupolas around particular intrusive bodies. Weathering can produce a pronounced vertical zonation with an oxidized, limonitic leached zone at surface (leached capping), an underlying zone with copper enrichment (supergene zone with secondary copper minerals) and at depth a zone of primary mineralization (the hypogene zone).

ECONOMIC FACTORS

TYPICAL GRADE AND TONNAGE:

• Worldwide according Cox and Singer (1988) based on their subdivision of 55 deposits into subtypes according to metal ratios, typical porphyry Cu deposits contain (median values):

Porphyry Cu-Au: 160 Mt with 0.55 % Cu, 0.003 % Mo, 0.38 g/t Au and 1.7 g/t Ag.
Porphyry Cu-Au-Mo: 390 Mt with 0.48 % Cu, 0.015 % Mo, 0.15 g/t Au and 1.6 g/t Ag.
Porphyry Cu-Mo: 500 Mt with 0.41 % Cu, 0.016 % Mo, 0.012 g/t Au and 1.22 g/t Ag.

A similar subdivision by Cox (1986) using a larger data base results in:

Porphyry Cu: 140 Mt with 0.54 %Cu, <0.002 % Mo, <0.02g/t Au and <1 g/t Ag.
Porphyry Cu-Au: 100 Mt with 0.5 %Cu, <0.002 % Mo, 0.38g/t Au and 1g/t Ag. (This includes deposits from the British Columbia alkalic porphyry class, B.C. model L03.)
Porphyry Cu-Mo: 500 Mt with 0.42 % Cu, 0.016 % Mo, 0.012 g/t Au and 1.2 g/t Ag.

• British Columbia porphyry Cu ± Mo ± Au deposits range from <50 to >900 Mt with commonly 0.2 to 0.5 % Cu, <0.1 to 0.6 g/t Au, and 1 to 3 g/t Ag. Mo contents are variable from negligible to 0.04 % Mo. Median values for 40 B.C. deposits with reported reserves are: 115 Mt with 0.37 % Cu, ~0.01 % Mo, 0.3g /t Au and 1.3 g/t Ag.

ECONOMIC LIMITATIONS: Mine production in British Columbia is from primary (hypogene) ores. Rare exceptions are Afton mine where native copper was recovered from an oxide zone, and Gibraltar and Bell mines where incipient supergene enrichment has provided some economic benefits.

END USES: Porphyry copper deposits produce Cu and Mo concentrates, mainly for international export.

PORPHYRY Cu ± Mo ± Au L04

IMPORTANCE: Porphyry deposits contain the largest reserves of Cu, significant Mo resources and close to 50 % of Au reserves in British Columbia.

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Cu±Ag QUARTZ VEINS I06

by David V. Lefebure[1]

IDENTIFICATION

SYNONYMS: Churchill-type vein copper, vein copper

COMMODITY (*BYPRODUCTS*): Cu (Ag, rarely Au).

EXAMPLES (British Columbia (MINFILE #) - *Canada/International*): Davis-Keays (094K012, 050), Churchill Copper (Magnum, 094K003), Bull River (082GNW002), Copper Road (092K060), Copper Star (092HNE036), Copper Standard (092HNE079), Rainbow (093L044); *Bruce Mines and Crownbridge (Ontario, Canada), Blue Wing and Seaboard (North Carolina, USA), Matahambre (Cuba), Inyati (Zimbabwe), Copper Hills (Western Australia), Tocopilla area (Chile), Burgas district (Bulgaria), Butte (Montana, USA), Rosario (Chile).*

GEOLOGICAL CHARACTERISTICS

CAPSULE DESCRIPTION: Quartz-carbonate veins containing patches and disseminations of chalcopyrite with bornite, tetrahedrite, covellite and pyrite. These veins typically crosscut clastic sedimentary or volcanic sequences, however, there are also Cu quartz veins related to porphyry Cu systems and associated with felsic to intermediate intrusions.

TECTONIC SETTINGS: A diversity of tectonic settings reflecting the wide variety of hostrocks including extensional sedimentary basins (often Proterozoic) and volcanic sequences associated with rifting or subduction-related continental and island arc settings.

DEPOSITIONAL ENVIRONMENT / GEOLOGICAL SETTING: Veins emplaced along faults; they commonly postdate major deformation and metamorphism. The veins related to felsic intrusions form adjacent to, and are contemporaneous with, mesozonal stocks.

AGE OF MINERALIZATION: Any age; can be much younger than hostrocks.

HOST/ASSOCIATED ROCK TYPES: Cu±Ag quartz veins occur in virtually any rocks although the most common hosts are clastic metasediments and mafic volcanic sequences. Mafic dikes and sills are often spatially associated with metasediment-hosted veins. These veins are also found within and adjacent to felsic to intermediate intrusions.

DEPOSIT FORM: The deposits form simple to complicated veins and vein sets which typically follow high-angle faults which may be associated with major fold sets. Single veins vary in thickness from centimetres up to tens of metres. Major vein systems extend hundreds of metres along strike and down dip. In some exceptional cases the veins extend more than a kilometre along the maximum dimension.

TEXTURE/STRUCTURE: Sulphides are irregularly distributed as patches and disseminations. Vein breccias and stockworks are associated with some deposits.

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[1] British Columbia Geological Survey, Victoria, B.C., Canada

Cu±Ag QUARTZ VEINS I06

ORE MINERALOGY (Principal and *subordinate*):

- Metasediment and volcanic-hosted: Chalcopyrite, pyrite, chalcocite*; bornite, tetrahedrite, argentite, pyrrhotite, covellite, galena.*
- Intrusion-related: Chalcopyrite, bornite, chalcocite, pyrite, pyrrhotite; *enargite, tetrahedrite-tennantite, bismuthinite, molybdenite, sphalerite, native gold and electrum.*

GANGUE MINERALOGY (Principal and *subordinate)*: Quartz and carbonate (calcite, dolomite, ankerite or siderite); *hematite, specularite, barite.*

ALTERATION MINERALOGY: Wallrocks are typically altered for distances of centimetres to tens of metres outwards from the veins.

- Metasediment and volcanic-hosted: The metasediments display carbonatization and silicification. At the Churchill and Davis-Keays deposits, decalcification of limy rocks and zones of disseminated pyrite in roughly stratabound zones are reported. The volcanic hostrocks exhibit abundant epidote with associated calcite and chlorite.
- Intrusion-related: Sericitization, in places with clay alteration and chloritization.

WEATHERING: Malachite or azurite staining; silicified linear "ridges".

ORE CONTROLS: Veins and associated dikes follow faults. Ore shoots commonly localized along dilational bends within veins. Sulphides may occur preferentially in parts of veins which crosscut carbonate or other favourable lithologies. Intersections of veins are an important locus for ore.

GENETIC MODEL: The metasediment and volcanic-hosted veins are associated with major faults related to crustal extension which control the ascent of hydrothermal fluids to suitable sites for deposition of metals. The fluids are believed to be derived from mafic intrusions which are also the source for compositionally similar dikes and sills associated with the veins. Intrusion-related veins, like Butte in Montana and Rosario in Chile, are clearly associated with high-level felsic to intermediate intrusions hosting porphyry Cu deposits or prospects.

ASSOCIATED DEPOSIT TYPES:

- Metasediment and volcanic-hosted: Possibly related to sediment-hosted Cu (E04) and basaltic Cu (D03).
- Intrusion-related: High sulphidation (H04), copper skarns (K01), porphyries (L01?, L03, L04) and polymetallic veins (I05).

COMMENTS: Cu±Ag quartz veins are common in copper metallogenetic provinces; they often are more important as indicators of the presence of other types of copper deposits.

EXPLORATION GUIDES

GEOCHEMICAL SIGNATURE: High Cu and Ag in regional silt samples. The Churchill-type deposits appear to have very limited wallrock dispersion of pathfinder elements; however, alteration halos of silica and carbonate addition or depletion might prove useful. Porpyhyry-related veins exhibit many of the geochemical signatures of porphyry copper systems.

GEOPHYSICAL SIGNATURE: Large veins with conductive massive sulphides may show up as electromagnetic conductors, particularly on ground surveys. Associated structures may be defined by ground magnetic, very low frequency or electromagnetic surveys. Airborne surveys may identify prospective major structures.

OTHER EXPLORATION GUIDES: Commonly camp-scale or regional structural controls define a dominant orientation for veins.

ECONOMIC FACTORS

GRADE AND TONNAGE: Typically range from 10 000 to 100 0000 t with grades of 1 to 4% Cu, nil to 300 g/t Ag. The Churchill deposit has reserves of 90 000 t of 3 % Cu and produced 501 019 t grading 3% Cu and the Davis-Keays deposit has reserves of 1 119 089 t grading 3.43 % Cu. The Big Bull deposit has reserves of 732 000 t grading 1.94% Cu. The intrusion-related veins range up to millions of tonnes with grades of up to 6% Cu. The Butte veins in Montana have produced several hundred million tonnes of ore with much of this production from open-pit operations.

ECONOMIC LIMITATIONS: Currently only the large and/or high-grade veins (usually associated with porphyry deposits) are economically attractive.

IMPORTANCE: From pre-historic times until the early 1900s, high-grade copper veins were an important source of this metal. With hand sorting and labour-intensive mining they represented very attractive deposits.

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ACKNOWLEDGEMENTS: This deposit profile represents the results of a literature review. It benefited from comments by David Sinclair and Vic Preto.

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DRAFT #: 3a March 29, 1996

Hawthorn Lake Property 2010 Cost Report

Exploration Work type	Comment	Days			Totals
Personnel (Name)* / Position	**Field Days (list actual days)**	**Days**	**Rate**	**Subtotal***	
Geleynse, Bruce - Prospector	14-Sep-10, 20-25-Sep-10	7.0	$250.00	$1,750.00	
Houle, Jacques - Geologist	14-Sep-10	1.0	$672.00	$672.00	
Stirling, Rebecca - Geologist	20-25-Sep-10	6.2	$250.00	$1,543.75	
				$3,965.75	**$3,965.75**
Office Studies	**List Personnel (note - Office only, do not include field days**				
General research	Houle, Jacques: 09-20,27-Sep-10	1.65	$745.31	$1,229.76	
General research	Stirling, Rebecca: 27-Sep-10	0.23	$250.00	$56.25	
Report preparation	Houle, Jacques: 06-Oct-15-Nov-10	2.25	$887.04	$1,995.84	
Report preparation	Stirling, Rebecca: 05-Oct-15-Nov-10	5.85	$250.00	$1,462.50	
				$4,744.35	**$4,744.35**
Geochemical Surveying	**Number of Samples**	**No.**	**Rate**	**Subtotal**	
Stream sediment (moss mats)	ALS Certificate VA10138403	28	$36.64	$1,025.98	
Rock	ALS VA10132826 & VA10138496	16	$42.86	$685.68	
				$1,711.66	**$1,711.66**
Transportation		**No.**	**Rate**	**Subtotal**	
truck rental - Houle		0.36	$403.20	$146.16	
truck rental - Geleynse		7.00	$50.00	$350.00	
fuel - Geleynse	actual costs per receipts			$152.75	
				$648.91	**$648.91**
Accommodation & Food	**Rates per day**				
Camp	day rate in Port Alberni	5	$50.00	$250.00	
Meals	actual costs per receipts			$423.58	
				$673.58	**$673.58**
Equipment Rentals					
Field Gear (Specify)	Field equipment and supplies - Houle	6.25	$33.60	$210.00	
				$210.00	**$210.00**
Freight, rock samples					
15-Sep-10	Greyhound shipment to ALS			$15.71	
27-Sep-10	Greyhound shipment to ALS			$47.69	
				$63.40	**$63.40**
TOTAL Expenditures					**$12,017.65**