Technical Report on Part of Claim 539471 of the Downie Marble Property

Downie Creek Area
Revelstoke Mining Division British Columbia

Latitude 51° 25‘ 22.5” North   Longitude 118° 7‘ 22.6” West
UTM Co-ordinates 421922 m. East 5697455 m. Zone 11N
Map Reference – NTS 82M050

Prepared on behalf of
The claimholder Robert G. Komarechka

by

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Introduction

Location and Access

The area of study in this report is confined to two areas within Claim 539471 as shown in Map 4, centered at Latitude 51° 25‘ 22.5” North and Longitude 118° 7‘ 22.6” West or in UTM Co-ordinates, 421922 m. East 5697455 m. NAD83 Zone 11N. The area is found on Map Reference NTS 82M050.

Access to the area can be obtained by driving northward from Revelstoke about 58 km. along highway 23 then eastward along the Downie Creek logging road for 18.7 km. upstream along Downie Creek. Follow the left branch (North Downie Road) northward across Downie Creek then eastward along the north side of Downie Creek to the end of the road at about 7.5 more kilometers ending at a logging landing. Currently the last 400 meters of this road is overgrown with vegetation. A 300 meter foot trail leads eastward from this overgrown landing to a small ledge previously sampled in 1999 for whole rock analysis and verification of a high purity calcium carbonate marble (*Komarechka 1999)*.

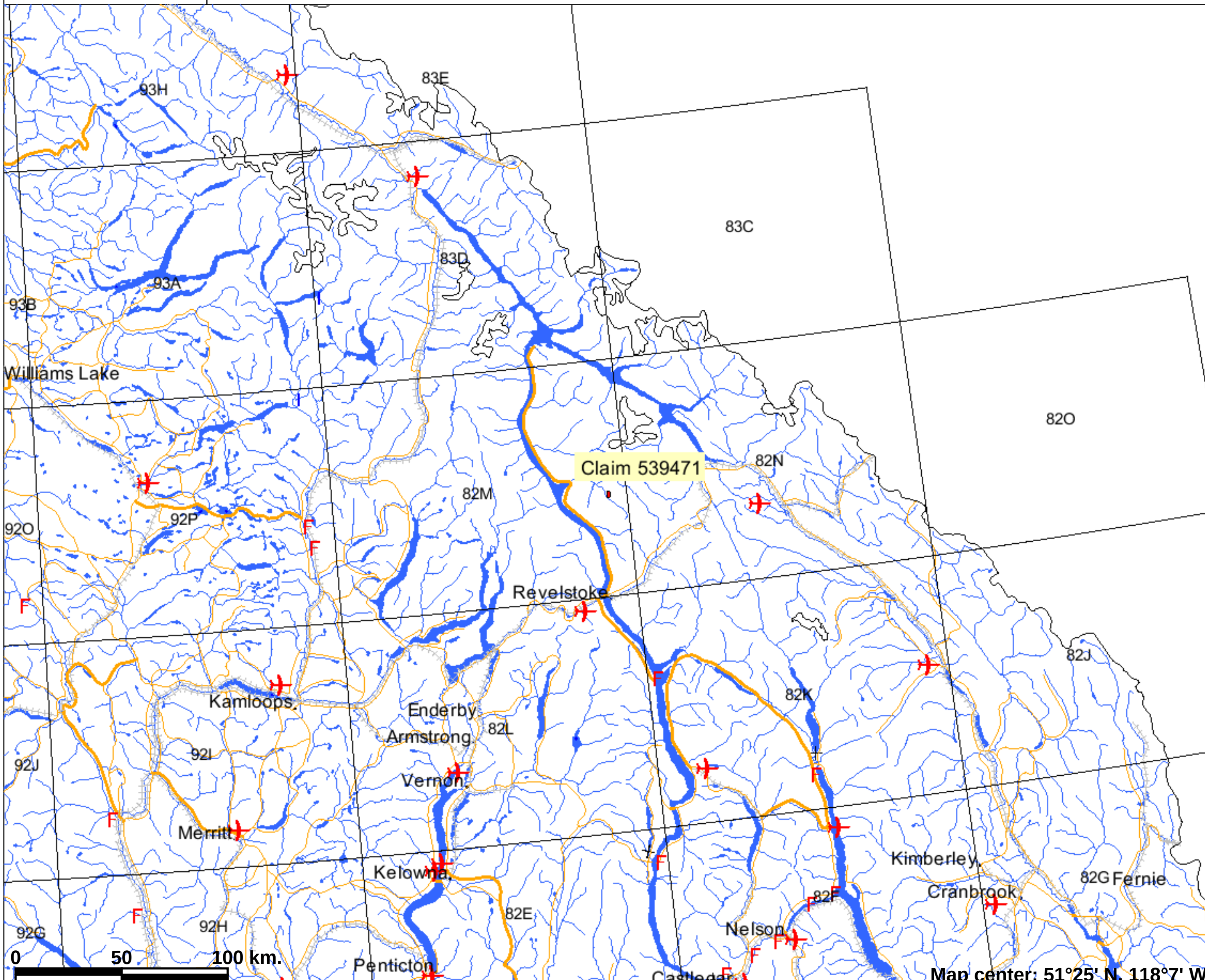
Property Description

The table below summarizes the details on the current mineral claim on which this work was undertaken.

Claim Number	Claim Name	Cells	Good to Date	Ownership	Hectares
539471	Downie Property	15	Jan. 13, 2008	Robert G. Komarechka	302.278

This claim was originally expanded to include other claims then later reduced in size to its current size. Currently this claim is part of a larger group of 14 contiguous claims consisting of 252 cells, comprising more or less 5044 hectares held by the claimholder and author Robert G. Komarechka. These claims, known as the Downie Claims, are found along the northern side of the upper reaches of Downie Creek as outlined on Map 2 and in Map 3.

Map 1 - General Location Map



Legend

Provincial Boundary (1:2M)
- Boundary (International)
- Boundary (Interprovincial)

NTS Grid

Transportation - Points (1:2M)
- Airstrip
- Ferry Route
- Seaplane Custom Port

Transportation - Lines (1:2M)
- Ferry Route
- Road - Trunk
- Road - Main
- Road - Local
- Bridge
- Rail Line

Water - Points (1:2M)
- Falls
- Dam

Water - Lines (1:2M)
- River/Stream - Definite
- River/Stream - Left Bank
- River/Stream - Right Bank
- Dam
- Lake - Definite
- Icefield
- Island - Definite
- Coastline - Definite

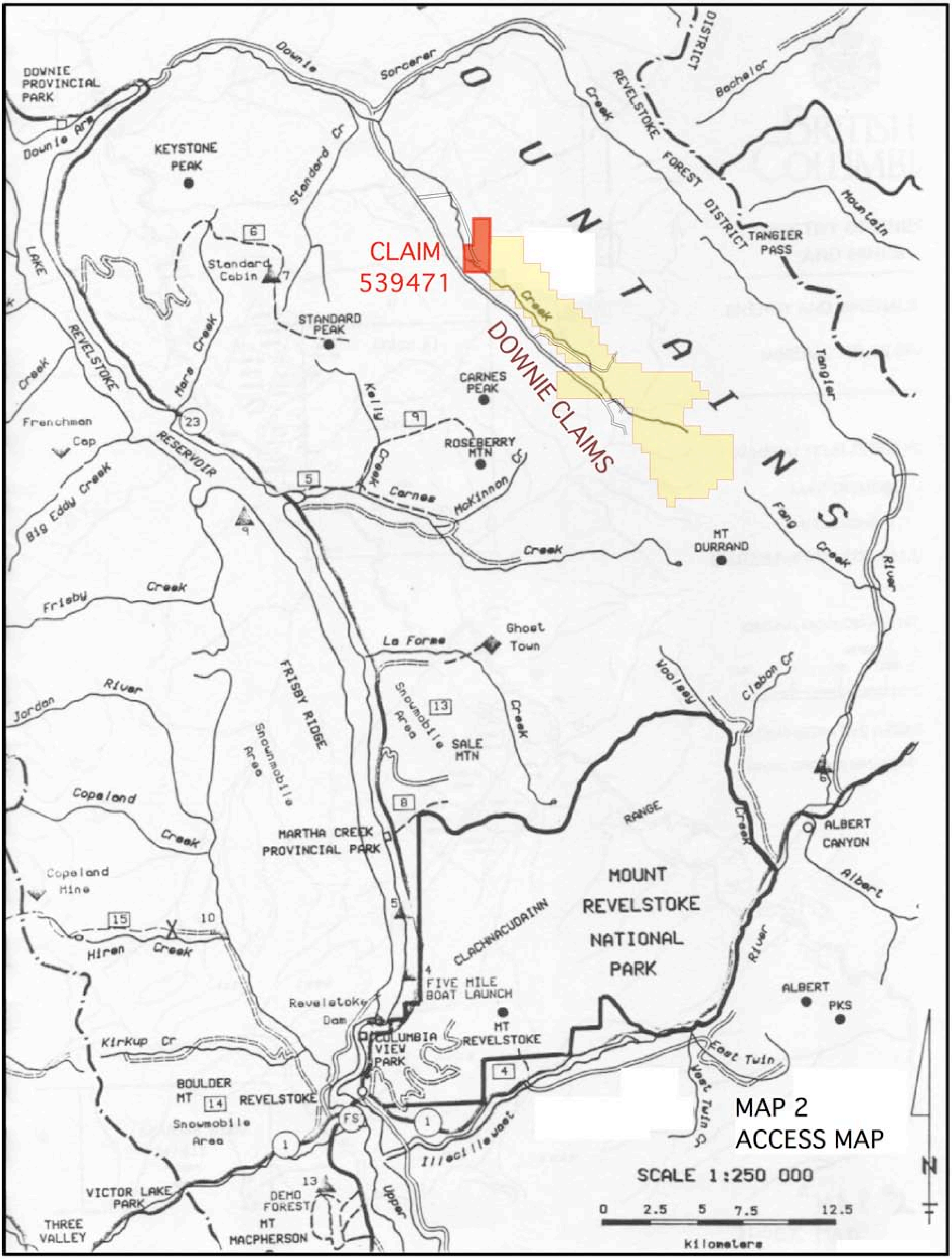
Water - Polygons (1:2M)
- River/Stream - Definite
- Lake - Definite
- Island - Definite

Major Cities

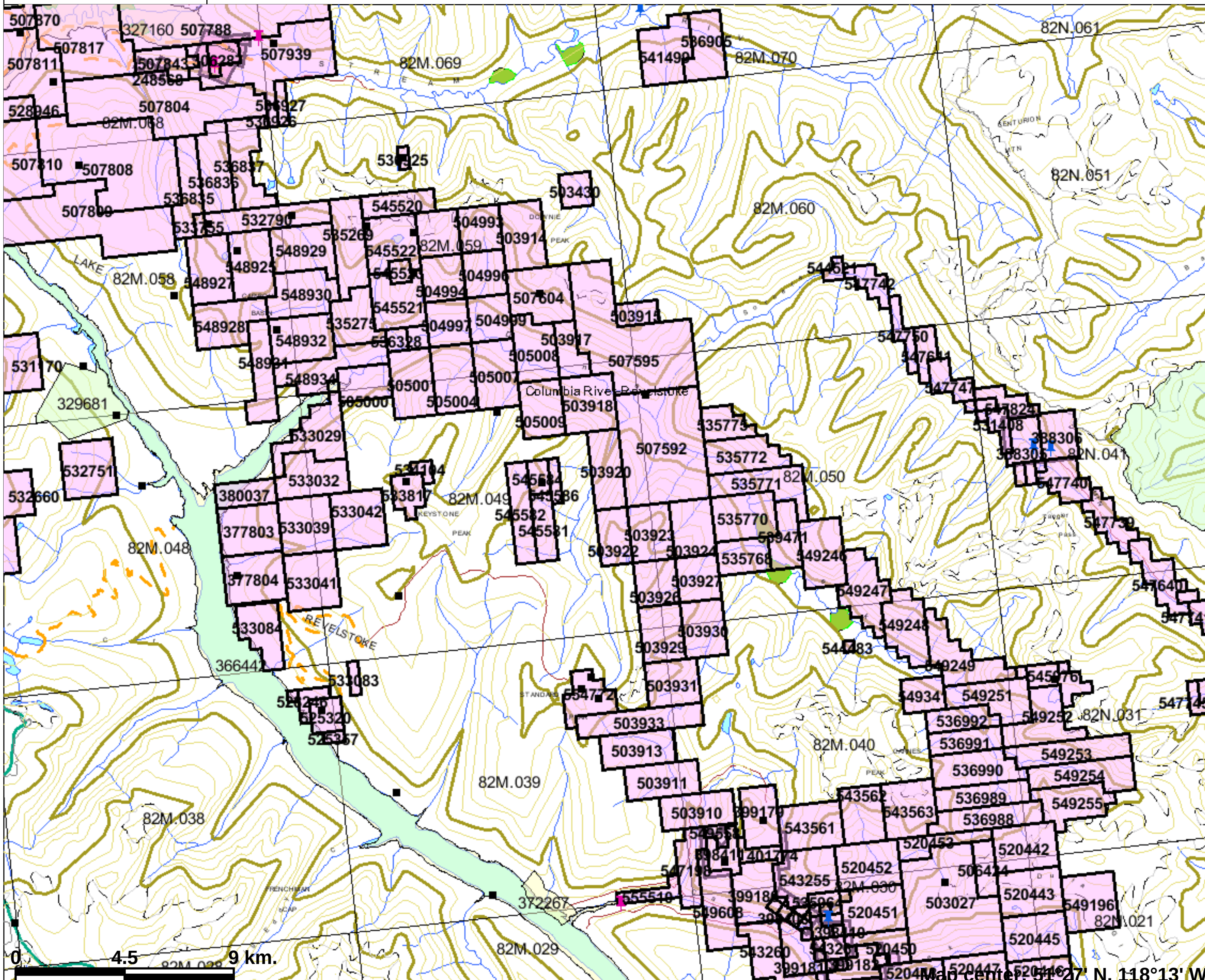
N

Scale: 1:2,857,075

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.


CLAIM
539471
DOWNIE CLAIMS
DOWNIE PROVINCIAL PARK
KEYSTONE PEAK
STANDARD PEAK
Standard Cabin
CARNES PEAK
ROSEBERRY MTN
MT DURRAND
TANGIER PASS
REVELSTOKE FOREST DISTRICT
MOUNTAINS
Frenchman Cap
Ghost Town
SALE MTN
FRISBY RIDGE
MARTHA CREEK PROVINCIAL PARK
MOUNT REVELSTOKE NATIONAL PARK
CLACHNACUDAINN RANGE
ALBERT CANYON
ALBERT PKS
FIVE MILE BOAT LAUNCH
Revelstoke Dam
COLUMBIA VIEW PARK
MT REVELSTOKE
BOULDER MT
REVELSTOKE
Copeland Mine
VICTOR LAKE PARK
THREE VALLEY
DEMO FOREST
MT MACPHERSON
Snowmobile Area
REVELSTOKE LAKE
RESERVOIR
MAP 2
ACCESS MAP
SCALE 1:250 000
0 2.5 5 7.5 12.5
Kilometers

General Claim Map Area



Legend

MINFILE Status

- Producer
- Past Producer
- Developed Prospect
- All others

Indian Reserves

National Parks

Parks

Mineral Tenures (Mineral - MTO)

- Mineral Claim
- Mineral Lease

Reserves (Mineral - MTO Sites)

- Placer Claim Designation
- Placer Lease Designation
- No Staking Reserve
- Conditional Reserve
- Release Required Reserve
- Surface Restriction
- Recreation Area
- Others

Mining Division (MTO)

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: 1:250,000

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.

In addition to the above claims, a work permit MX-4-286 in the name of the claimholder, Robert G. Komarechka, has been applied for over this area. This permit is for the removal of a bulk sample of marble dimension stone. No bulk sampling has been undertaken up to the time of writing this report.

Property History and Potential

Claim 539471 overlies part of at least one wide band of white high purity finely crystalline calcitic marble of the Badshot Formation that appears to have potential for statuary and dimension stone as well as high grade filler applications. Previous work in the form of a BCPAP report (Komarechka, 1996) and a later prospecting report (Komarechka, 1999) has been undertaken by the author on the property to determine the partial extent and purity of this marble in the area of claim 539471 and beyond. This current report further examines the proposed bulk sample site area of high purity calcitic marble for its capability for producing large sound quarrying blocks.

In the course of this examination a boulder train of massive arsenopyrite and massive pyrrhotite with associated chalcopyrite was found along a slide area on claim 539471 west of the proposed quarry site. An unreproducable assay of 6 Au oz/tonne was obtained from a sample of massive arsenopyrite from one of these float samples. Chalcopyrite associated with bull quartz veins was also noted on this claim. This second area is shown on Map 3 and 4.

Regional work over the property and in the surrounding area has also been undertaken by Venturex Exploration (Formerly Orphan Boy), as well as the Federal and British Columbia Governments. Sulphide VMS occurrences of copper and zinc in both the Index and Mohican Formations are found outside the claims on either side of the Badshot Formation as well as replacement Pb-Zn occurrences within the Badshot.

Nearby production from a Besshui Style VMS body within the Index Formation has occurred at the past producing Goldstream mine located 30 km to the northwest of this study area. This mine produced 70,000 tonnes of copper and 49,000 tonnes of zinc from 1,738,500 tonnes milled between April 1991 and October 1995 (Logan et al. 1995). From the Badshot formation, minor production has occurred from the Pb-Zn Waverly Tangier Replacement deposit located 10 kilometers to the east. The GSC in 1928 reported, that 15 tons of sulphide ore, shipped, from the Tangier mine, to Wales in the early days, contained 1.5 ounces gold, 130 ounces silver, and 25 per cent lead per ton. (Turner, J. 2005). Production from the Eocambrian Hamil formation occurred at the J&L property (shown as JL on figure 1) located 12 kilometers to the south. The arsenical gold-rich J&L deposit has reported probable and possible reserves in excess of 5 million tones averaging 2.71% Pb, 4.33% Zn, 7.23 g/t Au and 72 g/t Ag (Logan et al. 1995). Cross section of the formations in the area and their sulphide showings are shown in figure 1.

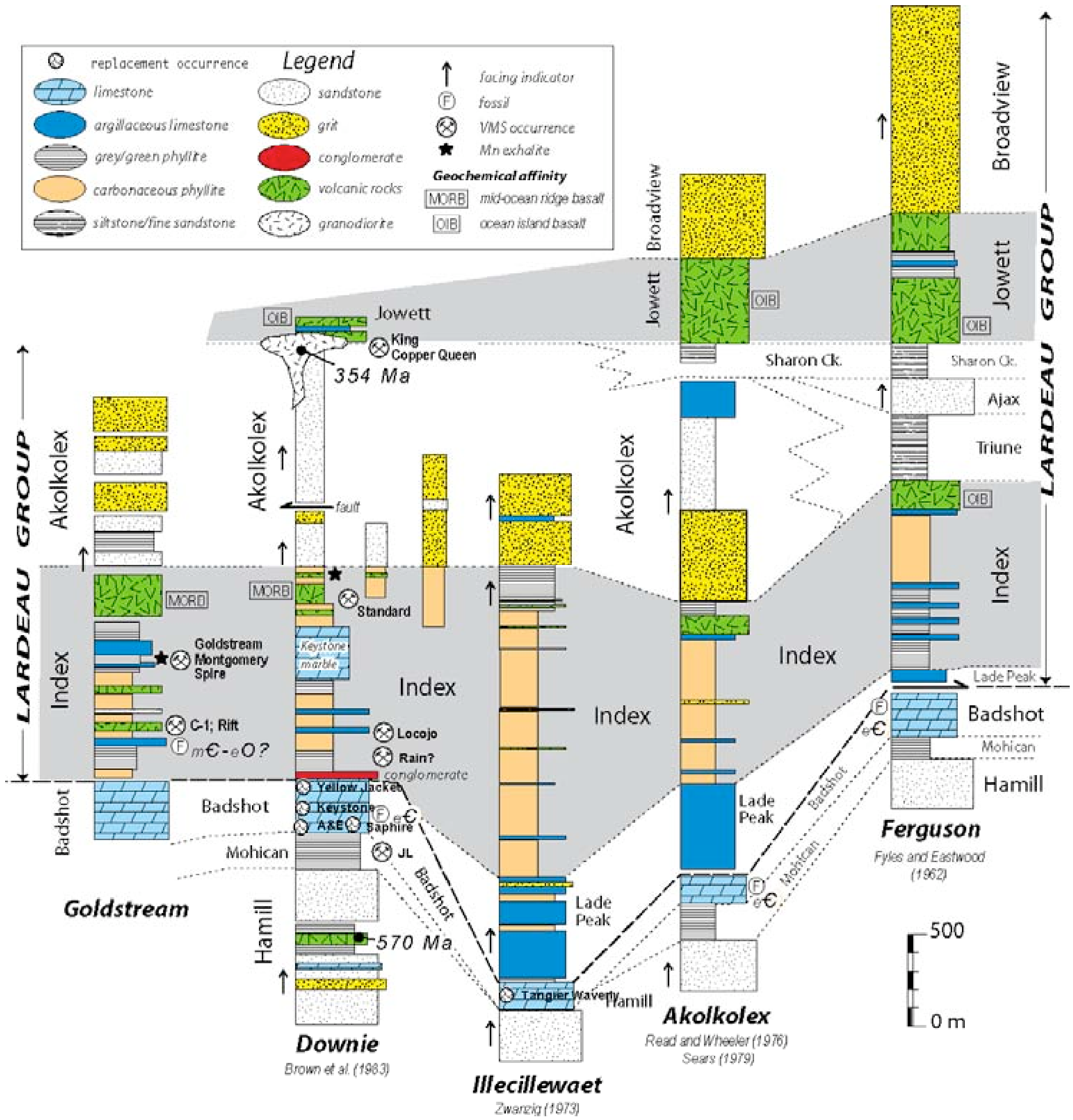
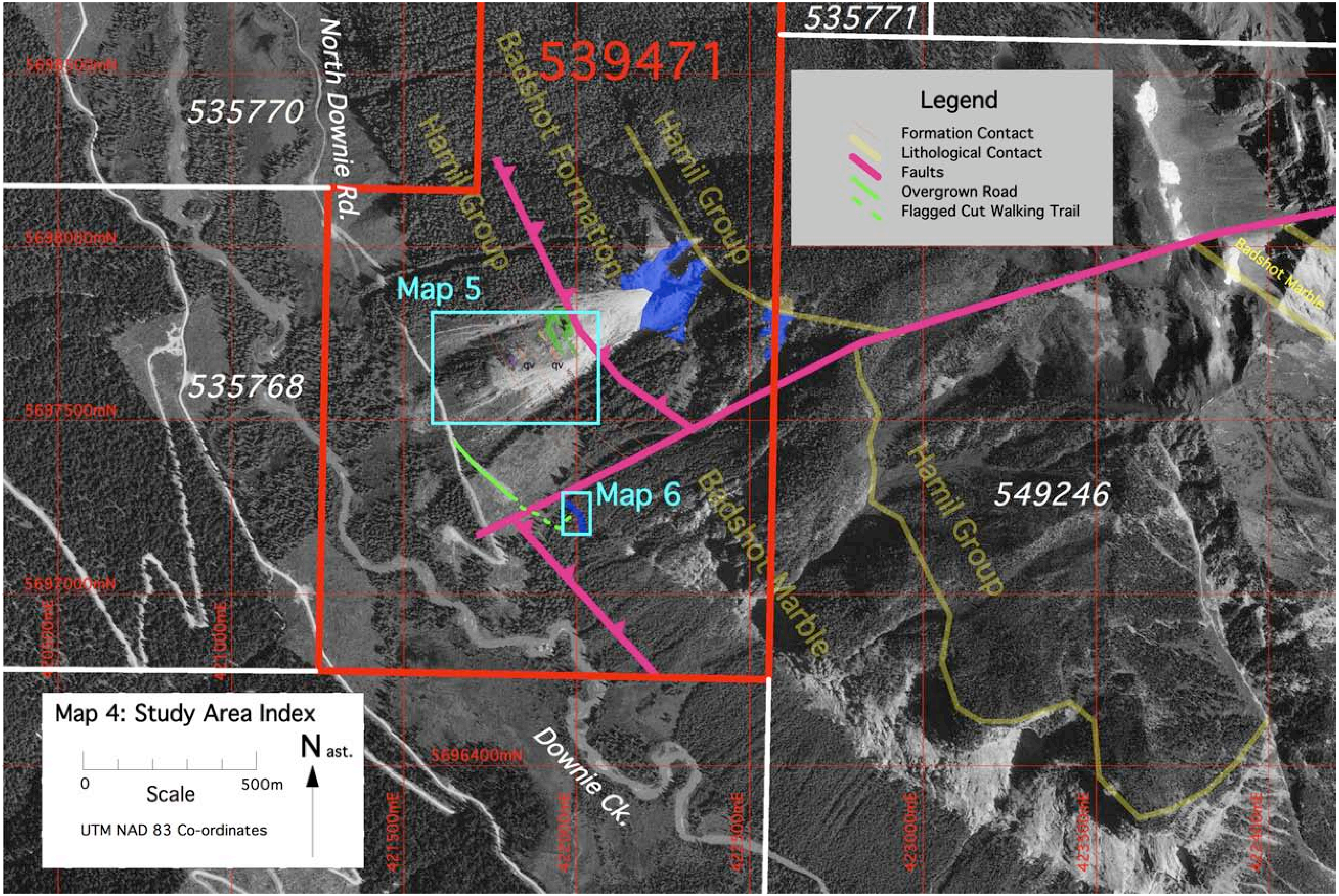


Fig. 1: *Composite stratigraphic sections for the Lardeau Group in the northern Selkirk Mountains showing known mineral occurrences in the area. Data modified from Logan & Colpron 2006 and Logan et al. 1995.*

Work Undertaken

A cursory partial examination was undertaken on this claim that consisted of 3 days of field work undertaken between August 23 to 27, undertaken by Robert Komarechka and Anatoliy Franchuk, a 2nd year geology student from Carleton University. A brief helicopter overflight over the claim was also undertaken during this time that assisted in the interpretation of the extension of the formations. A further 3 days of office work was required by Robert Komarechka to complete this report. This work was part of a 2 week field exploration work program undertaken on this claim and



Map 4: Study Area Index
0
Scale
500m
UTM NAD 83 Co-ordinates
N ast.
Legend
Formation Contact
Lithological Contact
Faults
Overgrown Road
Flagged Cut Walking Trail
539471
535771
535770
535768
549246
North Downie Rd.
Downie Ck.
Hamil Group
Badshot Formation
Badshot Marble
Map 5
Map 6
qv
5698000mN
5697500mN
5697000mN
5696400mN
421500mE
422000mE
422500mE
423000mE

several other areas outside the claim area. The areas outside of this claim are not discussed in this report.

Field work on claim 539471 consisted of demarking an overgrown trail to a potential quarry site, GPS locating of this route as well as a cliff face of white Marble, measuring the cliff face, cursory mapping the face and the top of the cliff to ascertain the potential of the quarry site and the requirements for undertaking a bulk sample.

A further examination was also undertaken to try and locate a source of massive sulphide float observed in a nearby slide area on the claim. Previous chalcopyrite bearing bull quartz float had also been observed several hundred meters to the west of this area while undertaking a previous BCPAP program in the area (Komarechka 1996). It was during this BCPAP program when the extensive area of white marble along Downie Creek was first studied. Samples were collected of some float samples as well as bedrock in the slide area. Stereoscopic examination and assaying was then undertaken on some of these samples.

Outcrop was mapped, where encountered, however most of the area traversed in this work was covered with overburden consisting mainly of talus.

A total of 19 samples were collected on claim 539471, 16 of which were assayed. These sample locations are shown in Maps 5 and 6. A description of most of the samples collected are shown in appendix 1, the Certified Assay Certificates are found in Appendix 2 and the Lab Methodology is described in Appendix 3. Additional samples collected outside the claim area are also shown on the signed certificates and should be ignored.

Technical Data

Regional Geology

Regionally, the Downie Creek Claims are located in lower Paleozoic rocks in the Selkirk Fan Structure within the western central portion of the Selkirk Mountains. These rocks consist of argillaceous shale, sandstone, limestone, dolostone and minor mafic volcanic rocks. Minor occurrences of lamprophyres have also been reported. Low grade regional and local dynamic metamorphism has altered these original rocks to argillites, quartzites, marbles schists and phyllites. The formations in this area have been subjected to extensive folding and faulting with intrusion of Paleozoic to Cretaceous granitic rocks. Despite the above, the rocks in the area display a regional strike in a NW – SE direction with variable dips

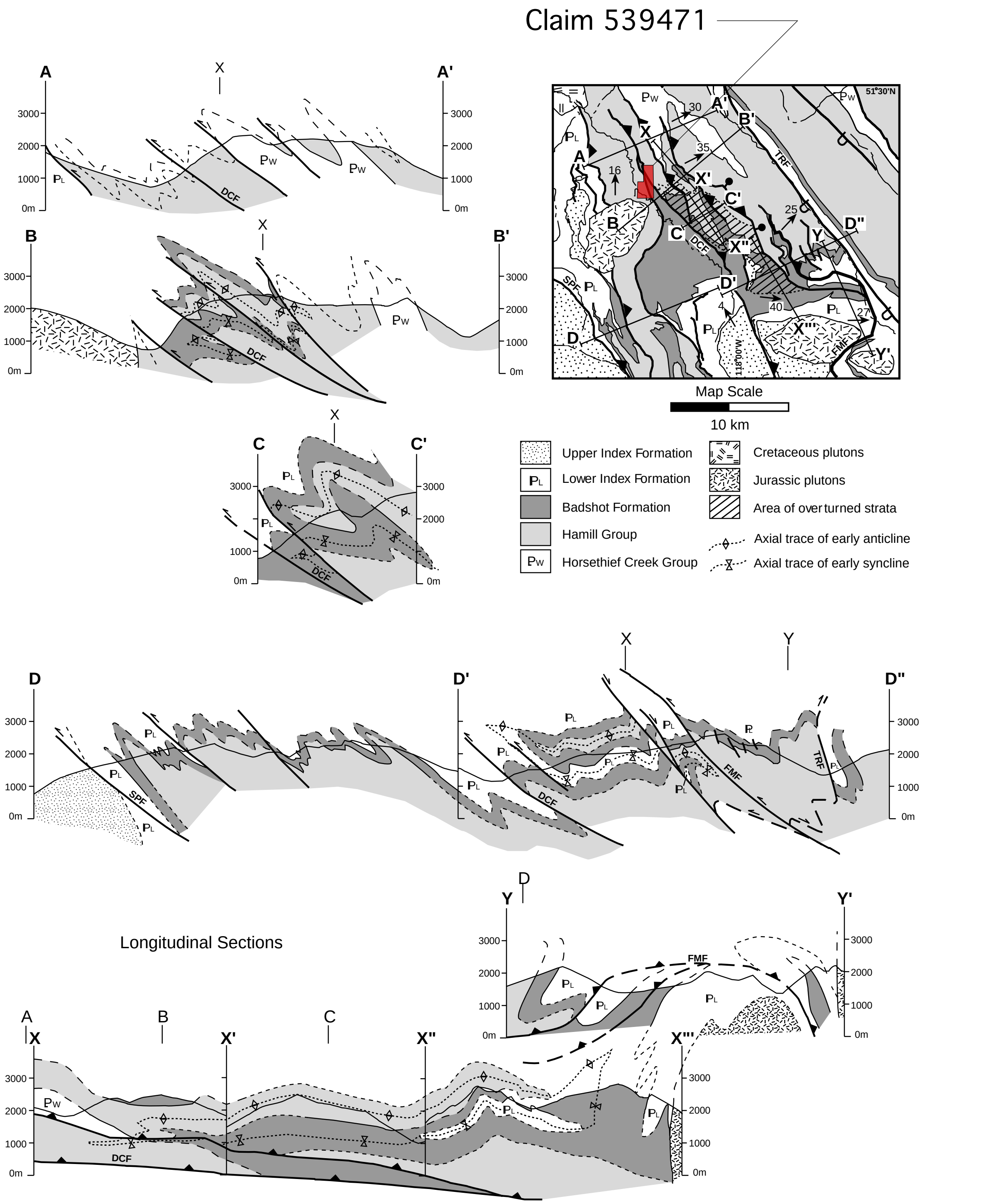


Figure 2. Vertical cross sections (A to D) and longitudinal sections (X and Y) at the northern termination of the Illecillewaet synclinorium. The area where strata were overturned before the development of the dominant, regional southwest-verging folds is indicated on the simplified geologic map. The axial traces of these early folds are also shown in the sections. The abrupt along-strike termination of the early folds suggests that they are noncylindrical folds. This interpretation is consistent with the eastward plunge of the fold axes. SPF—Standard Peak fault; DCF—Downie Creek fault; FMF—Fortitude Mountain fault; TRF—Tangier River fault. (Colpron et al 1998)

Local Geology

Structure

Recent government mapping in the area of claim 539471 shows the area underlain by the Badshot Formation and rocks of the Hamil Group (Colpron et al. 1998). As illustrated in figure 2 above, the rocks in the area have been folded into an overturned nappe and then subjected to a series of southwest climbing thrust faults. The most pervasive of these thrust faults is the Downie Creek fault (DCF) which in the area of the claim is found to the north of, and trending parallel to, Downie Creek. In studying the fracture orientation on the cliff face of the potential quarry site the presence of widely spaced arcuate slip fractures containing muscovite was noted. It appears that this arcuate surface matches the curvature of the thrusted nappes and may represent a dilation surface for facilitating subsequent fluid travel and hence the presence of the hydrated mineral muscovite. A major arcuate slip fracture on the marble cliff face is shown in Figure 4.

In the slide area the observed rocks were striking 150° and dipping northeastward into the mountainside which is compliant with the interpretation illustrated in Figure 2.

Fig. 3: *Slide area on claim 539471. Note the white marble and the dark silicified ridge with associated chlorite schists midway in the slide area. The potential marble quarry site is located midway along the right side of the photo.*

<u>Lithology</u>

Some limited outcrops of the Hamil Group were exposed in the slide area and consisted of phyllite, quartzites (or possible recrystallized tuffites) and dark green chloritic schists believed to be derived, in part, from mafic volcanics. Abundant talus covered most of the area and this, with the steep terrain, and dense vegetative cover in other areas, prevented more detailed interpretation in the time available. The Badshot formation on the claim consists primarily of white calcitic marble with light gray bands and occasional thin white micaceous seams. Just eastward of the slide area the marble becomes purer, whiter and microcrystalline. Maps 5 and 6 shows the detail of the geology and rock types encountered in the area.

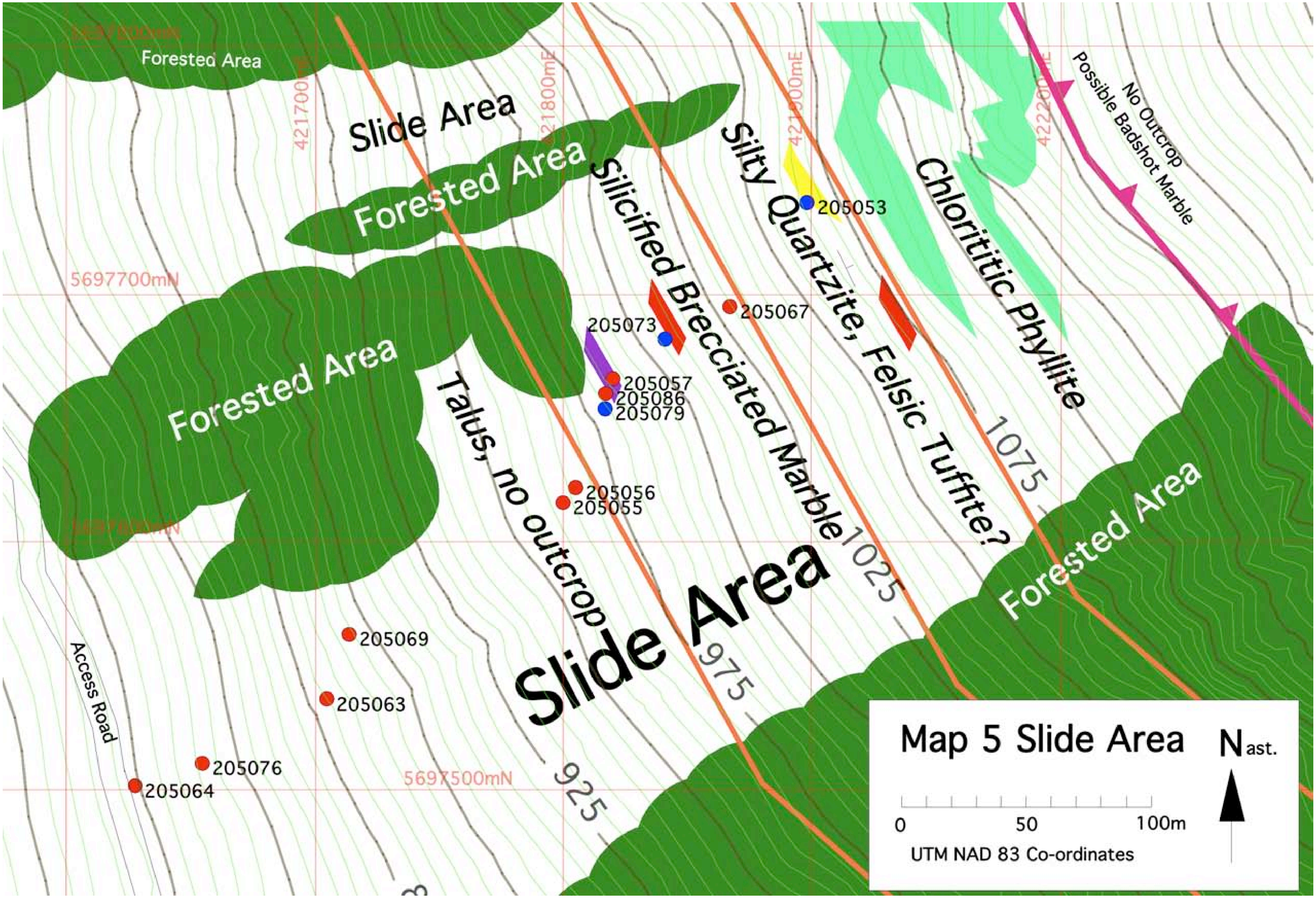
An interesting observation was noted concerning the marble encountered on this claim. It appears that the marble talus observed in the slide area tended to be finely crystalline and were broken into slab like shapes with sides having minor muscovite. In the area of the Marble cliff the marble was microcrystalline and had significantly less pervasive muscovite slips and those existing were widely spaced. Going further eastward off the claim, the marble becomes, in part, light gray and approaches a more gritty texture more typical of a limestone. This might suggest an environment more conducive to recrystallization exists to the west.

Also noted was the tendency for the silty quartzites or tuffites to develop into a fractured quartz stockwork and then massive quartz going westward from the traversed area on the slide. Time did not permit further westward examination of this trend.

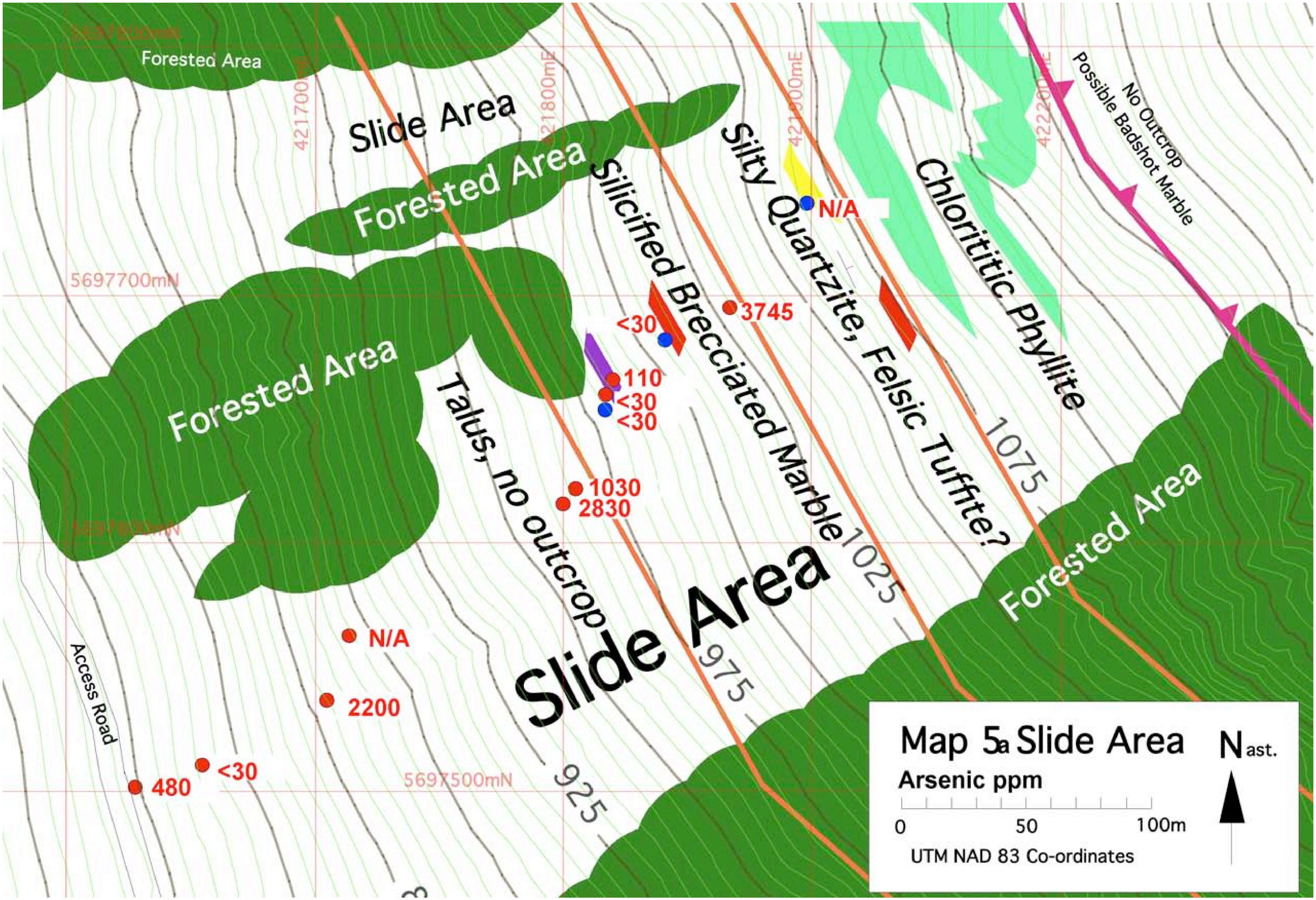
Sample Collection

A total of 19 samples were collected on claim 539471, 16 of which were assayed. Fourteen of these were collected in the slide area while two (lab sample numbers 205084 and 205085) were collected in the area of the potential marble quarry site. Of the eleven slide samples only 3 of these samples (205053, 205073 and 205079) were collected from outcrop. These sample locations are shown as blue dots in Maps 5 and red dots on map 6. A description of most of the samples collected are shown in appendix 1, the Certified Assay Certificates are found in Appendix 2 and the Lab Methodology is described in Appendix 3. Additional samples collected outside the claim area are also shown on the signed certificates and should be ignored.

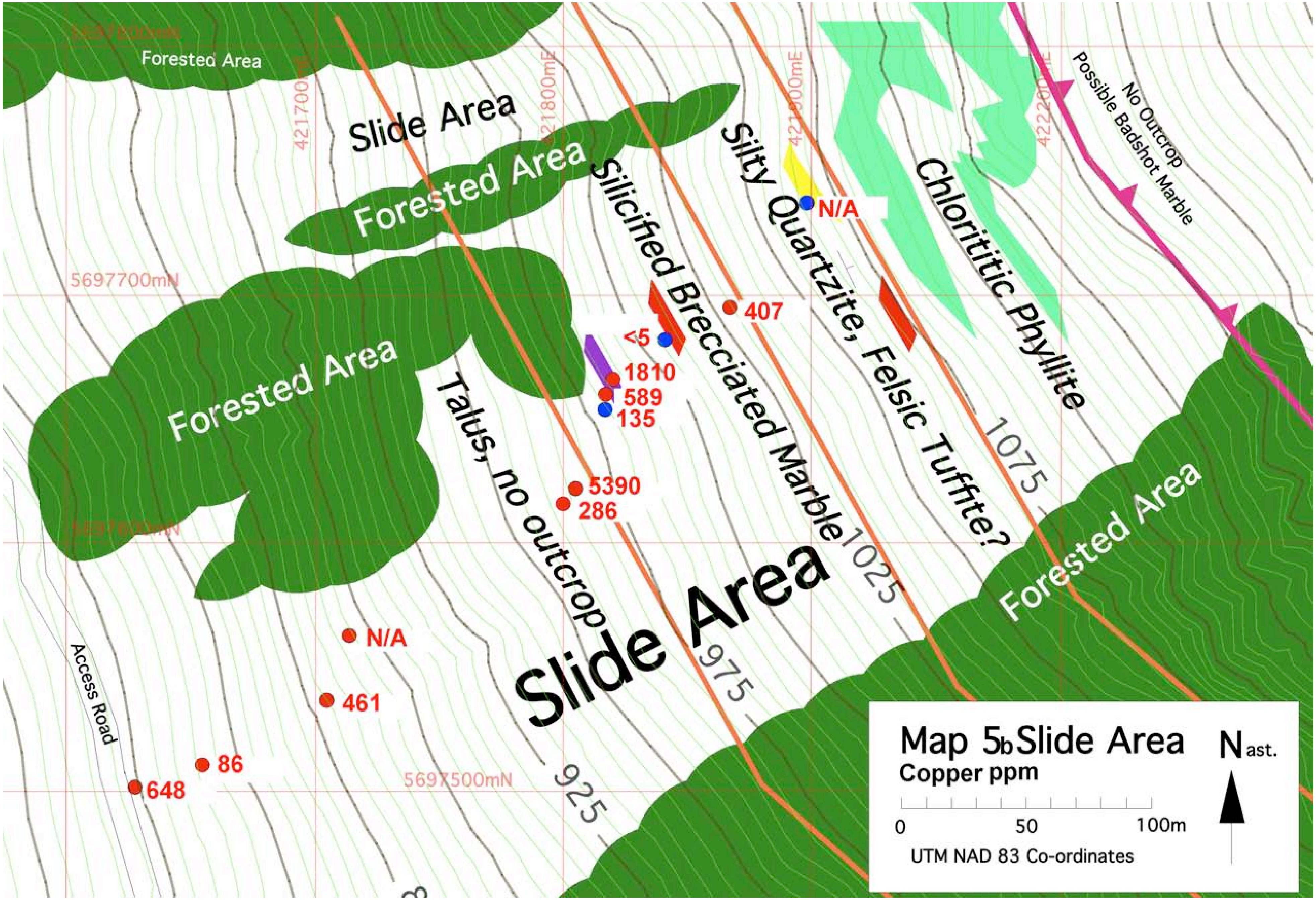
The samples were analysed by SGS Laboratories of Toronto whose staff are trained and qualified according to their company policy and ISO 17025 requirements.



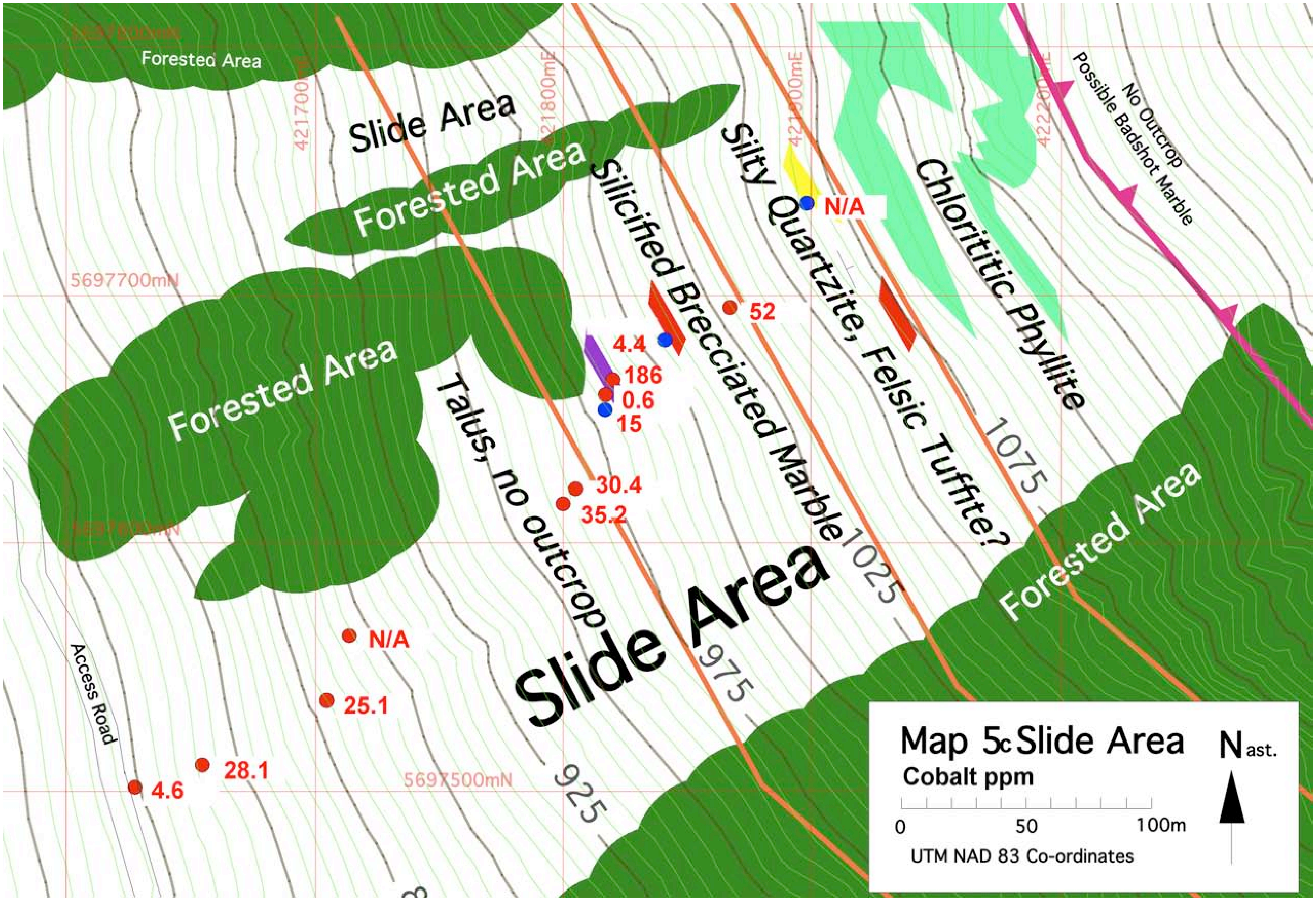
Forested Area
Slide Area
Forested Area
Forested Area
Talus, no outcrop
Slide Area
Silicified Brecciated Marble
Silty Quartzite, Felsic Tuffite?
Chloritic Phyllite
No Outcrop
Possible Badshot Marble
Forested Area
Access Road
5697700mN
5697500mN
421700mE
421800mE
421900mE
422000mE
205053
205067
205073
205057
205086
205079
205056
205055
205069
205063
205076
205064
925
975
1025
1075
Map 5 Slide Area
N ast.
0
50
100m
UTM NAD 83 Co-ordinates



Map 5a Slide Area
Arsenic ppm
0
50
100m
UTM NAD 83 Co-ordinates
N ast.
Forested Area
Slide Area
Forested Area
Forested Area
Talus, no outcrop
Slide Area
Silicified Brecciated Marble
Silty Quartzite, Felsic Tuffite?
Chloritic Phyllite
No Outcrop
Possible Badshot Marble
Forested Area
Access Road
5697700mN
5697500mN
421700mE
421800mE
421900mE
422200mE
N/A
3745
<30
110
<30
<30
1030
2830
N/A
2200
<30
480
925
975
1025
1075



Map 5b Slide Area
Copper ppm
0
50
100m
UTM NAD 83 Co-ordinates
N ast.
Forested Area
Slide Area
Forested Area
Forested Area
Forested Area
Forested Area
Slide Area
Talus, no outcrop
Silicified Brecciated Marble
Silty Quartzite, Felsic Tuffite?
Chloritic Phyllite
No Outcrop
Possible Badshot Marble
Access Road
5697700mN
5697500mN
421700mE
421800mE
421900mE
422200mE
925
975
1025
1075
N/A
407
<5
1810
589
135
5390
286
N/A
461
86
648



Map 5c Slide Area
Cobalt ppm
0
50
100m
UTM NAD 83 Co-ordinates
N ast.
Slide Area
Slide Area
Forested Area
Forested Area
Forested Area
Forested Area
Talus, no outcrop
Silicified Brecciated Marble
Silty Quartzite, Felsic Tuffite?
Chloritic Phyllite
No Outcrop
Possible Badshot Marble
Access Road
5697700mN
5697500mN
421700mE
421800mE
421900mE
422200mE
925
975
1025
1075
N/A
52
4.4
186
0.6
15
30.4
35.2
N/A
25.1
28.1
4.6

Mineralization Encountered

No mineralization was observed in the marble quarry area of Map 6. In the slide area of Map 6 however a distinct trail of sulphide bearing rocks were encountered as a talus trail leading up the slope. The float mineralization encountered can be divided into four types as described below:

I) Orthoquartzite or felsic tufite, containing silt sized quartz fragments with wispy finely crystalline pyrite,

II) Brecciated carbonatized undetermined (possible marble protolith) containing white quartz and calcite veins with associated pyrite, arsenopyrite and chalcopyrite within the veins,

III) Massive soft black sooty fist size float fragments, believed to be arsenopyrite, and

IV) Massive pyrite & hexagonal pyhrrotite containing walnut sized blebs of chalcopyrite.

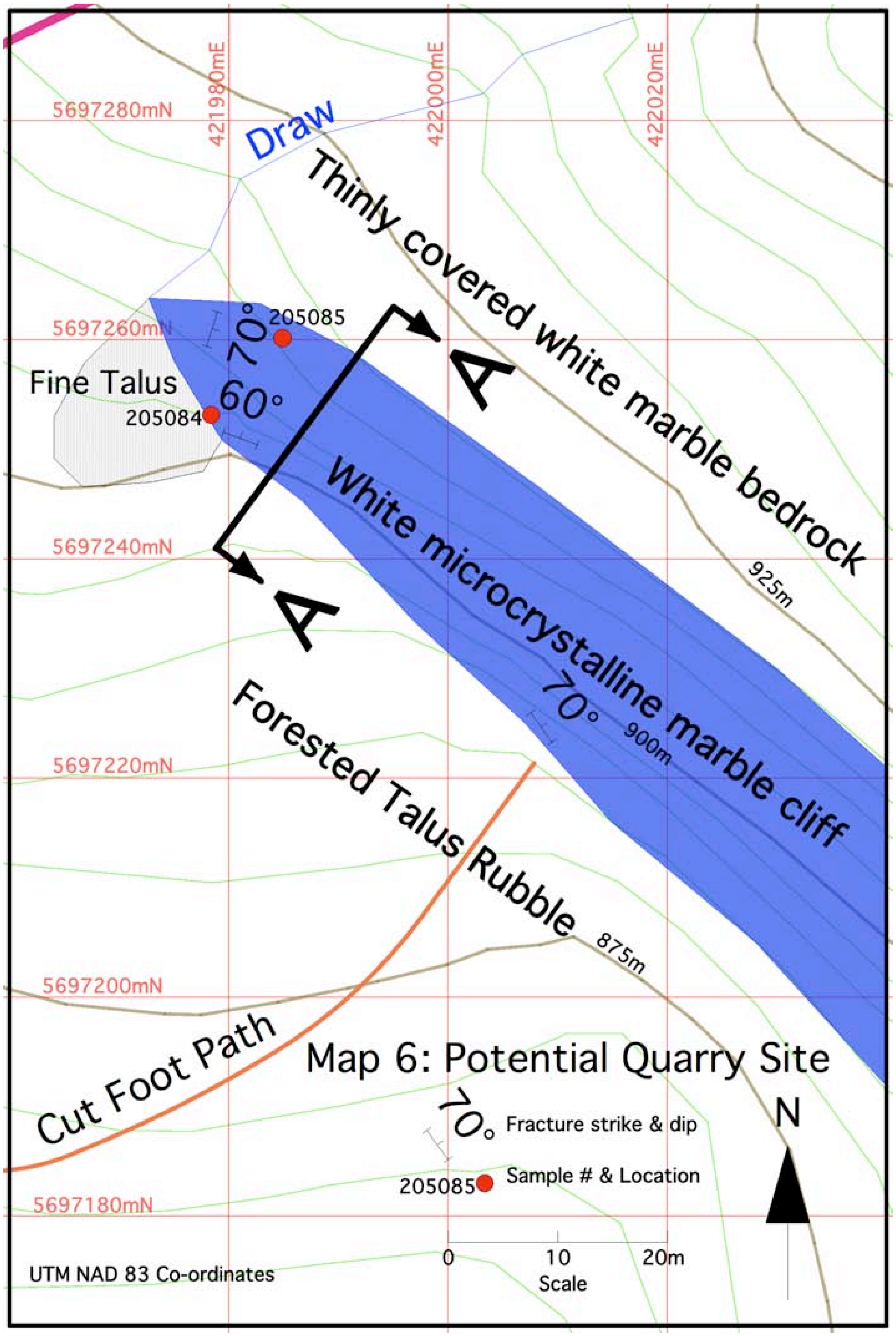
The source of type I style mineralization was found in outcrop and is shown on Map 5. The source of type II style mineralization was also found down slope near the source of the type I mineralization with the quartz veining becoming more intense going westward. The original quartzites being converted into massive quartz. Type III style mineralization was also noted in the quartz veins and may be a more intense mineralization phase of this style, however no large areas of massive mineralization was observed. The source of type IV style mineralization was not found but it is believed that due to the size of the massive slabs encountered it is probably a VMS style mineralization that may be related to the green chloritized schist (possibly derived from a volcanic unit). Unfortunately insufficient field time limited further investigation.

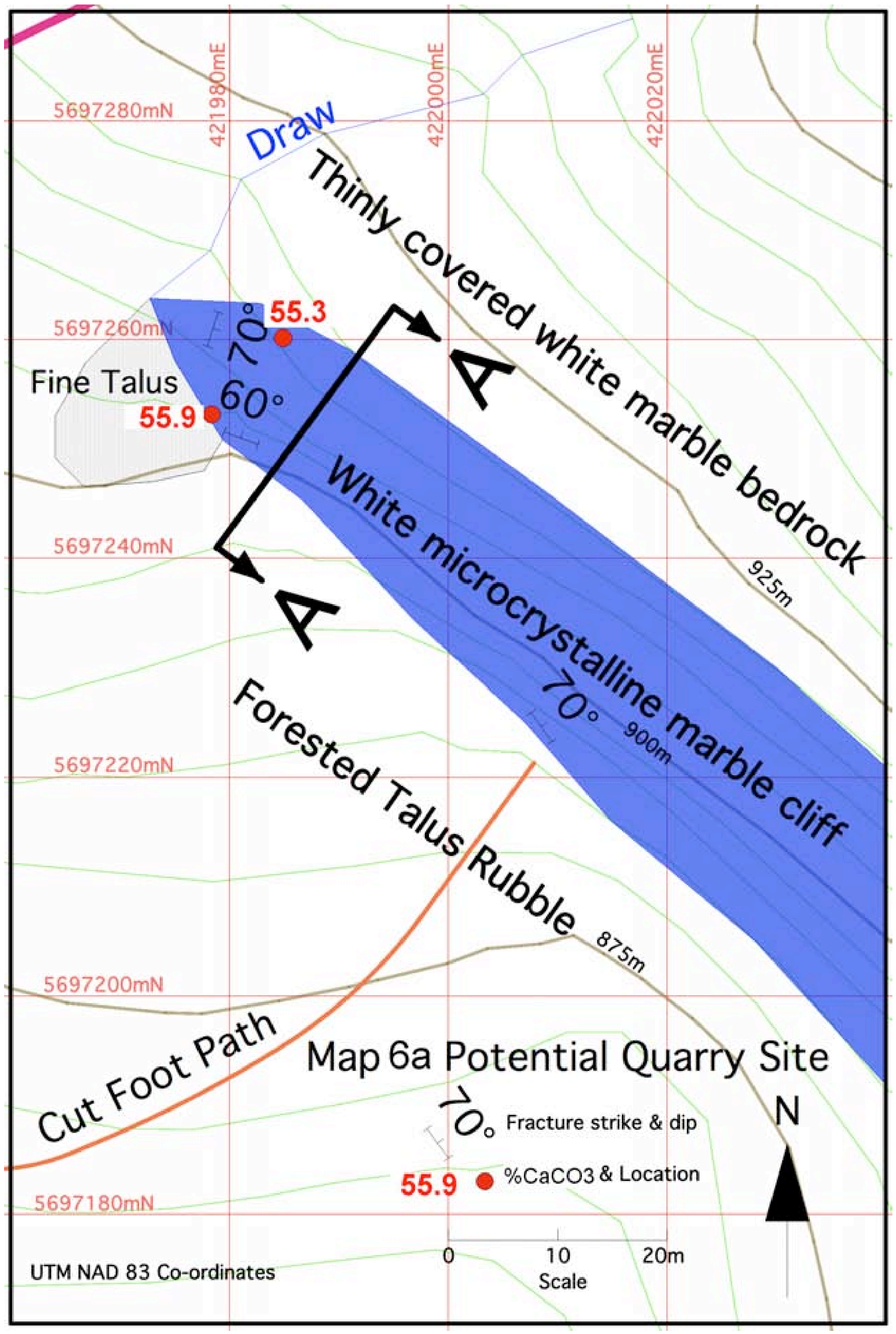
Fig. 4: *Photo of part of the marble cliff, proposed quarry test area of Map 6, showing white marble coated with dark lichen. Note arcuate slip fracture directly above Anatoliy.*

Description of Potential Marble Quarry Site

Two marble samples were collected as shown on Map 6. Both sample 205084 and 205085 gave similar assays as previous samples averaging 55.6% CaO. The marble was a bright white colour with some local areas exhibiting a faint veiled gray colouration (see figure 7). In the area investigated the marble exhibited an extremely fine microcrystalline porcelain-like texture. Of some concern was the occasional presence of very thin layers of arcuate muscovite surfaces sometimes with associated tan coloured carbonate. The orientation of these surfaces appears to parallel the surface of the recumbent folds in the area and may represent areas of minor dilation. While not abundant, these surfaces and their orientation would need to be defined to maximize the production of blocks. Figure 4 shows the presence of one of these surfaces on the cliff face, while figure 8 shows a close up of another muscovite slip found on top of the cliff face.

A cross section in figure 5 shows details of the marble in the area of the proposed quarry site.


421980mE
422000mE
422020mE
5697280mN
5697260mN
5697240mN
5697220mN
5697200mN
5697180mN
Draw
Thinly covered white marble bedrock
205085
70°
60°
205084
Fine Talus
A
A
White microcrystalline marble cliff
925m
70°
900m
Forested Talus Rubble
875m
Cut Foot Path
Map 6: Potential Quarry Site
70° Fracture strike & dip
205085 Sample # & Location
N
0 10 20m
Scale
UTM NAD 83 Co-ordinates



Map 6a Potential Quarry Site
5697280mN
5697260mN
5697240mN
5697220mN
5697200mN
5697180mN
421980mE
422000mE
422020mE
Draw
Thinly covered white marble bedrock
White microcrystalline marble cliff
Fine Talus
Forested Talus Rubble
Cut Foot Path
55.3
55.9
70°
60°
A
A
925m
900m
875m
Fracture strike & dip
%CaCO3 & Location
N
0
10
20m
Scale
UTM NAD 83 Co-ordinates

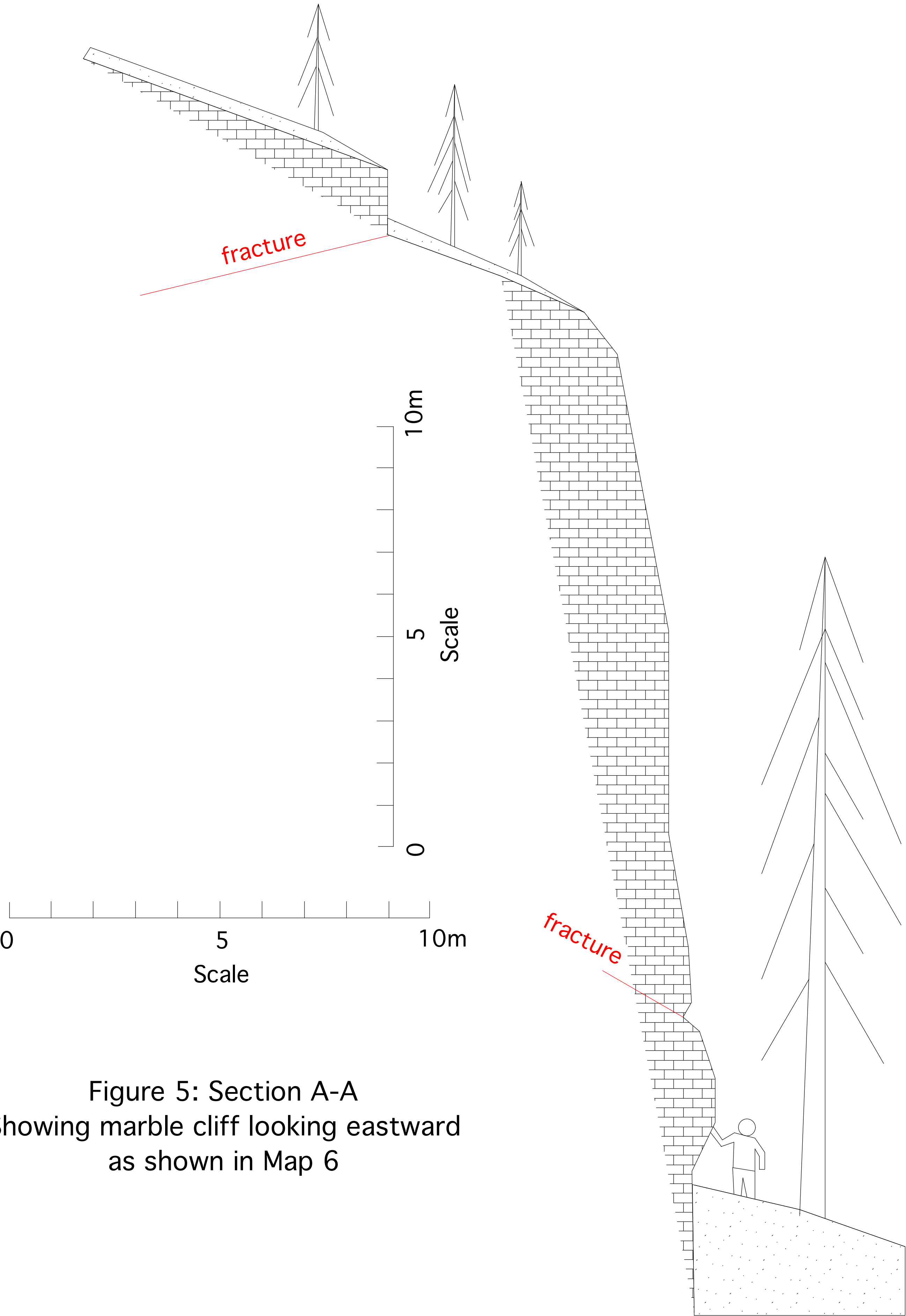


Figure 5: Section A-A
Showing marble cliff looking eastward
as shown in Map 6

Fig. 6: *Chip of microcrystalline marble showing lichen rind collected from the marble cliff face of figure 4.*

Fig. 7: *Microcrystalline slightly veiled marble found at top of cliff face of potential quarry site. Minor surficial brown staining due humic groundwater precipitation of iron compounds.*

Fig. 8: *White marble showing a thin slippage plane contaminated with tan coloured iron carbonate, muscovite and chlorite, found at top of marble cliff area.*

Conclusion and Recommendations

Regarding the sulphide/arsenopyrite mineralization –Area of Map 5

Although no economic mineralization has been encountered, the presence of numerous slab-like boulders of massive pyrrhotite with associated chalcopyrite, of significant size (+20lbs), enhances the potential of economic VMS mineralization. The potential for Replacement Style Zinc, similar to the past producing Bluebell Mine near Kootenay Lake and the nearby Waverley – Tangier property, is also possible within the Badshot Formation in this area. The Pb Zn Saphire showing near Downie Lake on the contiguous Downie Claims is believed to be a replacement type Pb Zn style mineralization, especially so when considering the associated karst weathering in the area.

The presence of massive arsenopyrite float and its association in later quartz veins in this area, associated with rocks previously mapped as the Hamil group, may be indicative of Intrusion-Related Gold Mineral Occurrences similar to the J & L property. This gold mineralization has been stated to be of an Eskay Creek style by several authors. (Logan et al. 1995) (Massey et al. 1999, appendix 3). The continuity of the Hamil Group through both areas (Logan et al. 1996) re-enforce the possibility of an Eskay creek style gold mineralization.

It is highly recommended that further field mapping and sample collection be undertaken in the slide area, and to the west, to better define the existing mineralization encountered and to try and locate the source of the massive sulphide float. The possibility of mineralization in the Hamil formation near the top of the mountains should also be examined.

Regarding the marble - Area of Map 6

The marble encountered in the area of the proposed quarry site is of a consistent high purity calcium carbonate with high brightness with a microcrystalline porcelain-like texture. Minor subtle variations of colour in the form of faint wispy veils of gray were locally observed within parts of the marble cliff. While the marble appears, for the most part, bright white, determining the slight variations of colour in the marble required consistent chipping of the surface to remove the dark gray surface lichen. This was not possible on the upper cliff face unless scaffolding was set up. While monolithic cliff faces of solid marble over 20 metres high exists in the area, the presence of a few fractures was noted. Some of these fractures tended to be sealed with recrystalized crystalline calcite and may prove to be sound at depth. This variation in crystal size in these filled fractures may affect the use of the marble for some applications but the amount affected can be minimized by the orientation of quarrying. However another type of fracture consisting of thin arcuate micaceous slip fractures will have a significant effect on the size of blocks that can be extracted. An attempt to map these fractures was impeded by inaccessibility of the cliff face and the overburden on top of the cliff.

Due to the orientation of these micaceous arcuate fractures, to effectively evaluate the dimension stone potential of this site it is recommended to undertake a stripping program on top of the cliff followed by detailed mapping of the fracture orientation and distribution. Should the stripped area appear sound, a drill program at the top of the cliff and into the face should be undertaken. This drill program would consist of a series of shallow fanned holes spaced in a manner so as to facilitate their later use for wire sawing should the quality of marble warrant. As the site is rather steep, and would require building a trail for access, it is expected that significant cost would be required for this evaluation.

Itemized Cost Statement for this Report

Geologist	
Robert G Komarechka: P.Geo., P.Geol: @ $500.00/day x 3 days	$1,500.00
Geological Assistant	
Anatoliy Franchuk: 2nd year Geology student @ $200.00/day x 3 days	$ 600.00
Camp Room and Board	
2 people: @ $70/day for 4 days	$ 560.00
Transportation	
4WD truck: 4 days @ $50.00/day	$ 200.00
Helicopter	
Bell 206: ½ hour with fuel @ $1,388.60/hr	$ 694.00
Assaying	
16 samples: @ avg. 70.61/sample	$1,129.76
Report & Maps	
Robert G Komarechka P.Geo., P.Geol: @ $400.00/day x 3 days	$1,200.00
Total	**$5,883.76**

Software Programs Used

Microsoft Word, Microsoft Excel, VectorWorks, Graphic Converter, Mac GPS Pro, Adobe Acrobat

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Author Qualifications

I, Robert G. Komarechka, of 545 Granite Street, Sudbury, Ontario, hereby certify that:

1. I am a consulting geologist with Bedrock Research Corp. located at 545 Granite Street Sudbury, Ontario in Sudbury.

2. I graduated from Laurentian University in Sudbury with a B.Sc. (1978) with a major in Geology and have practised my profession since graduation.

3. I have been a registered member of the Association of Professional Engineers Geologists and Geophysicists of Alberta (APEGGA) since 1985 with membership number M39059.

4. I have been a registered member of the Association of Professional Geoscientists of Ontario since 2004 with membership number 1150.

5. I am a Fellow of the Canadian Gemmological Association since graduation as a Gemmologist in 1990.

6. I have practiced my profession as a geologist since my graduation from university with government and in the private sector in Eastern and Western Canada and in parts of the United States reporting on, and managing a variety of projects in mineral exploration and mining.

7. I am familiar with the property having sporadically undertaken previous assessment work in the area over the past 20 years.

8. That I have an interest in the property described in this report, being the 100% claimholder of the property.

9. That this report is based on field observation and information collected from the property from August 23 to August 27, 2006.

Robert G. Komarechka P.Geol., P.Geo.
April 23, 2007

Appendices

Appendix 1

Sample Descriptions

SAMPLE DESCRIPTIONS

DOWNIE SLIDE
&
POTENTIAL MARBLE QUARRY SITE

Descriptions

Note: The very finely crystalline arsenopyrite described below may be another similar mineral as the quantity of arsenic assayed appears too low.
The locations of samples described below can be found on Maps 5 and 6.

205064 **Massive Arsenopyrite**
arsenopyrite with minor (6%) intercrystalline scattered irregular multicrystalline ragged white calcite.

205076 **Quartz Amphibole Plagioclase Gneiss**
Float from Downie North Side. Primarily finely crystalline quartz with streaks of chloritized black amphibole frequently associated with 6% pyrite**.**

205053 **Siliceous tuffite or finely crystalline quartzite**
as described at WP5 but with up to 70% very finely crystalline disseminated euhedral pyrite and thin white quartz veins.

205067 **Massive Arsenopyrite**
Black massive very finely crystalline with white metallic arsenopyrite veinlets and with minor (6%) intercrystalline irregular ragged white calcite clots. Note: This sample gave 6 oz/ton when analysed with a hand held XRF unit and very high arsenic values. This could not be reproduced with the assay results.

205073 **Quartz**
as described below in BK6F but not float and with 6% pyrite and containing small dark spots, probably of arsenopyrite. Contains thin parallel micaceous surfaces related to later structural deformation.minor veinlets and blebs of possible arsenopyrite veinlets.

WP 5 **Siliceous tuffite or finely crystalline quartzite**

Not assayed	found near sample 205053**.** white massive, microcrystalline quartz crystals, with scattered very finely crystalline disseminated pyrite concentrated along thin wispy bands.
205057	**Sulfidic Carbonatized Brecciated Marble** medium gray finely to coarsely crystalline marble with erratic crystal size (being larger along veinlets) brecciated/sulphide veins of chalcopyrite with pyrhhotite and minor peripheral pyrite veinlets bounded by clear recrystallized cream white coarsely crystalline calcite, occasional veinlets containing pyrhhotite - chalcopyrite.
205086	**Massive Arsenopyrite** black massive finely crystalline with minor pyrite containing scattered white finely crystalline blebs of calcite having adhering clear medium crystalline quartz within a finely crystalline orange brown iron carbonate.
205079	**Quartz Vein** medium gray to white quartz containing possible pyrite, arsenopyrite and chalcopyrite in brecciated cracks and veinlets comprising 6% of rock.
WP 9 Not assayed	**Quartz Vein** containing pyrite and black sooty mineral in veinlets consisting of pyrite and possibly arsenopyrite. Similar to 06-08-24-BK9
WP 9 Not assayed	**Chloritic Phyllite** collected at south edge of zone. Dark gray green phyllitic on weathered surface due to thin dark green unweathering chlorite within a dark gray very finely crystalline calcitic marble matrix.
205069	**Quartz Tuffite** as described in 06-08-24-BK4 with less pyrite.
205055	**Massive Pyrite & Pyrrhotite (potential VMS)** very finely crystalline, massive pyrite, pyrrhotite, arsenopyrite and slightly magnetic.
205056	**Sulphidic Carbonatized Breccia** as in BK7F but also massive varieties with soft black sooty vein arsenopyrite. May be outcrop or a very large boulder.
205063	**Massive Arsenopyrite with Pyrite** Same as 06-08-24-BK5F.

205063 **Massive Arsenopyrite with Pyrite**
Same as 06-08-24-BK5F.

205084 **Marble**
bright white, microcrystalline massive with a porcelain texture,

205085 **Marble**
Sample collected at top of Quarry
white with very slightly veiled light gray colouration, see photo 3, microcrystalline, massive with porcelain texture

Appendix 2

Assay Certificates

SGS

Certificate of Analysis

Work Order: 091760

To: Bedrock Research Corp.
Attn: Bob Komarechka
545 Granite Street
SUDBURY
ON P3C 2P4

Date: Apr 05, 2007

P.O. No. :	BEDROCK RES
Project No. :	DEFAULT
No. Of Samples	1
Date Submitted	Dec 19, 2006
Report Comprises	Pages 1 to 7 (Inclusive of Cover Sheet)

Distribution of unused material:

1 Rocks

Certified By : ______________________

Stuart Lam
Operations Manager

ISO 17025 Accredited for Specific Tests. SCC No. 456

Report Footer:

L.N.R.	= Listed not received	I.S.	= Insufficient Sample
n.a.	= Not applicable	--	= No result

*INF = Composition of this sample makes detection impossible by this method

M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion

Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

SGS

Final : 091760 Order: BEDROCK RES

Element	Au	Al	Ba	Be	Ca	Cr	Cu	Fe	K	Li
Method	FAG303	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	0.03	0.01	0.5	5	0.01	10	5	0.01	0.01	10
Units	G/T	%	PPM	PPM	%	PPM	PPM	%	%	PPM
205067	0.04	0.10	27.4	<5	0.31	30	391	>30	0.10	<10
*Dup 205067	<0.03	0.11	28.6	<5	0.34	30	424	>30	0.11	<10

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Adel Mina
CHEMIST

A. Mina

Final : 091760 Order: BEDROCK RES

Element	Mg	Mn	Ni	P	Sc	Sr	Ti	V	Zn	Zr
Method	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	0.01	10	5	0.01	5	0.1	0.01	5	5	0.5
Units	%	PPM	PPM	%	PPM	PPM	%	PPM	PPM	PPM
205067	0.01	70	192	<0.01	<5	11.8	<0.01	23	<5	7.6
*Dup 205067	0.01	70	209	<0.01	<5	12.2	<0.01	24	<5	8.1

SGS

Final : 091760 Order: BEDROCK RES

Element	Ag	As	Bi	Cd	Ce	Co	Cs	Dy	Er	Eu
Method	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	1	30	0.1	0.2	0.1	0.5	0.1	0.05	0.05	0.05
Units	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
205067	8	3630	2.7	<0.2	0.8	52.0	<0.1	0.26	0.17	<0.05
*Dup 205067	7	3860	2.9	<0.2	1.0	51.7	<0.1	0.28	0.19	0.06

Final : 091760 Order: BEDROCK RES

Element	Ga	Gd	Ge	Hf	Ho	In	La	Lu	Mo	Nb
Method	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	1	0.05	1	1	0.05	0.2	0.1	0.05	2	1
Units	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
205067	<1	0.20	<1	<1	0.06	<0.2	0.5	<0.05	<2	<1
*Dup 205067	<1	0.22	<1	<1	0.07	<0.2	0.5	<0.05	<2	<1

SGS

Final : 091760 Order: BEDROCK RES

Element	Nd	Pb	Pr	Rb	Sm	Sn	Ta	Tb	Th	Tl
Method	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	0.1	5	0.05	0.2	0.1	1	0.5	0.05	0.1	0.5
Units	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
205067	0.5	239	0.12	2.4	0.2	<1	<0.5	<0.05	0.4	<0.5
*Dup 205067	0.6	277	0.13	2.8	0.2	<1	<0.5	<0.05	0.4	<0.5

Final : 091760 Order: BEDROCK RES

Element	Tm	U	W	Y	Yb
Method	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	0.05	0.05	1	0.5	0.1
Units	PPM	PPM	PPM	PPM	PPM
205067	<0.05	0.78	<1	1.5	0.2
*Dup 205067	<0.05	0.94	<1	1.8	0.2

Certificate of Analysis

Work Order: 092290

To: Bedrock Research Corp.
Attn: Bob Komarechka
545 Granite Street
SUDBURY
ON P3C 2P4

Date: Apr 05, 2007

P.O. No. :
Project No. : DEFAULT
No. Of Samples 34
Date Submitted Feb 09, 2007
Report Comprises Pages 1 to 9
(Inclusive of Cover Sheet)

Distribution of unused material:

1

Certified By : ______________________
Stuart Lam
Operations Manager

ISO 17025 Accredited for Specific Tests. SCC No. 456

Report Footer:

L.N.R. = Listed not received
n.a. = Not applicable
I.S. = Insufficient Sample
-- = No result
*INF = Composition of this sample makes detection impossible by this method
M after a result denotes ppb to ppm conversion, % denotes ppm to % conversion
Methods marked with an asterisk (e.g. *NAA08V) were subcontracted

Subject to SGS General Terms and Conditions

SGS

Final : 092290 Order:

Element	Au	Pd	Au	Ag	SiO2	Al2O3	CaO	MgO	Na2O	K2O
Method	FAI313	FAI313	FAG323	FAG323	XRF76Z	XRF76Z	XRF76Z	XRF76Z	XRF76Z	XRF76Z
Det.Lim.	1	1	0.03	3	0.01	0.01	0.01	0.03	0.02	0.01
Units	PPB	PPB	G/T	G/T	%	%	%	%	%	%
205051	6	5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205052	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205053	N.A.	N.A.	<0.03	<3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205054	N.A.	N.A.	N.A.	N.A.	65.9	15.5	4.33	1.25	3.37	3.84
205055	N.A.	N.A.	<0.03	<3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205056	N.A.	N.A.	<0.03	44	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205057	N.A.	N.A.	<0.03	21	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205058	3	3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205059	N.A.	N.A.	<0.03	<3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205060	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205061	N.A.	N.A.	<0.03	27	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205062	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205063	N.A.	N.A.	<0.03	I.S.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205064	N.A.	N.A.	<0.03	7	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205065	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205066	12	5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205068	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205069	N.A.	N.A.	<0.03	<3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205070	186	185	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205071	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205072	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205073	N.A.	N.A.	<0.03	<3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205074	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205075	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205076	N.A.	N.A.	<0.03	I.S.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205077	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205078	N.A.	N.A.	<0.03	<3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205079	N.A.	N.A.	<0.03	17	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205080	N.A.	N.A.	<0.03	<3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205081	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205083	N.A.	N.A.	N.A.	N.A.	0.28	0.10	54.7	0.20	<0.02	0.01
205084	N.A.	N.A.	N.A.	N.A.	0.28	0.04	55.9	0.29	<0.02	<0.01
205085	N.A.	N.A.	N.A.	N.A.	0.44	0.12	55.3	0.14	0.02	0.02
205086	N.A.	N.A.	<0.03	12	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
*Dup 205051	1	<1	I.S.	I.S.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
*Dup 205063	N.A.	N.A.	I.S.	I.S.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
*Dup 205076	N.A.	N.A.	I.S.	I.S.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

SGS

Final : 092290 Order:

Element Method Det.Lim. Units	Fe2O3 XRF76Z 0.01 %	MnO XRF76Z 0.01 %	TiO2 XRF76Z 0.01 %	P2O5 XRF76Z 0.01 %	Cr2O3 XRF76Z 0.01 %	LOI XRF76Z 0.01 %	SUM XRF76Z 0.01 %	Al ICM90A 0.01 %	Ba ICM90A 0.5 PPM	Be ICM90A 5 PPM
205051	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	7.08	6830	<5
205052	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	3.95	187	<5
205053	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205054	4.72	0.11	0.54	0.21	0.03	0.39	100.1	7.70	482	<5
205055	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.23	39.3	<5
205056	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.09	18.7	<5
205057	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.45	90.4	<5
205058	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	3.24	712	<5
205059	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	8.29	754	<5
205060	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205061	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205062	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	9.71	102	<5
205063	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.48	102	<5
205064	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.86	204	<5
205065	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	3.76	14.4	<5
205066	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	4.93	493	<5
205068	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	6.54	1020	<5
205069	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205070	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.39	15.1	<5
205071	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	7.52	1900	<5
205072	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2.02	347	<5
205073	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1.02	107	<5
205074	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	4.28	1250	<5
205075	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.19	13.3	<5
205076	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	8.19	344	<5
205077	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	7.89	853	<5
205078	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.24	14.5	<5
205079	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.11	9.5	<5
205080	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	10.2	181	<5
205081	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2.49	32.5	<5
205083	0.11	<0.01	<0.01	<0.01	<0.01	44.1	99.6	N.A.	N.A.	N.A.
205084	0.09	<0.01	<0.01	<0.01	<0.01	43.0	99.6	N.A.	N.A.	N.A.
205085	0.08	<0.01	<0.01	0.01	<0.01	43.0	99.2	N.A.	N.A.	N.A.
205086	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.42	98.9	<5
*Dup 205051	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	7.05	6990	<5
*Dup 205063	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0.49	109	<5
*Dup 205076	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	8.07	340	<5

SGS

Final : 092290 Order:

Element	Ca	Cr	Cu	Fe	K	Li	Mg	Mn	Ni	P
Method	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	0.01	10	5	0.01	0.01	10	0.01	10	5	0.01
Units	%	PPM	PPM	%	%	PPM	%	PPM	PPM	%
205051	5.84	420	135	3.10	3.51	60	2.36	310	77	0.49
205052	3.62	2060	712	8.85	2.18	40	13.4	1220	1370	0.03
205053	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205054	3.02	150	<5	3.17	2.94	20	0.72	820	<5	0.08
205055	4.10	20	286	>30	0.14	<10	0.65	180	155	<0.01
205056	14.4	30	5390	20.3	0.06	<10	5.55	1310	47	0.01
205057	9.40	50	1810	28.8	0.23	<10	4.45	850	88	0.01
205058	17.3	70	56	0.84	1.03	<10	6.78	540	17	0.05
205059	3.74	130	830	8.17	1.17	20	2.77	270	263	0.11
205060	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205061	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205062	6.50	360	399	7.00	0.55	10	1.05	210	51	0.04
205063	0.55	20	461	>30	0.27	<10	0.04	40	169	0.01
205064	0.66	20	648	>30	0.50	<10	0.09	30	170	0.01
205065	15.6	140	24	5.98	0.12	10	6.47	5400	17	0.10
205066	4.44	230	8630	19.0	1.24	40	2.48	1000	245	0.17
205068	5.32	710	20	5.90	3.12	50	5.30	930	186	0.24
205069	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205070	2.87	310	6690	>30	0.09	<10	0.24	220	960	<0.01
205071	0.69	250	66	3.52	2.56	60	1.92	180	45	0.08
205072	2.02	590	236	2.50	0.23	<10	0.19	200	63	0.01
205073	0.40	270	<5	2.71	0.52	<10	0.08	30	11	<0.01
205074	10.4	2380	29	5.94	1.85	30	8.34	1810	564	0.04
205075	0.63	2660	<5	7.27	0.09	<10	25.1	960	1520	<0.01
205076	5.58	130	86	8.39	0.47	30	2.96	1660	26	0.10
205077	4.98	200	335	8.27	1.84	40	1.56	480	29	0.14
205078	1.10	270	66	1.52	0.06	<10	0.06	40	8	0.01
205079	0.21	380	135	1.34	0.10	<10	0.03	40	13	0.02
205080	6.32	440	264	5.04	0.93	30	1.27	260	30	0.05
205081	2.38	3830	56	9.35	0.17	10	18.7	1330	680	0.02
205083	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205084	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205085	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205086	1.60	10	589	>30	0.24	<10	0.06	40	162	<0.01
*Dup 205051	5.45	470	141	3.19	3.50	60	2.37	300	79	0.50
*Dup 205063	0.58	20	442	>30	0.26	<10	0.04	40	166	0.01
*Dup 205076	5.54	130	86	8.28	0.47	20	2.91	1620	26	0.10

Final : 092290 Order:

Element	Sc	Sr	Ti	V	Zn	Ag	As	Bi	Cd	Ce
Method	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	5	0.1	0.01	5	5	1	30	0.1	0.2	0.1
Units	PPM	PPM	%	PPM	PPM	PPM	PPM	PPM	PPM	PPM
205051	22	476	0.88	777	294	1	<30	<0.1	3.2	44.4
205052	19	36.0	0.39	176	87	<1	<30	0.8	<0.2	14.5
205053	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205054	7	868	0.30	73	55	<1	<30	<0.1	<0.2	54.0
205055	<5	84.6	<0.01	28	<5	4	2830	0.5	<0.2	4.2
205056	<5	233	<0.01	20	47	60	1030	3.0	0.3	5.9
205057	<5	191	0.03	25	125	22	110	6.0	0.3	3.5
205058	<5	413	0.19	613	76	1	<30	0.1	0.4	42.0
205059	18	716	1.01	231	169	4	<30	0.4	2.0	81.2
205060	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205061	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205062	12	525	0.44	132	36	<1	<30	0.2	<0.2	68.7
205063	<5	10.5	0.03	32	<5	5	2200	2.5	<0.2	2.4
205064	<5	10.6	0.07	34	<5	5	480	2.7	<0.2	1.9
205065	5	339	0.11	51	130	<1	<30	0.2	<0.2	45.9
205066	20	282	0.36	194	96	18	<30	0.3	1.2	45.5
205068	18	676	0.37	165	95	<1	<30	<0.1	<0.2	97.1
205069	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205070	<5	90.6	0.01	25	101	4	<30	1.2	2.0	5.6
205071	11	55.6	0.39	182	126	<1	<30	0.2	0.2	78.7
205072	<5	93.5	0.10	257	76	<1	<30	0.2	1.2	20.9
205073	<5	13.1	0.09	6	85	<1	<30	<0.1	<0.2	29.1
205074	<5	164	0.17	107	467	<1	<30	0.1	0.4	38.7
205075	<5	21.5	<0.01	13	64	<1	<30	<0.1	<0.2	0.8
205076	23	464	1.29	297	239	<1	<30	0.1	0.6	38.0
205077	24	599	0.47	200	54	<1	<30	0.5	0.3	43.7
205078	<5	24.8	<0.01	6	17	<1	<30	<0.1	<0.2	1.3
205079	<5	10.7	<0.01	<5	21	<1	<30	<0.1	<0.2	1.0
205080	14	399	0.44	144	74	<1	<30	0.3	<0.2	60.5
205081	12	36.1	0.24	121	91	<1	<30	0.2	<0.2	13.5
205083	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205084	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205085	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205086	<5	15.5	0.06	29	<5	4	<30	2.0	<0.2	2.0
*Dup 205051	22	440	0.88	783	308	1	<30	0.1	3.0	44.5
*Dup 205063	<5	11.4	0.03	32	<5	4	2260	2.6	<0.2	2.2
*Dup 205076	22	451	1.27	298	241	<1	<30	0.2	0.7	37.0

SGS

Final : 092290 Order:

Element Method Det.Lim. Units	Co ICM90A 0.5 PPM	Cs ICM90A 0.1 PPM	Dy ICM90A 0.05 PPM	Er ICM90A 0.05 PPM	Eu ICM90A 0.05 PPM	Ga ICM90A 1 PPM	Gd ICM90A 0.05 PPM	Ge ICM90A 1 PPM	Hf ICM90A 1 PPM	Ho ICM90A 0.05 PPM
205051	14.4	4.1	3.29	2.18	0.90	15	3.96	2	3	0.71
205052	87.0	19.2	2.10	1.17	0.49	8	2.27	1	2	0.42
205053	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205054	5.7	1.4	3.76	2.18	1.27	15	4.82	1	5	0.78
205055	35.2	0.2	0.45	0.31	0.15	<1	0.47	<1	<1	0.10
205056	30.4	<0.1	1.75	0.89	0.46	<1	1.60	<1	<1	0.35
205057	186	0.2	1.01	0.54	0.29	<1	0.99	<1	<1	0.21
205058	2.2	0.8	3.44	2.39	0.85	6	3.74	2	6	0.76
205059	49.1	2.3	6.50	3.84	1.38	13	7.41	2	5	1.36
205060	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205061	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205062	17.1	3.4	3.49	2.08	0.90	17	4.90	1	3	0.71
205063	25.1	0.1	0.37	0.29	0.07	<1	0.45	<1	<1	0.09
205064	4.6	0.2	0.34	0.27	0.07	2	0.32	<1	1	0.08
205065	7.4	0.3	4.54	2.55	0.91	9	5.26	3	<1	0.92
205066	239	2.0	4.10	2.28	1.12	13	5.17	2	2	0.85
205068	28.3	12.0	3.11	1.57	2.14	13	6.56	2	4	0.56
205069	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205070	1600	0.9	0.20	0.19	0.11	<1	0.29	<1	<1	0.05
205071	13.4	5.0	3.70	2.32	1.13	16	5.18	2	4	0.77
205072	33.5	0.5	1.26	0.81	0.39	5	1.49	2	<1	0.29
205073	4.4	0.5	0.94	0.52	0.31	2	1.45	<1	4	0.18
205074	30.1	4.9	2.47	1.41	0.81	11	3.02	6	2	0.51
205075	100	<0.1	<0.05	<0.05	0.09	<1	0.06	7	<1	<0.05
205076	28.1	1.4	5.07	2.65	1.60	19	6.00	3	3	0.95
205077	33.5	3.0	3.25	1.76	1.82	14	4.15	1	2	0.63
205078	7.2	<0.1	0.38	0.17	0.09	<1	0.30	2	<1	0.08
205079	15.0	0.1	0.26	0.11	0.07	<1	0.22	1	<1	<0.05
205080	16.0	34.4	3.75	2.07	1.38	19	4.95	2	3	0.76
205081	92.5	0.4	1.55	0.93	0.47	5	1.67	1	1	0.34
205083	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205084	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205085	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205086	0.6	0.1	0.39	0.28	0.10	1	0.30	<1	<1	0.09
*Dup 205051	15.1	4.1	3.25	2.21	0.95	15	3.93	2	4	0.71
*Dup 205063	25.9	0.1	0.42	0.27	0.11	<1	0.41	<1	<1	0.09
*Dup 205076	28.0	1.4	5.06	2.57	1.59	18	5.78	3	3	0.98

SGS

Final : 092290 Order:

Element	In	La	Lu	Mo	Nb	Nd	Pb	Pr	Rb	Sm
Method	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	0.2	0.1	0.05	2	1	0.1	5	0.05	0.2	0.1
Units	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
205051	<0.2	27.5	0.38	11	20	21.9	<5	5.50	146	4.0
205052	<0.2	6.8	0.18	<2	4	8.1	<5	1.95	156	2.2
205053	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205054	<0.2	28.9	0.34	2	19	25.4	17	6.26	136	5.1
205055	<0.2	2.1	0.05	<2	<1	1.9	26	0.50	5.1	0.5
205056	<0.2	2.7	0.11	<2	<1	3.4	264	0.75	1.5	1.1
205057	<0.2	1.5	0.06	4	2	2.2	471	0.48	8.3	0.8
205058	<0.2	28.9	0.38	9	7	22.5	9	5.80	37.7	4.1
205059	<0.2	43.4	0.53	<2	42	39.0	20	9.74	61.6	7.9
205060	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205061	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205062	<0.2	37.9	0.32	5	16	31.3	12	8.10	35.6	5.5
205063	<0.2	1.1	0.06	<2	1	1.3	257	0.31	8.4	0.4
205064	<0.2	0.9	0.07	3	2	1.0	258	0.23	17.6	0.2
205065	<0.2	27.1	0.33	<2	4	23.4	9	5.73	4.1	5.1
205066	<0.2	22.6	0.33	29	8	24.9	11	5.79	55.0	5.7
205068	<0.2	47.4	0.20	<2	5	49.4	11	12.0	140	9.2
205069	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205070	<0.2	3.2	0.08	8	<1	2.3	8	0.61	4.2	0.4
205071	<0.2	43.6	0.35	8	16	35.7	17	9.32	127	6.2
205072	<0.2	12.2	0.14	32	4	9.3	8	2.50	12.2	1.7
205073	<0.2	15.2	0.09	12	2	11.8	235	3.22	21.5	1.9
205074	<0.2	23.5	0.22	3	6	16.4	8	4.56	136	3.1
205075	<0.2	0.5	<0.05	5	<1	0.3	6	0.10	1.7	<0.1
205076	<0.2	19.0	0.32	2	25	21.1	13	4.78	21.8	5.3
205077	<0.2	22.0	0.24	10	10	24.6	19	5.71	103	4.9
205078	<0.2	0.8	<0.05	17	<1	0.8	6	0.19	1.7	0.3
205079	<0.2	0.5	<0.05	5	<1	0.6	13	0.13	2.6	0.2
205080	<0.2	34.0	0.30	7	16	28.0	12	7.14	74.9	5.5
205081	<0.2	6.4	0.15	11	3	7.2	<5	1.72	7.1	1.8
205083	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205084	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205085	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205086	<0.2	1.0	0.06	<2	2	0.9	152	0.24	7.7	0.2
*Dup 205051	<0.2	27.8	0.39	12	21	22.4	<5	5.57	148	4.2
*Dup 205063	<0.2	1.1	0.05	<2	1	1.3	259	0.29	8.2	0.4
*Dup 205076	<0.2	18.5	0.34	2	25	20.7	13	4.61	22.1	5.3

SGS

Element	Sn	Ta	Tb	Th	Tl	Tm	U	W	Y	Yb
Method	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A	ICM90A
Det.Lim.	1	0.5	0.05	0.1	0.5	0.05	0.05	1	0.5	0.1
Units	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
205051	<1	1.3	0.60	5.5	1.5	0.35	8.72	3	20.9	2.4
205052	2	<0.5	0.36	2.2	1.1	0.17	0.51	<1	10.5	1.2
205053	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205054	1	1.1	0.72	7.7	0.6	0.32	2.61	<1	20.6	2.1
205055	<1	<0.5	0.08	0.5	<0.5	<0.05	0.58	<1	2.7	0.3
205056	<1	<0.5	0.29	0.5	<0.5	0.13	1.33	<1	9.1	0.8
205057	<1	<0.5	0.16	2.7	<0.5	0.07	2.46	<1	5.2	0.4
205058	<1	<0.5	0.58	7.5	<0.5	0.38	12.1	<1	26.3	2.5
205059	<1	2.4	1.19	8.3	0.9	0.54	1.75	<1	34.8	3.2
205060	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205061	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205062	<1	1.0	0.68	6.6	<0.5	0.30	2.38	3	18.9	2.0
205063	<1	<0.5	0.07	1.5	<0.5	<0.05	0.71	<1	2.1	0.3
205064	<1	<0.5	0.06	2.9	<0.5	0.05	1.99	2	2.2	0.4
205065	1	<0.5	0.80	5.1	<0.5	0.36	2.85	<1	26.4	2.3
205066	<1	0.5	0.80	5.7	<0.5	0.35	4.28	<1	21.8	2.1
205068	<1	<0.5	0.79	8.0	0.8	0.20	1.72	<1	14.9	1.3
205069	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205070	<1	<0.5	<0.05	1.0	<0.5	<0.05	0.20	<1	1.4	0.3
205071	2	1.0	0.78	15.2	0.6	0.34	3.83	<1	20.7	2.2
205072	<1	<0.5	0.25	3.8	<0.5	0.13	7.83	<1	7.1	0.9
205073	<1	<0.5	0.20	4.7	<0.5	0.08	0.70	<1	4.9	0.6
205074	2	<0.5	0.46	6.4	1.2	0.19	3.52	<1	14.2	1.4
205075	<1	<0.5	<0.05	0.2	<0.5	<0.05	0.27	<1	<0.5	<0.1
205076	4	1.4	0.94	2.7	<0.5	0.35	0.67	<1	24.2	2.2
205077	<1	0.5	0.62	2.0	<0.5	0.25	0.59	<1	15.6	1.6
205078	<1	<0.5	0.08	<0.1	<0.5	<0.05	0.15	1	2.1	0.1
205079	<1	<0.5	<0.05	0.2	<0.5	<0.05	0.15	<1	1.1	<0.1
205080	<1	1.0	0.72	7.2	<0.5	0.30	1.82	<1	19.8	2.0
205081	<1	<0.5	0.26	1.8	<0.5	0.13	0.55	<1	8.4	0.9
205083	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205084	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205085	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205086	<1	<0.5	0.07	2.1	<0.5	<0.05	0.75	<1	2.1	0.3
*Dup 205051	<1	1.2	0.58	5.9	1.4	0.35	8.87	3	21.0	2.5
*Dup 205063	<1	<0.5	0.08	1.4	<0.5	<0.05	0.74	<1	2.2	0.3
*Dup 205076	4	1.5	0.88	2.7	<0.5	0.36	0.66	<1	24.2	2.2

SGS

Element	Zr	Cu	Co	Pb	Zn	Ni
Method	ICM90A	ICP90Q	ICP90Q	ICP90Q	ICP90Q	ICP90Q
Det.Lim.	0.5	0.01	0.01	0.01	0.01	0.01
Units	PPM	%	%	%	%	%
205051	112	N.A.	N.A.	N.A.	N.A.	N.A.
205052	50.5	N.A.	N.A.	N.A.	N.A.	N.A.
205053	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205054	167	N.A.	N.A.	N.A.	N.A.	N.A.
205055	6.7	0.03	N.A.	N.A.	<0.01	0.02
205056	6.3	0.56	N.A.	N.A.	<0.01	<0.01
205057	31.6	0.19	N.A.	N.A.	<0.01	N.A.
205058	211	<0.01	N.A.	N.A.	<0.01	<0.01
205059	169	0.09	<0.01	N.A.	0.01	N.A.
205060	N.A.	<0.01	N.A.	N.A.	N.A.	<0.01
205061	N.A.	0.06	<0.01	0.03	<0.01	0.02
205062	102	N.A.	N.A.	N.A.	N.A.	N.A.
205063	19.4	0.04	<0.01	0.03	<0.01	0.02
205064	50.7	0.06	<0.01	0.03	<0.01	0.02
205065	27.9	N.A.	N.A.	N.A.	N.A.	N.A.
205066	75.2	N.A.	N.A.	N.A.	N.A.	N.A.
205068	152	N.A.	N.A.	N.A.	N.A.	N.A.
205069	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205070	3.4	0.71	0.20	N.A.	N.A.	0.10
205071	142	N.A.	N.A.	N.A.	N.A.	N.A.
205072	37.6	N.A.	N.A.	N.A.	N.A.	N.A.
205073	156	N.A.	N.A.	N.A.	N.A.	N.A.
205074	56.5	N.A.	N.A.	N.A.	N.A.	N.A.
205075	2.9	N.A.	N.A.	N.A.	N.A.	N.A.
205076	112	N.A.	N.A.	N.A.	N.A.	N.A.
205077	57.1	N.A.	N.A.	N.A.	N.A.	N.A.
205078	1.4	N.A.	N.A.	N.A.	N.A.	N.A.
205079	6.1	N.A.	N.A.	N.A.	N.A.	N.A.
205080	115	N.A.	N.A.	N.A.	N.A.	N.A.
205081	30.7	N.A.	N.A.	N.A.	N.A.	N.A.
205083	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205084	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205085	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
205086	29.9	0.06	<0.01	N.A.	<0.01	0.02
*Dup 205051	119	N.A.	N.A.	N.A.	N.A.	N.A.
*Dup 205063	18.9	N.A.	N.A.	N.A.	N.A.	N.A.
*Dup 205076	121	N.A.	N.A.	N.A.	N.A.	N.A.

Appendix 3

Assay Quality Control

CRU21: Crush to 75% passing 2 mm

1. **Parameter(s) measured, unit(s):**
   All

2. **Typical sample size:**
   Crush < 3.5 kg

3. **Type of sample applicable (media):**
   Geological and metallurgical samples (ores, concentrates, rocks, soils and metallurgical process products)

4. **Sample preparation technique used:**
   Samples require various preparation procedures to ensure sample homogeneity, representative sub-samples and prevent cross contamination. The stepwise procedure may involve all steps or some of the steps depending upon the state of the sample as received. The sample is dried at 70 +/-10°C for 24 hours, if received wet or client specified. The next step involves crushing to reduce the sample size to 2mm 10 mesh (9 mesh Tyler). The sample is then split via a riffle splitter continuously in order to divide the sample into a 250g sub-sample for analysis and the remainder is stored as a reject.

5. **Method of analysis used:**
   This may involve various analyses depending upon the analytes requested and sample type.

6. **Data reduction by:**
   Computer, on line, data fed to Laboratory Information Management System with secure audit trail.

7. **Quality Control**

Crushing Parameters	Frequency and Requirement
Prep. Blank	1 in 50
Prep. Replicates	1 in 50
% Passing Checks	1 in 50 with 75% passing 9 mesh Tyler (2mm) *

* may be client specified

FAG303 : The Determination of Gold by Fire Assay and Gravimetric Finish

1. **Parameter(s) measured, unit(s):**
   Gold (Au): G/T

2. **Typical sample size:**
   30.0 g

3. **Type of sample applicable (media):**
   Crushed and pulverized rocks.

4. **Sample preparation technique used:**
   Crushed and pulverized rock sample are weighed and mixed with flux and fused using lead oxide at 1100°C, followed by cupellation of the resulting lead button (Dore bead). The bead is transferred into porcelain crucibles; silver is removed by using dilute Nitric acid, heated to 650°C, and then cooled.

5. **Method of analysis used:**
   Gravimetric analysis is a technique through which the amount of an analyte can be determined through the measurement of mass from the use of a micro balance.

6. **Data reduction by:**
   The results are exported via computer, on line, data fed to the Laboratory Information Management System (LIMS CCLAS EL) with secure audit trail.

7. **Figures of Merit:**

Element	Reporting Limit G/T
Au	0.03

8. **Quality control:**
   All QC samples are verified using LIMS. The acceptance criteria are statistically controlled and control charts are used to monitor accuracy and precision. Data that falls outside the control limits is investigated and repeated as necessary.

Minerals Services METHOD SUMMARY

FAI313 : The Determination of Gold, Platinum and Palladium by Fire Assay and ICP-OES.

1. **Parameter(s) measured, unit(s):**
   Gold (Au); Platinum (Pt); Palladium (Pd) : ppb

2. **Typical sample size:**
   30.0 g

3. **Type of sample applicable (media):**
   Crushed and pulverized rocks.

4. **Sample preparation technique used:**
   Crushed and pulverized rock sample are weighed and mixed with flux and fused using lead oxide at 1100°C, followed by cupellation of the resulting lead button (Dore bead). The bead is digested using 1:1 HNO_3 and HCl and the resulting solution is submitted for analysis.

5. **Method of analysis used:**
   The digested sample solution is aspirated into the inductively coupled plasma Optical Emission Spectrometer (ICP-OES) where the atoms in the plasma emit light (photons) with characteristic wavelengths for each element. This light is recorded by optical spectrometers and when calibrated against standards the technique provides a quantitative analysis of the original sample.

6. **Data reduction by:**
   The results are exported via computer, on line, data fed to the Laboratory Information Management System (LIMS CCLAS EL) with secure audit trail.

7. **Figures of Merit:**

Element	Reporting of Quantification (LOQ) ppb
Au	2.87
Pt	5.60
Pd	3.12

8. **Quality control:**
   The ICP-OES is calibrated with each work order. An instrument blank and calibration check is analyzed with each run. One preparation blank and reference material is analyzed every 46 samples, one duplicate every 12 samples.
   All QC samples are verified using LIMS. The acceptance criteria are statistically controlled and control charts are used to monitor accuracy and precision. Data that falls outside the control limits is investigated and repeated as necessary.

ICA50 : Ore Grade Analysis of Base Metals by Sodium peroxide Fusion and ICP-OES.

1. **Parameter(s) measured, unit(s):**
   Cobalt (Co); Copper (Cu); Nickel (Ni); Lead (Pb); Zinc (Zn) : %

2. **Typical sample size:**
   0.20 g

3. **Type of sample applicable (media):**
   Crushed and Pulverized rocks, soils and sediments

4. **Sample preparation technique used:**
   Crushed and pulverized rock, soil and /or sediment samples are fused by Sodium peroxide in zirconium crucibles and dissolved using dilute HNO_3.

5. **Method of analysis used:**
   The digested sample solution is aspirated into the inductively coupled plasma Optical Emission Spectrometer (ICP-OES) where the atoms in the plasma emit light (photons) with characteristic wavelengths for each element. This light is recorded by optical spectrometers and when calibrated against standards the technique provides a quantitative analysis of the original sample.

6. **Data reduction by:**
   The results are exported via computer, on line, data fed to the Laboratory Information Management System (LIMS CCLAS EL) with secure audit trail.

7. **Figures of Merit:**

Element	Limit of Quantification (LOQ) %	Element	(LOQ) %
Co	0.001	Pb	0.007
Cu	0.004	Zn	0.004
Ni	0.005		

8. **Quality control:**
   The ICP-OES is calibrated with each work order. An instrument blank and calibration check is analyzed with each run. One preparation blank and reference material is analyzed every 46 samples, one duplicate every 12 samples.
   All QC samples are verified using LIMS. The acceptance criteria are statistically controlled and control charts are used to monitor accuracy and precision. Data that falls outside the control limits is investigated and repeated as necessary.

9. **Accreditation:**
   The Standards Council of Canada has accredited this test in conformance with the requirements of ISO/IEC 17025. See www.scc.ca for scope of accreditation

ICM90A : The Determination of 54 Elements using Sodium peroxide fusion followed by ICP-OES and ICP-MS.

1. Parameter(s) measured, unit(s):

Silver (Ag); Aluminum (Al); Arsenic (As); Boron (B); Barium (Ba); Beryllium (Be); Bismuth (Bi); Calcium (Ca); Cadmium (Cd); Cerium (Ce); Chromium (Cr); Cobalt (Co); Cesium (Cs); Copper (Cu); Dysprosium (Dy); Erbium (Er); Europium (Eu); Iron (Fe); Gallium (Ga); Gadolinium (Gd); Germanium (Ge); Hafnium (Hf); Holmium (Ho); Indium (In); Potassium (K); Lanthanum (La); Lithium (Li); Lutetium (Lu); Magnesium (Mg); Manganese (Mn); Molybdenum (Mo); Niobium (Nb); Neodymium (Nd); Nickel (Ni); Phosphorus (P); Lead (Pb); Praseodymium (Pr); Rubidium (Rb); Scandium (Sc); Samarium (Sm); Tin(Sn); Strontium (Sr); Tantalum (Ta); Terbium (Tb); Thallium (Tl); Thorium (Th); Titanium (Ti); Thulium (Tm); Uranium (U);Vanadium(V);Tungsten(W);Yttrium (Y); Ytterbium (Yb); Zinc (Zn); Zirconium (Zr) : ppm and %

2. Typical sample size:

0.10 g

3. Type of sample applicable (media):

Crushed and Pulverized rocks, soils and sediments

4. Sample preparation technique used:

Crushed and pulverized rock, soil and /or sediment samples are fused by Sodium peroxide in graphite crucibles and dissolved using dilute HNO_3.

During digestion the sample is split into 2 and half is given to ICP-OES and the other half is given to ICP-MS.

5. Method of analysis used:

The digested sample solution is aspirated into the inductively coupled plasma Mass Spectrometer (ICP-MS) where the ions are measured and quantified according to their unique mass and the other half aspirated into the inductively coupled plasma Optical Emission Spectrometer (ICP-OES) where the atoms in the plasma emit light (photons) with characteristic wavelengths for each element. This light is recorded by optical spectrometers and when calibrated against standards the technique provides a quantitative analysis of the original sample.

6. Data reduction by:

The results are exported via computer, on line, data fed to the Laboratory Information Management System (LIMS CCLAS EL) with secure audit trail.

7. Figures of Merit:

Element	Limit of Quantification (LOQ) ppm	Element	LOQ ppm	Element	(LOQ) ppm	Element	(LOQ) ppm
Ag	0.0	Er	0.0	Mn	3.17	Tb	0.0
Al	0.023%	Eu	0.0	Mo	2.30	Th	0.10
As	4.30	Fe	0.083%	Nb	0.70	Ti	0.003%
Ba	3.440	Ga	0.30	Nd	0.70	Tl	0.10
Be	0.477	Gd	0.0	Ni	6.463	Tm	0.0
Bi	0.20	Ge	0.03	P	0.00%	U	0.1
Ca	0.153%	Hf	0.30	Pb	17.7	V	2.70
Cd	0.10	Ho	0.0	Pr	0.0	W	0.60
Ce	0.30	In	0.0	Rb	0.40	Y	0.20
Co	0.30	K	0.06%	Sc	0.453	Yb	0.0
Cr	26.60	La	0.10	Sm	0.10	Zn	10.547
Cs	0.10	Li	8.71	Sn	2.30	Zr	17.313
Cu	18.216	Lu	0.20	Sr	9.76		
Dy	0.0	Mg	0.013%	Ta	0.30		

8. Quality control:

The ICP-OES and ICP-MS are calibrated with each work order. An instrument blank and calibration check is analyzed with each run. One preparation blank and reference material is analyzed every 46 samples, one duplicate every 12 samples.
All QC samples are verified using LIMS. The acceptance criteria are statistically controlled and control charts are used to monitor accuracy and precision. Data that falls outside the control limits is investigated and repeated as necessary.

PUL45 : Pulverize 250g in Cr Steel to 85% passing 75 µm

1. **Parameter(s) measured, unit(s):**
   All
2. **Typical sample size:**
   Max: 250 g

3. **Type of sample applicable (media):**
   Geological and metallurgical samples (ores, concentrates, rocks, soils and metallurgical process products)

4. **Sample preparation technique used:**
   Pulverizing is done using pots made either hardened chrome steel or mild steel material. Crushed material is transferred into a clean pot and the pot is placed into a vibratory mill. Samples are pulverized to 85% passing 75 micron 200 mesh or otherwise specified by the client.

5. **Method of analysis used:**
   This may involve various analyses depending upon the analytes requested and sample type.

6. **Data reduction by:**
   Computer, on line, data fed to Laboratory Information Management System with secure audit trail.

7. **Figures of Merit: Quality Control**

Pulverizing Parameters	Frequency	Quality Control Requirement
Prep. Blank	At the start of batch	85% passing 200 mesh (75 um)
Prep. Replicates	every 50 samples	85% passing 200 mesh (75 um)
% Passing Checks	Every 50 samples	85% passing 200 mesh (75 um)

XRF76Z: The Determination of Major Oxides using Fused Glass Discs and X-Ray Fluorescence Spectrometry

1. Parameter(s) measured, unit(s):

Aluminum oxide (Al_2O_3); Calcium oxide (CaO); Chromium oxide (Cr_2O_3); Iron oxide (Fe_2O_3); Magnesium oxide (MgO); Manganese oxide (MnO); Phosphorus oxide (P_2O_5); Potassium oxide (K_2O); Sodium oxide (Na_2O); Titanium oxide (TiO_2) and LOI: %

2. Typical sample size:

2.00 g

3. Type of sample applicable (media):

Crushed and Pulverized rocks and milled to 200 mesh or finer.

4. Sample preparation technique used:

Crushed and pulverized rock samples are pre-dried at a range between 75°C – 90°C and then ignited at 950°C+/-50°C and then fused with 50% Lithium metaborate ($LiBO_2$) and 50% Lithium tetraborate ($Li_2B_4O_7$) in a fluxer to produce a glass disc.

5. Method of analysis used:

The glass disc is analyzed on the sequential x-ray fluorescence spectrometer. The fused glass discs are irradiated with x-rays from the x-ray tube creating in response secondary x-rays emitted from the sample that are counted and used to determine the concentrations of the elements. Quantitative determination is made possible through previously prepared calibration standards.

6. Data reduction by:

The results are exported via computer, on line, data fed to the Laboratory Information Management System (LIMS CCLAS EL) with secure audit trail. The system computer performs all necessary calculations automatically to calculate the % oxide for each element and the %Total major content of the sample. The LOI is included in the total.

7. Figures of Merit:

Element	Limit of Quantification (LOQ) %	Element	LOQ %
Al_2O_3	0.026	MnO	0.02
CaO	0.049	Na_2O	0.040
Cr_2O_3	0.01	P_2O_5	0.01
Fe_2O_3	0.05	SiO_2	0.035
K_2O	0.02	TiO_2	0.02
MgO	0.11		

8. Quality control:

A blank is analyzed with every new batch of flux. An in-house reference material is analyzed every 55 samples, one duplicate every 12 samples.

All QC samples are verified using LIMS. The acceptance criteria are statistically controlled and control charts are used to monitor accuracy and precision. Data that falls outside the control limits is investigated and repeated as necessary.

9. Accreditation:

The Standards Council of Canada has accredited this test in conformance with the requirements of ISO/IEC 17025. See www.scc.ca for scope of accreditation.

FAG323 : The Determination of Gold and Silver by Fire Assay and Gravimetric Finish

1. Parameter(s) measured, unit(s):
Gold (Au), Silver (Ag): G/T

2. Typical sample size:
30.0 g

3. Type of sample applicable (media):
Crushed and pulverized rocks.

4. Sample preparation technique used:
Crushed and pulverized rock sample are weighed and mixed with flux and Silver wire 99.9% and fused using lead oxide at 1100°C, followed by cupellation of the resulting lead button (Dore bead). The bead is transferred into porcelain crucibles Lead is removed by heated to 950°C, and then cooled. Beads are weighed for Total Silver then transferred into porcelain crucibles; silver is removed by using dilute Nitric acid, heated to 650°C, and then cooled.

5. Method of analysis used:
Gravimetric analysis is a technique through which the amount of an analyte can be determined through the measurement of mass from the use of a micro balance. The initial silver is weighed is subtracted from the known added silver wire and gold weight. The final weight is the silver weight.

6. Data reduction by:
The results are exported via computer, on line, data fed to the Laboratory Information Management System (LIMS CCLAS EL) with secure audit trail.

7. Figures of Merit:

Element	Reporting Limit G/T
Au	0.03
Ag	0.03

8. Quality control:
All QC samples are verified using LIMS. The acceptance criteria are statistically controlled and control charts are used to monitor accuracy and precision. Data that falls outside the control limits is investigated and repeated as necessary.