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Ontario

ASSESSMENT WORK REPORT

CLAIM L 4284088

Portion of Block 53, Gillies Limit

Larder Lake Mining Division

Claim Holder - Brian Anthony (Tony) Bishop client #108621

Report prepared and submitted by Tony Bishop

January 26, 2017

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ASSESSMENT REPORT FOR CLAIM 4284088 GILLIES LIMIT, LARDER LAKE MINING DIVISION

Prepared by Brian A. (Tony) Bishop, submitted January 26, 2017

INTRO:

Hereby submitted by Brian Anthony (Tony) Bishop [Client No. 108621, 100% holder on record], on January 26, 2017, an assessment report for Claim no. L 4284088 (recorded on January 26, 2015). The claim contains one unit, situated in the NE ¼ of NE ¼ of Block 23, Gillies Limit**,** Larder Lake mining division (reference Map 1 in Appendix 1). This report includes details of work done to date, including a reconnaissance survey and prospecting and preliminary geochemical surveys based on till sampling and analysis, with recommendations for further assessment of this in conjunction with work done on contiguous claims. Electron Microprobe Analysis is also planned. Appendices include detailed methodologies for field work and till sample processing (including results of processing efficiency test and flowchart for concentrating), maps, including maps and field notes of traverses, and relevant photographs.

PURPOSE:

The purpose of staking Claim no. L 4284088 and the goal of the assessment work done to date and included in this report is to look for evidence and test the hypothesis that the claim may contain the top of a kimberlite pipe which manifests in the post-glacial topography as a small circular lake. As Shigley et al (2016) state, in reference to the Diavik Mine, "Because kimberlites weather and decompose faster than much older surrounding rocks, pipes often occur in topographical depressions beneath lakes…most [pipes] are buried beneath bodies of water".

Work completed to date includes an on-foot observational examination of the claim, a research component, a carefully determined and mapped out soil sampling plan, screening, concentrating, sorting and examining potential kimberlite indicator minerals (KIMs) in collected soil samples, and recording these and other findings.

ACCESS:

Access to Claim no. 4284088 can be made from the town of Cobalt.

Cobalt is reached from Highway 11 via Highway 11B. Claim no. 4284088 is situated approximately 9 km south-southeast of the town of Cobalt. From Cobalt, Coleman Road can be taken to the juncture of Silverfields Road (aka. Hound Chute Road) and Glenn Lake Road, situated between Cart Lake and Peterson Lake. Glenn Lake Road leads to Kerr Lake, where it becomes the Beaver Temisk Road (aka. the Cobalt-Brady Lake Road). This road passes Brady Lake and reaches the old Ophir Mine site, approximately 7 km south of Cobalt. The next two km of road access is on a very old, boulder strewn, and heavily overgrown road, suitable for an ATV or a carefully driven small 4-wheel drive truck. The road from the Ophir Mine site to Silver Lake is fairly open, but becomes more overgrown south of Silver Lake. Halfway between the Ophir Mine site and Claim no. 4284088 there is a fork in the road as it passes Mary Ann Lake – continue south on the right side until you are adjacent to the east boundary of the Claim; you will have to park at Chopin Lake and continue on foot.

(reference Map in Appendix 2).

As the crow flies, the claim is 2.5 km from the nearest year-round road, 9 km from the Cobalt train station, 9.6 km from the Trans Canada Highway 11, 110 km from North Bay, and 400 km from Toronto.

HISTORY OF DEVELOPMENT:

<u>Abstract of human activity near the claim.</u>

Before 1900, when the surveyors for the right-of-way of the Temiskaming and North Ontario (T.&N.O.) Railway worked north from North Bay past Long Lake Station [Cobalt, ON] up to Cochrane, there was limited activity in what is now Gillies Limit. Logging expeditions entered Lake Temiskaming after coming up the Ottawa River from Montreal as early as the late 1700s and some mid-to-late 1800s colonization of Lake Temiskaming on the Quebec shore. A farming community was settled on a bay south and east of the claim on the shores of Lake Temiskaming in the 1880s, in addition to a mission of oblate Fathers, and the posts of the Northwest Company and Hudson Bay Trading Companies. Charles Farr founded

Haileybury in the late 1880s and petitioned the government for railway access to facilitate colonization of the area. A colonization road did exist which reached the southernmost part of Lake Temiskaming on the Ontario side, but was never widely used.

The first government infrastructure nearest the claim was the building of the T. & N.O. railway which passed to the west, reaching Cobalt, Ontario in 1903-1904, where a silver and cobalt-nickel arsenide deposit was discovered. The mining boom which followed the discovery of silver at Cobalt often dominated the geological interest in the area for many decades, and although prospectors and geologists closely explored the terrain all around Cobalt, most of the exploration was guided by the search for more silver and cobalt-nickel arsenide deposits.

In the 1980s, there was renewed interest in the geology of the area this time in search of diamond-bearing kimberlite pipes, stimulated in part by the discovery of an 800-carat yellow diamond by a settler “somewhere in the Cobalt area” in 1904 (which was soon after bought by Tiffany’s) but became overshadowed by the vastly rich silver discoveries of the day. Soil sampling and geophysics by various companies, in addition to exploration by the Ontario Geological Survey, uncovered more than 50 known kimberlite pipes, some diamondiferous, outlining the existence of a Lake Temiskaming Kimberlite Field on the Lake Temiskaming structural zone which appears to have intruded the Canadian Shield in this region approximately 148 million years before present. Deep sonar has also revealed circular features beneath the water of Lake Temiskaming itself which are inferred to be kimberlite pipes.

Although there is now an identified kimberlite field in the region, no known pipes have been established in the immediate area around Claim no. L 4284088 and no previous work of any kind on Claim no. L 4284088 has been performed to date, according to overlays researched at the Mining Recorder’s Office in Kirkland Lake.

FIELDWORK: Please refer to Appendix 5 for Methodologies for Field Work and Till Sample Processing and Appendix 2 for Traverse Maps and Field Notes

TRAVERSE 1: August 4, 2016 Tony Bishop and Graeme Bishop

Graeme Bishop and I went to Cobalt to investigate Claim no. 4284088 with the intent to check road access for a sampling program and to prospect on the claim itself. Investigation of the overlays at the mines office had turned up no direct work on this claim, but on adjacent Claim no. 4282176 to the southwest, Cabo had, in 2009, performed a magnetic field survey. As well, in March 2001 Cabo had taken till samples to test for KIMs immediately northwest and west-northwest of 4284088. These till results, while off claim, are relevant to 4284088 and mentioned elsewhere in the report.

When first staked in January 2015, midwinter staking access was gained from the Hound Chute Road near Cobalt, thence to Ice Chisel/Darwin Lake area approximately 7 km south of Cobalt. This hike to 4284088 is lengthy and arduous with rough terrain. From Google Earth and other maps, I decided to try a different route that might allow access during summer months with less hiking distance. The route taken to reach the claim is described briefly under the heading 'Access' on page 3, and is continued here:

When we first drove the route past Brady Lake it eventually turned into branching logging roads, and from that to a very rough trail just accessible by my Toyota Tacoma driving at little more than walking speed. Branches and small trees had to be removed by hand, as well as large boulders/rocks for the last two km, taking between 1½ to 2 hours until finally parking near Chopin Lake.

The character of the bush changes from the access road to the traverse on foot. The access road is built making use of the high ground, and while old and overgrown with poplar, spruce, and birch, it is also bordered by much mature maple growth. Leaving the road, a trail was bush-wacked on a 600 meter walk west to reach the boundary of the claim. This traverse is extremely difficult, owing to the steepness of the hills and the near-impenetrable tangle of 'blow-down' which is exhibited across a wide swath of the hills adjacent to the road. Mixed bush, with new growth and some very old growth was encountered. The high ground showed maple, birch, and conifers.

A circular lake lies near the centre of the claim, surrounded mostly by moss and cedar growth.

As seen from Geological Map OGS P3581 and OBM Map 2052 (Cobalt Silver Area SE sheet) the claim and surrounding area is comprised of Nipissing Diabase and above that, north of Schumann Lake, by Keewatin. Outcrops examined did not warrant extensive sampling after brief visual examination. The area has not been recently logged so many individual boulders were covered in moss/humus, and when uncovered, were predominately diabase. Several rock chip samples were nonetheless bagged and packed out for microscope examination (no unusual/useful results were noted from these samples). Further examination will be made on a till sampling expedition of rock and pebble types. See Traverse 1 Map and Field Notes in Appendix 2

TRAVERSE 2: August 15, 2016 Graeme Bishop and Patrick Harrington

A sampling program was initiated by reviewing various sources such as Google Earth and topographic and geological maps to best select till sample sites based on glacier ice movement directions, topography etc. GPS coordinates were mapped accordingly.

After hiking due west from the road for approximately 600 meters and reaching the area of Claim no. 4284088, there was a 390 meter hike due north and a 280 meter hike due west with deviations for the purpose of collecting soil samples. Some of the sample holes were shallow, owing to boulders or bedrock beneath shallow soil deposition. Other sample holes encountered water and mulchy-cedar soil. Generally, the till sampled was a mixture of brownish soil, dark soil, and whitish-grey clay at the lower levels. Good samples were hard to procure for this claim, owing to the difficulty of covering the terrain and to the nature of the ground where samples were dug.

Due to the long hike out and some difficulty locating suitable sample material, the samples were smaller in volume (averaging 2.5 kg) than is recommended in GSC Open File report 7374. It states that, "To obtain an adequate number of indicator mineral grains, a sample must contain an average of 5 to 10 kg of sand-sized material… [i.e., screened to 5 mm] (0.063-2 mm) (Clifton et al., 1969; Averill, 2001). As a general guide, 10 to 20kg of sandy-silty till, 20 to 40kg of clayey till, and 12 to 25kg of glaciofluvial sediment is required to obtain a representative heavy mineral sand-sized concentrate… Samples are often not screened in the field" (Plouffe et al, 2013, p 14, 15).

The samples obtained, with the exception of creek samples, can usually not be screened in the field owing to commonly damp ground, clay, etc., that, without a water source, precludes obtaining a meaningful time/cost efficient screened sample. Larger cobbles and debris were removed from the samples after a quick visual examination of the rocks and cobbles. See Traverse 2 Map and Field Notes in Appendix 2

TILL SAMPLE PROCESSING:

Due to the small size of the samples, I combined the results of microscope KIM picking of the 4 samples which had been chosen for proximity and down-ice direction of the potential kimberlite pipe on claim 4284088 into one larger representative sample of KIMs. The up-ice samples were processed separately, and due to lack of KIMs, considered separately. This initial sampling program was performed to obtain a yes/no probability of my target hypothesis. Additional sampling program(s) will help further delineate these preliminary results. Each sample is sluiced, dried, screened into fractions of 0.25 -0.5mm, 0.5 -1.0mm, 1.0-2.0mm, and +2.0mm, then the magnetic portions are removed. Each fraction <1.0mm is then GoldCubed® and panned to get a manageable concentrate (cons) for picking of KIMs and other heavy minerals of interest (see Methodologies for Field Work and Till Sample Processing, Appendix 5).

If a very large/high number of red (pyrope) garnets are visually observed at any stage of panning the GoldCube® cons, this amount becomes the final product for viewing under the microscope. The overflow from the first GoldCube® run is then re-GoldCubed®, panned and saved for later viewing, and if necessary, picked for KIMs.

When large amounts of pyropes are encountered, the larger fractions from the sluiced cons (i.e., 1.0 to 2.0mm and larger +2.0mm) are saved as is and picked from under the microscope for KIMs. As the weight chart shows, the smallest fraction is the largest, and much easier to (carefully) pan to get a concentrate. An extra but very important (and time consuming) step is to photograph every large/important/unusual potential KIM or other heavy mineral through the microscope ocular, recording the type, size, colour, etc. of each grain, and storing and labelling the images on the computer for later viewing or to aid when consulting with geologists and other experts in the field of mineralogy, especially as related to diamond exploration. For this claim alone, 94 photographs of concentrates/various grains have been taken and stored. As well, when dealing with grains that are from 0.25 to <3.0mm in size, one simply cannot easily find a certain one in picked KIMs and show it to individuals to ascertain their potential importance, and once sent to a lab for microprobe analysis, important physical characteristics such as kelyphitic rims and physical wear are lost. Photographing all KIMs picked also helps estimate total numbers in the sample.

Included in my counts of pyrope garnet are red, pink, and purple colours. Typically, Cr pyrope (by definition) garnets in most literature are considered to be red (colour comes from enhanced chromium and/or iron content); however, McLean et al (2007) shows that the colours in Diavik Mine A154-S kimberlite pipe garnets, in order of Chromium content which is important for diamond exploration, are as follows:

- "Orange xenocrysts have <1 wt.% Cr_2O_3, and are inferred to have eclogitic derivation
- There is a general increase in Cr content from orange → red → pink → purple. A similar trend may be seen in the data of Hawthorne et al. (1979) for garnets from the Dokolwayo kimberlite and Hlane paleoalluvial deposits in Swaziland
- Red grains increase in Cr from light → dark red
- Purple xenocrysts are more likely than pink or red to be harzburgitic (G10 or G10D), but colour alone cannot be used as a definitive test"

Pink garnets, however, are not commonly mentioned in diamond exploration literature. In samples from Canadian kimberlites, the Cr content of the pink-purple garnets seem to exceed that of the darker purple garnets when tested at the lab in Sudbury (verbal communication, Dave Crabtree, Geosciences Lab), (McLean et al, 2007), (Grutter et al, 2004); therefore, I am including pink garnets in pyrope garnet counts.

In targeting and evaluating potential kimberlite pipes it is important also to note an article on 'Following kimberlite indicator minerals to source' in GSC OF-7374, "The corollary for exploration at Chidliak is that any source of high garnet counts in sediment samples is considered worthy of pursuit, regardless of garnet compositions" (Pell et al, 2013, p 51).

With that in mind, if I attempt to normalize my results vs. sample size as compared to say, the OGS-OF report 6088 (see p 13 & 17), taking into account my samples were unscreened (until processed in the sluice and/or GoldCube®), the number of KIMs I picked could be averaged up a considerable amount in quantity.

RESULTS: **Please reference KIMs Photos in Appendix 3 in conjunction with the following discussion**

The very low count of KIMs that were found in the samples from the north and northwest part of the claim above the lake/target and Cabo's D-16 and D-11 samples a bit further north and west can be accounted for from the known kimberlites ~14+ km up-ice of these till/stream samples, reflecting the relatively large distance up-ice of Claim no. 4284088. However, a much larger quantity of KIMs were found (see Appendix 3) in the four till samples taken from the southeast ¼ of Claim no. 4284088, directly down-ice of the round lake. From OGS Open File report 6088 it is stated that: "It is important to note, however, that lakes within drainage basins act as sediment traps, restricting the down drainage transport of heavy minerals" (Reid, 2002, p 13), to the extent that OGS 6088 recommends "to maximize the length of stream section between a sample site and a lake". So basically, whether from water flow or glacial transport, for some distance directly below a lake (sediment trap), one would not expect to find any heavy minerals in the till.

This enhances the importance of a great number of KIMs being found in till samples directly down-ice of a lake, especially a moderately deep lake, and little to none above as this is the reverse of what would happen unless the lake itself is the source of the heavy KIM minerals, i.e., the 'target'.

As mentioned, the sample sizes in my till samples are ~2 to 3 kg, and the four down-ice samples combined approximate ~10kg. This contrasts with Cabo's individual samples of 10-20kg and sometimes larger than 20kg in the OGS-OFR 6088 sampling program (Reid, 2002, p 13). So, if my till samples are "normalized", the results could be interpreted as being 2 or more times as many as was picked. More importantly, the 0.25-0.5 fraction is all but impossible to pick all the KIMs as to the very large numbers encountered, and as such, finding a number of larger fraction KIMs becomes much more relevant, especially as these would break down quickly with lengthy glacial transport.

Microprobe results from Sudbury will be forthcoming in later reports.

In examining the concentrates under the microscope, I noted that most of the KIMs from samples S1, S2, S3, and S4 from till sampling Traverse #2 have very angular habits and/or kelyphitic coatings in lesser or greater amounts. All four samples had elevated KIMs, and I chose to combine the results (i.e., 4 x ~3kg = ~12kg) which is closer to being one average recommended sample's weight. This offers a better representation of down-ice sampling than one individual sample would do, and helps to normalize the size of the samples.

After picking under the microscope, individual grains were either grouped together or, as required, separately stored in vials.

A significant number of KIMs were photographed, labelled, and stored separately from those in the photo file in Appendix 3, chosen for unique attributes and for possible later microprobing.

Photos 1 to 3 of Appendix 3 show a view of picked KIMs. For now, they are to be considered "potential KIMs" until select stones are sent for Electron Microprobe Analysis, although based on colour alone most exploration companies simply label them KIMs until proven otherwise in their counts.

Photos 4 & 5 depict grains to be sent for microprobing. Note both have angular habits and evidence of kelyphitic coating still showing, indicating proximity to source.

Photo 16: As can be seen, this garnet has a moderately heavy kelyphitic coating. Many KIMs viewed have a very heavy coating as to sometimes being completely coated on one side. This makes finding these heavily coated stones for picking very difficult. One solution is to tumble the stones to remove coating, which would destroy textures such as sharp edges etc. Another is the use of a soak/bath in oxalic acid, but again creates the loss of the coating/rims which aid in determining proximity to a kimberlite. For now, I decided to risk possibly missing a number of KIMs, choosing quality over quantity. I might, as time permits, soak the already picked samples in storage to remove the coating and view again to better determine actual numbers of KIMs.

Photos 18 & 19: These appear to be kyanite crystals. When finding substantial numbers of KIMs here and at my other claims, I occasionally find these (in different colours). Some (internet) research indicated that small kyanite crystals have been found in diamondiferous kimberlites in mines in Russia and elsewhere. More research is required to verify if another alternative potential source exists nearby in the Cobalt area.

Photo 28: An unusual stone, very bright (shiny), with an almost iridescent yellow 'frosting' on the surface.

Photos 29 & 30: This stone, as others, has been stored in a separate vial for later viewing/testing.

Photo 31: A very odd stone. Somehow this jet-black stone has a miniscule transparent 'window(s)' through which white inclusions (or the white plate underneath) can be seen. Under the microscope, it can be seen these are not on the surface but have depth.

Photo 33: Many sulphide grains were encountered. Only a few were picked and photographed, and stored with the KIMs.

Photo 34: From my various claims spread across Gillies Limit and Lorrain Township, a small number of silver/bornite/cobalt/erythrite grains have been found. Compare this to finding very large numbers of garnets and other KIMs. The nearest known kimberlites are 15-20 km up-ice, numbering 8 in total with small surface area, compared to over 100+ silver mines in the Cobalt area, some producing vast amounts of ore also directly up-ice only 4-10 km distant. These facts, with respect to proximity to Claim no. 4284088, should result in many silver-cobalt grains and few to no KIMs if indeed the source of the KIMs was in the kimberlites to the north. This suggests a very proximal source, I.e., the lake on 4284088, as the source of the KIMs in my till samples from below said lake.

DISCUSSION & CONCLUSIONS:

There seems to be a general misconception concerning the necessity of having a "magnetic bullseye" as being the primary method of locating kimberlite pipes and indeed, in the 1980s-1990s, a necessity. The following articles will help dispel that outdated belief, given more recent research and outcomes from Canadian-producing mines and advances in geo-chemical and structural geology analysis:

November 18, 2014
Arctic Announces new 100% owned Property in the heart of the Lac de Gras diamond field:

"Twenty years of diamond exploration on the Slave Craton has proven that kimberlites can be small with complex shapes (dykes, sills, and multi-phase pipes) with complex geophysical signatures. …Many of the >200 kimberlites discovered on the Slave Craton are magnetic discoveries…Non-magnetic kimberlites are often more diamondiferous than magnetic kimberlites, and…would be missed if only magnetic anomalies were tested. The Kennady Diamonds Property (TSXv-KDI) is a recent examples of exploration success that resulted from exploring for non-magnetic kimberlite. Close-spaced airborne gravity, ground gravity, and ground EM techniques discovered high diamond grade kimberlites….On the adjacent Ekati property, 6 new kimberlites were discovered by a modern heli-borne gravity survey. One kimberlite… is significantly diamondiferous. …The Diavik mine itself consists of non-magnetic kimberlite, detected by electromagnetic (EM) surveys. …These new discoveries represented separate, usually volcanic pyroclastic events which were always more diamondiferous than their magnetic partners. We also found diamondiferous kimberlites with no magnetic and EM signature using gravity techniques."

"Because kimberlites weather and decompose faster than much older surrounding rocks, the pipes often occur in topographic depressions beneath lakes. …The pipes are capped by several meters of glacial till, a thin layer of lacustrine sediments, and 15–20 meters of lake water. … With the retreat of the glaciers, the pipe locations often became depressions in the land surface, which filled with water to become lakes. The lakes at pipe locations are generally deeper than those formed by just glacial action." (Shigley et al, 2016).

"Kimberlite pipes are often found in geographically localized groups, frequently under lakes because of differential erosion, and the remanence directions within those groups is often similar. Kimberlite pipes are often associated with diabase dikes, and are also commonly intruded along pre-existing zones of weakness regional faults, geological contacts." (Kono (Ed), 2010, p 205)

"Known, economically viable kimberlites range in size from thin (1 - 4 m) dykes or sills, to small pipes of ~75 m in diameter to very large pipes with sizes of ~1.5 km diameter. Just about any type of rock can host kimberlite bodies. The physical and geochemical signatures of the host rocks are widely variable in terms of their magnetic response, electrical resistivity, density and elemental distributions. Hence a variety of kimberlite – host rock responses are possible i.e. positive anomaly, negative anomaly, or no anomaly" (Kjarsgaard, B.A., 2007, p 674).

"Kimberlites in the Lac de Gras field tend to be small (50-200m diameter) steep sided bodies…" (Kjarsgaard, B.A., 2007, p 674).

"Kimberlite intrusions tend to occur in clusters or fields, with the large scale distribution possibly controlled by deep seated structural features and local emplacement controlled by shallow zones of weakness such as faults or the margins of diabase dykes" (Power & Hildes, 2007, p 1025).

"To date, the majority of kimberlites discovered using magnetic surveys have been negative magnetic anomalies. These small, circular, negative anomalies are easy to pick out in the comparatively positive magnetic background. It is assumed that there are still many kimberlites that have not yet been discovered due to their neutral or positive magnetic responses" (Kennedy, 2008, p 5).

"In the Diavik area, diabase dykes have large positive magnetic signatures making pipes located close to these dykes difficult to detect. There is also the issue of remanent magnetization obscuring magnetic signatures" (Kennedy, 2008, p 149).

On Claim no. 4284088 is a round lake that on Google Earth measures 155m (north-south) x 158m (east-west), the same size range and shape of many important diamondiferous pipes in Canada. It has no obvious discernible magnetic field that can be observed on the Airborne Magnetic and Electromagnetic Survey, OGS Map 82-067 (2000) (see Map 4 in Appendix 1). From my research, it would seem this should not be detrimental to its being considered a potential kimberlite pipe.

The Schumann Lake Arch Fault is less than 500m north of this lake, as well as a north-south fault occurring to the east about the same distance, passing through the lakes on adjacent Claim no. 4282176.

Regional northwest trending regional scale fault structures include the Temiskaming Fault, Crosswise Lake Fault, Montreal River Fault, and the Latchford Fault. Numerous cross faults and lineaments connect these major structures (Sears, S.M., 2001).

As I have attempted to demonstrate, I feel that there is cause to believe the circular lake on Claim no. 4284088 is a kimberlite pipe, one of what I hypothesize to be a potential cluster of pipes existing across Gillies Limit and Lorrain Township on my claims. As can be seen in the photographs, a considerable number of KIMs were picked including 2 purple garnets, many more pink, red, and orange garnets, as well as many Cr Diopsides, Chromites, etc. and other unidentified grains.

An important point to note is that many of the reports I read from other companies testing for KIMs in the Cobalt and other areas only test the 0.25-0.5mm and 0.5-1.0mm fractions. On fewer occasions, the 1.0-2.0mm fraction is tested as well for heavy minerals. Finding KIMs, especially purple garnets larger than 1.0mm or 2.0mm is therefore very important as this also helps to establish proximity to source, especially when sharp edges and kelyphytic coating is observed, as in Photo 4.

With this in mind, I save and view the concentrates from the sluice in 0.25-0.5mm, 0.5-1.0mm, 1-2mm, and 2-5mm. The 0.25-0.5mm, and 0.5-1.0mm are further concentrated in the GoldCube® and by panning. In one of my other claims I have found several KIMs in the 2.0-5.0mm size range, including at least one purple garnet.

RECOMMENDATIONS:

- A follow-up till sampling program to better delineate the pattern and source of the KIMs found below the lake on Claim no. 4284088 and off-ice direction
- Microprobe testing of select KIM grains to determine diamond indicator status. Plans to do this are in the near future at the lab in Sudbury. Select grains have been photographed and stored each in their own separate vial ready for shipping
- Obtain more information about the target/lake, such as PH and depth to bottom at various positions in the lake to better assess its possibility of being kimberlitic in origin.
- Possible hand-held field mag survey, although this might be of limited use if it is as I suspect a non-magnetic pipe

EXPENSES of Assessment Work Claim L 4284088 for Jan 26/15 – Jan 26/17 Reporting Period

Work Type	Units of work	Cost per unit of work	Total Cost
Sampling plans, field survey, prospecting	Tony Bishop: 2 days	$500 per day	$1,000
Hired help Traverses 1,2	Graeme Bishop: 2 days; Patrick Harrington 1 day, including food allowance	$285 per day	$855
Till sample processing, HMC, separating into 6 mesh fractions, sorting, microscope picking and interpretation of KIMs and logging results, microphotography of select grains & KIMs picked, computer storage of microphotos, storage of picked grains & concentrates picked	Tony Bishop: 6 samples	$500 per sample	$3,000
Report preparation, map compilations, interpretations	Tony Bishop: 4 days	$500 per day	$2,000
Clerical support for reports & technical computer support	Chloë Bishop	$400	$400
Field work supplies: batteries for GPSs, flagging tape, 2 sample storage tubs	Canadian Tire, Giant Tiger	$8 + 8 + 12 + tax	$30
Transportation based on OPA OEC rate	2 return trips to claim 218 km (return) x 2 = 436 km	$0.50 per km x 436 km	$218
Office supplies – computer paper/printer ink	Northern Lights Computing	$82	$82
		TOTAL VALUE OF ASSESSMENT WORK	**$7,585**

Map Appendix Overview

MAP 1: Claim location relative to area claims

MAP 2: Road access in claim vicinity

Shows Claim no. 4284088 in the bottom right hand side. Access roads are in black with arrows on the route to the claim. At the top of the map, small black circles represent known kimberlites with Xs inside circles for diamondiferous kimberlites (3 of).

MAP 3: Topographical features and rock types: portion taken from Map P 3581 Geological Compilation of the Cobalt-Temagami Area, Abitibi Greenstone Belt, Ontario Geological Survey (2006)

Claim no. 4284088 is shown just south of the east-west Schumann Lake Arch Fault and just east of the north-south fault through Claim no. 4282176.

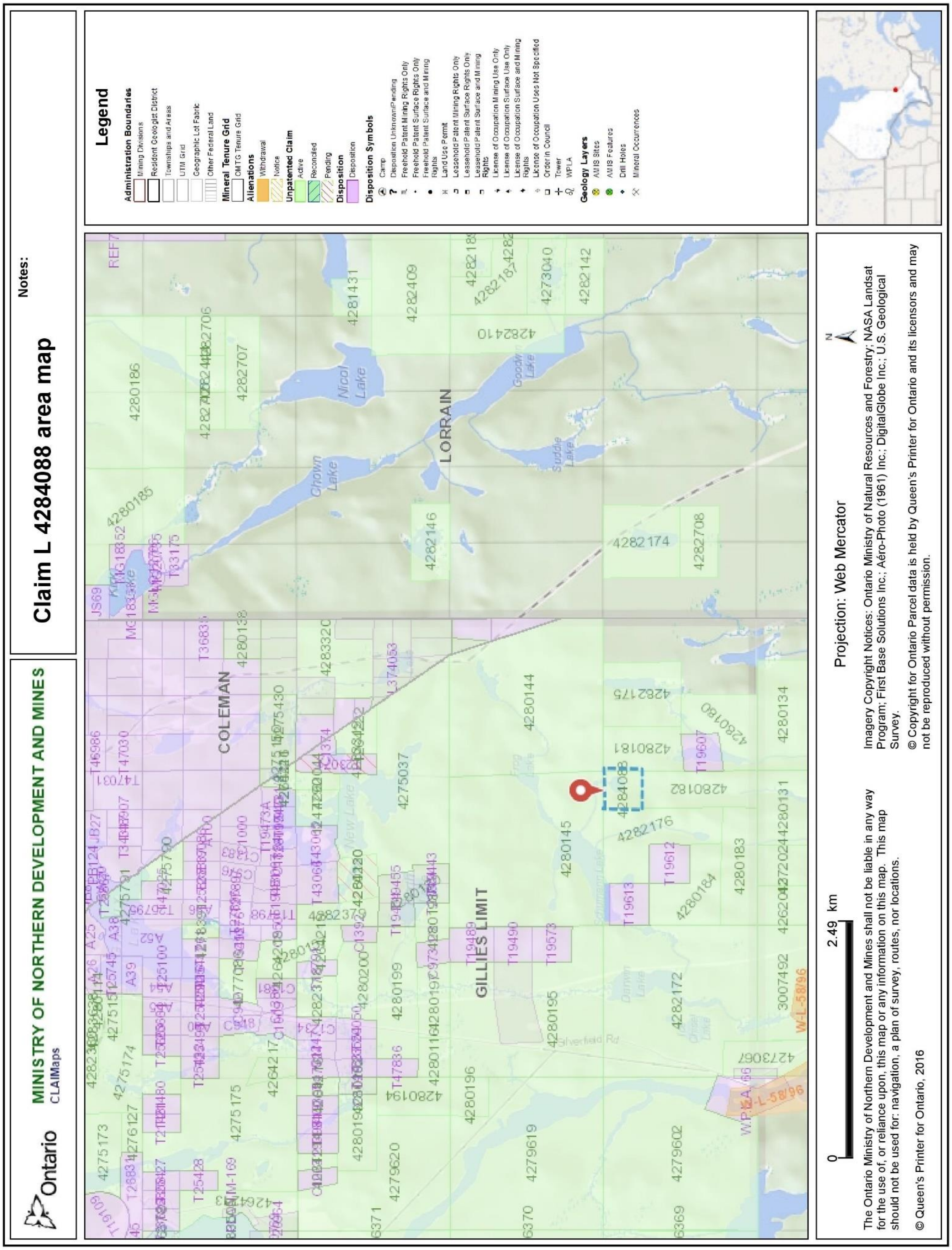
MAP 4: Magnetic and Electromagnetic view: portion of Map 82 067 Airborne Magnetic and Electromagnetic Survey, Temagami Area, Ontario Geological Survey (2000)

Claim no. 4284088 is shown with a concentrated series of east-west parallel lines running through and encompassing the lake. This would likely mask any obvious magnetic signature if it had a typical kimberlitic profile.

MAP 5: Down-ice Google Earth aerial view

This is a very useful tool in mapping as it plainly shows hills and valleys. As well, the north-south trending fault line through the lakes on the right-hand side of the photo is easily discernible. This feature of Google Earth helps determine probable variations in local ice-flow (glacial) directions to aid in a till sampling program (note: South orientation on top of the page, North on the bottom).

Appendix 1

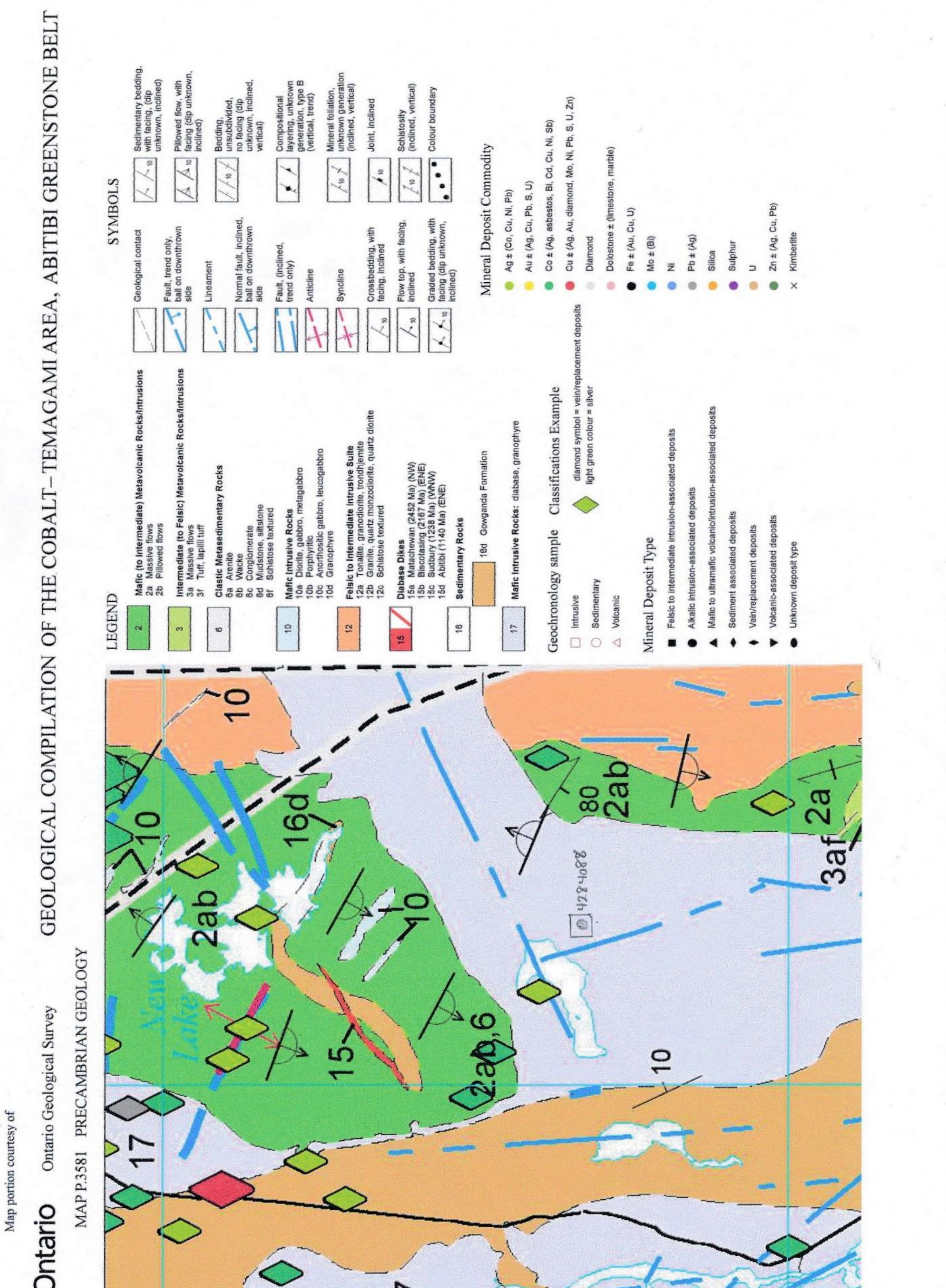


Map 1

Appendix 1

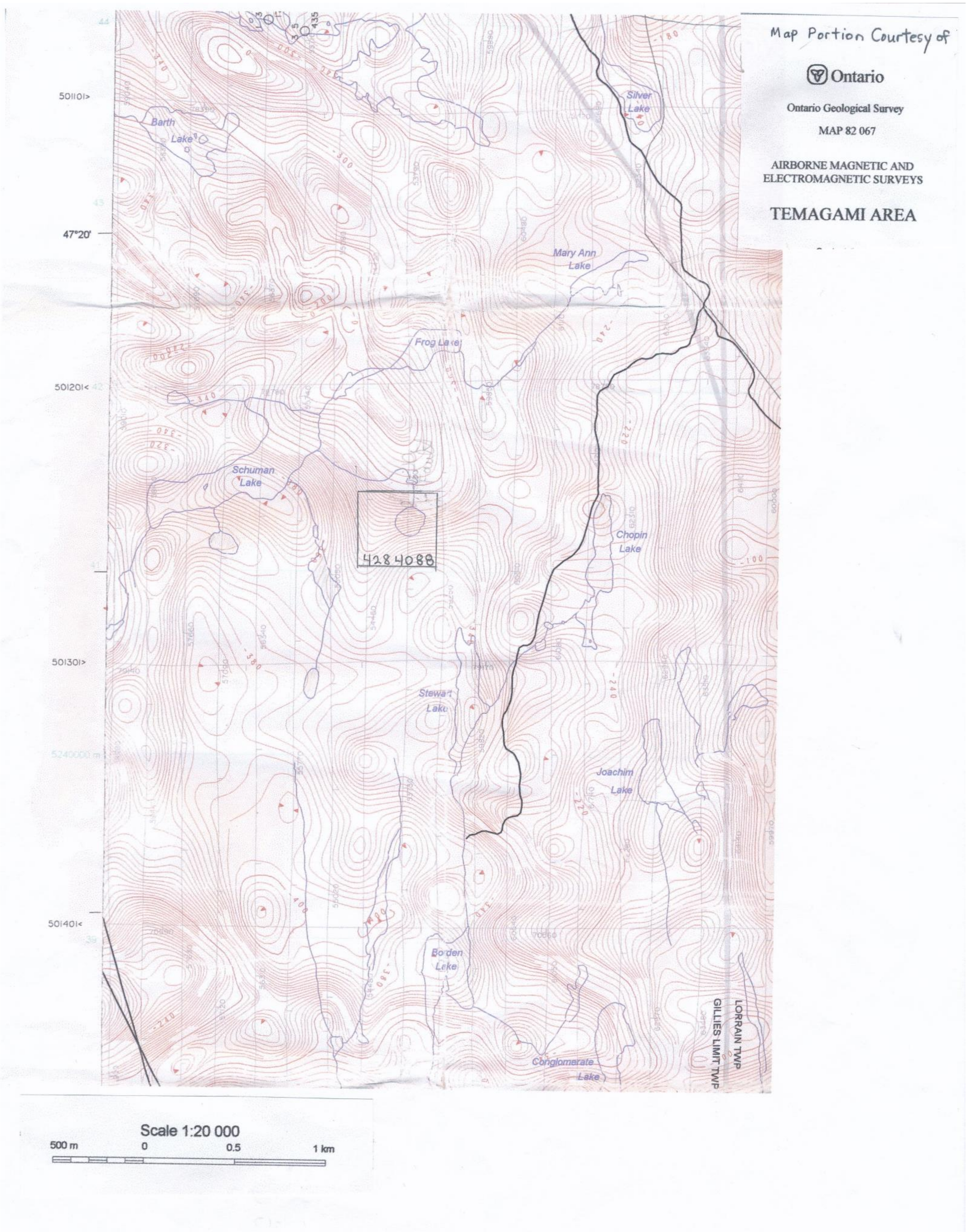
Map 2

Appendix 1



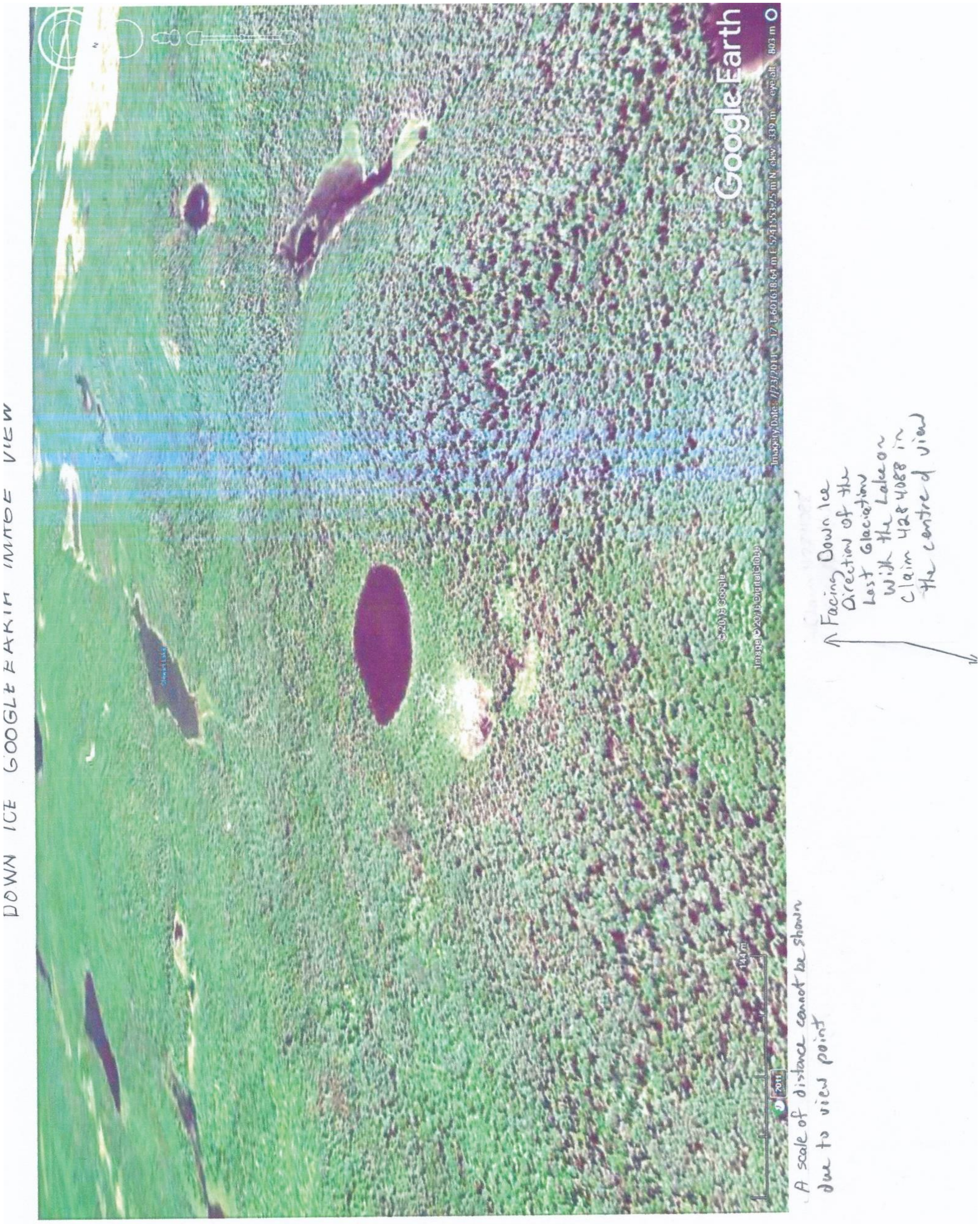
Map 3

Appendix 1



Map 4

Appendix 1



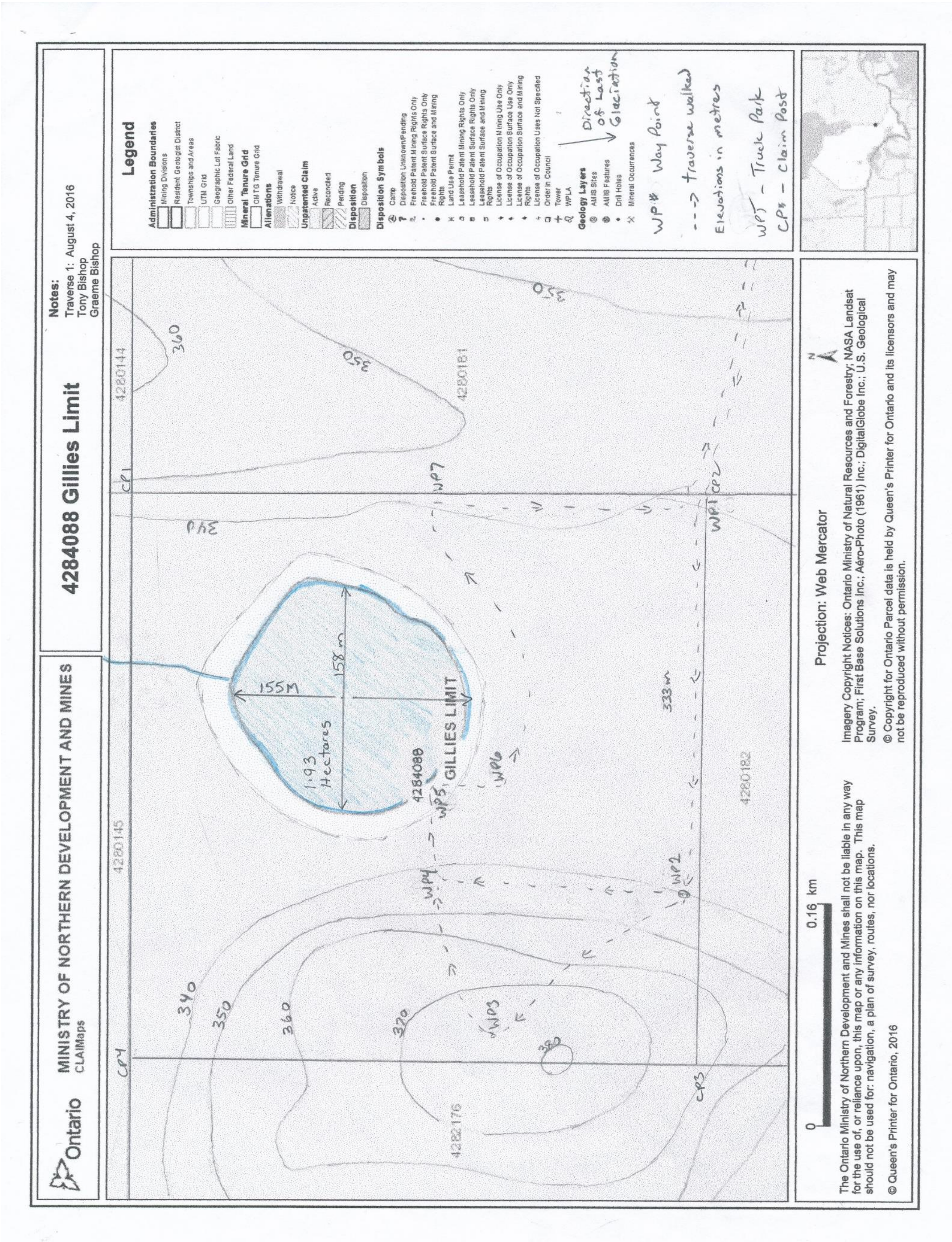
Map 5

Traverses Appendix Overview

TRAVERSE 1: August 4, 2016 – Map & Field Notes

TRAVERSE 2: August 15, 2016 – Map & Field Notes

Appendix 2


Ontario
MINISTRY OF NORTHERN DEVELOPMENT AND MINES
CLAIMaps
4284088 Gillies Limit
Notes:
Traverse 1: August 4, 2016
Tony Bishop
Graeme Bishop
Legend
Administration Boundaries
Mining Divisions
Resident Geologist District
Townships and Areas
UTM Grid
Geographic Lot Fabric
Other Federal Land
Mineral Tenure Grid
OM TG Tenure Grid
Alienations
Withdrawal
Notice
Unpatented Claim
Active
Reconciled
Pending
Disposition
Disposition
Disposition Symbols
Camp
Disposition Unknown/Pending
Freehold Patent Mining Rights Only
Freehold Patent Surface Rights Only
Freehold Patent Surface and Mining Rights
Land Use Permit
Leasehold Patent Mining Rights Only
Leasehold Patent Surface Rights Only
Leasehold Patent Surface and Mining Rights
License of Occupation Mining Use Only
License of Occupation Surface Use Only
License of Occupation Surface and Mining Rights
License of Occupation Uses Not Specified
Order In Council
Tower
WPLA
Geology Layers
AMIS Sites
AMIS Features
Drill Holes
Mineral Occurrences
Direction of Last Glaciation
WP# Way Point
- - -> traverse walked
Elevations in metres
WPT - Truck Park
CP# - Claim Post
4280145
4280144
4280181
4280182
4282176
4284088
GILLIES LIMIT
155M
158 m
1.93 Hectares
333m
340
350
360
370
380
CP1
CP2
CP3
CP4
WP1
WP2
WP3
WP4
WP5
WP6
WP7
0 0.16 km
N
Projection: Web Mercator
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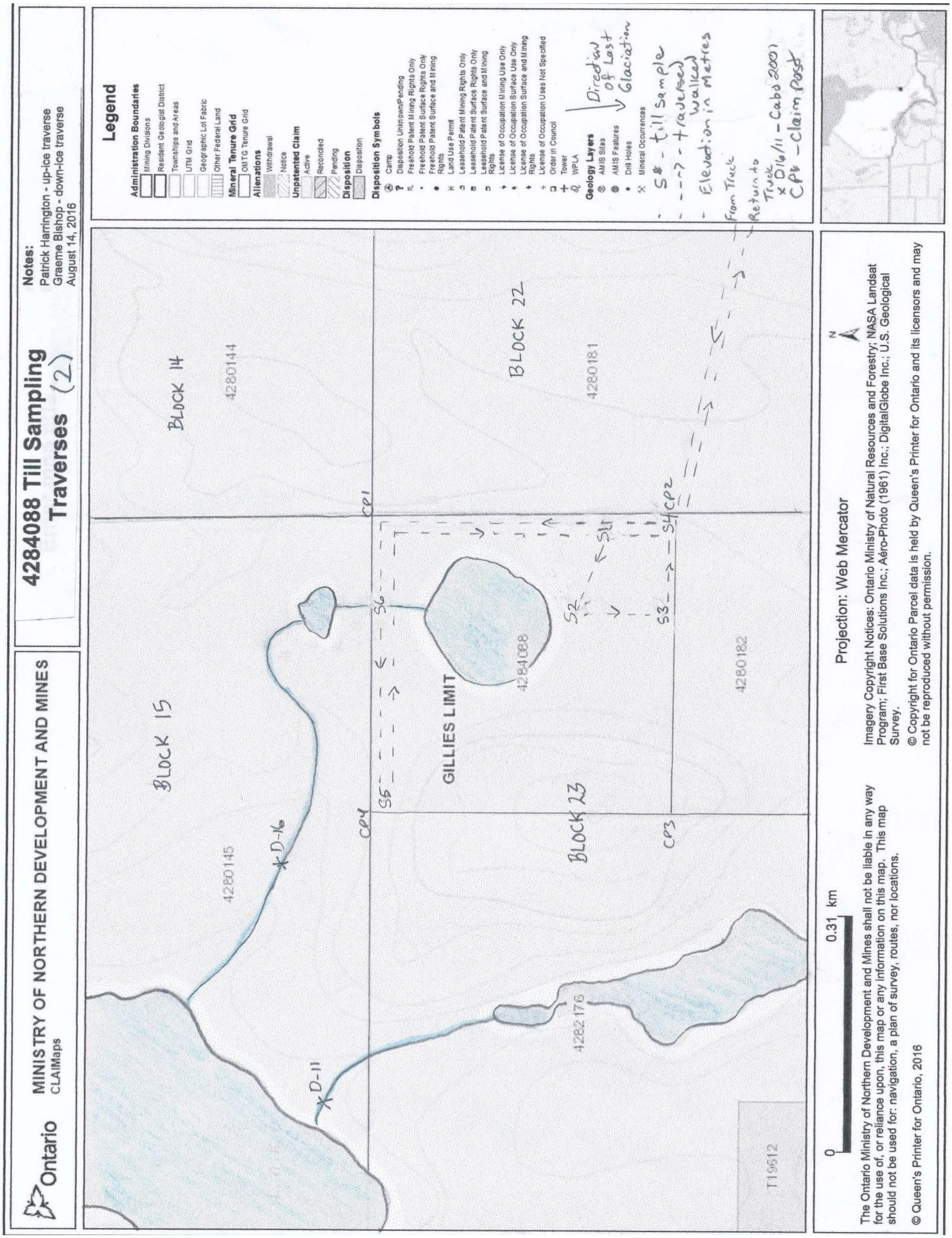
Appendix 2

L 4284088

Traverse 1: field notes AUGUST 4, 2016 Brian A. (Tony) Bishop, Graeme Bishop

Location #	**Coordinates** 17T UTM	**Activity/Description**
WPT	0602430 E/5241184 N	Parked truck on road west of Chopin Lake; proceeded approx. 616m to bush-wack trail to Corner Post 2 on SE corner of claim
WP1	0601811 E/5241262 N	Corner Post 2 on SE corner of claim
WP2	0601534 E/5241270 N	Graeme headed uphill on a new heading. I went north on hill's edge
WP3	0601420 E/5241399 N	Graeme reached hill top and headed ~E to meet at WP4
WP4	0601536 E/5241430 N	Graeme and I meet and compare notes
WP5	0601609 E/5241424 N	Walked to lake then turned S to WP6
WP6	0601622 E/5241378 N	Headed E around the S end of the lake
WP7	0601809 E/5241443 N	At middle point of E side of claim between #'s 1 & 2 posts; head S for #2 post, then return to truck
Corner post #1	0601802 E/5241712 N	
Corner post #2	0601804 E/5241306 N	
Corner post #3	0601392 E/5241290 N	
Corner post #4	0601396 E/5241665 N	

Appendix 2


Ontario
MINISTRY OF NORTHERN DEVELOPMENT AND MINES
CLAIMaps
4284088 Till Sampling Traverses (2)
Notes:
Patrick Harrington - up-ice traverse
Graeme Bishop - down-ice traverse
August 14, 2016
BLOCK 15
BLOCK 14
BLOCK 22
BLOCK 23
4280145
4280144
4280181
4280182
4282176
4284088
GILLIES LIMIT
T19612
D-11
D-16
CP1
CP2
CP3
CP4
S2
S3
S4
S5
S6
S1
Legend
Administration Boundaries
Mining Divisions
Resident Geologist District
Townships and Areas
UTM Grid
Geographic Lot Fabric
Other Federal Land
Mineral Tenure Grid
OMTG Tenure Grid
Alienations
Withdrawal
Notice
Unpatented Claim
Active
Reconciled
Pending
Disposition
Disposition
Disposition Symbols
Camp
Disposition Unknown/Pending
Freehold Patent Mining Rights Only
Freehold Patent Surface Rights Only
Freehold Patent Surface and Mining Rights
Land Use Permit
Leasehold Patent Mining Rights Only
Leasehold Patent Surface Rights Only
Leasehold Patent Surface and Mining Rights
License of Occupation Mining Use Only
License of Occupation Surface Use Only
License of Occupation Surface and Mining Rights
License of Occupation Uses Not Specified
Order in Council
Tower
WPLA
Geology Layers
AMIS Sites
AMIS Features
Drill Holes
Mineral Occurrences
Direction of Last Glaciation
S# - till sample
---> - traversed walked
- Elevation in Metres
From Truck
Return to Truck
x D16/11 - Cabo 2001
CP# - claim post
0
0.31 km
Projection: Web Mercator
N
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Appendix 2

L 4284088

Traverse 2: field notes AUGUST 15, 2016 Graeme Bishop, Patrick Harrington

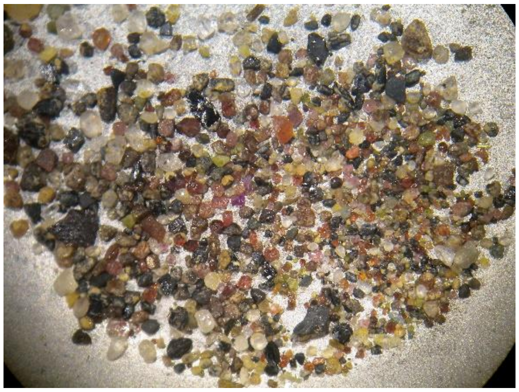
Sample #	Coordinates 17T UTM	Activity/Description
S1	0601804 E/ 5241351 N	Sandy/gravel ~18" deep
S2	0601667 E/ 5241381 N	Muck and sand/silt – wet sample
S3	0601684 E/ 5241257 N	3' cedars – 3' deep wet gravel – poor sample
S4	0601806 E/ 5241268 N	Sandy gravel ~2' deep
S5	0601416 E/ 5241632 N	Sandy/clay/gravel
S6	0601683 E/ 5241623 N	Very wet swamp muck – little sand/gravel
Waypoint X	0602430 E/ 5241184 N	At road – parking – 616m to corner post on south east corner of 4284088
Corner post #1	0601802 E/5241712 N	
Corner post #2	0601804 E/5241306 N	
Corner post #3	0601392 E/5241290 N	
Corner post #4	0601396 E/5241665 N	

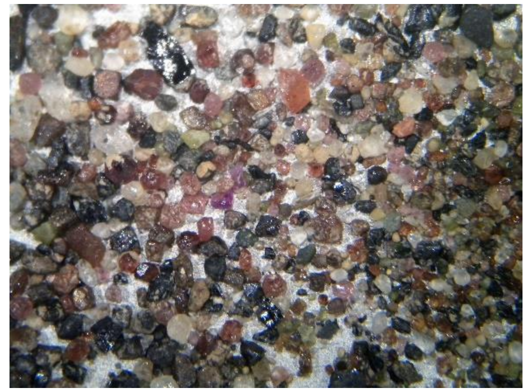
Description: NE ¼ of NE ¼ of Block 23 (1 x 16 Ha Units in Claim)

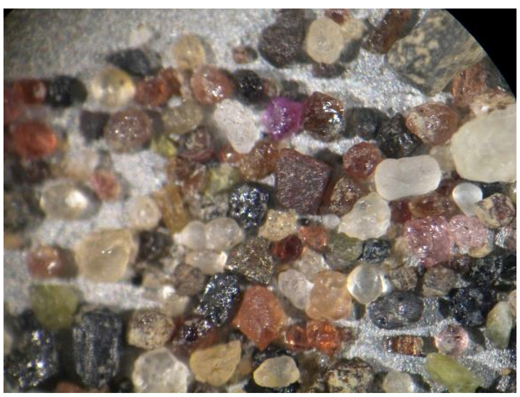
Also included on the Map are locations for two of the Cabo samples up-ice from Claim no. 4284088 as referred to in the body of my report

D-16 Cabo	0601348 E/5241723 N
D-11 Cabo	0601027 E/5241701 N

Microscope Photos of KIMs

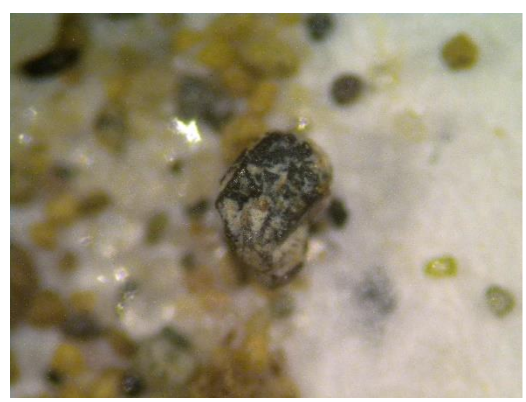

1 – KIMs picked


2 – KIMs picked

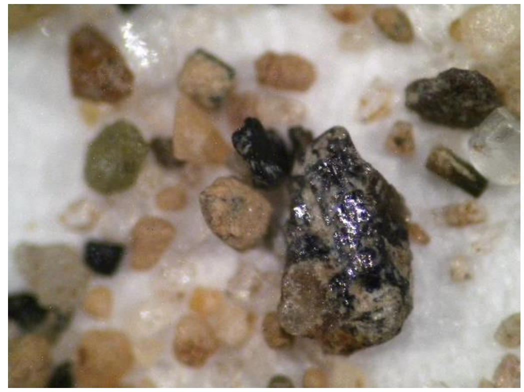

3 – KIMs picked


4 – 0.8mm purple garnet in picked KIMs

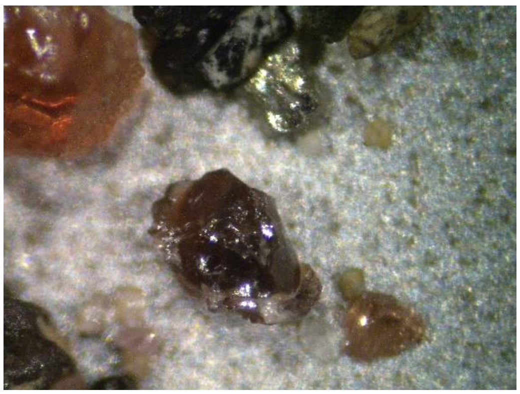

5 – 1.1mm purple garnet in picked KIMs


6 – 0.8mm coated black/red garnet

7 – Back side of #6 – 0.8mm coated black/red garnet



8 – 1.2mm coated black/red garnet



9 – 1.1mm deep red garnet in KIMs

10 – 1.2mm coated red garnet

11 – 0.5mm & 0.2mm deep red garnets in cons

12 – 0.25mm red garnet in cons

13 – 0.3mm red garnet – see #14

14 – 0.5mm yellow/orange stone – see #13

15 – 2.0mm orange garnet

16 – 0.8mm coated red/orange garnet

17 – 0.5mm coated orange garnet

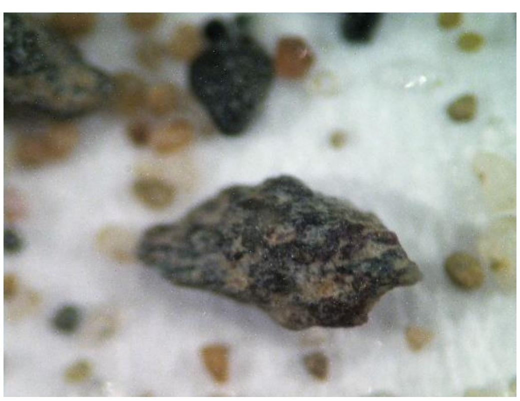
18 – Small orange garnet & blue/green crystal (Kyanite)

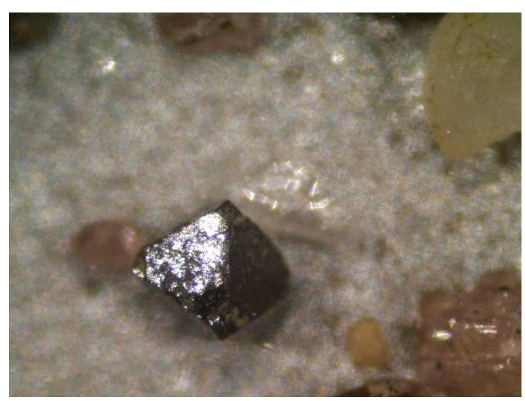

19 – 1.2mm Kyanite


20 – Pink garnet in cons


21 – 0.25mm pink garnets in cons x2


22 – 0.5mm coated deep green Cr diopside

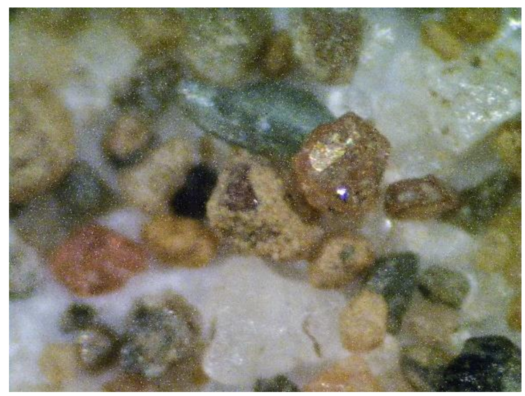

23 – 2.0mm red garnet & Cr diopside


24 – 0.6mm Euhedral chromite

25 – 2.2mm chromite with coating

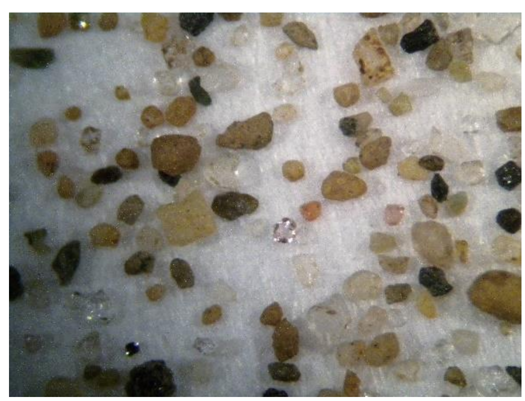
26 – Backside of #25 – 2.2mm chromite with coating

27 – ~0.2mm small bright stone

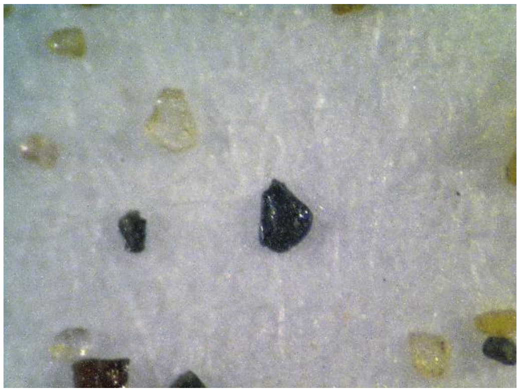


28 – Small yellow stone

29 – 0.2mm brilliant pink stone

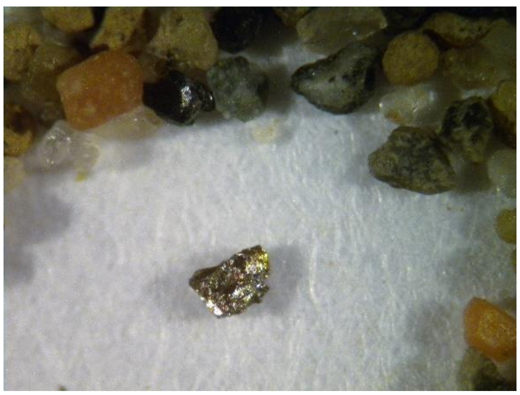


30 – Brilliant pink stone in cons – see #29

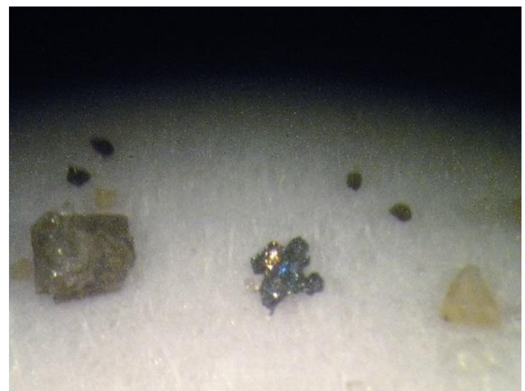


31 – Black stone with transparent areas; white spot seen inside/through the stone

32 – 0.4mm clear stone with (natural) blue line



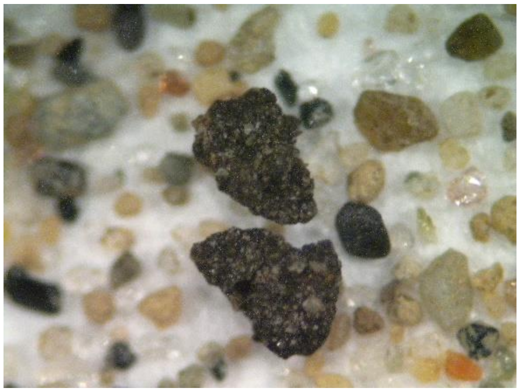
33 – 0.7mm sulphide grain



34 – Silver/Bornite grain

35 – 6.0mm possible kimberlite

36 – Close-up of #35 – possible kimberlite

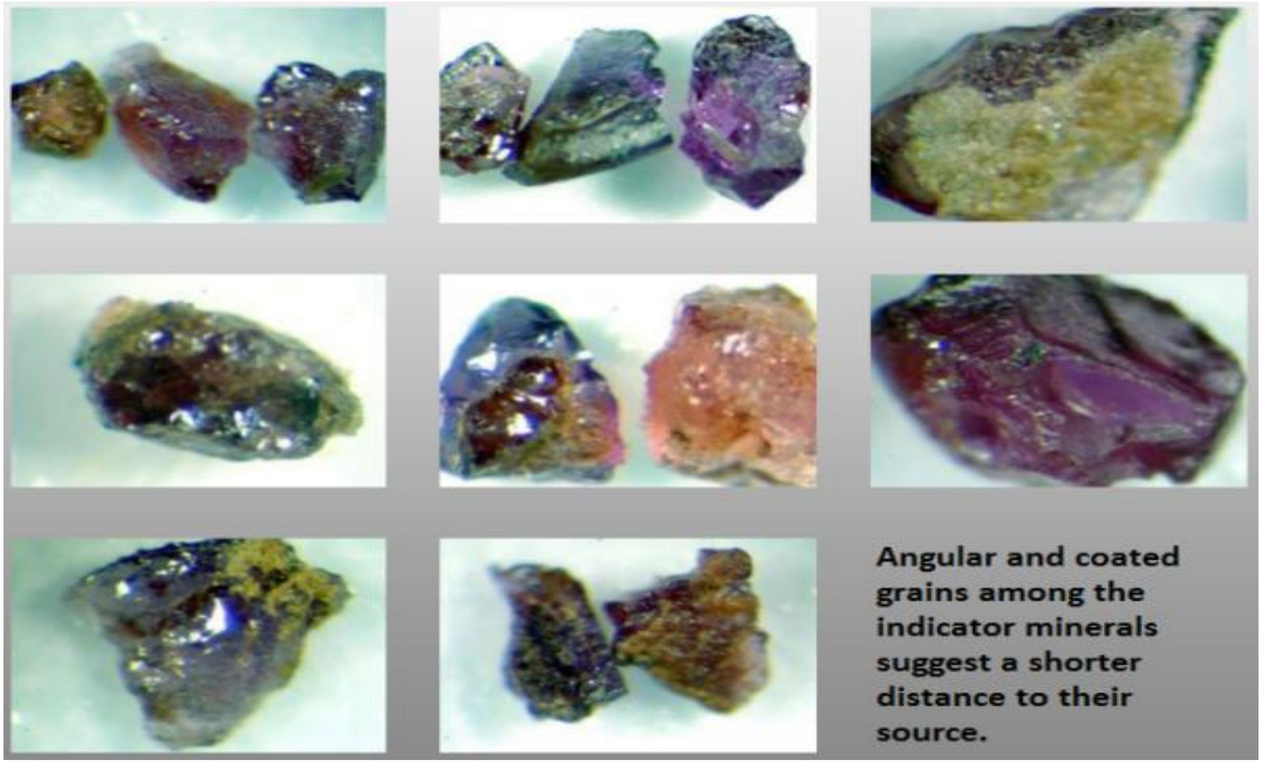


37 – 0.7mm & 0.9mm, possible kimberlites

Reference Photos

"Angular and coated grains among the indicator minerals suggest a shorter distance to their source" ("Arctic Star Presentation", 2016, p 13)

Arctic Star and North Arrow Announce Drilling at Redemption Diamond Project



"Studies of the indicator minerals from the South Coppermine train, some of which are imaged to the right, show very angular habits, some with soft alteration rims, (kelphyite for pyrope and lucoxene for ilmenite), all evidence for close proximity to source. Mineral grains lose their coats and become rounded as they travel down ice in the glacier. The angular/coated grains were most abundant at the head of the South Coppermine train. One grain with kimberlite attached was also noted." ("Arctic Star Presentation", 2016, p 13)

Methodologies for Field Work and Till Sample Processing

PREFACE:

I discovered that diamond exploration is unlike that for any other mineral resource. Initial exploration is largely till or stream sampling with or without previously picking a target area on a geological map or searching for a magnetic “bullseye” on a mag map. When near a road the cost of obtaining a till sample is low compared to a remote fly-in area where exorbitant transport costs come into play.

The high exploration costs associated with diamond prospecting are otherwise largely associated with processing the sample (i.e., assaying). For example, a gold assay on a sample is typically $20 to $30, base metals/platinum ~$70 or so. A till sample for diamond indicators (not necessarily diamonds) is upwards of $600 to $800 per sample (for the initial identification). Individual stones (potential kimberlite indicator minerals or KIMs) then have to be tested at a current rate of $14+ per grain, in minimum batches of 50 or more on an electron microprobe. This whole process points only to the *potential* for diamonds in the possible target. Diamonds themselves are so exceedingly rare in till samples that they are generally not looked for directly.

To further complicate issues, due to a number of glaciations in Canada in different directions, samples must be taken from tens of metres to several kilometres down-ice (usually at the last glacial direction) of the potential kimberlite source. This requires the bulk of meaningful sampling must be done off claim, sometimes a long way off claim, which then can not be applied for assessment work to maintain that claim in good standing. Direct sampling of a kimberlite target is only accomplished by bulk sampling with a large diamond drilling program, or if near surface, by more direct mechanized sampling methods (both very costly and permit intensive).

These initial obstacles can only be overcome by a lone prospector with determination, knowledge, the use of a collection of specialized equipment, and lots of time (and patience). Even for established commercial labs the bulk of the time and cost comes down to an individual meticulously picking KIMs with a pair of tweezers while viewing the concentrates from a sample under a microscope. This lengthy time consuming process is such that if large numbers of indicators are encountered, only a portion of the sample is picked for KIMs and then averaged (e.g., ‘guestimated’) to the full sample, possibly risking losing any all important G^{10} and other similar grains in the remaining portion.

As such, this Appendix is rather lengthy and details largely the method of processing till and stream samples by the author and achieving meaningful results.

METHODOLOGY/OVERVIEW OF FIELD WORK:

Great care and time was spent on viewing and researching maps (topo, mining, Google images, ice flow direction (actual and inferred past), fault lines, drainage patterns etc.) to determine the most likely locations to sample down-ice of the main target to locate potential KIMs. When favourable KIM results are found, follow-up work will include a sampling program in off-ice directions to compare with the samples taken down-ice to delineate probable origin of the KIMs.

Samples were not dried and weighed because too much loss of small particles occurs with wet (water) gravity concentration when a fine grained dry sample is being treated (the grain floats and gets lost). Typical sample size is ~3kg. The purpose of looking for KIMs is first to find any to begin with in a till sample, and then determine an approximation of number of KIMs encountered over the chosen sampling sites and to extrapolate the initial source location. The sample sizes taken have much to do with the difficulty or ease of acquiring the sample in the field.

Standard 38cm x 28cm sample bags are used for collecting till samples. Small shovels are used to dig a 1’ to 3’ deep hole below the humus line and the bags filled ½ to ⅔ full, taped shut, and labelled. When possible the sample is screened through a 4 mesh screen, or if not, then larger rocks and roots are removed by hand. In between samples the equipment is cleaned as well as possible to avoid cross-contamination. GPS coordinates are taken at each sample site and then recorded if not matching the prechosen map coordinates.

Appendix 5

METHODOLOGY FOR PROCESSING TILL SAMPLES: **Please also see Sluice Efficiency Test Results Chart and Flow Chart for Concentrating and Retrieving KIMs from Till and Stream Samples attached**

EQUIPMENT:

1) GOLDFINDER CUSTOM MADE SLUICE *(since modified by the author for the efficient processing ~10 to 100+ lb soil samples, for initial kimberlite indicators / heavy mineral concentration)***:**

The Goldfinder sluice (see Equipment photo 1) is manufactured with aircraft grade aluminum in 3 sections, with sturdy fast connecting latches. It is 14' long, 14" wide, and has height adjustments at front and back of the top section, and front and back of the fully assembled sluice. From the manufacturer, it excels at saving very fine flour as well as coarser gold. The ability to save 90%+ of flour gold in any sluice is exceedingly rare [The Goldfinder sluice was tested extensively in the 1970s by designer and developer Wayne Loewen on the Saskatchewan River as well as in-house tests with known gold grains counted before and after running through the sluice]. (This particular sluice was rented from me by the then Resident Geologist Gerhard Meyer and District Geologist Gary Grabowski, both of the Kirkland Lake MRO, for testing for gold in eskers on the shores of Abitibi Lake). I determined that with certain beneficial modifications from stock it could also be very good at saving kimberlite indicator minerals (KIMs) from larger or several combined smaller till samples.

Saving gold by gravity methods is comparatively easy as gold is about 5x heavier than indicator minerals or diamonds. To use the sluice to obtain a primary concentrate of KIMs, I removed the Hungarian riffles and the solid-backed 'miner's moss' carpet. I used a thicker, slightly more open-weave miner's moss, and overlying the miner's moss, a specific 4 mesh classifying screen. This was cut to fit in the top of the sluice and overlaps the original grizzly bars to reduce the size of the feed material being concentrated prior to the miners' moss sections, and to spill the +4 pebbles off the end of the top section which I saved to visually check for kimberlites or other minerals of interest. Initially I covered the next 3 miner's moss carpets with the same screen. A heavy duty ¾ HP submersible sump pump with a large flow rate replaced the 6 ½ HP Honda high pressure pump for a more correct water flow for the lighter material being run. This gave a 1" depth of water running above the top of the miner's moss. The sluice was run at a less steep angle than for gold to further enhance saving potential KIMs, with the first top section of the sluice adjusted to an angle of ½" over 36". The larger bottom section dropped 3" every 5'. Great care must be exercised to level the sluice to provide an even water flow across its surface.

The modified sluice considerably reduced the original volume of material, but most importantly the modified wrap around spray bar (see Equipment photo in Appendix 9) blasts apart clay and other clumped material very quickly and the water flow then also quickly removes very fine silt, humus, and plant matter as well as +4 mesh rocks (previously, I would spend 1 – 2 hrs or more trying to break this clay and such by hand with various utensils and water spray, and afterwards would have to screen out the humus and then classify to -4 mesh with screens). Efficiently saving the 1mm and smaller grains from clay strictly by hand methods is nearly impossible.

To test efficiency after the initial trial run using this equipment, I cleaned and kept separate the 4 carpet sections and the overflow of the sluice, which after further processing resulted in 25 separate samples of various meshes, and then checked the results under the microscope for indicators to determine if any losses were incurred and where. With this information, I was then able to make further modifications and retest to compare efficiencies (I eventually removed the miner's moss from the top section leaving the classifying screen with an overlay of expanded metal covering it, and removed the +4 mesh classifying screens on the lower three sections, leaving just the miner's moss, which is also what the sluices' designer Wayne Loewen found was best for saving fine gold).

The concentrate from the sluice is then dried completely and screened to achieve fractions of -4+10 mesh, -10+20 mesh, -20+28 mesh, -28+35 mesh, and -40 mesh, which I weigh and then remove magnetics (magnetite) with a 2" diameter neodymium magnet encased in ABS housing. To separate ilmenites and chromites from the magnetite, I suspend the neodymium magnet one to two inches above the magnetic portion which easily lifts the magnetite but leaves behind the less magnetic portion which I then observe under a microscope. I find that this portion often has various transparent quartz (?), and various other grains including garnets with black inclusions of probable magnetite, as well as the ilmenites and chromites. What remains is then panned with a Keene's Engineering riffle pan and the weight when dried recorded (interestingly, many professional labs list panning as the final concentration technique). This preliminary work was all necessary to determine the efficiency of sluicing till samples for KIMs and other heavy minerals with this particular sluice. Surprisingly, the first top section with no miner's moss had an interesting number of potential KIMs as well as a 1.5mm purple garnet in my sluice efficiency test. The next carpet had very many indicators, the next a sizable number of indicators, the final carpet and overflow had no KIMs or magnetite etc. that would typically comprise a heavy concentration. Sluice Efficiency Test Results are tabulated in Table 1.

2) TYLER PORTABLE SIEVE SHAKER:

The Tyler sieve shaker (Equipment photo 2) is utilized for larger samples. For individual small samples, screening is done by hand with standard sieve screens.

3) GOLDCUBE®:

As well as sluicing, I have since added as the next step running each individual screened concentrate smaller than 20 mesh through a Goldcube® (Equipment photo 3), initially designed to save small-flour gold. I added a water flow control valve to better save the KIM grains, especially at the smallest mesh size. Applying the same methodology as for the sluice, with rigorous checks and rechecks to assess potential losses by running the overflow through several times and checking the resulting concentrates under a microscope, I have discovered the Goldcube® works very well as a concentrator for the small indicator minerals looked for in diamond exploration, as well as being quick and easy to use.

A custom 12V rotating grizzly will be tested on individual samples in the field on future sampling programs where conditions are favourable.

4) MANSKER JIG:

I also acquired and compared the efficiency of using a Mansker Jig for concentrating till samples, as some labs and explorationists use this device extensively for this purpose. I purchased one Coleparmer 8" HHSS #40 sieve for KIMs, and one Coleparmer 8" HHSS #100 sieve for lamprophyre indicators. Based on my findings I have determined a preference for my sluicing and Goldcube® methodology, as this appears to be superior to the Mansker Jig in concentrating KIMs. (Aside note: a Camel Spiral Concentrator (which also is used by some commercial labs) was also tested for KIM concentrates, and I found it to be the worst of the lot – essentially useless.)

5) PANNING:

The Goldcube® concentrates are then carefully panned with a Keene's Engineering Gold Pan down to a yet smaller concentrate for KIM picking under a microscope.

6) HIGH-SPEED CENTRIFUGE:

I acquired and tested a high-speed centrifuge to separate the final concentrate into specific gravity layers. The centrifuge only seems to work to an extent on the finest fraction of concentrates. For now I will continue to use a high quality pan for final concentrating.

7) MICROSCOPE:

After these steps the indicators are then visually picked out (or a number estimated, and/or photographed under the microscope if too many to pick out or count) from each fraction under a Nikon SMZ-2B 8-50x binocular microscope with the help of Pelco (ceramic or carbon-fibre tipped) medical grade tweezers, and colour correct LED lamps for top, left and right, and below lighting. LW and SW ultraviolet lamps are also used in conjunction with the microscope to further identify various mineral grains.

8) PHOTOGRAPIC RECORDING:

Many important/interesting grains are carefully photographed (often front and back) before picking, and pertinent information, such as location, colour, size, texture, etc. is recorded. These are then downloaded to the computer, checked for colour/focus, and stored according to claim. A few of these will then be included in the work assessment report associated with the source claim.

9) PICKING KIMs:

Several types and sizes of manual tweezers were experimented with before a suitable soft touch, carbon fibre in PVDF, 1.0 x 2.0mm tip curved medical tweezer was found for picking out KIMs from samples. Viewing through the binocular microscope, KIMs and any other different/interesting grains are picked out. I have been adding these to the KIMs in the storage container for each sample so if interest or need dictates, they can be studied further. For now, I am also storing my once-picked-through concentrates in secure containers, as in some samples there are far too many potential KIMs to pick them all, and then as in most commercial labs, only a smaller but significant portion is hand-picked. See Flow Sheet for Processing Till Samples attached.

10) OTHER:

Lastly, I considered the use of Polytungstate for heavy liquid separation but at $2500 US for 500 ml and special licensing and equipment requirements to use this product I quickly nixed that idea.

Sluice Efficiency Test Results

Appendix 6

Overflow Chart: collected in stainless steel pan after exiting sluice			
Dry weight from sluice = 3160 grams			
	Screened dry weight (grams)	**Magnetic portion (grams)**	**After panning dry weight (grams)**
-4+10 mesh =	1469		24
-10+20 mesh =	290	3	25
-20+28 mesh =	141	2	19
-28+35 mesh =	171	2	23
-35 mesh =	1058	x	
Total =	**3129**		

Sluice Top: expanded metal over classifying screen – no carpet			
Dry weight from sluice = 940 grams			
	Screened dry weight (grams)	**Magnetic portion (grams)**	**After panning dry weight (grams)**
-4+10 mesh =	241	15	24
-10+20 mesh =	128	6	25
-20+28 mesh =	66	3	19
-28+35 mesh =	80	3	23
-35 mesh =	419	x	
Total =	**934**		

Sluice 1: classifying screen over miner's moss			
Dry weight from sluice = 2860 grams			
	Screened dry weight (grams)	**Magnetic portion (grams)**	**After panning dry weight (grams)**
-4+10 mesh =	136	6	26
-10+20 mesh =	495	20	18
-20+28 mesh =	258	6	19
-28+35 mesh =	336	7	17
-35 mesh =	1610	x	
Total =	**2835**		

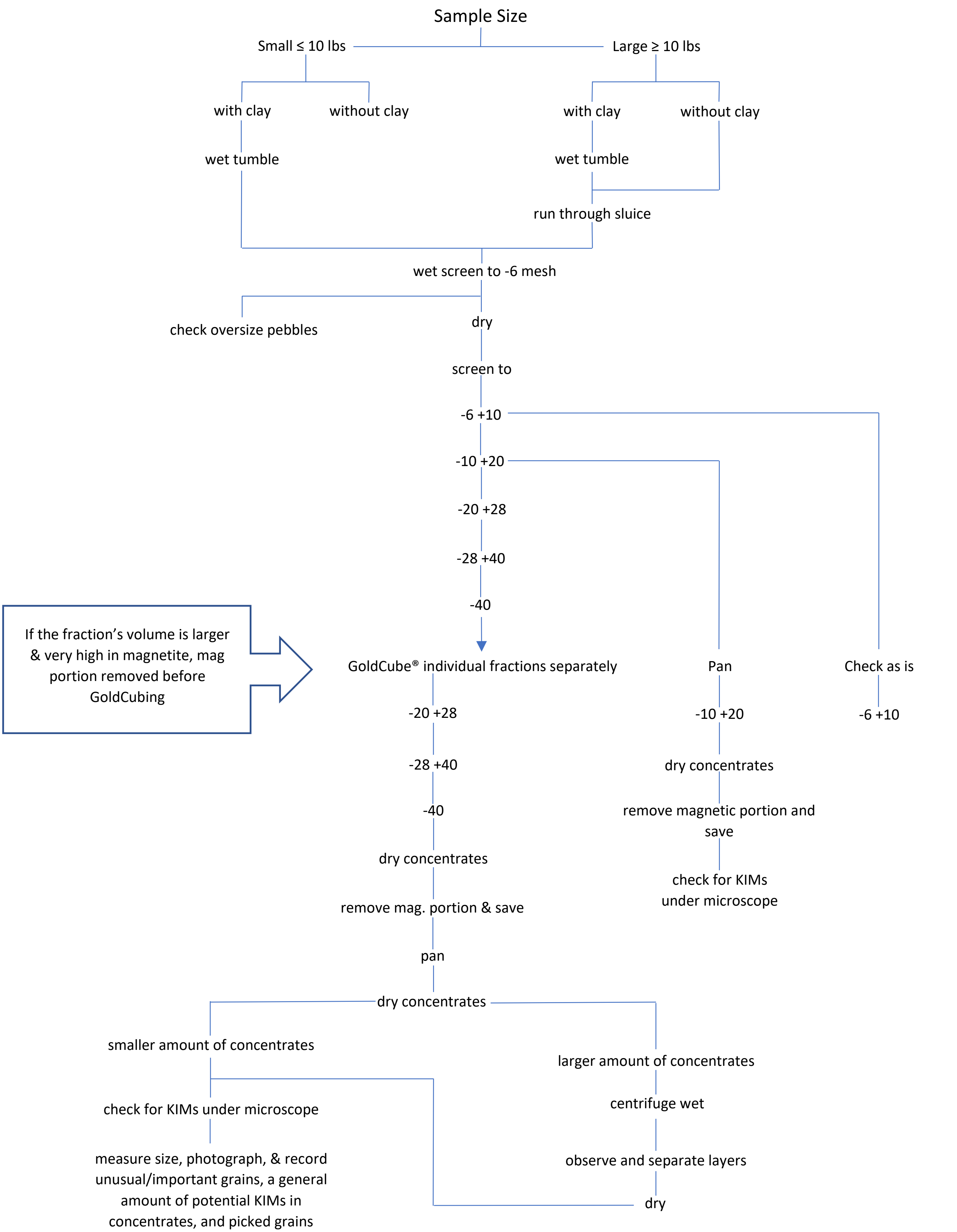
Sluice 2: classifying screen over miner's moss			
Dry weight from sluice = 3020 grams			
	Screened dry weight (grams)	**Magnetic portion (grams)**	**After panning dry weight (grams)**
-4+10 mesh =	29	1	22
-10+20 mesh =	269	8	18
-20+28 mesh =	248	6	20
-28+35 mesh =	359	7	17
-35 mesh =	2106	x	
Total =	**3011**		

Sluice 3: classifying screen over miner's moss			
Dry weight from sluice = 2550 grams			
	Screened dry weight (grams)	**Magnetic portion (grams)**	**After panning dry weight (grams)**
-4+10 mesh =	220	10	15
-10+20 mesh =	441	13	17
-20+28 mesh =	198	5	16
-28+35 mesh =	210	4	16
-35 mesh =	1425	x	
Total =	**2494**		

(note: slight differences in sluice and screen weights could be accounted for by moisture differences and loss during screening, tumbling, and container transfers, but are statistically inconsequential)

Appendix 7

Flow Sheet for Concentrating and Retrieving KIMs from Till & Stream Samples



Appendix 8

Equipment List

- Mansker Jig
- Camel Spiral Concentrator
- Custom designed proprietary tube/spiral concentrator for fine to very fine material
- Diamond sieves
- Tyler – 8 sieve Motorized Portable Sieve Shaker
- Various test sieves from -4 to -100 mesh
- 12V and 120V and motorized water pumps for concentrators as needed
- Garrett Au Pans: 15” super sluice, 10”
- Keene’s Engineering Au Pans: 14”, 12”, 10”
- Heavy duty 18” x 16” rubber panning tub
- Goldcube® fine Au/heavy mineral concentrator
- Goldspears (2 of) with extra 4’ extensions for precious metal and magnetite soil testing, wet & dry
- Scintrex-Scintillation Counter Model BGS-1S
- Rock saws: 10”, 18”, 24”, 36”
- Various metal/mineral detectors: MineLab Pro-find Pinpointer, Garrett’s BFO, ADS VLF 5khz, AT-Gold 15 khz, ATX multi-frequency pulse
- Goldfinder 14’ aircraft aluminum collapsible sluice with ¾ hp 120V submersible pump, 6 ½ hp Honda pump, dredging (3”) capability, custom designed Hungarian and expanded metal riffles, -4 mesh classifying screen
- Digiweigh digital scale, readability 0.1 gram
- Mettler PM30, 0-60lb, 0.1g scales
- Fujifilm Finepix SL, Nikon Coolpix digital cameras, custom microscope adapter for Coolpix
- Canon EOS Rebel SLR, with commercial microscope adapter
- Zeiss OPMI-1 stereo 4-25x microscope with thru the lens variable halogen lighting, 6’ articulating boom stand
- Zeiss Jena 4-25x compound microscope with separate oculars to 80x
- Bristal 40-1000x microscope
- Nikon SMZ 2B continuously variable 8-50x microscope with adjustable boom stand
- Individually switched, colour correct directed LED lighting
- Diamond Selector II
- Superbright 2000SW and Superbright II LW370 portable ultraviolet lights /battery/120V
- Inova multi-wavelength LW UV LED flashlight
- Clay-Adams high speed centrifuge
- 2” Neodymium magnet in waterproof ABS shell
- Weaker 4” x 6” flat magnet cut to fit Au pans
- Various shovels, auger, containers, compasses, GPS, maps, etc. as needed for soil/rock sampling
- Electronic pH tester and pH strips
- Toyota Tacoma 4x4
- 8’ Boler, 14’ Boler trailers/portable camps

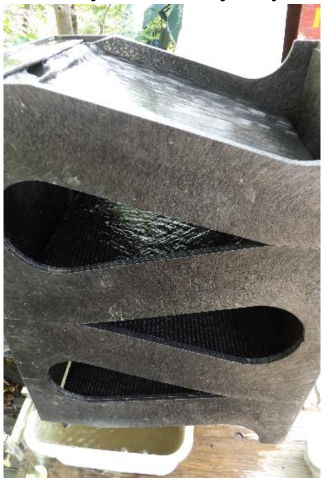
Equipment Photos

Appendix 9

1 - Goldfinder Sluice

1a - Panned and dried concentrates from sluice efficiency test ready to pick for KIMs under microscope

2 -Tyler motorized portable sieve shaker



3 - Goldcube®

4 - Variable speed industrial tumbler

5 - Microscopes

6 - 2-inch neodymium magnet

7 - Portable camp near claim

Statement of Qualifications:

I, Brian Anthony (Tony) Bishop p/l #A44063 of Kenogami (RR#2 Swastika, ON), hereby certify as follows concerning my report on Claim L 4284088 in the Township of Gillies Limit, Larder Lake Mining Division:

I have been prospecting and placer mining part-time for 43+ years in Ontario, British Columbia, and Nova Scotia (which led to writing a book *The Gold Hunter's Guide to Nova Scotia* (Nimbus Publishing, 1988, ISBN 0-920852-93-9) which was used in prospecting courses in Nova Scotia). I have held an Ontario Prospector's License for 36 years, and was issued a Permanent Prospector's License in 2005. I have completed a number of prospecting courses given by the Ministry, and have my Prospector's Blasting Permit. I was one of the directors on the Northern Prospectors Association (NPA) in the early years when Mike Leahy revitalized/resurrected the NPA in Kirkland Lake, and with Mike, initiated the annual gold panning event as part of Kirkland Lake Gold Days.

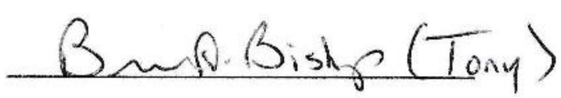
As well, I sold and used small scale mining and concentrating/processing equipment for over 20 years. This included instructing others in their use.

On short term contracts I have performed specialized work for Cobatec, Macassa, Castle Silver Mines Inc., Gold Bullion Development Corp, as well as short stints in Ecuador and Montana.

The last two years I have devoted to full-time diamond exploration. This has included 1,000+ hours of research from many diverse sources on exploration and processing techniques.

Drawing on this research and my many years of practical experience I have assembled a complete till processing lab I feel rivals many commercial ones. Importantly, I sometimes exceed their results by testing a wider range of samples' fraction sizes and as a result have found a number of kimberlite indicator minerals, notably a number of purple garnets all 1.0mm and larger in size (i.e., > 20 mesh) and other indicators that were larger than the usual upper cut-off for commercial labs' mesh sizes. Many redundancy tests are routinely performed to monitor potential losses of the KIMs and I feel my equipment and techniques closely match that of the industry.

Signed:



Brian Anthony (Tony) Bishop

January 26, 2017

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