2011 GEOCHEMICAL REPORT

ON THE MAMQUAM 1-3 CLAIMS

IN THE PACIFIC RANGES OF THE COAST MOUNTAINS

92 G/10

NEW WESTMINSTER MINING DIVISION

122 DEGREES 57 MINUTES 36 SECONDS WEST

49 DEGREES 39 MINUTES 0 SECONDS NORTH

CLAIMS: MAMQUAM 1-3

TENURE NUMBERS: 510555, 510559, 510564

OWNER/OPERATOR: KEN MACKENZIE

AUTHOR: KEN MACKENZIE, FMC# 116450

SQUAMISH, B.C. JUNE, 2012

EVENT NUMBER: 5277387

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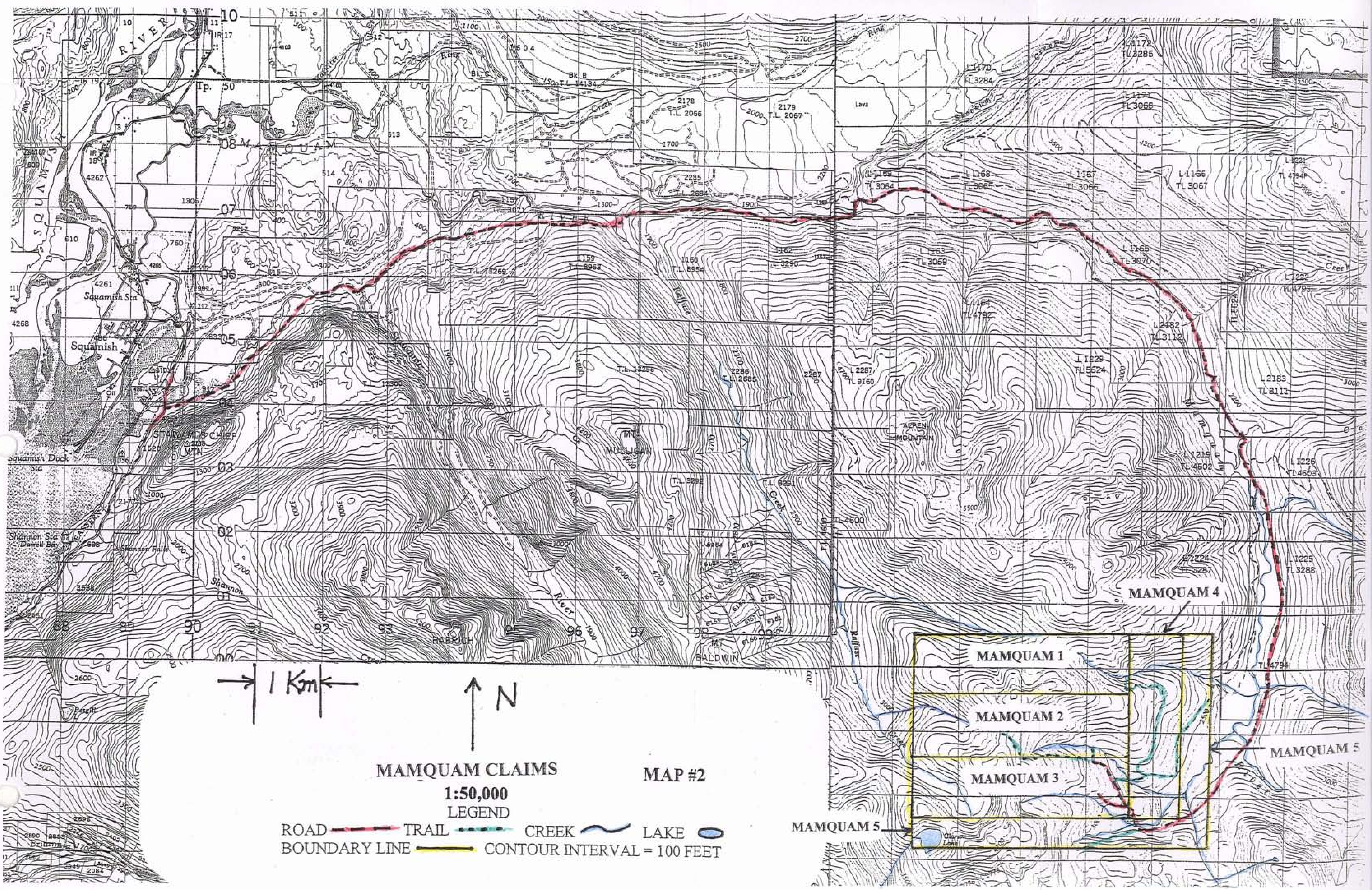
MAMQUAM CLAIMS

1:600,000

MAP #1

0 10 20 30 40 50

Km


MAMQUAM 1
MAMQUAM 2
MAMQUAM 3
MAMQUAM 4
MAMQUAM 5
MAMQUAM 5
1 Km
N
MAMQUAM CLAIMS
1:50,000
LEGEND
ROAD
TRAIL
CREEK
LAKE
BOUNDARY LINE
CONTOUR INTERVAL = 100 FEET
MAP #2
Squamish
Squamish Sta
STAWAMUS CHIEF MTN
MT. MULLIGAN
ALPEN MOUNTAIN
MT. BALDWIN
MT. HABRICH

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MAMQUAM CLAIMS

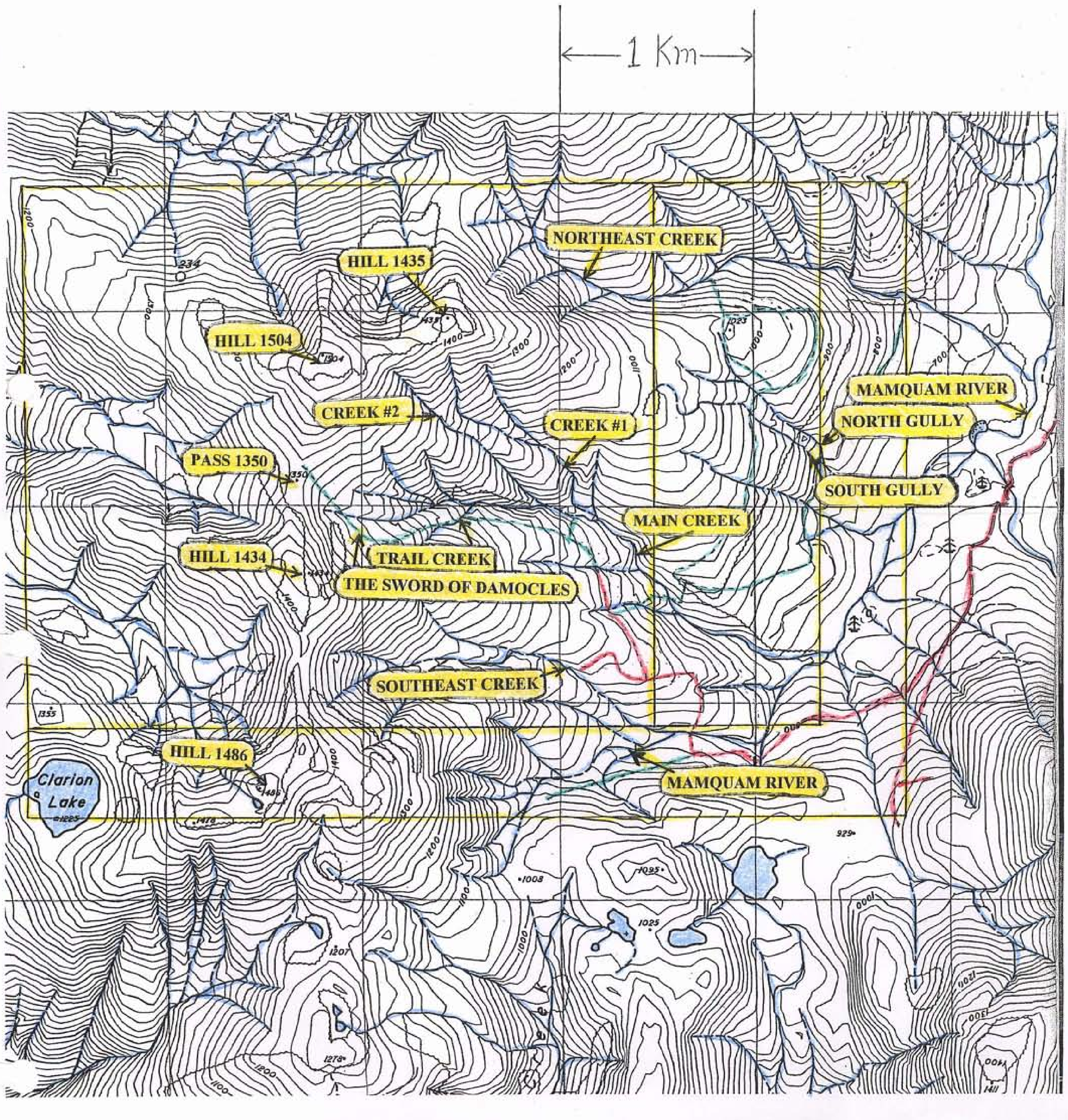
1:20,000 **MAP # 3**

PLACE NAMES, ROADS AND TRAILS

LEGEND

ROAD — TRAIL — CREEK OR RIVER — LAKE

BOUNDARY LINE — CONTOUR INTERVAL = 20 METERS



MAMQUAM 1-3 CLAIMS
INTRODUCTION

The Mamquam 1-3 claims are located in Pacific Ranges of the Coast Mountains near the headwaters of the Mamquam River. See Map #1 (the index map) for the location.

The property can be accessed by road from Squamish. Drive south from Squamish on highway 99 to the Mamquam main logging road, which is reached just beyond a bridge over the Stawamus River near the base of the Stawamus Chief (a well-known rock climbing area). Turn left (east) off the highway and follow the main road, which is marked in miles and in kilometres. Logging trucks or construction vehicles may be present on this road so drive carefully with your lights on and use a radio. The correct frequency is posted.

At approximately 2.5 miles the road crosses the Stawamus River, and continues on past a run of the river electrical generating plant (mile 6 to 8). At mile 9 the road crosses a bridge over the Mamquam River and stays on the north side of the river until the headwaters are reached.

In 2011 there was no logging activity beyond the 9 mile bridge but that has changed for 2012. Large areas close to the main road have been logged this year and logging trucks are frequently on the road.

At mile 15 the road narrows and becomes steep for a short section. If there is evidence of logging trucks on the road I stop there and make more calls than usual on the radio to ensure there are no loaded logging trucks coming down the hill while I'm proceeding up. There is also a fork in the road at mile 15. The main road goes uphill to the left. The other road continues straight ahead but is decommissioned and cross-ditched.

At mile 18 there is a similar junction but this time you should continue straight ahead on the decommissioned, cross-ditched road that soon crosses the Mamquam River near its headwaters. The road is easily drivable with a four-wheel drive vehicle with sufficient clearance. Continue on the main road that parallels and then crosses a branch of the Mamquam flowing from the southwest.

Continue uphill until the road splits. One road continues straight ahead and the other goes right (north). Both roads terminate on the property between 900 and 1000 metres of elevation.
Take the right fork and head north, contouring around the mountain until a washout is reached, which is where you park.

These roads are shown on Map #2 (1:50,000 index map), which shows the property in relationship to the Mamquam River, Raffuse Creek, Clarion Lake, the Stawamus River and the town of Squamish.

There are three trails that begin from this north branch of the road. The first one is found at a low point in the road where a small creek flows through a culvert under the road. This trail descends from the road south of the creek then crosses the creek to travel north along the edge of the logging slash until the forest is entered. The trail then continues downhill beside the small stream until the main creek is reached. The main creek can be easily crossed at this site and the trail ascends the other bank passing over a recently fallen cedar tree which is gradually settling into the hillside. The trail then follows a small gully next to a glacial till slope failure. Once the logging slash is reached, the trail continues along the edge of the forest until an old logging road is encountered. This road can be followed uphill (west) and then north contouring around the mountain. Near the end of the road above the northeast creek, the trail enters the logging slash to the west and ascends through a thick growth of blueberries and small trees until the forest is reached again. From this site the trail proceeds north and west a short distance then descends the steep bank into the northeast creek.

In 2011 I cut a new trail to the northeast creek which leaves the old logging road just beyond the north gully creek. It heads uphill until it reaches the north branch of the north gully creek and then continues north to connect with the previous trail.

The old logging road on the other side of the main creek can also be followed downhill (east and then north) until it reaches the lower gossan that contains the north and south gullies.

The other two trails can be accessed by parking before the washout and hiking to the end of the road where there is a turnaround. The first trail leaves the turnaround towards the north and descends steeply into the main creek.
The second trail leaves the turnaround towards the west and heads uphill through the logging slash until the forest is reached, where it continues parallel to the main creek until trail creek is reached. The route then continues in trail creek, or parallel to trail creek until sub-alpine glades are encountered. At this point the trail changes direction to the northwest until pass 1350 is reached.

There are numerous deer, black bears and the occasional cougar in the area. The animals use the roads and trails regularly so caution is advised. In addition, elk have been re-introduced to the Indian River watershed and they have now expanded into the Mamquam River watershed. Bull elk can be very aggressive in the fall rutting season.
However, the most dangerous animals encountered in this area are other humans.

Many people drive the roads quickly and recklessly. Although I'm very careful, I've still had near misses with people on ATV's, motorcycles or other vehicles which were travelling at high speeds on the narrow, potholed, gravel roads.

Hunters are another special problem. Many hunters are knowledgeable and safety conscious but there are others who seem to shoot indiscriminately in all directions and these people are a major danger. I've even heard of hunters who shoot at a noise in the bush without seeing what they're firing at. Apparently this is called a sound shot.

In addition to the normal wild black bears that I encounter, conservation officers often release problem bears that have been habituated to humans into this area. For some strange reason the Department of Natural Resources thinks this is a safe place to release dangerous bears. These bears are not afraid of humans and view them as a source of food. Habituated bears are no longer accustomed to foraging in the woods and become very hungry and extremely aggressive. My greatest fear is that one day the Department of Natural Resources will release a habituated grizzly bear into the Indian River or the Mamquam River area without public consultation or warnings.

There are three claims that cover this part of the Mamquam Property named Mamquam 1 to 3, and their tenure numbers are 510555, 510559, and 510564. Most of the property is covered with soil or glacial till so rock outcrops are scarce. As a result, prospecting has mainly been done by following the stream sediment geochemistry and examining creek beds. Outcrops on or near old logging roads have also been prospected. Nearly all the mineralized rock found to 2005 was float, for which no source has been identified. However, since then low grade disseminated chalcopyrite has been identified in various outcrops of altered quartz diorite and in silicified andesites. High grade chalcopyrite has also been found in a fracture dilation in the south gully. This high-grade chalcopyrite was found by following float to its source.

There are two main rock types found on the property, Gambier Group metamorphosed volcanics that contain rhyolites, andesites, cherts, tuffs and volcaniclastics. There are also intrusive rocks such as quartz diorite and granodiorite. The two areas of metamorphosed volcanic rocks identified in the early 1980's have been found to be more extensive than previously thought. In addition, there are numerous rhyolite and some porphyry dykes in the area. These are the same rocks that are associated with the Britannia Mine so the model originally used was a volcanogenic massive sulphide type of mineralization. This model still applies, particularly now that a number of silicified mineralized rocks (float) have been found in the glacial till, which probably derive from a feeder zone. However, as more evidence of disseminated chalcopyrite and mineralized quartz veins are found, other models may also apply.

This report covers a total of 17 geochemical samples, 11 soil samples, 4 sediment samples, and 2 rock float samples.

To date no massive sulphide, feeder zone, porphyry copper or quartz vein deposit of commercial value has been identified on the Mamquam property.

Map #3 is a 1:20,000 map that shows the roads, trails and place names used on all the Mamquam claims.

HISTORY OF THE MAMQUAM 1-3 CLAIMS

A detailed history of the Mamquam property was documented in my 2005 prospecting report. Please refer to that report for a more complete summary. This report on the history will provide only a brief description of the property to the end of 2010.

This property was discovered in 1979 using a dithizone field test combined with stream sediment analyses performed in commercial labs. The original model was a volcanogenic massive sulphide type of deposit similar to that found in the nearby Britannia mine. The highest geochemical values found at that time surrounded hill 1504. This area was thought to contain one or more massive sulphide lenses. This interpretation is still considered valid, and has been strengthened now that other types of mineralized rock have been found that indicate the presence of a feeder zone. The cluster of various sized pieces of rock float that appear to be part of a feeder zone found in or near trail creek contain copper, zinc, lead, gold and silver as well as other indicator elements.

In addition, chalcopyrite disseminated in quartz diorite intrusive rocks has been discovered. The significance of this mineralization is unclear at this time, but disseminated mineralization can occur near massive sulphide lenses or it could be an indicator of a porphyry copper occurrence.

The work performed from 2005 to 2010 has revealed new anomalous areas that have required additional staking as well as more detailed follow-up. The spring, seep and waterfall survey has been very successful in confirming previous results and extending anomalies to new areas. The various soil and bedrock grids have proven to be extremely good for outlining the gossans and better defining the anomalous areas found with stream geochemistry.

Highly anomalous levels of gold have been found in seven separate areas surrounding hill 1504.

In summary, based on the previous prospecting and geochemical investigations, the present model includes a massive sulphide occurrence with one or more feeder zones, one or more sulphide lenses, a possible porphyry copper occurrence and at least seven anomalous gold areas, all centered on hill 1504.

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MAMQUAM 1-3 CLAIMS

1:20,000 **MAP # 4**

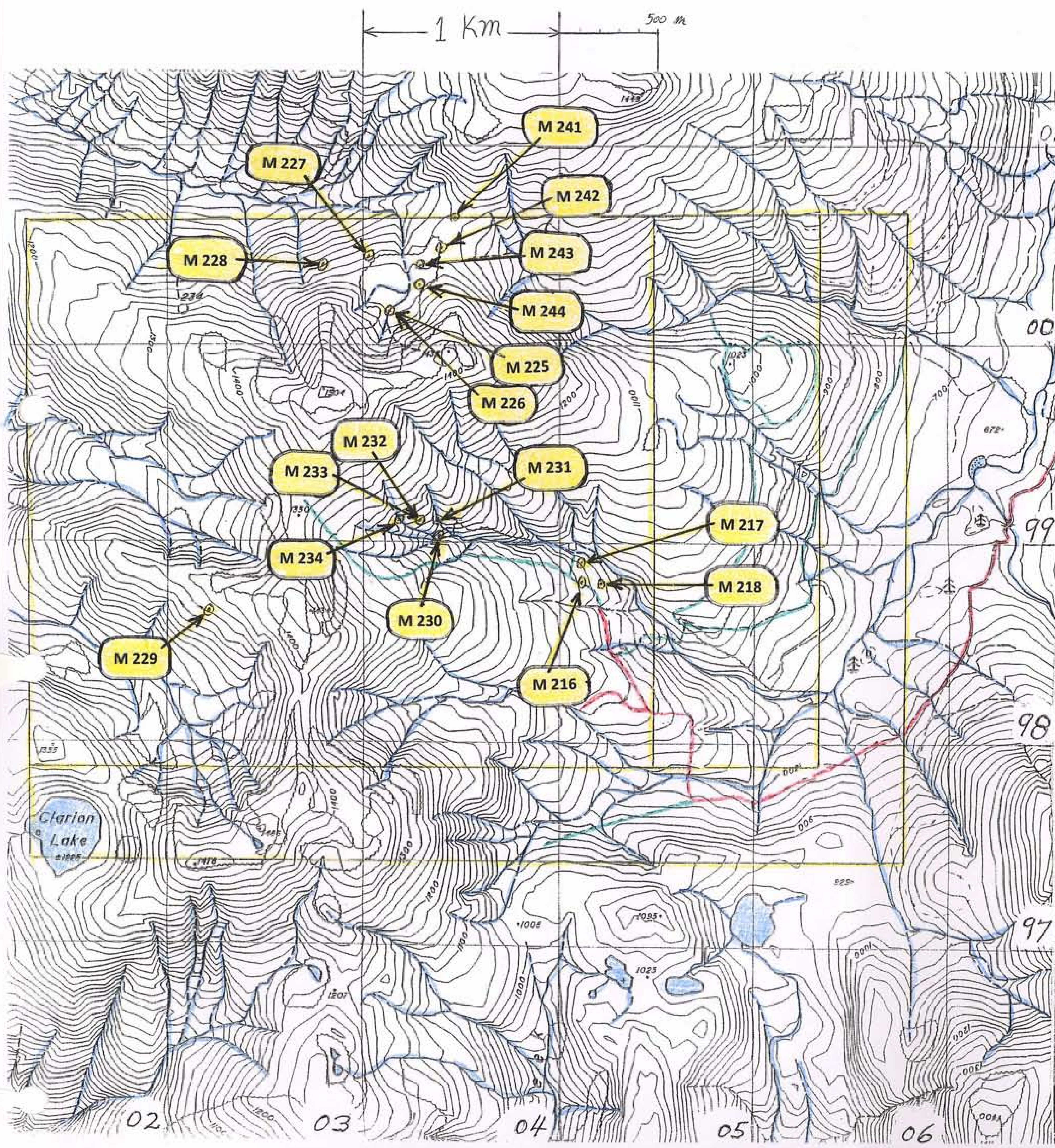
2011 GEOCHEMICAL SURVEY SAMPLE SITE LOCATIONS

LEGEND:

CREEK **LAKE** **ROAD** **TRAIL** **DATUM NAD 83**

CONTOUR INTERVAL = 20 METRES **CLAIM BOUNDARY** **2011 SAMPLE SITE**

M 217



SUMMARY OF WORK PERFORMED ON THE MAMQUAM 1-3 CLAIMS IN 2011

On July 19, 2011 Reka Lyne and I reached the last bridge over the Mamquam River where we found a deep snow patch covering the bridge and the nearby road. We worked hard digging and moving snow until we were finally able to drive the truck through to the other side. This is the latest date I've seen for snow to block the road at this site. The rest of the road was clear and we drove easily to our usual parking spot at the end. We then hiked uphill to the landing and traversed downhill into the logged area.

<u>M 216</u> 0504100 E 5498800 N

This soil sample was obtained near the end of the road in the logging slash. It was organic, mainly "A" level with some lighter brown "C" level material mixed in, obtained from a hole about 45 centimetres deep.

Significant results for M 216:

Au	0.005	ppm
Ag	1.4	ppm
Al	2.3	%
Ba	80	ppm
Cr	8	ppm
Fe	3.81	%
Mg	0.68	%
Mo	2	ppm
P	900	ppm
Pb	22	ppm
Sr	24	ppm
Zn	75	ppm

On July 28, 2011, Rainer Schwarz and I drove to the end of the road and hiked to where we could continue the geochemistry lines on the west side of the main creek.

<u>M 217</u> 0504100 E 5498900 N

This soil sample was obtained from the edge of the cliffs that lead down to the main creek. The soil was exposed, contained many rocks was "C" level, coloured a light rusty-brown and was taken from a hole 15 centimetres deep.

Significant results for M 217:

Au	0.017	ppm
Ag	0.6	ppm
Al	1.93	%
As	7	ppm
Ba	50	ppm
Cu	128	ppm
Fe	5.71	%
Mg	0.53	%
Mo	7	ppm
P	920	ppm
Pb	38	ppm
Zn	90	ppm

M 218 0504200 E 5498800 N

This sediment was taken from a small stream that flows into the main creek.

Significant results for M 218:

Au	0.031	ppm
Ag	0.7	ppm
Al	2.1	%
As	8	ppm
Ba	220	ppm
Cd	2.3	ppm
Co	115	ppm
Cr	8	ppm
Cu	53	ppm
Fe	6.01	%
Mg	0.75	%
Mn	26800	ppm
Mo	7	ppm
P	740	ppm
Pb	54	ppm
Sr	41	ppm
Zn	195	ppm

The more remote areas of the Mamquam property have been difficult to get to so on September 2, 2011, Linda Kowalski, Rick Price and I flew by helicopter to a large open area to the northeast of hill 1504. While the helicopter waited for us we collected four samples from this area.

<u>M 225</u> 0503137 E 5500175 N
A sediment sample was collected from a small stream that descends from hill 1504.
Significant results for M 225:

Au	0.017	ppm
Ag	0.4	ppm
Al	2.08	%
As	16	ppm
Ba	100	ppm
Be	0.8	ppm
Ca	0.31	%
Cd	5.8	ppm
Co	23	ppm
Cr	18	ppm
Cu	317	ppm
Fe	5.48	%
Mg	1.37	%
Mn	1680	ppm
Mo	3	ppm
P	870	ppm
Pb	168	ppm
Sr	49	ppm
Zn	1070	ppm

<u>M 226</u> 0503137 E 5500175 N
A piece of rock float was found in the creek near the same site. It was a rhyolite that contained pyrite.
Significant results for M 226:

Au	0.062	ppm
As	6	ppm
Ba	140	ppm
Bi	2	ppm

Mo	5	ppm
Pb	24	ppm

M 227 0503023 E 5500449 N

This sediment was taken from a small stream that drains the large flat area to the northeast of hill 1504. The material collected was mainly organic with some sand and silt included.

Significant results for M 227:

Au	0.006	ppm
Al	1.95	%
As	30	ppm
Ba	150	ppm
Be	0.7	ppm
Ca	0.84	%
Cd	2.5	ppm
Co	19	ppm
Cr	25	ppm
Cu	141	ppm
Mn	2040	ppm
Mo	9	ppm
P	1570	ppm
Pb	342	ppm
Sr	84	ppm
Zn	201	ppm

M 228 0502800 E 5500400 N

This soil sample was taken from an area of mature trees. It was a "C" level, brown coloured soil obtained from about 15 centimetres below the surface.

Significant results for M 228:

Au	0.011	ppm
Ag	0.5	ppm
Cr	13	ppm
Fe	4.15	%
P	1180	ppm
Pb	15	ppm

We then returned to the helicopter and flew to hill 1434. We landed on snow and traversed westward and slightly south until we reached a small stream that drains the west ridge of hill 1434. We had to look hard for a place where there was sediment, but eventually obtained a sample.

<u>M 229</u> 0502215 E 5498644 N

This sediment sample was a mix of organic and inorganic material found in a pool with many small rocks. The larger rocks found in the stream were mainly white unmineralized rhyolites.

Significant results for M 229:

Au	0.007	ppm
As	9	ppm
Cr	13	ppm
Mo	2	ppm

After collecting this sample we returned to the helicopter and flew back to the Squamish airport.

On September 5, 2011 Reka Lyne and I drove to the end of the road then hiked uphill to trail creek where we crossed the main creek and climbed up the waterfall of creek #4. This took us above the north bank of the main creek where we collected a soil sample.

<u>M 230</u> 0503390 E 5499000 N

We were attempting to get to 0503400 E, but the cliff edge prevented us from going further. The soil sample was a yellow-brown "C" level taken from about 15 centimetres deep.

Significant results for M 230:

Au	0.007	ppm
Ag	0.3	ppm
Al	2.74	%
As	10	ppm
Ba	80	ppm
Cr	9	ppm
Fe	3.8	%
Mg	0.82	%
Mo	4	ppm
Pb	121	ppm
Zn	227	ppm

M 231 0503400 E 5499100 N

We then hiked uphill to line 54999100 N and obtained this soil sample from beneath a large boulder (float). The soil was dark brown "C" level taken from a hole 15 centimetres deep.

Significant results for M 231:

Au	0.013	ppm
Ag	1.2	ppm
Al	1.85	%
Cd	1.1	ppm
Mg	0.57	%
Mo	7	ppm
P	940	ppm
Pb	26	ppm
Zn	115	ppm

M 232 0503300 E 5499100 N

We obtained another soil sample at this grid point. It was a dark brown, wet, "C" level soil taken from about 20 centimetres deep. There were pieces of exposed rock float nearby.

Significant results for M 232:

Au	0.045	ppm
Al	3.79	%
As	11	ppm
Ba	80	ppm
Co	11	ppm
Cr	12	ppm
Fe	3.83	%
Mg	1.09	%
Mn	824	ppm
Mo	6	ppm
P	1040	ppm
Pb	83	ppm
Sr	25	ppm
Zn	503	ppm

M 233 0503300 E 5499100 N

Some of the rock float was sampled and found to be a silicified andesite with very fine disseminated pyrite.

Significant results for M 233:

Au	0.008	ppm
Ag	0.4	ppm
Al	1.76	%
As	68	ppm
Ba	120	ppm
Bi	2	ppm
Ca	0.38	%
Co	17	ppm
Fe	3.79	%
Mg	1.73	%
Mn	1275	ppm
P	1030	ppm
Zn	160	ppm

M 234 0503200 E 5499100 N

We continued along line 5499100 N to the next grid point and found an area of wet soil in a seep. The soil was mainly gray-brown, "C" level with rocks felt below in the hole that was about 20 centimetres deep.

Significant results for M 234:

Au	0.013	ppm
Ag	0.5	ppm
Al	2.36	%
As	8	ppm
Ba	140	ppm
Cd	1.8	ppm
Co	87	ppm
Cr	10	ppm
Cu	1140	ppm
Fe	4.77	%
Mg	0.57	%
Mn	7480	ppm
Mo	13	ppm
P	1160	ppm

Pb	134	ppm
Zn	177	ppm

The copper level in this soil sample is the highest found on the property to date, and the cobalt level is the second highest.

On October 6, 2011 Rick Price and I flew by helicopter to the south end of the ridge that leads to Alpen Mountain. The weather report was for cloud in the morning but clearing later in the day. We landed above the clouds and higher than we wanted to, but we were able to descend easily to where we wanted to work, which was well above our property line. We took four sediment samples from four different creeks as we traversed toward the flat area to the northeast of hill 1504. Once we were above the pass we descended again and began to take soil samples on the property.

M 241 0503428 E 5500630 N

This soil sample was taken near the north property line. It was from a patch of exposed dirt that lay on bedrock. The soil was brown, "C" level, and was obtained from a hole about 6 centimetres deep.

Significant results for M 241:

Au	0.009	ppm
Al	3.22	%
As	8	ppm
Cr	15	ppm
Cu	58	ppm
Fe	4.38	%
Mo	2	ppm
P	750	ppm

M 242 0503400 E 5500500 N

This soil sample was obtained from an open area in thick low-bush blueberries. The soil was a mix of black organic and gray-white material, "A" and "B" (no "C" was available) from about 20 centimetres deep.

Significant results for M 242:

Au	0.009	ppm
Al	1.72	%
Cr	8	ppm

Pb	16	ppm

<u>M 243</u> 0503300 E 5500400 N

This was another soil sample taken in the same area. It was a yellow-brown "C" level soil obtained from a hole about 20 centimetres deep.

Significant results for M 243:

Au	0.008	ppm
Al	3.53	%
Ba	60	ppm
Cr	12	ppm
Cu	53	ppm
Mg	0.91	%
P	710	ppm
Sr	22	ppm

<u>M 244</u> 0503300 E 5500300 N

This soil was obtained from the same area close to a small stream. It was a light yellow-brown, "C" level, taken from about 20 centimetres deep.

Significant results for M 244:

Au	0.01	ppm
Ag	0.3	ppm
Ba	60	ppm
Cr	11	ppm
Cu	66	ppm
Mg	1.08	ppm
P	810	ppm
Sr	20	ppm
Zn	93	ppm

After we had finished taking our samples, the clouds thickened and descended to a point just above us. Fortunately, the helicopter picked us up just before the clouds covered the site. That night there was a severe rain storm that lasted for the next two days. We were very happy to make it back home dry, warm and on schedule.

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MAMQUAM 1-3 CLAIMS

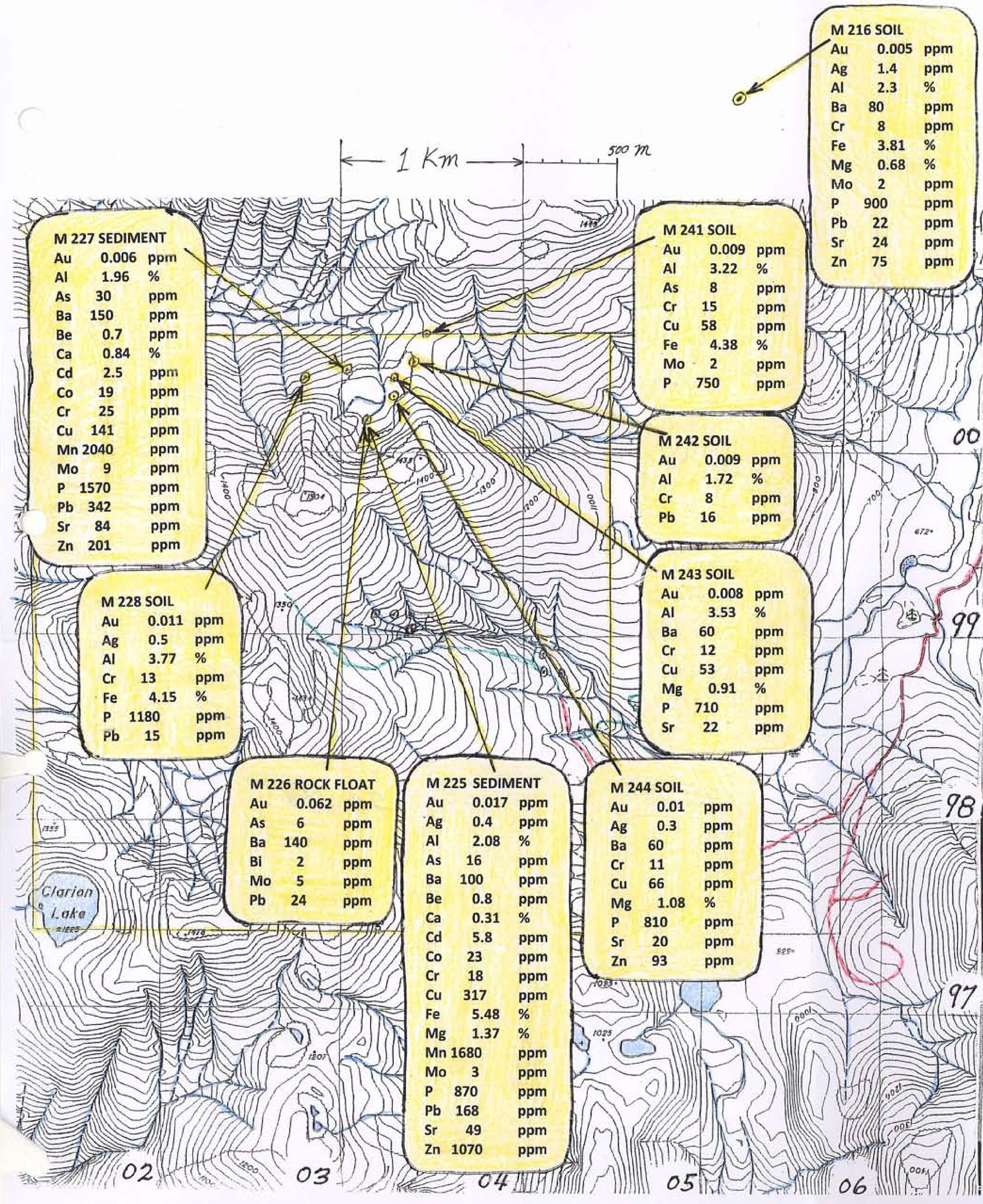
1:20,000 MAP # 5

2011 GEOCHEMICAL SURVEY SIGNIFICANT RESULTS-NORTHERN AREA

LEGEND:

CREEK LAKE ROAD TRAIL DATUM NAD 83

CLAIM BOUNDARY CONTOUR INTERVAL = 20 METRES 2011 SAMPLE SITE



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MAMQUAM 1-3 CLAIMS

1:20,000 MAP # 6

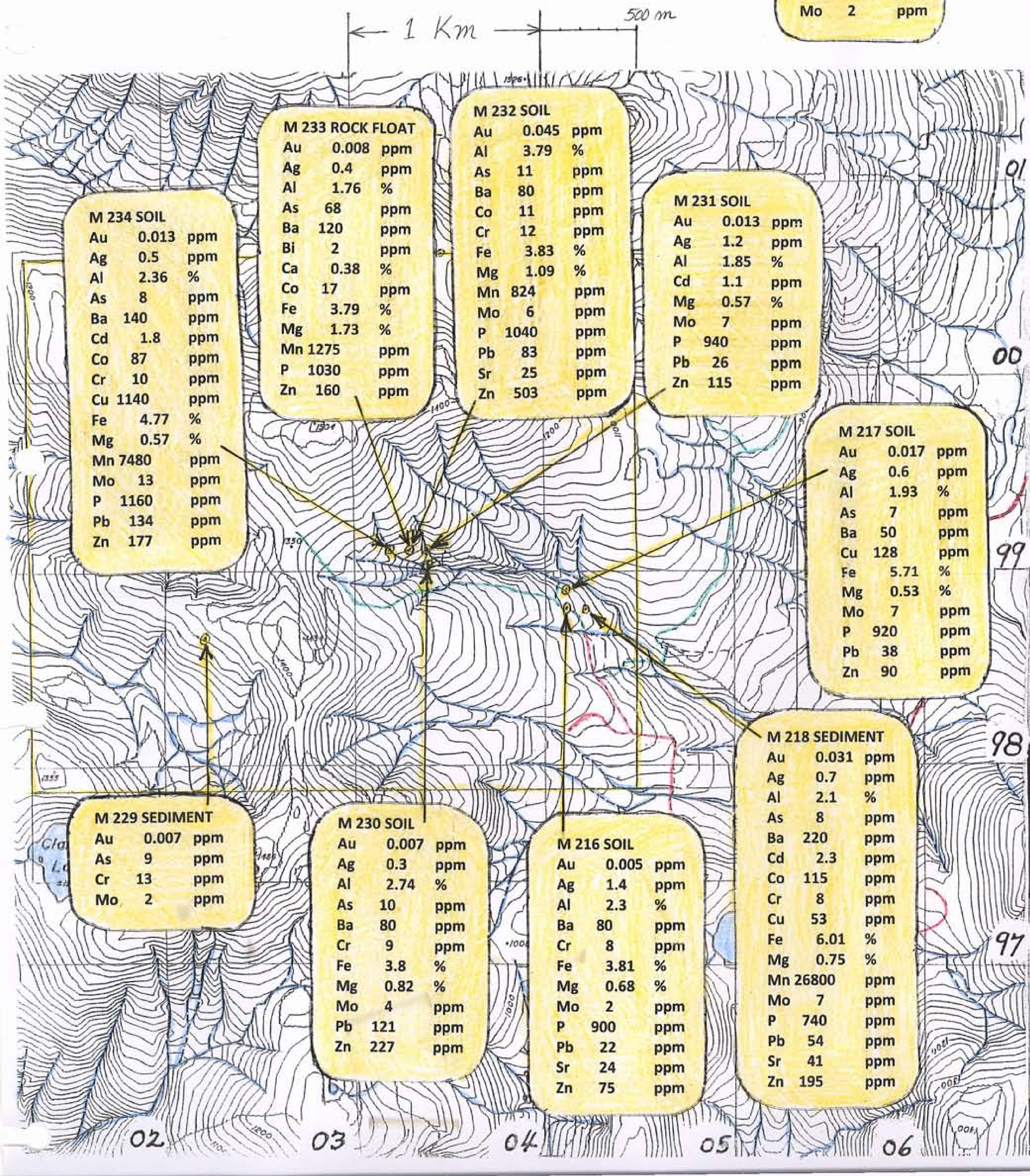
2011 GEOCHEMICAL SURVEY SIGNIFICANT RESULTS-CENTRAL AREA

LEGEND:

CREEK LAKE ROAD TRAIL DATUM NAD 83

CLAIM BOUNDARY CONTOUR INTERVAL = 20 METRES 2011 SAMPLE SITE

M 229 SEDIMENT
Au 0.07 ppm
As 9 ppm
Cr 13 ppm
Mo 2 ppm



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MAMQUAM 1-3 CLAIMS

1:20,000

MAP # 7

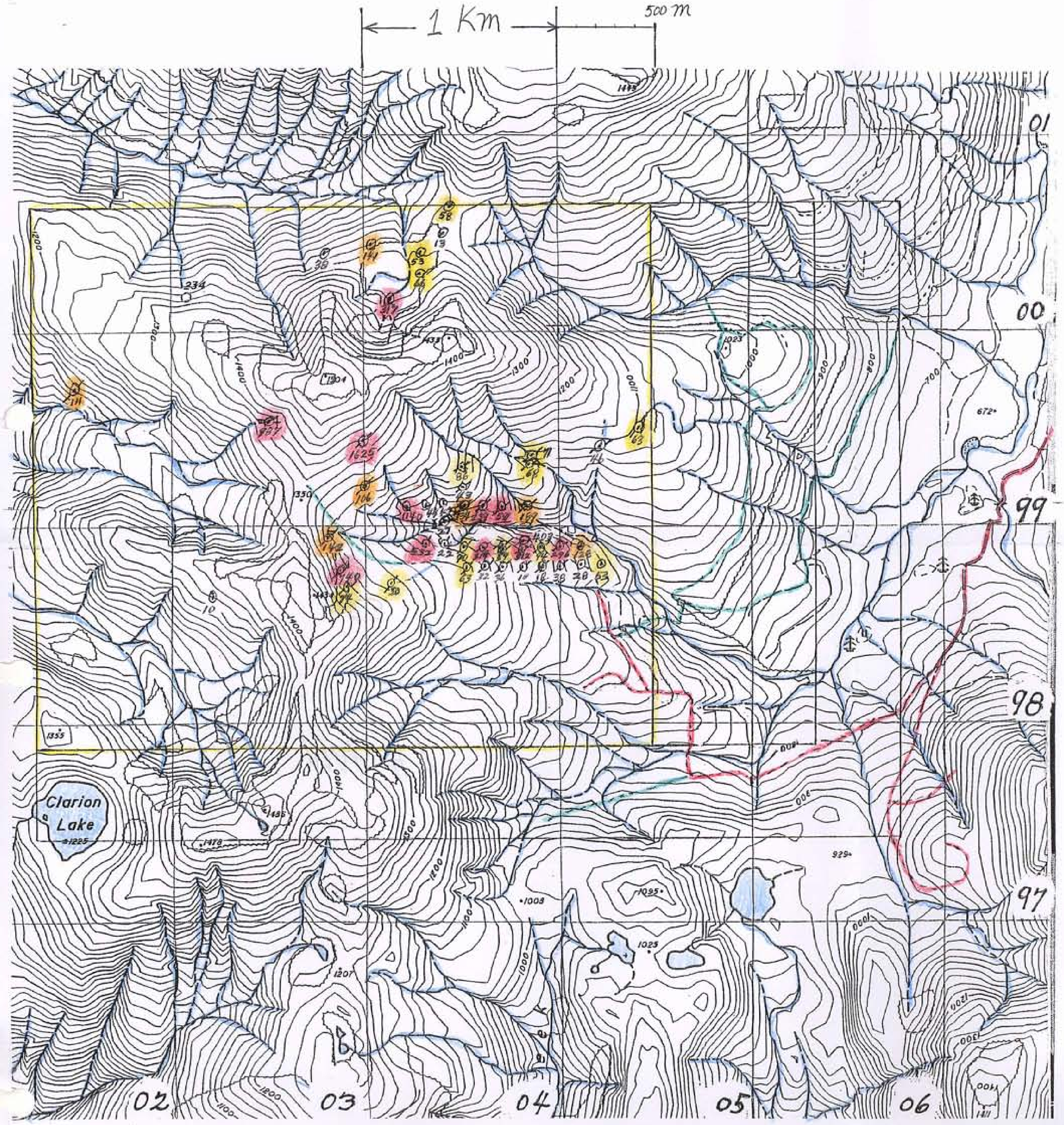
2011 GEOCHEMICAL SURVEY-COPPER

LEGEND:

CREEK — TRAIL — ROAD — 2008-2010 SAMPLE SITES

DATUM NAD 83 — CONTOUR INTERVAL = 20 METRES — 2011 SAMPLE SITES

Cu 50-99 ppm — Cu 100-199 ppm — Cu > 199 ppm



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MAMQUAM 1-3 CLAIMS

1:20,000

MAP # 8

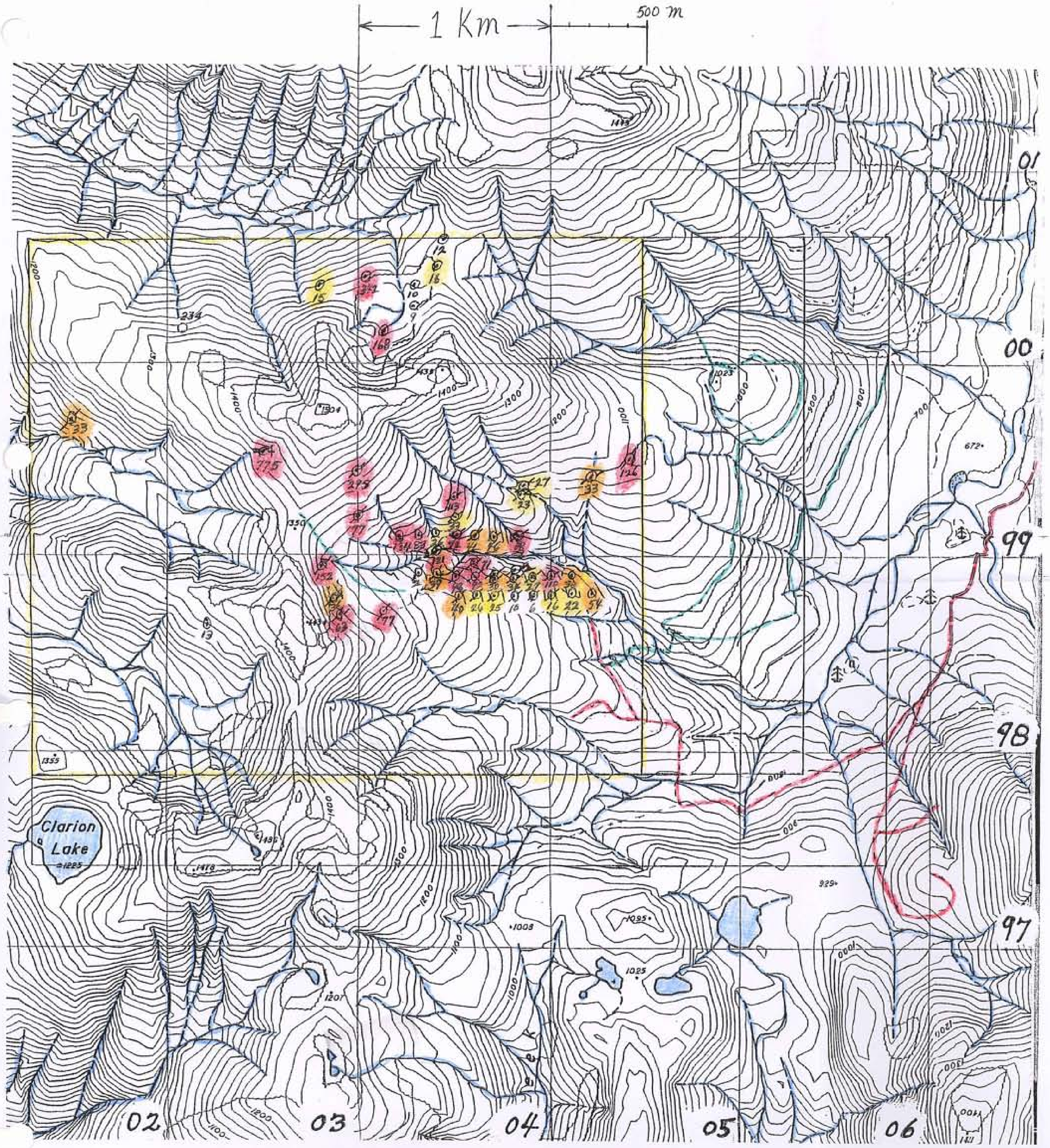
2011 GEOCHEMICAL SURVEY-LEAD

LEGEND:

CREEK — TRAIL — ROAD — 2008-2010 SAMPLE SITES

DATUM NAD 83 — CONTOUR INTERVAL = 20 METRES — 2011 SAMPLE SITES

Pb 15-29 ppm — Pb 30-59 ppm — Pb > 59 ppm



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MAMQUAM 1-3 CLAIMS

1:20,000

MAP # 9

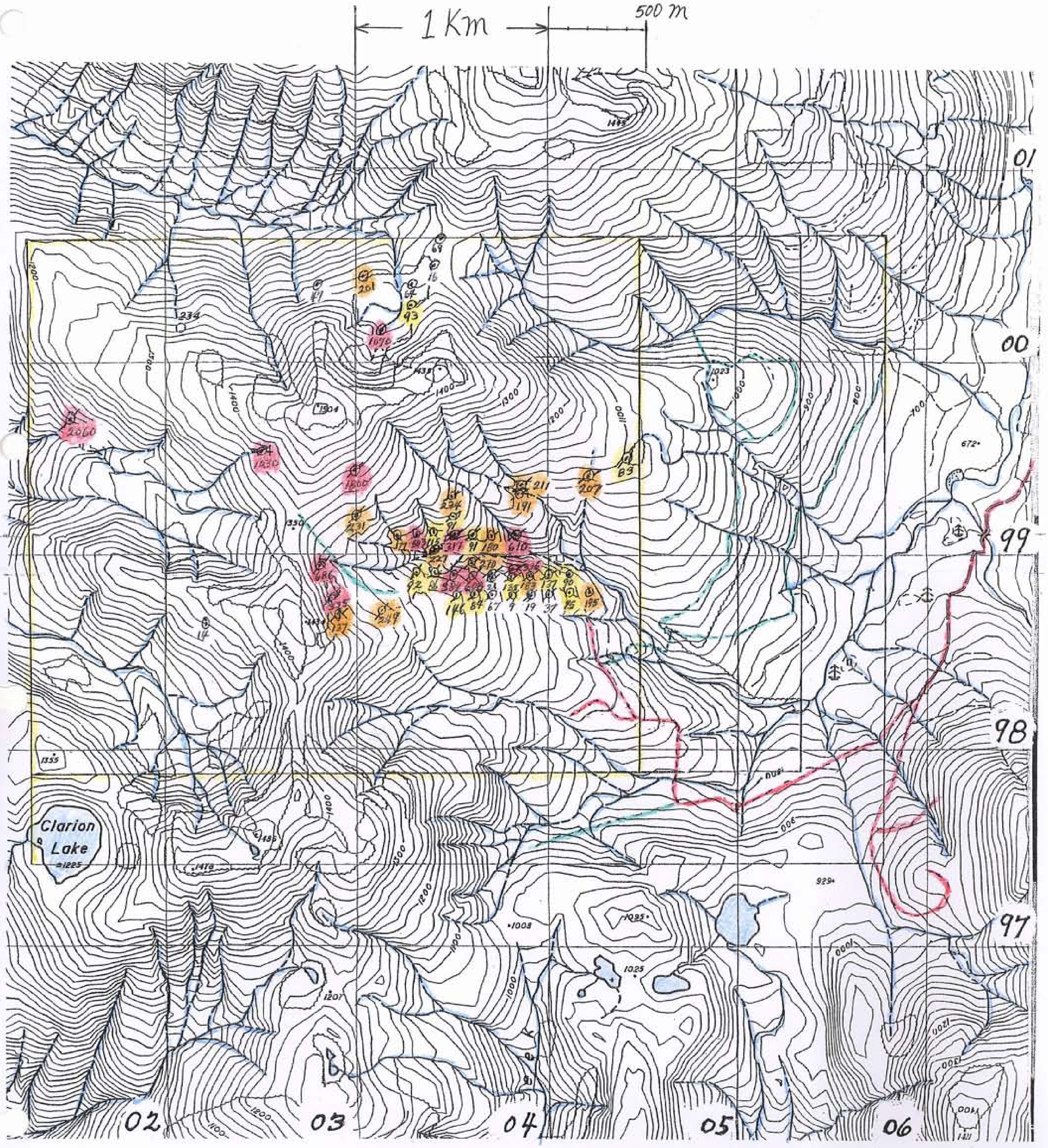
2011 GEOCHEMICAL SURVEY-ZINC

LEGEND:

CREEK — TRAIL — ROAD — 2008-2010 SAMPLE SITES

DATUM NAD 83 — CONTOUR INTERVAL = 20 METRES — 2011 SAMPLE SITES

Zn 75-149 ppm — Zn 150-299 ppm — Zn > 299 ppm



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MAMQUAM 1-3 CLAIMS

1:20,000

MAP # 10

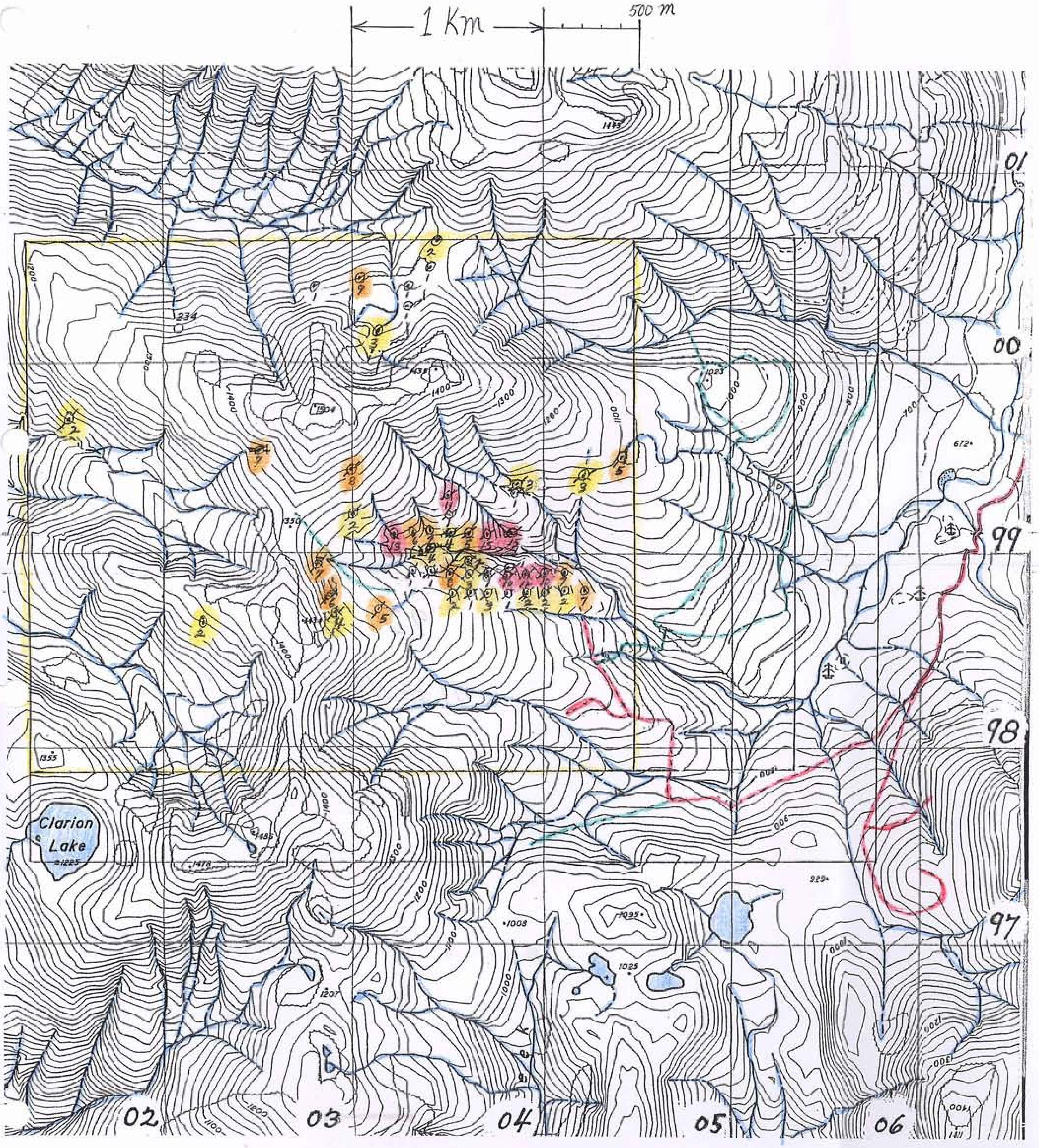
2011 GEOCHEMICAL SURVEY-MOLYBDENUM

LEGEND:

CREEK **TRAIL** **ROAD** **2008-2010 SAMPLE SITES**

DATUM NAD 83 **CONTOUR INTERVAL = 20 METRES** **2011 SAMPLE SITES**

Mo 2-4 ppm **Mo 5-9 ppm** **Mo > 9 ppm**



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MAMQUAM 1-3 CLAIMS

1:20,000

MAP # 11

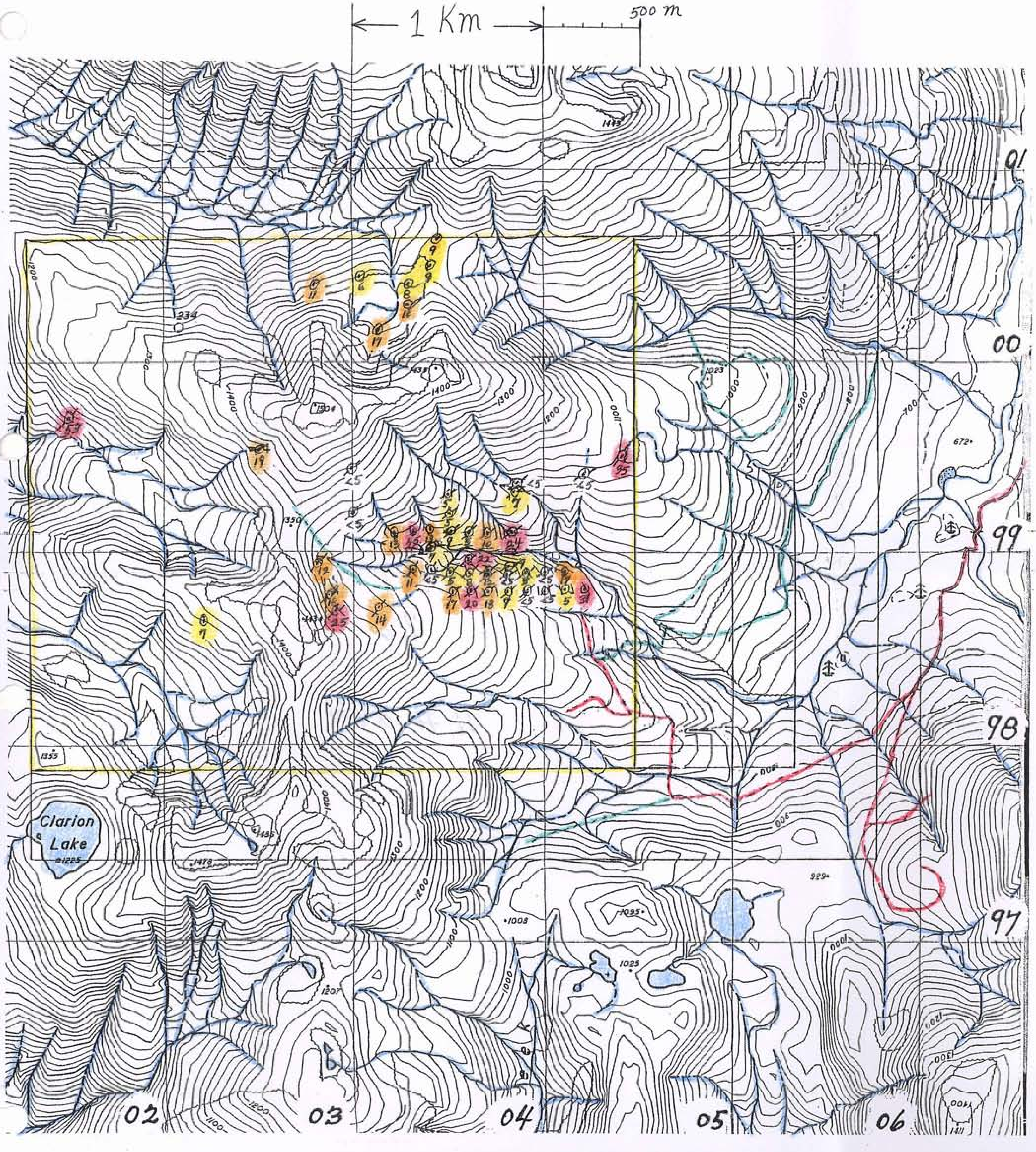
2011 GEOCHEMICAL SURVEY-GOLD

LEGEND:

CREEK **TRAIL** **ROAD** **2008-2010 SAMPLE SITES**

DATUM NAD 83 **CONTOUR INTERVAL = 20 METRES** **2011 SAMPLE SITES**

Au 5-9 ppb **Au 9-19 ppb** **Au > 19 ppb**



2011 TECHNICAL DATA AND INTERPRETATION

This report covers a total of 17 geochemical samples, which includes 11 soil samples, 4 sediment samples and 2 rock float samples.
The location of each sample was obtained using a Garmin GPSmap 60Cx GPS, with the datum setting at NAD 83.
The object of this survey was to follow up on anomalies found in previous years, to extend soil survey lines initiated in 2008 to 2010, to sample gravel bars in all major creeks (particularly those at the base of waterfalls or in other pools) and to continue the survey of springs and seeps begun in 2009.

Each soil sample was obtained using the pick end of a steel rock hammer and a light steel garden trowel. The rock hammer was used to loosen soil and to dig around rocks so they could be removed from the hole. The trowel was used to remove loose soil from the hole and to obtain the sample once the correct level was reached. The holes were excavated widely to prevent upper soil layers from rolling into the hole and contaminating the lower soil layers. My general goal was to sample "C" level soils, but this was not possible at all sites.
In areas that have a lot of roots in the soil I also use a pair of pruning shears and occasionally a small hand saw. If I encounter large roots, I try to dig around and under them or I move to another spot.

The sample number, location, description, depth and soil horizon were carefully recorded at each site and the soil obtained was placed in a labelled plastic zip-lock bag, which was sealed. The sealed plastic bag was then placed into a labelled paper bag that was used to protect the plastic bag and the sample from perforation and contamination. Each sample was then carefully placed into a pack and padded with extra clothing to prevent inadvertent damage. This system worked very well and all samples remained intact from the field to the laboratory.

Bedrock and rock float samples were examined, broken with a rock hammer and the fresh surfaces examined with a hand lens. A description was written in the field notes along with the GPS location. Representative samples of the rocks were bagged and transported as described for the soil samples. Rocks with sharp edges were given additional care and padding.
Once I had returned to Squamish, parts of each of the rock samples were removed from their labelled bags and examined again with a hand lens and a

stereoscopic microscope. Only one sample was opened at a time, and the table and microscope stage were cleaned after each sample was examined in order to minimize contamination. Once the examination was completed, the pieces of sample were replaced in their bags, sealed and removed from the area before a new sample was reviewed.

Sediment samples were collected using the light steel trowel and a plastic container with a removable lid. The lid has about forty 5 millimetre holes drilled in it. The holes are spaced about 1.25 centimetres apart so the plastic is not weakened. The trowel, the plastic container and the lid are washed before and after collecting each sample so that contamination between samples is minimized. For this survey I was attempting to collect heavy minerals or metals so the preferred sites were gravel bars with rocks 2.54 centimetres or larger found at the base of waterfalls, in other pools or on the sides of creeks.
The trowel was used to dig through the rocks in order to collect the finer material between. The sand, silt and gravel were placed on the lid of the closed container and shaken or scraped with the trowel to filter the fine material into the container. The coarse material is discarded back into the creek. Many trowel loads are required to obtain a sample large enough for analysis. Once the container is about three-quarters full, the cleaned trowel is usod to scoop most of the material into a labelled zip-lock plastic bag. The rest of the material still in the container is carefully washed into the bag until the last of the fine black material has been collected. The last material out of the container is the heaviest and therefore the most important. If this portion of the sample is lost, the entire procedure needs to be repeated so a complete sample can be obtained.

Once the sample is in the zip-lock bag, the bag is gently agitated so the heavier material will sink to the bottom. This also causes excess water to rise to the surface where it can be carefully poured out of the bag, while retaining all the heavy minerals or metals. Any black material that floats out with the water at this stage is likely to be quite light and usually organic in nature so the loss is not significant. The zip-lock bag is then sealed, placed in a second larger plastic bag and sealed again with a twist tie (zip-lock bags leak water). Both plastic bags are then placed in a labelled paper bag and the sample is packed upright, near the bottom of the pack in case of water leakage.

Sediment and soil samples should be protected from the sharp edges of tools or rock samples to avoid perforation, which can result in loss or contamination.

All samples were analysed by ALS Ltd. In North Vancouver, BC, and their reports can be found in appendix B. The company has also provided written material on the preparation of the soil, sediment and rock samples as well as their protocols for analyses. This material has been included in appendix C, along with a Quality Assurance Overview that covers quality assurance, quality control, external accreditation and certification, and external proficiency tests.

Microsoft office is the suite of software programs used to produce this report, which includes a database program "Access", a spreadsheet program "Excel", and a word processing program "Word". All geochemical analysis results for each sample site are entered into a database. Sample types (rock, soil, sediment, rock float, etc.), collection dates and locations are also recorded. The database can be queried in many ways to produce relevant comparisons.

Map # 4 shows the site locations for all samples collected in this geochemical survey.

Map # 5 documents the sample sites and significant results found in the northern area of the claims.

Map # 6 documents the sample sites and significant results found in the central area of the claims.

Maps # 7 to # 11 are compilations of copper, lead, zinc, molybdenum and gold contours found in geochemical surveys from 2008 to 2010 as well as the new results found in 2011. Only soil, bedrock, loose rock that is likely locally derived or sediment samples obtained from close to their source have been contoured on these maps.
In order to produce this overview, most samples shown are from grid points on a 100 metre by 100 metre grid. For more detail please see my previous reports.

Sites sampled in previous geochemical surveys are marked by a different symbol to those collected in the 2008 to 2010 surveys. Both symbols are shown in the legend of the element contour maps.

Maps # 7 to # 11 all show similar patterns. The highest levels of the five mapped elements surround hill 1500 or occur in or near the main creek gossan. However, the eastern side of hill 1434 also contains significant anomalies that may represent a continuation of the main creek gossan.
The only sample taken from the eastern boundary (M 176 from 2010) is also anomalous for all five elements.

CONCLUSION

Geochemical survey lines 5498900 N and 5499100 N are particularly interesting as they cover both sides of the main creek gossan. Both lines were extended in 2011 and sample M 234 produced the highest soil level of copper (1140 ppm) found to date on the property.

The spring and waterfall surveys continue to produce significant anomalous results. There are still many untested springs and waterfalls on the property that require investigation, and the results will be used as a guide for future soil and bedrock geochemistry survey lines. In particular, hills 1500 and 1434 as well as samples M 176 and M 234 require more work.

In summary, this geochemical survey has produced more anomalous results that are consistent with a volcanogenic massive sulphide model, which includes one or more feeder zones. In addition, the copper, molybdenum and gold results are further support for a possible porphyry copper-molybdenum-gold occurrence on this property.

MAMQUAM 1-3 GEOCHEMICAL REPORT
ITEMIZED COST STATEMENT FOR 2011

SCHEDULE

FOOD COSTS/PERSON/DAY	$12.00
VEHICLE TO MAMQUAM	$70.00
VEHICLE TO VANCOUVER	$45.00
PROSPECTORS/DAY	$500.00

ROAD AND TRAIL CLEARING (PRORATED)

PROSPECTORS	14.4 DAYS @ $500	$7,200.00
VEHICLE	12.6 TRIPS @ $70	$882.00
FOOD	14.4 DAYS @ $12	$172.80

PROSPECTING EXPENSES (PRORATED)

PROSPECTORS	8 DAYS @ $500	$4,000.00
VEHICLE	2 TRIPS @ $70	$140.00
HELICOPTER	2-SEP-2011	$879.44
HELICOPTER	6-OCT-2011	$503.55

SAMPLES TO ALS-NORTH VANCOUVER

2 TRIPS PRORATED FOR THE NUMBER OF SAMPLES:

PROSPECTOR	1 DAY @ $500 x 0.2656	$132.81
VEHICLE	2 TRIPS @ $70 x 0.2656	$18.59

REPORT PREPARATION

2010 GEOCHEMICAL REPORT	10.0625 DAYS @ $500	$5,031.25

OTHER EXPENSES

ANALYSES 15-AUG-2011	3 @ $34.80	$104.40
ANALYSES 16-NOV-2011	14 @ $33.44	$468.16
FILING FEES	5-APR-2012	$351.45

TOTAL	**$19,884.45**

APPENDIX A

AUTHOR'S QUALIFICATIONS

K.R. MacKenzie, B.Sc., M.D.

Dr. MacKenzie is a retired physician who graduated from the University of British Columbia in 1963 with a B.Sc. in Chemistry and Mathematics. Geology 105 was taken as part of his undergraduate studies. He spent three summers working for the Geological Survey of Canada under Dr. J.O. Wheeler.
After graduating from U.B.C. in 1968 with a medical degree, Dr. MacKenzie continued to prospect as a hobby and after retiring from Medicine in 1998, the prospecting hobby evolved into a business venture.

Recent reading by the author includes:

THE ROCKS AND MINERALS OF THE WORLD by C. Sorrell and G. Sandstrom

EXPLORATION AND MINING GEOLOGY by William C. Peters

ORE DEPOSITS by C.F. Park and R.A. MacDiarmid

A FIELD GUIDE TO ROCKS AND MINERALS by Pough

THE GEOCHEMISTRY OF GOLD AND ITS DEPOSITS by R.W. Boyle

CASE HISTORIES OF MINERAL DISCOVERIES, VOLUME 3, PORPHYRY COPPER, MOLYBDENUM AND GOLD DEPOSITS, VOLCANOGENIC DEPOSITS (MASSIVE SULPHIDES), AND DEPOSITS IN LAYERED ROCK by V.F. Hollister, Editor

PORPHYRY COPPER AND MOLYBDENUM DEPOSITS; WEST-CENTRAL B.C. by N.C. Carter

GEOLOGY OF THE PORPHYRY COPPER DEPOSITS OF THE WESTERN HEMISPHERE by Victor F. Hollister

ATLAS OF ALTERATION by A.J.B. Thompson and J.F.H. Thompson, Editors

ORE MINERAL ATLAS by Dan Marshall, C.D. Anglin and Hamid Mumin

PORPHYRY DEPOSITS OF THE CANADIAN CORDILLERA by A. Sutherland Brown, Editor

THE GEOLOGY OF ORE DEPOSITS by John M. Guilbert and Charles F. Park, Jr.

GEOCHEMISTRY OF HYDROTHERMAL ORE DEPOSITS by H.L. Barnes

GEOCHEMISTRY by Arthur H. Brownlow

FIELD GEOPHYSICS by John Milsom

XXIV INTERNATIONAL GEOLOGICAL CONGRESS; COPPER AND MOLYBDENUM DEPOSITS OF THE WESTERN CORDILLERA by C.S. Ney and A. Sutherland Brown

PRINCIPLES OF GEOCHEMICAL PROSPECTING by H.E. Hawkes

GEOCHEMICAL EXPLORATION by R.W. Boyle and J.I. Mcgerrigle

THE ELEMENTS by John Elmsley

GREAT MINING CAMPS OF CANADA 5. BRITANNIA MINES, BRITISH COLUMBIA
Geoscience Canada, September 2011, Volume 38 Number 3.
By W.G. Smitheringale

APPENDIX B

ANALYSIS RESULTS FOR ALL SAMPLES

COLLECTED ON THE MAMQUAM 1-3 CLAIMS

DURING 2011

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

ALS Minerals

MACKENZIE, KEN
PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

Finalized Date: -SEP-2011
This copy reported on 19-SEP-2011
Account: MACKEN

CERTIFICATE VA11162670

Project: X,M
P.O. No.:
This report is for 16 Sediment samples submitted to our lab in Vancouver, BC, Canada on 15-AUG-2011.
The following have access to data associated with this certificate:

KEN MACKENZIE		

SAMPLE PREPARATION

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

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-AA23	Au 30g FA-AA finish	AAS
ME-ICP41	35 Element Aqua Regia ICP-AES	ICP-AES

36.

To: MACKENZIE, KEN
PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

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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Phone: 604 984 0221 Fax: 604 984 0218 www.alsglobal.com

Finalized Date: 18-SEP-2011
Account: MACKEN

MACKENZIE, KEN
PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

Project: X,M

CERTIFICATE OF ANALYSIS VA11162670

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	Au-AA23 Au ppm 0.005	ME-ICP41 Ag ppm 0.2	ME-ICP41 Al % 0.01	ME-ICP41 As ppm 2	ME-ICP41 B ppm 10	ME-ICP41 Ba ppm 10	ME-ICP41 Be ppm 0.5	ME-ICP41 Bi ppm 2	ME-ICP41 Ca % 0.01	ME-ICP41 Cd ppm 0.5	ME-ICP41 Co ppm 1	ME-ICP41 Cr ppm 1	ME-ICP41 Cu ppm 1	ME-ICP41 Fe % 0.01
M-216		0.56	<0.005	1.4	2.30	3	<10	80	<0.5	<2	0.18	<0.5	7	8	28	3.81
M-217		0.92	0.017	0.6	1.93	7	<10	50	<0.5	<2	0.04	<0.5	7	6	128	5.71
M-218		0.62	0.031	0.7	2.10	8	<10	220	<0.5	<2	0.26	2.3	115	8	53	6.01

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Finalized Date: 18-SEP-2011
Account: MACKEN

Project: X,M

CERTIFICATE OF ANALYSIS VA11162670

Sample Description	Method Analyte Units LOR	ME-ICP41 Ga ppm 10	ME-ICP41 Hg ppm 1	ME-ICP41 K % 0.01	ME-ICP41 La ppm 10	ME-ICP41 Mg % 0.01	ME-ICP41 Mn ppm 5	ME-ICP41 Mo ppm 1	ME-ICP41 Na % 0.01	ME-ICP41 Ni ppm 1	ME-ICP41 P ppm 10	ME-ICP41 Pb ppm 2	ME-ICP41 S % 0.01	ME-ICP41 Sb ppm 2	ME-ICP41 Sc ppm 1	ME-ICP41 Sr ppm 1
M-216		10	<1	0.06	10	0.68	468	2	0.01	5	900	22	0.08	<2	1	24
M-217		<10	<1	0.04	10	0.53	328	7	0.01	3	920	38	0.04	<2	3	6
M-218		<10	1	0.04	10	0.75	26800	7	0.01	8	740	54	0.07	<2	2	41

38.

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Finalized Date: 18-SEP-2011
Account: MACKEN

Project: X,M

CERTIFICATE OF ANALYSIS VA11162670

Sample Description	Method Analyte Units LOR	ME-ICP41 Th ppm 20	ME-ICP41 Ti % 0.01	ME-ICP41 Tl ppm 10	ME-ICP41 U ppm 10	ME-ICP41 V ppm 1	ME-ICP41 W ppm 10	ME-ICP41 Zn ppm 2
M-216		<20	0.01	<10	<10	47	<10	75
M-217		<20	0.01	<10	<10	34	<10	90
M-218		<20	0.02	<10	<10	48	<10	196

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GARIBALDI HIGHLANDS BC V0N 1T0

Finalized Dat [illegible]DEC-2011
This copy reported on 13-DEC-2011
Account: MACKEN

CERTIFICATE VA11241761

Project: D.L.X,M
P.O. No.:
This report is for 22 Sediment samples submitted to our lab in Vancouver, BC, Canada on 16-NOV-2011.

The following have access to data associated with this certificate:

KEN MACKENZIE		

SAMPLE PREPARATION

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

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-AA23	Au 30g FA-AA finish	AAS
ME-ICP41	35 Element Aqua Regia ICP-AES	ICP-AES

40.

To: MACKENZIE, KEN
PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

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Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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Finalized Date: o-DEC-2011
Account: MACKEN

Project: D.L.X,M

CERTIFICATE OF ANALYSIS VA11241761

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	Au-AA23 Au ppm 0.005	ME-ICP41 Ag ppm 0.2	ME-ICP41 Al % 0.01	ME-ICP41 As ppm 2	ME-ICP41 B ppm 10	ME-ICP41 Ba ppm 10	ME-ICP41 Be ppm 0.5	ME-ICP41 Bi ppm 2	ME-ICP41 Ca % 0.01	ME-ICP41 Cd ppm 0.5	ME-ICP41 Co ppm 1	ME-ICP41 Cr ppm 1	ME-ICP41 Cu ppm 1	ME-ICP41 Fe % 0.01
M-225		0.60	0.017	0.4	2.08	16	<10	100	0.8	<2	0.31	5.8	23	18	317	5.48
M-227		0.58	0.006	0.2	1.95	30	<10	150	0.7	<2	0.84	2.5	19	25	141	2.63
M-229		0.90	0.007	<0.2	0.55	9	<10	10	<0.5	<2	0.05	<0.5	1	13	10	0.58

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Finalized Date: 8-DEC-2011
Account: MACKEN

Project: D.L.X,M

CERTIFICATE OF ANALYSIS VA11241761

Sample Description	Method / Analyte / Units / LOR	ME-ICP41 Ca ppm 10	ME-ICP41 Hg ppm 1	ME-ICP41 K % 0.01	ME-ICP41 La ppm 10	ME-ICP41 Mg % 0.01	ME-ICP41 Mn ppm 5	ME-ICP41 Mo ppm 1	ME-ICP41 Na % 0.01	ME-ICP41 Ni ppm 1	ME-ICP41 P ppm 10	ME-ICP41 Pb ppm 2	ME-ICP41 S % 0.01	ME-ICP41 Sb ppm 2	ME-ICP41 Sc ppm 1	ME-ICP41 Sr ppm 1
M-225		<10	1	0.06	10	1.37	1680	3	0.04	28	870	168	0.07	<2	5	49
M-227		<10	1	0.08	20	0.44	2040	9	0.03	25	1570	342	0.19	<2	2	84
M-229		<10	1	0.05	<10	0.10	47	2	0.02	8	540	13	0.07	<2	<1	7

42.

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Finalized Date: 6-DEC-2011
Account: MACKEN

Project: D.L.X,M

CERTIFICATE OF ANALYSIS .VA11241761

Sample Description	Method Analyte Units LOR	ME-ICP41 Th ppm 20	ME-ICP41 Ti % 0.01	ME-ICP41 Tl ppm 10	ME-ICP41 U ppm 10	ME-ICP41 V ppm 1	ME-ICP41 W ppm 10	ME-ICP41 Zn ppm 2
M-225		<20	0.04	<10	<10	79	<10	1070
M-227		<20	0.02	<10	<10	46	<10	201
M-229		<20	0.02	<10	<10	18	<10	14

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Finalized Dat -DEC-2011
This copy reported on
13-DEC-2011
Account: MACKEN

CERTIFICATE VA11241762

Project: D.L.,X,M
P.O. No.:
This report is for 8 Rock samples submitted to our lab in Vancouver, BC, Canada on 16-NOV-2011.
The following have access to data associated with this certificate:

KEN MACKENZIE

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-ICP41	35 Element Aqua Regia ICP-AES	ICP-AES
Au-AA23	Au 30g FA-AA finish	AAS

To: MACKENZIE, KEN
PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

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Signature:
Colin Ramshaw, Vancouver Laboratory Manager

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Finalized Date: 8-DEC-2011
Account: MACKEN

Project: D.L.,X,M

CERTIFICATE OF ANALYSIS VA11241762

Sample Description	Method Analyte Units LOR	WEI-21 Recvd Wt. kg 0.02	Au-AA23 Au ppm 0.005	ME-ICP41 Ag ppm 0.2	ME-ICP41 Al % 0.01	ME-ICP41 As ppm 2	ME-ICP41 B ppm 10	ME-ICP41 Ba ppm 10	ME-ICP41 Be ppm 0.5	ME-ICP41 Bi ppm 2	ME-ICP41 Ca % 0.01	ME-ICP41 Cd ppm 0.5	ME-ICP41 Co ppm 1	ME-ICP41 Cr ppm 1	ME-ICP41 Cu ppm 1	ME-ICP41 Fe % 0.01
M-226		0.76	0.082	<0.2	0.49	6	<10	140	<0.5	2	0.16	<0.5	5	4	17	2.05
M-233		0.64	0.008	0.4	1.76	68	<10	120	<0.5	2	0.38	<0.5	17	2	9	3.79

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PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

Finalized Date: 6-DEC-2011
Account: MACKEN

Project: D.L.,X,M

CERTIFICATE OF ANALYSIS VA11241762

Sample Description	Method Analyte Units LOR	ME-ICP41 Ga ppm 10	ME-ICP41 Hg ppm 1	ME-ICP41 K % 0.01	ME-ICP41 La ppm 10	ME-ICP41 Mg % 0.01	ME-ICP41 Mn ppm 5	ME-ICP41 Mo ppm 1	ME-ICP41 Na % 0.01	ME-ICP41 Ni ppm 1	ME-ICP41 P ppm 10	ME-ICP41 Pb ppm 2	ME-ICP41 S % 0.01	ME-ICP41 Sb ppm 2	ME-ICP41 Sc ppm 1	ME-ICP41 Sr ppm 1
M-226		<10	<1	0.11	10	0.28	220	5	0.07	<1	320	24	1.21	<2	1	8
M-233		10	<1	0.23	10	1.73	1275	1	0.03	6	1030	7	2.43	<2	3	15

46.

ALS Minerals

ALS Canada Ltd.

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

MACKENZIE, KEN
PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

Finalized Date: 8-DEC-2011
Account: MACKEN

Project: D.L.,X,M

CERTIFICATE OF ANALYSIS VA11241762

Sample Description	ME-ICP41 Th ppm 20	ME-ICP41 Ti % 0.01	ME-ICP41 Tl ppm 10	ME-ICP41 U ppm 10	ME-ICP41 V ppm 1	ME-ICP41 W ppm 10	ME-ICP41 Zn ppm 2
Method / Analyte / Units / LOR							
M-226	<20	<0.01	<10	<10	8	<10	61
M-233	<20	<0.01	<10	<10	36	<10	160

47

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

MACKENZIE, KEN
PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

Finalized Date: DEC-2011
Account: MACKEN

CERTIFICATE VA11241760

Project: D.L.,X,M
P.O. No.:
This report is for 14 Soil samples submitted to our lab in Vancouver, BC, Canada on 16-NOV-2011.
The following have access to data associated with this certificate:

KEN MACKENZIE

SAMPLE PREPARATION

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

ANALYTICAL PROCEDURES

ALS CODE	DESCRIPTION	INSTRUMENT
Au-AA23	Au 30g FA-AA finish	AAS
ME-ICP41	35 Element Aqua Regia ICP-AES	ICP-AES

To: MACKENZIE, KEN
PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

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

ALS Minerals

To: MACKENZIE, KEN
PO BOX 641
GARIBALDI HIGHLANDS BC V0N 1T0

Finalized Date: 13-DEC-2011
Account: MACKEN

Project: D.L.,X,M

CERTIFICATE OF ANALYSIS VA11241760

Sample Description	Method / Analyte / Units / LOR	WEI-21 Recvd Wt. kg 0.02	Au-AA23 Au ppm 0.005	ME-ICP41 Ag ppm 0.2	ME-ICP41 Al % 0.01	ME-ICP41 As ppm 2	ME-ICP41 B ppm 10	ME-ICP41 Ba ppm 10	ME-ICP41 Be ppm 0.5	ME-ICP41 Bi ppm 2	ME-ICP41 Ca % 0.01	ME-ICP41 Cd ppm 0.5	ME-ICP41 Co ppm 1	ME-ICP41 Cr ppm 1	ME-ICP41 Cu ppm 1	ME-ICP41 Fe % 0.01
[redacted]																
M-228		0.62	0.011	0.6	3.77	2	<10	<10	<0.5	<2	0.08	<0.5	6	13	38	4.15
M-230		0.64	0.007	0.3	2.74	10	<10	80	<0.5	<2	0.04	<0.5	5	9	27	3.80
M-231		0.46	0.013	1.2	1.85	3	<10	10	<0.5	<2	0.02	1.1	5	6	47	2.43
M-232		0.88	0.045	0.2	3.79	11	<10	80	<0.5	<2	0.24	<0.5	11	12	44	3.83
M-234		0.48	0.013	0.5	2.38	8	<10	140	<0.5	<2	0.10	1.8	87	10	1140	4.77
[redacted]																
M-241		0.72	0.009	0.2	3.22	8	<10	20	0.5	<2	0.04	<0.5	7	15	58	4.38
M-242		0.80	0.009	0.2	1.74	<2	<10	<10	<0.5	<2	0.08	<0.5	4	8	13	0.66
M-243		1.12	0.008	<0.2	3.53	3	<10	60	<0.5	<2	0.11	<0.5	9	12	53	3.38
M-244		0.82	0.010	0.3	3.37	3	<10	60	<0.5	<2	0.11	<0.5	9	11	66	3.23

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

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GARIBALDI HIGHLANDS BC V0N 1T0

Finalized Date: 13-DEC-2011
Account: MACKEN

Project: D.L.,X,M

CERTIFICATE OF ANALYSIS VA11241760

Sample Description	Method / Analyte / Units / LOR	ME-ICP41 Ga ppm 10	ME-ICP41 Hg ppm 1	ME-ICP41 K % 0.01	ME-ICP41 La ppm 10	ME-ICP41 Mg % 0.01	ME-ICP41 Mn ppm 5	ME-ICP41 Mo ppm 1	ME-ICP41 Na % 0.01	ME-ICP41 Ni ppm 1	ME-ICP41 P ppm 10	ME-ICP41 Pb ppm 2	ME-ICP41 S % 0.01	ME-ICP41 Sb ppm 2	ME-ICP41 Sc ppm 1	ME-ICP41 Sr ppm 1
[redacted]																
M-228		10	<1	0.03	<10	0.40	480	1	<0.01	3	1180	15	0.05	<2	3	11
M-230		10	1	0.03	10	0.82	402	4	<0.01	2	240	121	0.04	<2	3	8
M-231		10	1	0.03	10	0.09	136	7	<0.01	2	940	26	0.06	<2	1	5
M-232		10	<1	0.05	10	1.09	824	6	<0.01	8	1040	63	0.05	<2	3	25
M-234		10	1	0.06	10	0.57	7480	13	<0.01	7	1160	134	0.08	<2	1	11
[redacted]																
M-241		10	<1	0.06	<10	0.37	460	2	<0.01	5	750	12	0.04	<2	3	9
M-242		10	<1	0.03	<10	0.16	89	1	<0.01	3	300	16	0.04	<2	1	18
M-243		10	<1	0.06	20	0.91	426	1	<0.01	5	710	10	0.04	<2	3	22
M-244		10	<1	0.06	10	1.08	524	1	<0.01	6	810	9	0.04	<2	2	20

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CERTIFICATE OF ANALYSIS VA11241760

Sample Description	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41	ME-ICP41
Analyte	Th	Ti	Tl	U	V	W	Zn
Units	ppm	%	ppm	ppm	ppm	ppm	ppm
LOR	20	0.01	10	10	1	10	2
[redacted]							
M-228	<20	0.04	<10	<10	74	<10	47
M-230	<20	0.01	<10	<10	52	<10	227
M-231	<20	0.01	<10	<10	49	<10	115
M-232	<20	0.03	<10	<10	47	<10	503
M-234	<20	0.02	<10	<10	65	<10	177
[redacted]							
M-241	<20	0.02	<10	<10	69	<10	69
M-242	<20	0.08	<10	<10	25	<10	18
M-243	<20	0.06	<10	<10	50	<10	64
M-244	<20	0.04	<10	<10	48	<10	93

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

APPENDIX C

SAMPLE PREPARATION, GEOCHEMICAL ANALYSIS, QUALITY ASSURANCE, QUALITY CONTROL, EXTERNAL ACCREDITATION AND CERTIFICATION, AND EXTERNAL PROFICIENCY TESTS

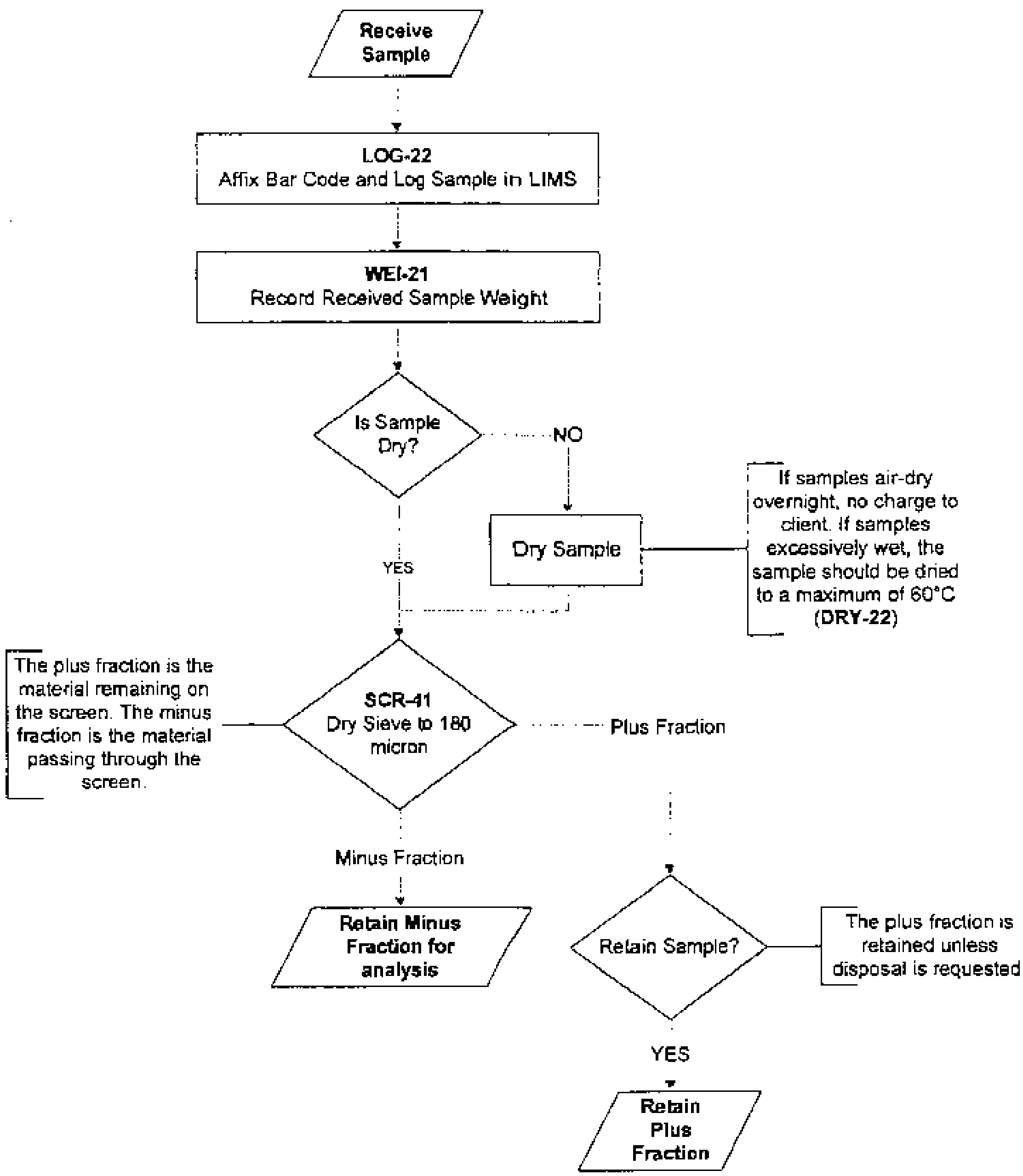
Sample Preparation Package – PREP-41
Standard Preparation: Dry sample and dry-sieve to –180 micron

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

An entire sample is dried and then dry-sieved using a 180 micron (Tyler 80 mesh) screen. The plus fraction is retained unless disposal is requested. This method is appropriate for soil or sediment samples up to 1 kg in weight.

Method Code	Description
LOG-22	Sample is logged in tracking system and a bar code label is attached.
SCR-41	Sample is dry-sieved to – 180 micron and both the plus and minus fractions are retained.

Sample Preparation Flowchart Package –PREP-41



ALS Chemex

Geochemical Procedure - ME-ICP41
Trace Level Methods Using Conventional ICP-AES Analysis

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

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

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

Element	Symbol	Units	Lower Limit	Upper Limit	Default Overlimit Method
Silver	Ag	ppm	0.2	100	Ag-OG46
Aluminum	Al	%	0.01	25	
Arsenic	As	ppm	2	10000	
Boron	B	ppm	10	10000	
Barium	Ba	ppm	10	10000	
Beryllium	Be	ppm	0.5	1000	
Bismuth	Bi	ppm	2	10000	
Calcium	Ca	%	0.01	25	
Cadmium	Cd	ppm	0.5	1000	
Cobalt	Co	ppm	1	10000	
Chromium	Cr	ppm	1	10000	
Copper	Cu	ppm	1	10000	Cu-OG46
Iron	Fe	%	0.01	50	

Element	Symbol	Units	Lower Limit	Upper Limit	Default Overlimit Method
Gallium	Ga	ppm	10	10000	
Mercury	Hg	ppm	1	10000	
Potassium	K	%	0.01	10	
Lanthanum	La	ppm	10	10000	
Magnesium	Mg	%	0.01	25	
Manganese	Mn	ppm	5	50000	
Molybdenum	Mo	ppm	1	10000	
Sodium	Na	%	0.01	10	
Nickel	Ni	ppm	1	10000	
Phosphorus	P	ppm	10	10000	
Lead	Pb	ppm	2	10000	Pb-OG46
Sulfur	S	%	0.01	10	
Antimony	Sb	ppm	2	10000	
Scandium	Sc	ppm	1	10000	
Strontium	Sr	ppm	1	10000	
Thorium	Th	ppm	20	10000	
Titanium	Ti	%	0.01	10	
Thallium	Tl	ppm	10	10000	
Uranium	U	ppm	10	10000	
Vanadium	V	ppm	1	10000	
Tungsten	W	ppm	10	10000	
Zinc	Zn	ppm	2	10000	Zn-OG46

ALS Chemex

Fire Assay Procedure – Au-AA23 & Au-AA24
Fire Assay Fusion, AAS Finish

Sample Decomposition: Fire Assay Fusion (FA-FUS01 & FA-FUS02)

Analytical Method: Atomic Absorption Spectroscopy (AAS)

A prepared sample is fused with a mixture of lead oxide, sodium carbonate, borax, silica and other reagents as required, inquarted with 6 mg of gold-free silver and then cupelled to yield a precious metal bead.

The bead is digested in 0.5 mL dilute nitric acid in the microwave oven, 0.5 mL concentrated hydrochloric acid is then added and the bead is further digested in the microwave at a lower power setting. The digested solution is cooled, diluted to a total volume of 4 mL with de-mineralized water, and analyzed by atomic absorption spectroscopy against matrix-matched standards.

Method Code	Element	Symbol	Units	Sample Weight (g)	Lower Limit	Upper Limit	Default Overlimit Method
Au-AA23	Gold	Au	ppm	30	0.005	10.0	Au-GRA21
Au-AA24	Gold	Au	ppm	50	0.005	10.0	Au-GRA22

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ALS Chemex

QUALITY ASSURANCE OVERVIEW

Laboratory Accreditation and Certification

ISO 17025

ALS Chemex's North Vancouver laboratory has received ISO 17025 accreditation from the Standards Council of Canada under CAN-P-4E (ISO/IEC 17025:2005), the General Requirements for the Competence of Testing and Calibration Laboratories, and the PALCAN Handbook (CAN-P-1570).

The scope of the accreditation includes the following methods:

- Au-AA: Determination of Au by Lead Collection Fire Assay and AAS
- Au/Ag-GRA: Determination of Au and Ag by Lead Collection Fire Assay and Gravimetric Finish
- PGM-ICP: Determination of Au, Pt and Pd by Lead Collection Fire Assay and ICP-AES
- ME-ICP41: Multi-Element (Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Ti, Tl, U, V, W, Zn) Determination by Aqua Regia Digestion and ICP-AES
- ME-ICP61: Multi-Element (Ag, Al, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, K, La, Li, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, Rb, S, Sb, Sc, Se, Si, Sn, Sr, Ta, Te, Ti, Tl, U, V W, Y, Zn and Zr) Determination by 4-Acid Digestion and ICP-AES
- ICP81: Al, Co, CU, Fe, Mg, Mn, Ni, Pb, S and Zn by Sodium Peroxide Fusion and ICP-AES
- OG46: Ag, Cu, Pb, and Zn – Determination of Ores and High Grade Material Using ICP-AES Following an Aqua Regia Digestion
- OG62: Ag, Cu, Pb and Zn – Determination of Ores and High Grade Material Using ICP-AES Following a Four-Acid Digestion
- AA45: Ag, Cu, Pb and Zn – Determination of Base Meals Using AAS Following an Aqua Regia Digestion
- AA46: Ag, Cu, Pb, Zn and Mo – Determination of Ores and High Grade materials Using AAS Following an Aqua Regia Digestion
- AA61: Ag, Co, Cu, Ni, Pb and Zn – Determination of Base Metals Using AAS Following a Four-Acid Digestion
- AA62: Ag, Co, CU, Mo, Ni, Pb and Zn – Determination of Ores and High Grade Materials Using AAS Following a Four-Acid Digestion

Our Reno, Nevada and Val d'Or, Quebec labs are actively pursuing ISO 17025 accreditation for Au by Fire Assay methods.

ISO 9001

ISO 9001

ALS Chemex laboratories in North America are registered to ISO 9001:2000 for the "provision of assay and geochemical analytical services" by QMI-SAI Global Quality Registrars.

The ISO 9001:2000 registration provides evidence of a quality management system covering all aspects of our organization. ISO 17025 accreditation provides specific assessment of our laboratory's analytical capabilities. In our opinion, the combination of the two ISO standards provides our clients complete assurance regarding the quality of every aspect of ALS Chemex operations.

Aside from laboratory accreditation, ALS Chemex has been a leader in participating in, and sponsoring, the assayer certification program in British Columbia. Many of our analysts have completed this demanding program that includes extensive theoretical and practical examinations. Upon successful completion of these examinations, they are awarded the title of Registered Assayer.

Quality Assurance Program

The quality assurance program is an integral part of all day-to-day activities at ALS Chemex and involves all levels of staff. Responsibilities are formally assigned for all aspects of the quality assurance program.

Sample Preparation Quality Specifications

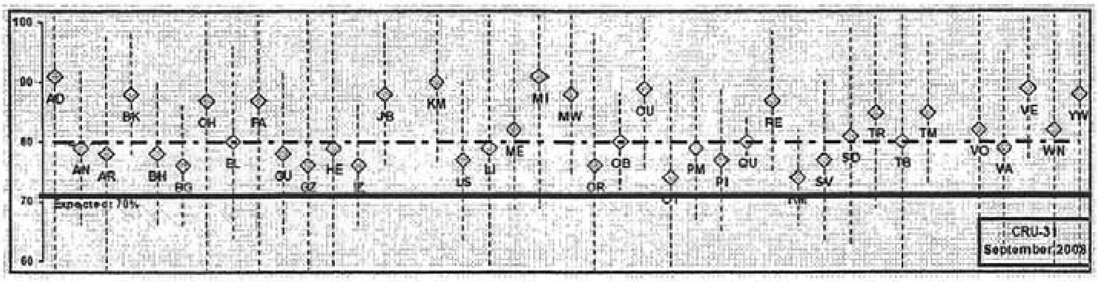
Standard specifications for sample preparation are clearly defined end monitored. The specifications for our most common methods are as follows:

- Crushing (CRU-31)
  > 70% of the crushed sample passes through a 2 mm screen
- Ringing (PUL-31)
  > 85% of the ring pulverized sample passes through a 75 micron screen (Tyler 200 mesh)
- Samples Received as Pulps
  >80% of the sample passes through a 75 micron screen (Tyler 200 mesh)

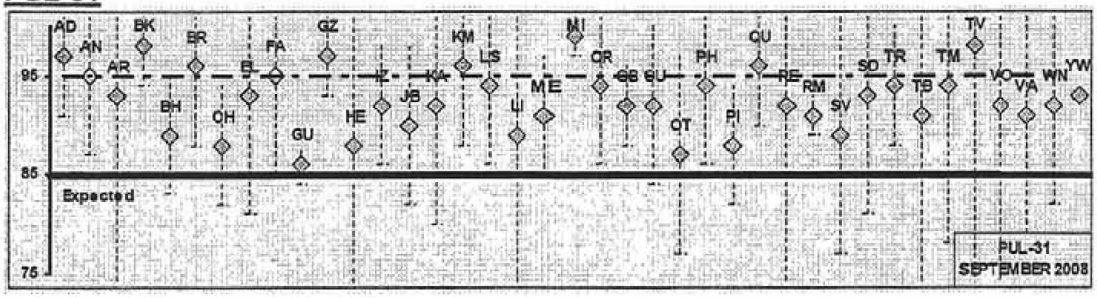
These characteristics are measured and results reported to verify the quality of sample preparation. Our standard operating procedures require that samples at every preparation station are tested regularly throughout each shift. Measurement of sample preparation quality allows the identification of equipment, operators and processes that are not operating within specifications.

QC results from all global sample preparation laboratories are captured by the LIM System end the QA Department compiles a monthly review report for senior management on the performance of each laboratory from this data.

CRU-31



PUL-31



Other Sample Preparation Specifications

Sample preparation is a vital part of any analysis protocol. Many projects require sample preparation to other specifications, for instance >90% of the crushed sample to pass through a 2 mm screen. These procedures can easily be accommodated and the Prep QC monitoring system is essential in ensuring the required specifications are routinely met.

Analytical Quality Control – Reference Materials, Blanks & Duplicates

The LIMS inserts quality control samples (reference materials, blanks and duplicates) on each analytical run, based on the rack sizes associated with the method. The rack size is the number of sample including QC samples included in a batch. The blank is inserted at the beginning, standards are inserted at random intervals, and duplicates are analysed at the end of the batch. Quality control samples are inserted based on the following rack sizes specific to the method:

Rack Size	Methods	Quality Control Sample Allocation
20	Specialty methods including specific gravity, bulk density, and acid insolubility	2 standards, 1 duplicate, 1 blank
28	Specialty fire assay, assay-grade, umpire and concentrate methods	1 standard, 1 duplicate, 1 blank
39	XRF methods	2 standards, 1 duplicate, 1 blank
40	Regular AAS, ICP-AES and ICP-MS methods	2 standards, 1 duplicate, 1 blank
84	Regular fire assay methods	2 standards, 3 duplicates, 1 blank

Laboratory staff analyse quality control samples at least at the frequency specified above. If necessary, they may include additional quality control samples above the minimum specifications.

All data gathered for quality control samples – blanks, duplicates and reference materials – are automatically captured, sorted and retained in the QC Database.

Quality Control Limits and Evaluation

Quality Control Limits for reference materials and duplicate analyses are established according to the precision and accuracy requirements of the particular method. Data outside control limits are identified and investigated and require corrective actions to be taken. Quality control data is scrutinised at a number of levels. Each analyst is responsible for ensuring the data submitted is within control specifications. In addition, there are a number of other checks.

Certificate Approval

If any data for reference materials, duplicates, or blanks falls beyond the control limits established, it is automatically flagged red by the computer system for serious failures, and yellow for borderline results. The Department Manager(s) conducting the final review of the Certificate is thus made aware that a problem may exist with the data set.

Precision Specifications and Definitions

Most geochemical procedures are specified to have a precision of ± 10%, and assay procedures ± 5%. The precision of Au analyses is dominated by the sampling precision.

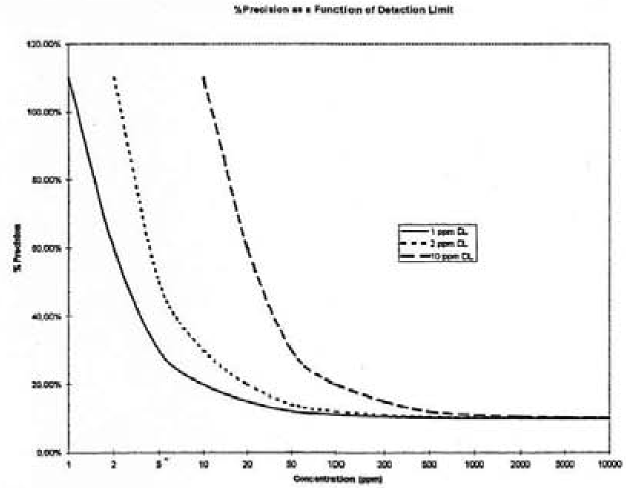
Precision can be expressed as a function of concentration:

$$P_c = \left(\frac{DetectionLimit}{c} + P\right) \times 100\%$$

where P_c - the precision at concentration c
c - concentration of the element
P - the "Precision Factor" of the element. This is the precision of the method at very high concentrations, i.e. 0.05 for 5%.

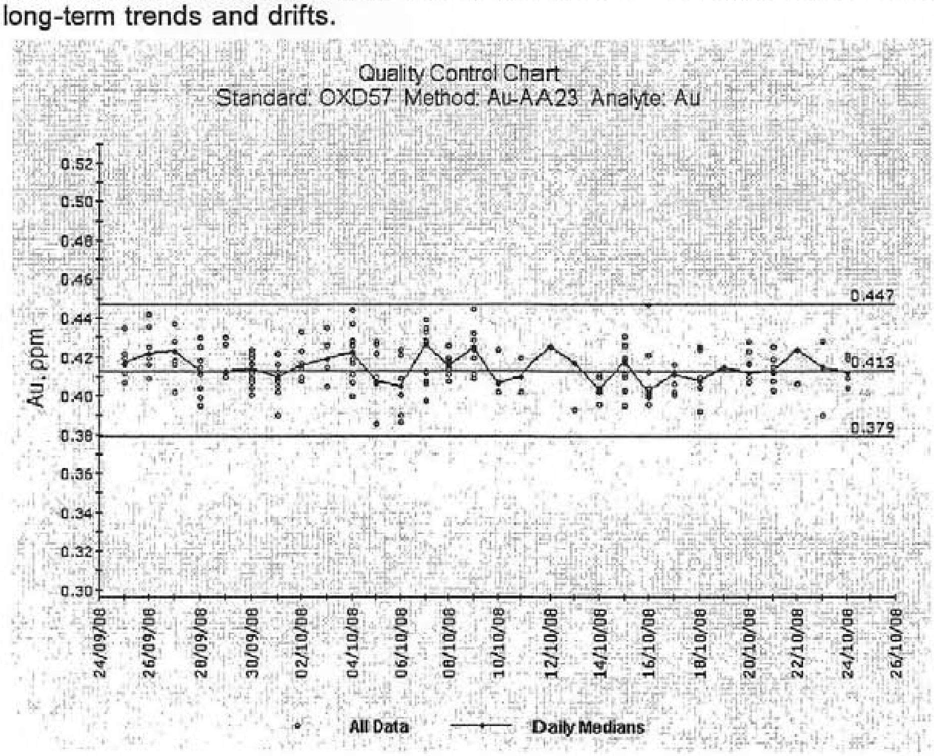
(M. Thompson, 1988. Variation of precision with concentration in an analytical system. Analyst, 113: 1579-1587.)

As an example, precision as a function of concentration (10% precision) is plotted for three different detection limits. The impact of detection limit on precision of results for low-level determinations can be dramatic.



Evaluation of Trends

Control charts for frequently used method codes are generated and evaluated by laboratory staff on a regular basis. The control charts are evaluated to ensure internal specifications for precision and accuracy are met. The data is also reviewed for any long-term trends and drifts.



External Proficiency Tests

Proficiency testing provides an independent assessment of laboratory performance by an outside agency. Test materials are regularly distributed to the participants and results are processed by a central agency. The results are usually converted to a Z-Score to rate the laboratory's result against the consensus value from all participating labs.

All ALS Chemex analytical facilities in North America participate in proficiency tests for the analytical procedures routinely done at each laboratory. ALS Chemex has participated for many years in proficiency tests organized by organizations such as Canadian Certified Reference Materials Projects, and Geostats as well es a number of independent studies orgenized by consultants for specific clients. We have participated also participated in several certification studies for new certified reference materials by CANMET and Rocklabs.

Feedback from these studies is invaluable in ensuring our continuing accuracy and validation of methods.

Quality Assurance Meetings

A review of quality assurance issues is held regularly at Technical and Quality Assurance Meetings. The meetings cover such topics es:

- Results of internal round robin exchanges, external proficiency tests and performance evaluation samples
- Monitoring of control charts for reference materials
- Review of quality system failures
- Incidents raised by clients
- Results of internal quality audits
- Other quality assurance issues

The Quality Assurance Department and senior laboratory menagement participate in these meetings.