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Report  
on  
Spatiotemporal Geochemical Hydrocarbon (SGH) Survey

Walker Knight Property  
Knight Township  
Larder Lake Mining District  
Northeastern Ontario

UTM Grid Zone 17, NAD 83  
NTS Map Sheet  
41P10NW, 41P11NE

February 17, 2022

Jamieson S. Walker  
Jamieson Geological Inc.

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## **ATTACHMENT 1: Activation Laboratories Ltd. - SGH SURVEY REPORT**

Part I of II: “3D - SGH - A SPATIOTEMPORAL GEOCHEMICAL HYDROCARBON INTERPRETATION”

for

JAMIESON GEOLOGICAL INC.

WALKER KNIGHT SGH PROJECT

Author: Jeff Brown, Activation Laboratories Ltd (author), Dale Sutherland (originator)

EVALUATION OF SAMPLE DATA – EXPLORATION FOR:

“COPPER” and “GOLD” TARGETS”

Dated February 19, 2021

Part II of II:

Laboratory summary results from Hydrocarbon Analysis by Gas Chromatography/Mass Spectrometry, Activation Laboratories Ltd. February 19, 2021: Printed summary report from Excel spreadsheet of the concentrations (parts per trillion- ppt) of SGH-Copper and SGH-Gold; determined by interpretation of 162 select hydrocarbons species from thermal extraction and capillary column gas chromatography and mass spectrometer analysis of 80 samples submitted from the Walker Knight survey.

## **ATTACHMENT II: SGH Field Sample Descriptions Locations with Results and Photo Thumbnails.**

## **1.0 Summary**

In November 2020, a sampling program to expand existing survey coverage for Spatiotemporal Geochemical Hydrocarbon (SGH) was conducted over the south central section of the 64-unit Walker Knight Property. The 80 samples were analyzed by Activation Laboratories in December 2020 and reported in leveled combined coverage in February 2021.

## **2.0 Location**

The property is located in south central Knight Township in the Larder Mining Division, District of Sudbury, between UTM NAD 83 coordinates 5281100-5284800N and 497180-502330E (NTS 41P10/11) approximately 25 km west of Gowganda (Map 1).

## **3.0 Access**

The property is accessed via Highway 560 west from Gowganda or east from Shining Tree (Map 1). By boat, a Provincial landing at Mosher Lake/Duncan Lake is approximately 18 km west of Gowganda. Travelling by boat approximately 7 km, first NW on Duncan Lake for 4.5 km and then heading NNE for 1.5 km from the narrows, then heading NNW for 1 km to the shoreline within the claim group. The east central section of the property has a natural small boat landing at 500545 E, 5282625 N, used by earlier survey crews. From the property landing on Duncan Lake to the central section of the previous sample grid is approximately 600 m in a WNW direction along a flagged trail. In winter, the property can be accessed with snowmobiles by traveling north from Highway 560 on the Tyrinite Mine Road (22 km west of Gowganda), a total distance of 8 km, crossing Pigeon Lake NW of the narrows at the landing and heading NNE approximately 2.5 km.

## **4.0 Property**

The property consists of 64 contiguous unpatented claim units, located in south central Knight Township, Larder Lake District (Map 2). The claim numbers are: 547980 consecutively to 547991 (12); 548771 consecutively to 548776 (6); 548953 (2); 550978 consecutively to 550986 (6); 580345 consecutively to 580350 (6); 580382 consecutively to 580389 (9); 580392 consecutively to 580394 (3); 580825 consecutively to 580834 (10); 580891 consecutively to 580902 (12); totaling (64) claim units.

The SGH geochemical survey described in this report was performed on the following claim numbers with sample count on each claim unit as follows (from south to north): 547787 (10), 547983 (21), 547988 (4), 548776 (15), 548773 (15), 548772 (7), 548771 (4), 548775 (4).

## **5.0 Physiology and Vegetation**

The central claim area has gentle topography dominated by the elongate topographic panel parallel to the Duncan Lake Fault with Duncan Lake as the lowland and upland sections toward the west with elongate gully lakes sub-parallel to the axis of Duncan Lake. The terrain is typical of Proterozoic cover areas between the greenstone belt windows in the western Cobalt embayment, shaped by arcuate N-S trending faults expressed in the cover quartzites and intrusive sills. Low rolling outcrop covered by sandy glacial outwash and thin till sheets occurs along lake bedrock exposures. The

central section of the property, where the SGH survey has been completed is an area of locally lowered topography with no bedrock exposure and hummocky features. The vegetation consists of jack pine, spruce, pine, tamarack, alder, maple, birch and poplar. Within the SGH survey area, a disturbed pattern of tree growth is noted, with some spatial coincidence with SGH-derived Re-Dox cell distribution (Map 5).

## **6.0 Regional and Property Geology**

The Walker Knight property in southcentral Knight Township is underlain by the Archean-aged Shining Tree volcanic belt of the Abitibi Greenstone Belt and Proterozoic-aged quartzites of the Huronian Cobalt Group (Carter, 1983). The property lies along the western-most Cobalt embayment, between the Pigeon Lake Fault and the Duncan Lake Fault systems. The lithostratigraphic section of the lower/older volcanic and intrusive rocks is exposed at the southwestern-most Walker Knight property. Here, rocks are part of the Kidd Munro group (2,719-2,7112 Ma., Ayer 2013), similar to rocks at the Tyrannite Mine. Over much of the remainder of the property, Proterozoic Gowganda formation (~2450 Ma) is mapped. The older Kidd Munro volcanic group form the basement units of the property, and consist primarily of NW-SE striking intercalated ultramafic to intermediate volcanic rocks locally with thin clastic and chemical sedimentary rocks. At the property, these units are exposed in the hangingwall of the Pigeon Lake fault, in a partially fault-bounded Archean structural window with granodiorite of the Milly Creek Stock (2,687 Ma., Ayer, 2013). The Pigeon Lake fault is a re-activated Archean splay fault of the Tyrrell Structural Zone, that also locally bounds the western Cobalt Embayment against the easternmost Archean Shining Tree belt. The overlying Gowganda Formation quartzites are in angular unconformity with the older volcanic units in the exposures in the westernmost exposures along Pigeon Lake. The overlying quartzites that are mapped across the remainder of the property form resistant exposures of gently east-dipping N-S elongate panels with dip slopes separated by younger N-S Proterozoic arcuate crustal faults. The faults separate the east-dipping panels including the largest in the area, the Duncan Lake Fault, that was later intruded by a large Nipissing-aged diabase sill, the Duncan Lake sill (2,218 Ma).

The north-south striking Duncan Lake fault cuts the Archean East Shining Tree belt in eastern Tyrrell township, east of the Juby deposit, as a rift style normal half-graben with the later roughly concordant Nipissing sill intruded within the Cobalt basin sedimentary sequence. Progressing northward to Mosher Lake, the Duncan Lake fault bends northwestward reactivating the existing Pigeon Lake fault system for approximately 4 km between Mosher Lake and the Duncan Lake narrows area. Here the Duncan Lake fault diverges from the NW trending Archean fabric, and cuts through a thick section of Cobalt sedimentary rocks (and presumably Archean basement). Later during this faulting event, the Duncan Lake sill was intruded. Generally, the Duncan Lake sill was emplaced within the younger quartzites and had little contact with Archean rocks in the sill footwall.

In the central section of the property, covering the area the sampling grid and beyond, geophysically, geochemically and geomorphologically distinct signatures are reflecting postulated Archean volcanic rocks in the near subsurface. No outcrop has been found in the area despite much effort. This postulated window would place the Duncan Lake Sill

footwall in direct contact with an altered geochemically active Archean crust during sill emplacement.

## **7.0 Previous Work**

The greater Shining Tree belt has seen precious and base metals exploration activities as early as the 1910's. Work in southernmost Knight and northern Tyrrell Township, primarily at the Tyrannite Mine property in the 1930's concentrated some previous exploration on a small portion of the westernmost Walker Knight property (Map 3). The property includes a Ontario Mineral Inventory OMI, MDI41P11NE00041, Wahbic, Hurst, Pigeon Lake Property. This gold, copper and molybdenum showing consists of a series of trenches near the shore of Pigeon Lake on a small isthmus. The prospect veins occur along a NNW-striking steep vein contact between granodiorite and ultramafic volcanics. The showing was subject to shallow drilling, geophysical surveys in the 1960's and has been sampled and reported as recently 2012 (Creso, 2012). Creso reports grab samples with up to 2.43g/t Au and up to 0.19% Mo from samples collected within an 82m long trench. This area is not the area of interest nor is it proximal to the south-central section of claim group where the SGH survey was conducted. These exposures do however indicate that the basement rocks, on the property, are mineralized.

In 2010, Creso Resources displayed maps of CARDS (Computer Aided Resource Detection System, Diagnos®, now Windfall Geotek®) that indicated an increased gold prospectivity of an area generally believed to have thick Gowganda sedimentary rock 'cover' (now in the south-central section of the Walker Knight property, Map 3). The method showed the area was 'most similar' to Minto, a small gold bearing breccia pipe 6 km due south in Tyrrell Township, emplaced at 2,642 Ma. The prospective area was staked by David Burda, who later conducted VLF survey, VLF modeling and SGH sampling and analysis over a 6-line (100x 1000m) grid (Gaudreau, 2015).

## **8.0 Exploration Rationale**

The exploration program was designed to prospect for the geochemical signature of buried or hidden gold or copper mineralized rocks using Spatiotemporal Geochemical Hydrocarbon (SGH). The primary exploration targets are both Archean shear zone hosted gold mineralization and/or intrusive-related copper. The targets are postulated to occur in an unexposed and as yet unmapped Archean "window" along the Duncan Lake Fault, in the footwall to the Duncan Lake sill. Additional mineralization models are recognized to occur in this geologic environment. The postulated window is buried under thin Quaternary sandy outwash deposits. The SGH method is capable of detecting and mapping geochemical oxidation-reduction cells potentially associated with geochemically anomalous rocks. The method also detects the decay component of organic processes related to the weathering of potentially altered and mineralized rock. The SGH method analyses soil adsorbed hydrocarbons and characterizes the hydrocarbons into geochemical 'type' or classes developed empirically over known mineral deposits and ore bodies. The classes or suites of hydrocarbons from known deposits create 'pathfinder templates' that allow for comparison of 'blind' exploration samples, such as those from the Walker Knight property, against empirically-developed templates from well-studied mineral (ore) deposits. The method analyzes hydrocarbon

characteristics from samples collected from the property compared against Gold class hydrocarbon templates to assign a relative scalar unit (1 through 6) that represents a significance or geochemical similitude for each individual sample against the empirically-developed known gold deposit template.

The new SGH survey area was conducted peripheral to the previously recognized SGH features from the 2014 SGH work, as well as the VLF conductors mapped in 2014. There is spatial coincidence in the 2014 work between both SGH ‘Gold’ and ‘Copper’ anomalies with well mapped and modeled VLF conductors (the anomaly). The property was first visited primarily to confirm that no outcrop existed within the footprint of previously mapped SGH anomalies. The visit also confirmed access routes and methods and an opportunity to review and inspect soil types, terrain and search for outcrop. The visit confirmed the lack of any outcrop in the anomaly area (see Carter, 1975, P.1037). Additionally, the 2014 SGH survey was insufficient to define the extent of the anomaly with large ‘open’ SGH anomalies mostly to the west and northeast.

### **9.0 Exploration Program**

In early September 2020, the author and an assistant mobilized to Gowganda to conduct a 2-day property reconnaissance of the SGH anomaly on the Walker Knight property. The property visit was required to confirm that no bedrock outcrop existed within the anomaly area and also to confirm best and safest access, brush out trails, inspect soils and confirm unusual topographic and vegetation features available on updated Google Earth images (see Map 7). The visit confirmed the lack of outcrop and the open nature of the extensive SGH ‘Gold’ anomaly, especially to the west of the previous survey. Additionally, observations of vegetation cover and topography confirmed a disrupted nature to the anomaly area.

#### **SGH Sampling Program**

A Spatiotemporal Geochemical Hydrocarbon (SGH) survey was then planned to extend the existing pattern of 100 m lines x 50 m sample interval for 3 lines to the west, each 1000 m long, as well as extend the northeastern sample lines to the northeast by ~300 m on the four most eastern lines (Map 4). This sampling protocol was confirmed as a suitable sample density based on research of the method and opinions of target size and depth. The SGH method can use a variety of sample media for analysis. A sampling protocol was established for the sampling of the SGH samples at the Walker Knight property, similar to the prior work in 2014. Soil B –horizon material was targeted as the sample media. This sample media is ubiquitously available below organics within the survey area, developed on fine sandy outwash deposits based on numerous shallow test pits (all 80 samples were B-horizon media). Additionally due to its depth of burial, the media is most likely isolated from anthropomorphic disturbances. The consistency of the B-horizon media, will also enhance the repeatability and precision of the method. In November 2020, a local sampling contractor was hired to sample the 80 sample locations (see Map 4). Detailed instructions and the sample waypoints were provided. The property was accessed by boat from the Duncan Lake landing each day. The 80 samples were collected and documented during 5 sampling days just prior to freeze up. At each sample location, on approximately even 50 m grid spacing, located using GPS waypoint method, the soil profile was excavated through the organic cover (A-horizon)



and into the B-horizon profile. These excavations were approximately 45 cm diameter and ranged from 10 to 50 cm deep. Using clean methods and a clean stainless steel trowel, the oxidized B-horizon material was extracted from the profile of the pit and approximately 200 grams of sample placed in labelled 4 mil thick polyethylene samples bags, rolled and closed carefully. Contamination from organics or tools was minimized. Sample bags were pre-labelled with black marker with an assigned sample number based on pre-assigned waypoint UTM locations. At each location, field data were collected to support the sampling. These field data are summarized here:

- Sample Number (with prefix WKG-20-SGH-#)
- Sample location from GPS in UTM 83 – Zone 17, Easting and Northing
- Depth of sample
- Soil Color
- Notes on the sample geographic location - specifics such as nearby features and general location topographically

During the sampling, after exposing the B-horizon, a photo was taken of the sample pit and soil profile, sample bag and a second photo taken showing the GPS with UTM location showing (Appendix II). These photos are valuable for checking sample locations, sample numbers and documenting the soils. The field data were entered into a spreadsheet and photos compiled prior to shipping to the lab. Samples were sorted by each sampling day, checking for completeness. Finally the samples were processed with submittal forms and boxed for shipping to Activations Laboratories from Elk Lake on November 19<sup>th</sup>, 2020. Samples were received November 23<sup>rd</sup>, 2020, the SGH analysis was completed December 6<sup>th</sup>, 2020; the SGH levelling and interpretation report was completed by Activation Laboratories Ltd. on February 19<sup>th</sup>, 2021.

## **10.0 Discussion of Results**

The report authored by Jeff Brown and coauthored by Dale Sutherland, B.Sc. of Activation Laboratories is attached as Appendix 1. This interpretive report is included with the analysis of samples using the SGH method. The SGH author is ‘blind’ to the samples, in that the interpretation is made without any prior knowledge of the property or its characteristics. Thusly, the blind interpretation should be reconciled against the existing geologic, geophysical and geochemical knowledge to integrate the SGH results with known geologic features, and that any newly identified anomalies be reconciled against known areas and responses. Brown and Sutherland recommends (from page 29):

The client should use a combination of the SGH results shown in this report with additional geochemical, geophysical, and geological information to possibly obtain a more confident and precise target location.

Two maps were produced representing the SGH Interpretation:

- 1) Interpretive color contour map of SGH Pathfinder ‘Gold’ map including the new oxidation/reduction or Redox cell or “Basement” interpretation (Map 5) ;
- 2) Interpretive colour contour of SGH ‘Copper’ map including the new oxidation/reduction or Re-dox cell interpretation from the SGH ‘Gold’ map (Map 6);

Each of the result maps included on pages 23 and 26 in attached report, will be discussed individually.

### **Map of Redox “Basement” Map**

Map 5 is the interpretive map of SGH “Gold” response showing the newly interpreted oxidation-reduction cell (redox cell or ‘basement’) mapped with SGH method. The interpretation indicates that an ovoid-shaped redox cell is evident on the property with its main axis striking due N-S, with two secondary axis’s (3D), one trending NE and the other NW. The redox cell is approximately 460 m x 450 m x 340 m in dimension respectively with its centre at 499880mE 5282830mN. The redox cell geometry and symmetry indicates a reduction oxidation cell has formed and produced a symmetrical segmented halo anomaly from a likely gold mineralized source at depth. The anomaly is described by Brown and Sutherland on page 22:

This map illustrates what appears to be a symmetrical segmented halo anomaly. The black lines on page 23 that connect opposing anomalies illustrates the excellent symmetry of the anomalies associated with this Redox zone [Yellow Oval]. Such symmetry provides a high level of confidence that these anomalies are not random occurrences. The intersection of the black lines as the center of the Redox conditions is expected to be the most reliable vertical projection of gold mineralization. This segmented halo anomaly would also suggest a deeper mineralization source than previously reported, unfortunately an estimation of depth could not be obtained. Other SGH Pathfinder Class Maps associated with the presence of Gold mineralization (not shown in this report) support this interpretation of this anomaly at the Walker Knight SGH Survey. Again, the prediction of this anomaly for Gold mineralization is based only on SGH.

### **Map of ‘Gold’ Pathfinder Class**

Map 5 also includes the interpretive colour contour map of pathfinder SGH ‘Gold’ mapped with SGH method. The SGH rating overall for the SGH ‘Gold’ pathfinder is 4.5 out of 6.0. The SGH ‘Gold’ anomaly, now including the 80 new samples, is better defined however it still remains ‘open’. Multiple SGH ‘Gold’ features are now recognized (anomalies).

High SGH ‘Gold’ surrounds the mapped redox cell as apical peaks, but also includes several SGH features that extend away from the redox cell, likely suggesting shallower anomalous extensions of the main redox mass, notably toward the NE, the SE and SW. The SGH ‘Gold’ peaks in the northeast quadrant of the re-dox cell are coincident with a strong near surface VLF conductors mapped and modeled from the 2014 survey. Additionally this same area has SGH ‘Copper’ anomalies spatially coincident. The coincidence of high SGH ‘Gold’ and high SGH ‘Copper’ with the VLF conductor make this area more prospective. Further, to the southeast of the redox cell, a series high values of SGH ‘Gold’ forms an elongate trend to the south over several hundred metres. This trend includes numerous samples and appears to merge with another high area in the far southeastern-most samples in the survey, again, suggesting open anomalies in SGH. On the southwest side of the redox cell, a series of three samples with high SGH ‘Gold’ extends southward, again, at the limit of the survey, leaving this anomaly open.

### **Map of ‘Copper’ Pathfinder Class**

Map 6 is the interpretive map of SHG pathfinder ‘Copper’ mapped with SGH method. The SGH rating overall for the SGH ‘Copper’ pathfinder is 4.0 out of 6.0. The map shows a much different pattern and trend than the SGH ‘Gold’ map. The largest feature is a series of High SGH ‘Copper’ values that extend to the northeast from the redox cell for 700 m defined by multiple line ‘highs’ (width >100 m), trending north-northeast (~030 degrees). The SGH ‘Copper’ values increase to the northeast, becoming greater away from the redox cell defined by SGH ‘Gold’ map. The SGH ‘Copper’ anomaly map is described by Brown and Sutherland on page 25:

[Map 4] shows the anomalies from the most reliable SGH Pathfinder Class in predicting the presence of Copper Mineralization. This map continues to illustrate a northeasterly trending apical anomalous zone. This is shown with the dotted black outline. We believe that mineralization might exist at these locations as a vertical projection beneath these anomalies. Other SGH Pathfinder Class Maps associated with the presence of Copper mineralization (not shown in this report) lend support to this interpretation of these anomalies at the Walker Knight SGH survey. The SGH Gold interpretation is also shown on page 26 for reference.

Again, the prediction of these anomalies for Copper mineralization is based only on SGH.

### **11.0 Observations**

The Spatiotemporal Geochemical Hydrocarbon (SGH) method was deployed successfully by the previous SGH survey on the property in initially identifying a portion of a much larger Oxidation-Reduction cell or redox system. With the expansion of the survey (this report), the redox cell is now near fully mapped by SGH. With this knowledge, the SGH anomalies can be targeted for additional geochemical and geophysical prospecting prior to diamond drilling.

### **12.0 Recommendations**

Follow up geochemical sampling is highly recommended. To improve metal speciation of the SGH ‘Gold’ and ‘Copper’ anomalies, a more direct geochemistry method is recommended. Methods described generally as partial leach geochemistry such as Activation Labs Mobile Ion Geochemistry (MIG) are most applicable.

Sampling and analysis would initially include 75 MIG samples at 100 x 50m at existing SGH locations with an addition 25 MIG samples in-fill at 50 x 50m across the northeast section to both test the method and define a potential drill target. Further recommended follow-up MIG sampling should be conducted over the entire SGH grid (100 x 50m, 250 MIG samples).

Magnetic data collection is also recommended. Either ground based magnetic survey (snowshoe) or drone ‘tree top’ magnetic data collection is needed and recommended. With the new information from MIG and the magnetics combined with SGH, and VLF

results, a diamond drilling program is further recommended. Ten 150 metre NQ-sized core holes are recommended to test the multiple shallow targets.

Finally, SGH sampling and analysis should be expanded and conducted in the following expansions:

- 1) north-eastward on 5 lines for 500m each (~65 samples);
- 2) south-westward on 3 lines for 700m each (~50 samples);
- 3) south-eastward on 5 lines for 500m each (~65 samples);
- 4) surrounding this sampling with a lower density sampling coverage at 100x100 m; conduct this over an area equal to the expanded survey (~250 samples).

### 13.0 References

Ayer, 2013. Miscellaneous Release—Data 294 Results from the Shining Tree, Chester Township and Matachewan Gold Projects and the Northern Cobalt Embayment Polymetallic Vein Project.

Creso Resources, 2012. Report on prospecting and surface sampling, Pigeon Lake and Brush Lake Area, Knight Township, Ontario. Ontario MNDM Assessment File

Carter, 1983. Geology of Natal and Knight Townships, Districts of Sudbury and Timiskaming. OFR 5337, M2465.

Carter, 1975. P1037 Preliminary Map Series, Geological series, Knight Township, District of Sudbury Scale 1 : 15840.

Johns, 2002. Preliminary Map Series, Precambrian Geology, Shining Tree Area, P3389, 1:50,000.

OGS Folio 495, 1990. Knight Township, Geological Data Inventory Folio 495 ; compiled by the staff of the Resident Geologist' s office , Cobalt, 1990 .

Ontario Mineral Inventory Record MDI41P11NE00041: Wahbic, Hurst, Pigeon Lake Property.

Gaudreau, 2015. Burda Knight NE Property, Knight Twp. AFRI 20000014014

## Statement of Qualifications

I, Jamieson S. Walker, of 4 Private Road, Blue Diamond, Nevada, USA hereby certify that:

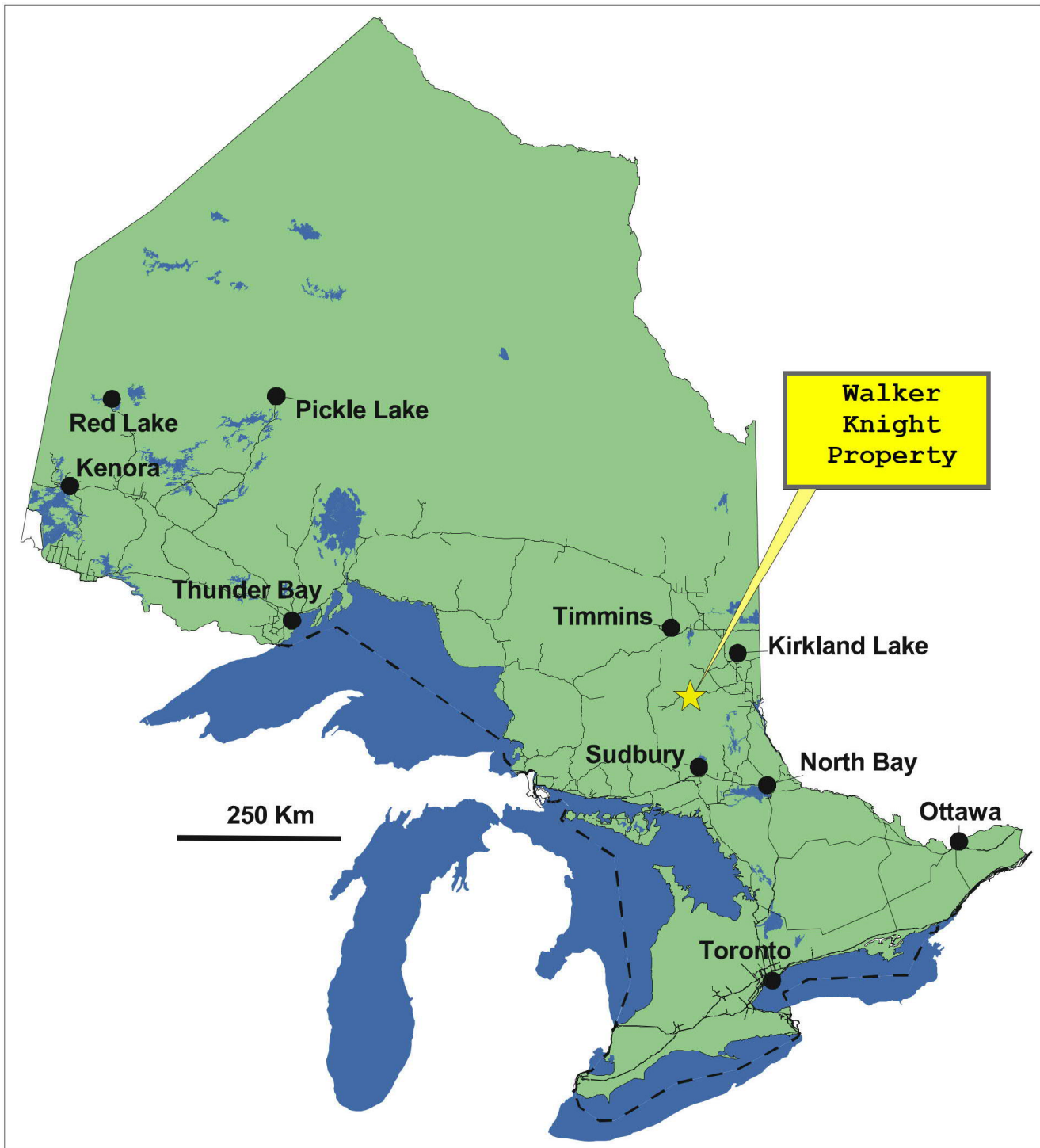
1. I am a graduate of:  
  
University of Minnesota in Duluth, Minnesota with a Master of Science degree, Geology in 1993.  
  
Lake Superior State College in Sault Ste. Marie, Michigan with a Bachelor of Science degree, Geology in 1985.  
  
Sault College of Applied Arts and Science in Sault Ste. Marie, Ontario with a Geological Engineering Technician Diploma, 1981.
2. I have been practicing my profession since graduation.
3. The information contained in this report is the result of work I conducted or work that I personally supervised.
4. I have a 100% interest in the property.

Dated at Blue Diamond, Nevada, this 17<sup>th</sup> day of February, 2022.

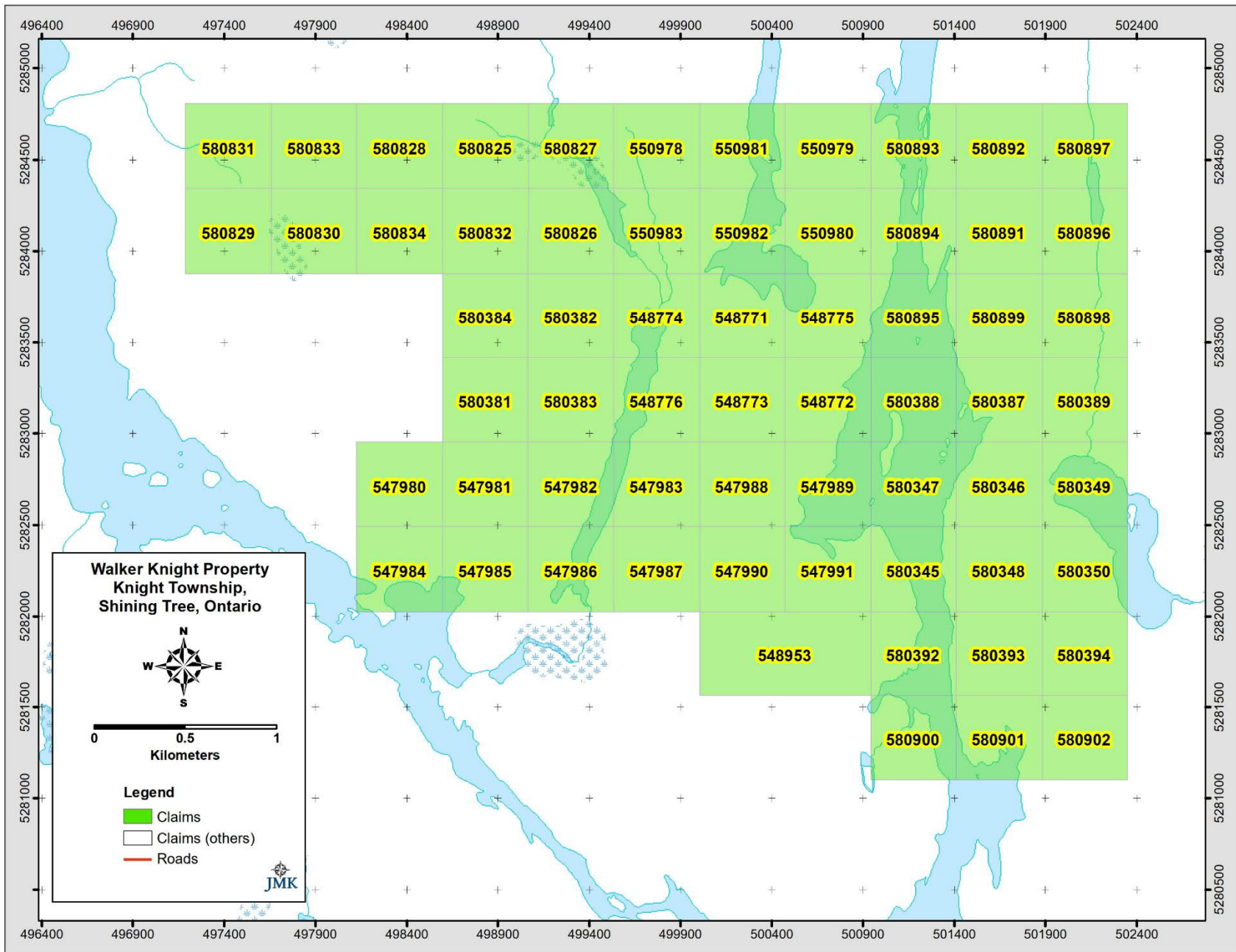
Respectfully submitted,



Jamieson S. Walker, M.Sc.  
President, Jamieson Geological Inc.  
A Nevada Corporation

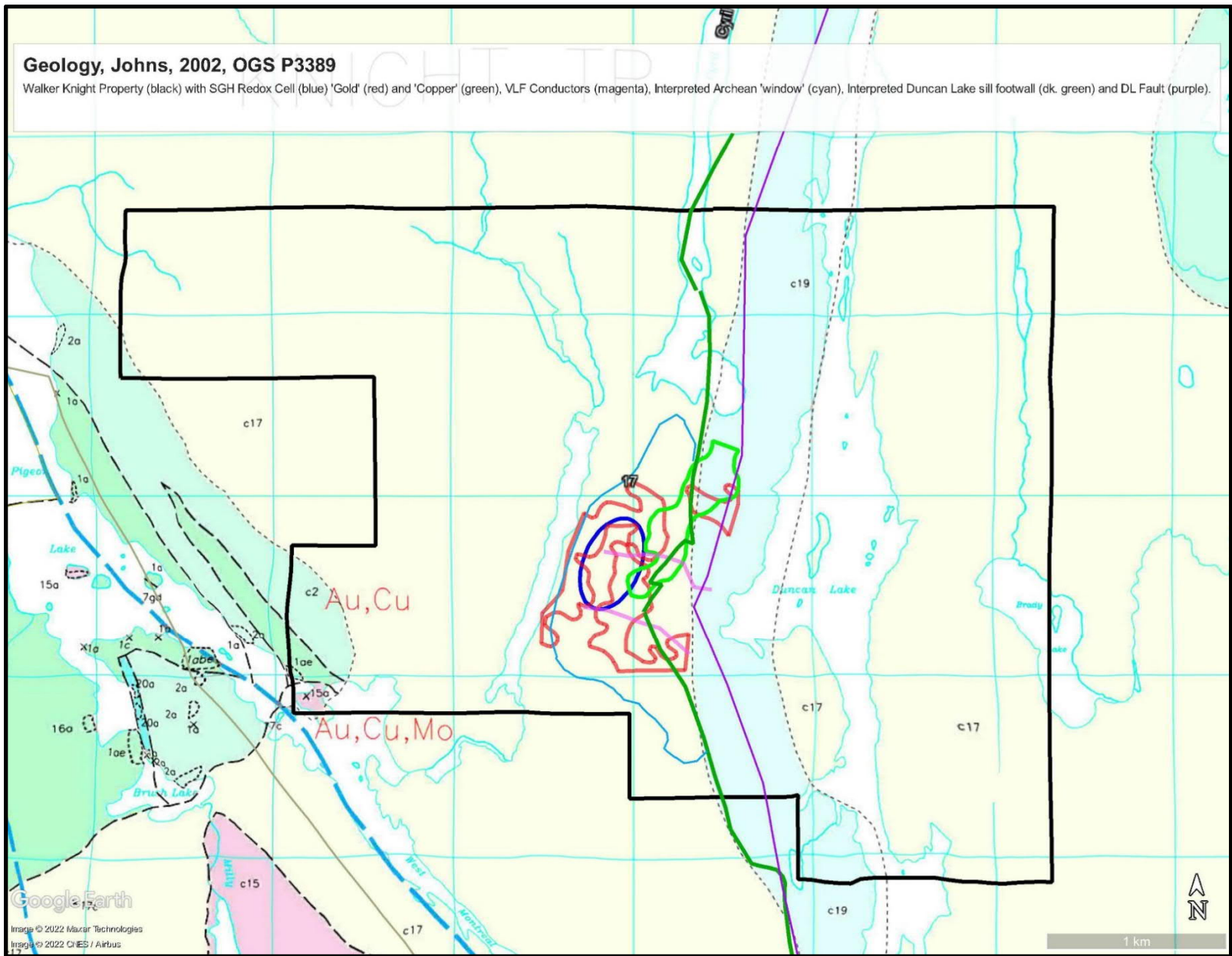


Map 1. Location of the Walker Knight property, Knight Township, Northeastern Ontario.

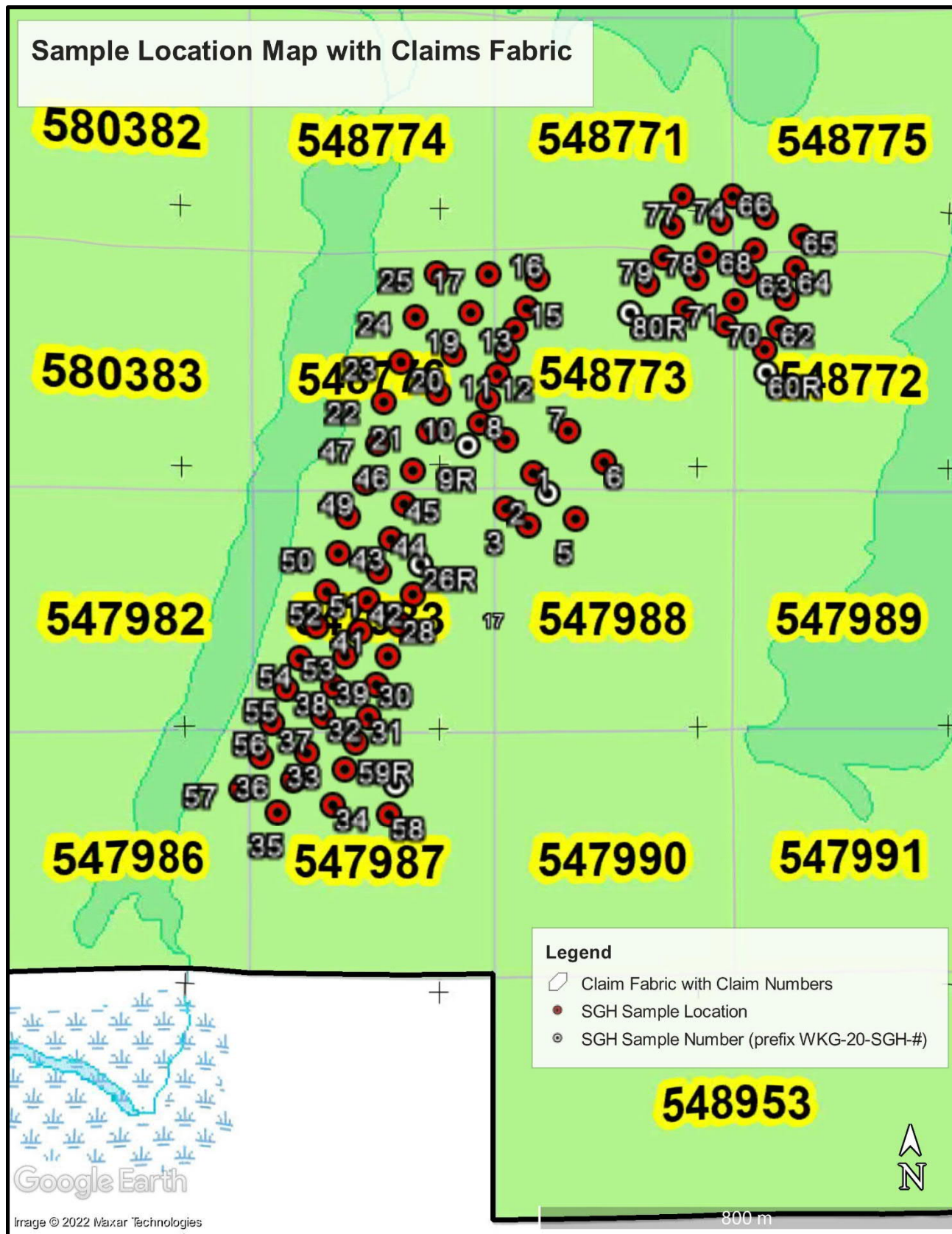


Map 2. Claim map of the Walker Knight property, Knight Township. Scale approx. 1:25,000.

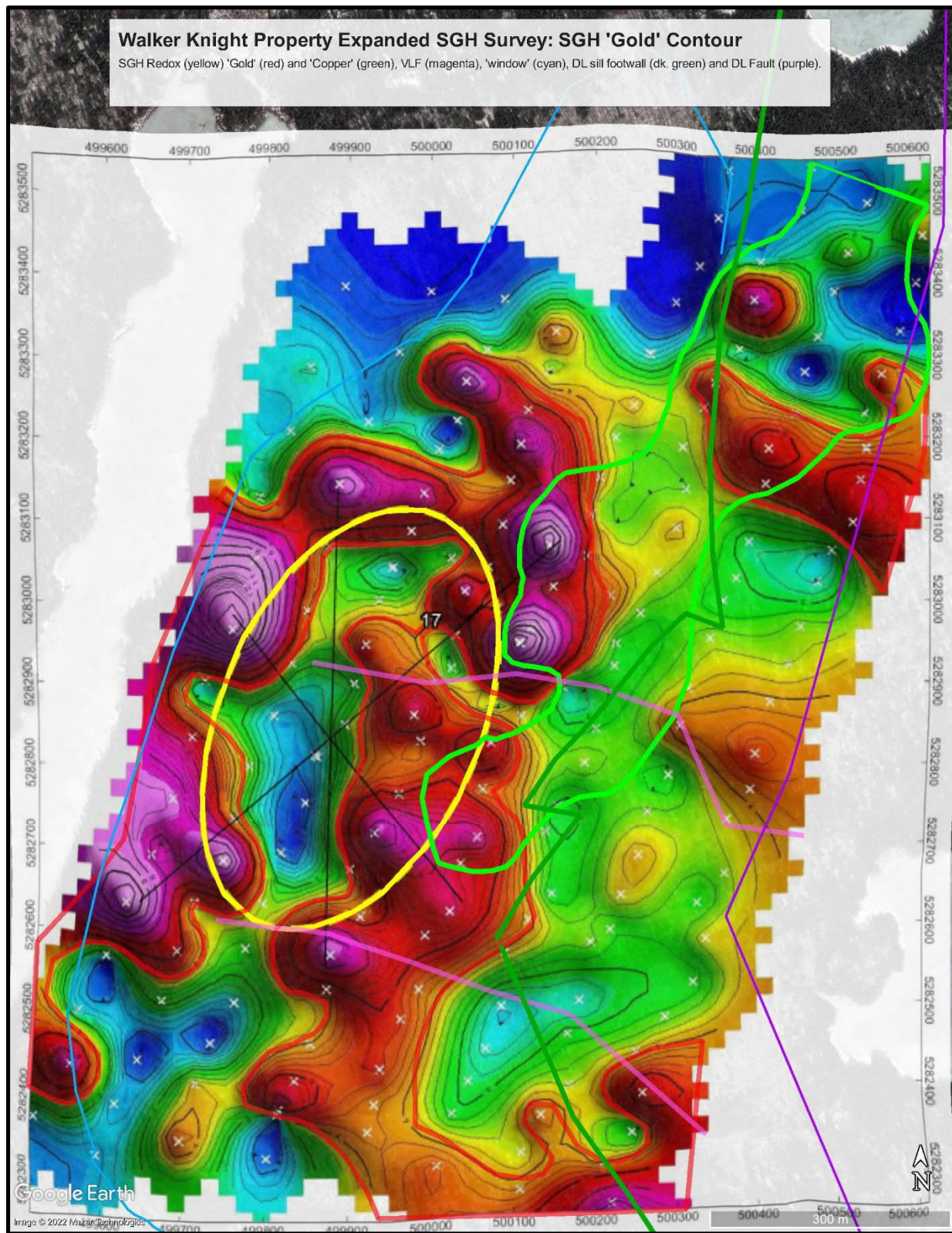




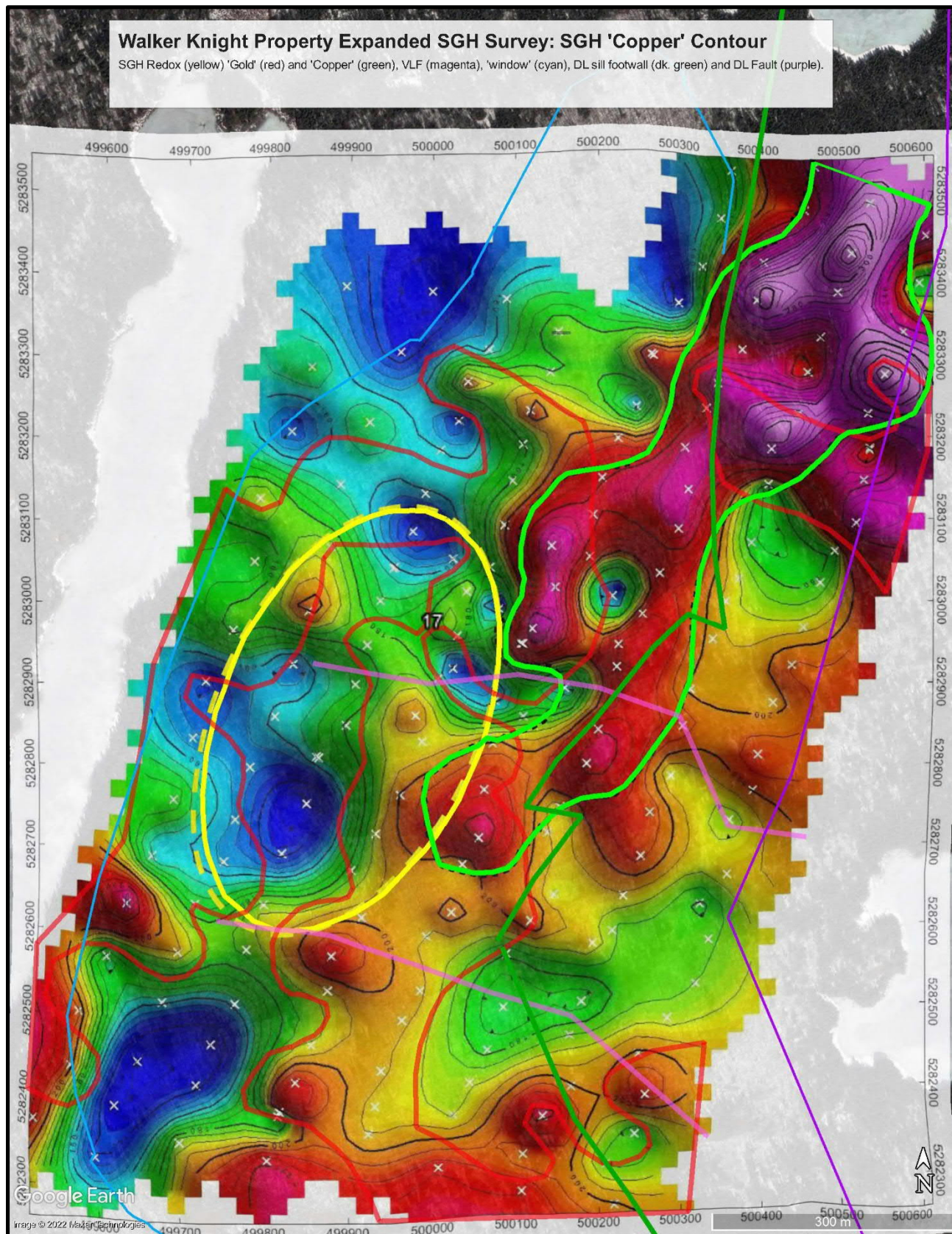
Map 3. Geology of the Walker Knight property after Johns-OGS P3389, 2002. Scale approx. 1:25,000. Map includes the perimeter of the 64-unit claim block, shown on Map 2.

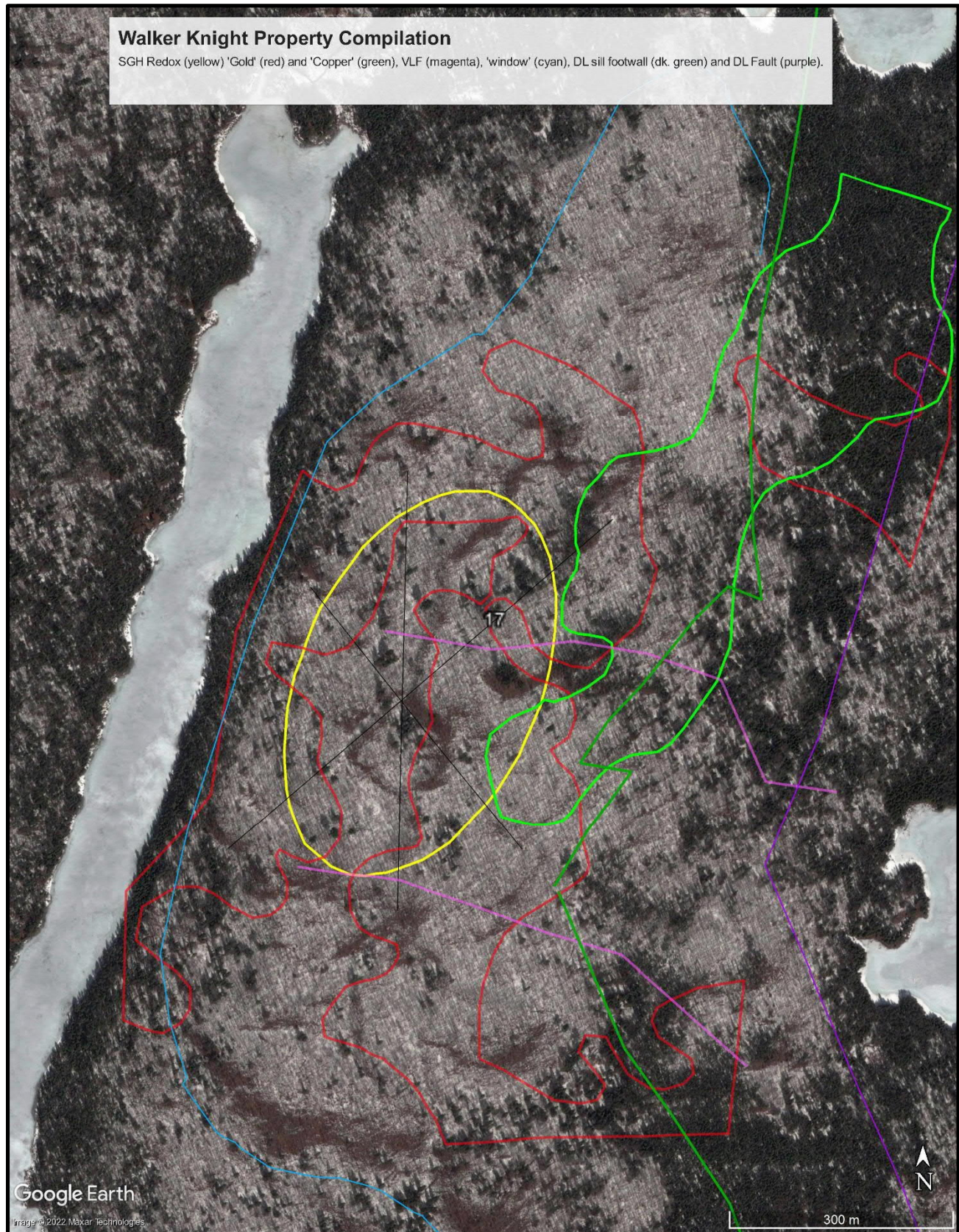


Map 4: SGH sample location map showing the Claim fabric. Claim Number and (Sample Count): 547787 (10), 547983 (21), 547988 (4), 548776 (15), 548773 (15), 548772 (7), 548771 (4), 548775 (4) of (80) Total SGH samples collected. Scale approximately 1:8,000.



Map 5: Interpretive SGH colour contour of the SGH 'Gold' oxidation/reduction map overlain on a Google Earth satellite image including compilation data. Distribution of samples with high SGH 'Gold' form an ellipse outlining a reduction-oxidation (redox) cell (yellow) that is approximately 460m x 340m in dimension. Additional SGH 'Gold' high trends extend to NE, SE and SW from the redox cell. Scale approximately 1:8,000.



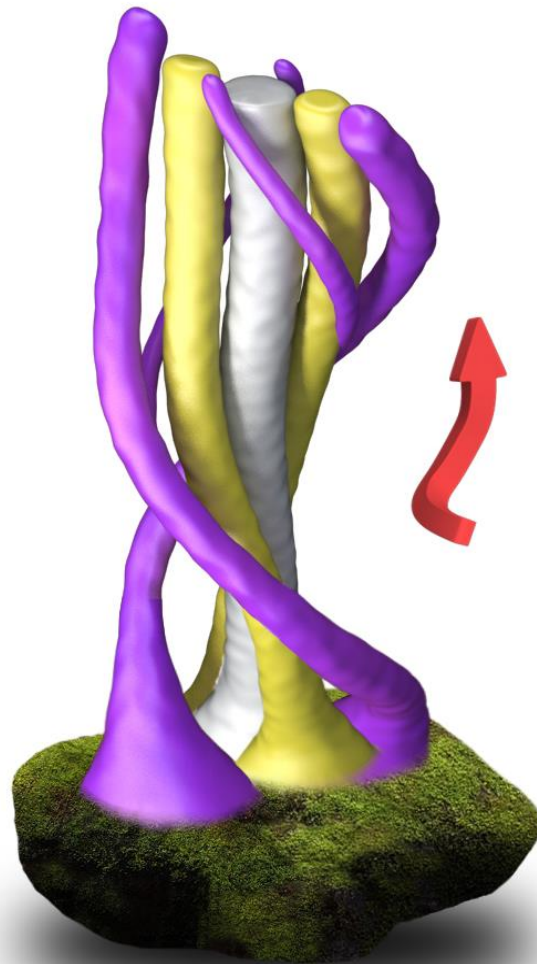


Map 7: Compilation of SGH features and VLF conductors overlain on a Google Earth winter image scene with compiled data and interpretations. Image shows the disturbed nature in the tree patterns with some symmetry to the independently derived SGH Reduction Oxidation cell. Scale approximately 1:8,000.

## 3D - SGH

# "A SPATIOTEMPORAL GEOCHEMICAL HYDROCARBON INTERPRETATION"

## ***JAMIESON GEOLOGICAL INC. WALKER KNIGHT SGH PROJECT***





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**SGH – SOIL GAS HYDROCARBON  
Predictive Geochemistry**

*for*

**JAMIESON GEOLOGICAL INC.**

**WALKER KNIGHT SGH SOIL SURVEY**

*\* Jeff Brown,*

*Activation Laboratories Ltd*

*(\* - author)*

**\*\*Dale Sutherland (\*\* - originator)**

***EVALUATION OF SAMPLE DATA – EXPLORATION FOR:  
"COPPER" and "GOLD" TARGETS***

***THE SGH COPPER AND GOLD INTERPRETATION TEMPLATES ARE  
USED FOR THIS REPORT***

***Workorders: A20-15019***





## Executive Summary

It is important to read the Report Preface on the next page as an introduction to the report. For more detail the Overview section on page 8 could also be read.

The customized section for the Walker Knight Survey starts on page 15. In the author's opinion, SGH appeared to perform well in terms of response. The SGH data from the new submission of samples submitted with A20-15019 had a slightly lesser response than the previous data submitted with A14-07256 for Copper although a slightly higher response was detected for that of gold. This difference in response required the use of data leveling, keep in mind that resulting data is considered "an approximation" and is thus reflected in the lower SGH confidence rating.

Note that some exploration companies submit this report intact to government assessors as proof of work on their claim. Be aware that the SGH data is not attached to this report, it is supplied separately as an Excel spreadsheet. Government assessors will also have to be supplied with this data.

## PREFACE

### THIS "STANDARD" SGH INTERPRETATION REPORT:

The purpose of this Soil Gas Hydrocarbon (SGH) interpretation "Standard Report" is to ensure that clients and other potential reviewers of the results have a good understanding of this organic, deep penetrating geochemistry. As SGH provides such a large data set and is not interpreted in the same way as an inorganic geochemical method, the provision of this interpretation and report enables the user to realize the results in a timely fashion and capitalizes on years of research and development since the inception of SGH in 1996 combined with the knowledge obtained by Activation Laboratories through the interpretation of SGH data from over 1,100 surveys for a wide variety of target types in various lithologies from many geographical locations. Although referenced today as a "nano-technology", the analysis of SGH has not changed since inception. The report is compulsory as it is the only known organic geochemistry that, in spite of the name, uses "non-gaseous" semi-volatile organic compounds interpreted using a forensic signature approach. Many different sample types can be used in the same survey. Interpretation is based solely on SGH data and does not include the consideration from any other geochemistry (inorganic), geology, or geophysics that may exist related to the survey area(s). This report can also provide evidence of project maintenance. To keep the price to a minimum and to provide as short a turnaround time as practically possible, usually only one SGH Pathfinder Class map is illustrated in a "Standard Report" with an applied interpretation although several other SGH Pathfinder Class maps are used and referenced. Definitions of certain terms or phrases used in this report can be found in Appendix A.

The interpretation in this report has used the results from some of the research with SGH in recent years which has focused on the potential that the SGH data is able to further dissect and understand the relationships between the chemical Redox conditions in the overburden the development of an electrochemical cell and its affect in shaping the upward migration of geochemical anomalies. This has resulted in the development by Activation Laboratories of a new enhanced model of the Electrochemical/ Redox Cell theory originated by Govett (1976) that was further developed to the model by Hamilton (2004, 2007). The new enhanced model developed by Sutherland (2011) takes the general anomalies expected by the Hamilton model to a higher level of detail and specificity. This has resulted in a more confident level of interpretation which has been referenced as 3D-SGH or **3D-"Spatiotemporal Geochemical Hydrocarbons (SGH)"**. This model was formally introduced at the International Applied Geochemistry Symposium (IAGS) organized by The Association of Applied Geochemists that took place in Rovaniemi, Finland, in August 2011. This new level of understanding of the expected anomaly types that can be observed with SGH provides a new level of quality control in the interpretation process as the symmetry of SGH anomalies can assure the interpreter which anomalies are as a result of a buried target. With the enhanced 3D-SGH interpretation that was introduced in 2012, we also mark the beginning of the ability to make some statements regarding the possible depth to mineralization for some projects as we dissect the Redox cell relative to the new Electrochemical Cell theory. The cover of this report is an artist's rendering of the pathways of different classes of Spatiotemporal Geochemical Hydrocarbons which migrate through the overburden. This model is used as the new 3D-SGH interpretation approach.

## DISCLAIMER

This "SGH Interpretation Report" has been prepared to assist the user in understanding the development and capabilities of this Organic based Geochemistry. The interpretation of the Soil Gas Hydrocarbon (SGH) data is in reference to a template or group of SGH classes of compounds specific to a type of mineralization or target that is chosen by the client (i.e. the template for petroleum, gold, copper, VMS, uranium, etc.). The various templates of SGH Pathfinder Classes that together define the forensic identification signature for a wide range of commodity target types; Gold, Nickel, VMS, SEDEX, Uranium, Cu-Ni-PGE, IOCG, Base Metal, Tungsten, Lithium, Polymetallic, and Copper, as well as for Kimberlites, Coal Seam, Wet Gas and Oil Play, have been developed through years of research and have been further refined from review of case studies and orientation studies has proven to be able to also address a wide range of lithologies. Even with 20+ years of development and experience with SGH, Activation Laboratories Ltd. cannot guarantee that the templates used are applicable to every type of target in every type of environment. The interpretation in this report attempts to identify an anomaly that has the best SGH signature in the survey for the type of mineralization or target chosen by the client. However, this interpretation is not exhaustive and there may be additional SGH anomalies that may warrant interest. It should not be viewed due to the generation of this SGH report, that Activation Laboratories Ltd. has the expertise or is in the business of interpreting any other type of geochemical data as a general service. As the author was trained by the originator of the SGH geochemistry, who has researched and developed this exploration tool since 1996, and has produced similar interpretations using SGH data for over 1,000 surveys, he is the best qualified person to prepare this interpretation as assistance to clients wishing to use this SGH geochemistry. Activation Laboratories Ltd. can offer assistance in general suggestions for sampling protocols and in sample grid design; however we accept no responsibility to the appropriateness of the samples taken. Activation Laboratories Ltd. has made every attempt to ensure the accuracy and reliability of the information provided in this report. Activation Laboratories Ltd. or its employees do not accept any responsibility or liability for the accuracy, content, completeness, legality, or reliability of the information or description of processes contained in this report. The information is provided "as is" without a guarantee of any kind in the interpretation or use of the results of the SGH geochemistry. The client or user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from using any information or material contained in this report or using data from the associated spreadsheet of results.

## **Cautionary Note Regarding Assumptions and Forward Looking Statements**

The statements and target rating made in the Soil Gas Hydrocarbon (SGH) interpretive report or in other communications may contain or imply certain forward-looking information related to the quality of a target or SGH anomaly.

Statements related to the rating of a target are based on comparison of the SGH signatures derived by Activation Laboratories Ltd. through previous research on known case studies. The rating is not derived from any statistics or other formula. The rating is a subjective value on a scale of 0 to 6 relative to the similarity of the SGH signature reviewed compared to the results of previous scientific research and case studies based on the analysis of surficial samples over known ore bodies. No information on the results from other geochemical methods, geophysics, or geology is usually available as additional information for the interpretation and assignment of a rating value unless otherwise stated. References to the rating should be viewed as forward-looking statements to the extent that it involves a subjective comparison to known SGH case studies. As with other geochemical methods, an implied rating and the associated anticipated target characteristics may be different than that actually encountered if the target is drilled tested or the property developed. Activation Laboratories Ltd. may also make a scientifically based prediction in this interpretive report to an area that might be used as a drill target. Usually, the nearest sample is identified as an approximation to a "possible drill target" location. This is based only on SGH results and is to be regarded as a guide based on the current state of this science.

Unless otherwise stated, Activation Laboratories Ltd. has not physically observed the exploration site and has no prior knowledge of any site description or details or previous test results. Actlabs makes general recommendations for sampling and shipping of samples. Unless stated, the laboratory does not witness sampling, does not take into consideration the specific sampling procedures used or factors such as; the season of sampling, sample handling, packaging, or shipping methods. The majority of the time, Activation Laboratories Ltd. has had no input into sampling survey design. Where specified Activation Laboratories Ltd. may not have conducted sample preparation procedures as it may have been conducted at the client's assigned laboratory external to Actlabs. Although Actlabs has attempted to identify important factors that could cause actual actions, events or results to differ scientifically which may impact the associated interpretation and target rating from those described in forward-looking statements, there may be other factors that cause actions, events or results that are not anticipated, estimated or intended. In general, any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives, assumptions, future events or performance are not statements of historical fact. These "scientifically based educated theories" should be viewed as "forward-looking statements".

Readers of this interpretive report are cautioned not to place undue reliance on forward-looking information. Forward looking statements are made based on scientific beliefs, estimates and opinions on the date the statements are made and for the interpretive report issued. The Company undertakes no obligation to update forward-looking statements or otherwise revise previous reports if these beliefs, estimates and opinions, future scientific developments, other new information, or other circumstances should change that may affect the analytical results, rating, or interpretation. Actlabs nor its employees shall be liable for any claims or damages as a result of this report, any interpretation, omissions in preparation, or in the test conducted. This report is to be reproduced in full, unless approved in writing.

## **SOIL GAS HYDROCARBON (SGH) GEOCHEMISTRY – OVERVIEW**

In the search for gas, oil, minerals and elements, geologists require tools to assess the location and potential quantity of minerals and ores. In the past people looked at the landscape to find the deposit. Similar landscapes indicate similar mineral and metal deposits. This is searching on a macro level, while geochemistry is searching on a micro level. Surficial materials requires many minerals and elements, so surficial materials can contain indications of the presence of minerals and elements.

SGH is a deep penetrating geochemistry that involves the analysis of surficial samples from over potential mineral or petroleum targets. The analysis involves the testing for 162 hydrocarbon compounds in the C5-C17 carbon series range applicable to a wide variety of sample types. These hydrocarbons have been shown to be residues from the decomposition of bacteria and microbes that feed on the target commodity as they require inorganic elements to catalyze the reactions necessary to develop hydrocarbons and grow cells in their life cycle. Specific classes of hydrocarbons (SGH) have been successful for delineating mineral targets found at over 950 metres in depth. Samples of various media have been successfully analyzed i.e., soil (any horizon), sand, till, drill core, rock, peat, humus, lake-bottom sediments and even snow. After preparation in the laboratory, the SGH analysis incorporates a very weak leach, essentially aqueous, that only extracts the surficial bound hydrocarbon compounds and those compounds in interstitial spaces around the sample particles. These are the hydrocarbons that have been mobilized from the target depth. SGH is unique and should not be confused with other hydrocarbon tests or traditional analyses that measure C1 (Methane) to C5 (Pentane) or other gases. Thus, in spite of the name, SGH does not analyze for any hydrocarbons that are actually gaseous at room temperature and SGH can also be used to analyze for hydrocarbons in sample types other than soil. SGH is also different from other soil hydrocarbon tests that thermally extracts or desorbs all of the hydrocarbons from the whole soil sample. This test is less specific as it does not separate the hydrocarbons and thus does not identify or measure the responses as precisely. These tests also do not use a forensic approach for identification. In SGH, the hydrocarbons in the sample extract are separated by high resolution capillary column gas chromatography and then detected by mass spectrometry to isolate, confirm, and measure the presence of only the individual hydrocarbons that have been found to be of interest from initial research and development and from performance testing especially from two Canadian Mining Industry Research Organization (CAMIRO) projects (97E04 and 01E02).

Over the past 20+ years of research, Activation Laboratories Ltd. has developed an in-depth understanding of the unique SGH signatures associated with different commodity targets. Using a forensic approach we have developed target signatures or templates for identification, and the understanding of the expected geochromatography that is exhibited by each class of SGH compounds. In 2004 we began to include an SGH interpretation report delivered with the data to enable our clients to realize the complete value and understanding of the SGH results in a short time frame and provide the benefits to them from past research sponsored by Actlabs, CAMIRO, OMET and other industrial sponsors. In 2011, a new model of Electrochemical/Redox Cell theory was proposed and the new 3D-SGH interpretation approach based on this theory was incorporated in 2012 on a routine basis for SGH interpretation reports.

SGH has attracted the attention of a large number of Exploration companies. In the above mentioned initial research projects the sponsors have included (in no order): Western Mining Corporation, BHP-Billiton, Inco, Noranda, Outokumpu, Xstrata, Cameco, Cominco, Rio Algom, Alberta

Geological Survey, Ontario Geological Survey, Manitoba Geological Survey and OMET. Further, beyond this research, Activation Laboratories Ltd. has interpreted the SGH data for over 1,000 targets from clients since January of 2004. In both CAMIRO research projects over known mineralization, client orientation studies, and in exploration projects over unknown targets, SGH has performed exceptionally well. As an example, in the first CAMIRO research project that commenced in 1997 (Project 97E04), there were 10 study areas that were submitted blindly to Actlabs. These study sites were specifically selected since other inorganic geochemical methods were unsuccessful at illustrating anomalies related to the target. Although Actlabs was only provided with the samples and their coordinates, SGH was able to locate the blind mineralization with exceptional accuracy in 9 of the 10 surveys. In 2007, shortly after providing SGH interpretation reports, SGH was credited in helping locate previously unknown mineralization, e.g. Golden Band Resources drilled an SGH anomaly and discovered a significant vein containing "visible" gold. ([www.goldenbandresources.com](http://www.goldenbandresources.com)) SGH has been very successful and mining companies have repeatedly used SGH on several reports. Of those clients that try this SGH Geochemistry, over 90+% have continued to use this technique as repeat clients. SGH has helped discover a large number of new deposits, however many clients have kept this to themselves as a competitive strategy.

# **SOIL GAS HYDROCARBON SURVEY DESIGN AND SAMPLING**

**Summary:** See Appendix C for more details

In summary, the best conditions for the sample type and survey design include:

- Fist sized samples are usually retrieved from a shallow dug hole in the 15 to 40 cm range of depth.
- Different sample types can be taken even "within" the same survey or transect, data leveling is rarely required. SGH is highly effective in areas of very difficult terrain. The Golden Rule is to always take a sample.
- Samples should be evenly spaced in a grid or as a second choice, in a series of transects with sample lines spaced at a ratio of up to 4:1 (line spacing: sample spacing).
- A minimum of 50 sample "locations" is recommended with one-third over the target and one-third on each side of the target into background if this can be predicted. More samples representing a larger area is preferred in order to optimize data contrast.
- If very wet, samples can be drip dried in the field. No special preservation is required for shipping.
- Relative or UTM sample location coordinates are required to allow interpretation.

## **SAMPLE PREPARATION AND SGH ANALYSIS**

**Summary:** See Appendix D for more details

Upon receipt at Activation Laboratories:

- The samples are air-dried at a relatively low temperature of 40°C.
- The samples are then sieved and the -80 mesh sieve fraction (<177 microns, although different mesh sizes can be used at the preference of the exploration geologist) is collected.
- The collected "pulp" is packaged in a Kraft paper envelope and transferred from our sample preparation department to our Organic Geochemical department also located in our World Headquarters in Ancaster, Ontario, Canada.
- Each sample is then extracted, compounds separated by gas chromatography and detected by mass spectrometry at a *Reporting Limit* of one part-per-trillion (ppt).
- The results of the SGH analysis is reported in raw data form in an Excel spreadsheet as "semi-quantitative" concentrations without any additional statistical modification.

## SGH DATA QUALITY

**Summary:** See Appendix E for more details

### Reporting Limit:

- The Excel spreadsheet of concentrations for the hydrocarbons monitored is in units of ppt as “parts-per-trillion” which is equivalent to nanograms/kilogram (ng/Kg). The reporting limit of 1 ppt represents a value of approximately 5 times the standard deviation of low level analysis. Essentially all background noise has already been eliminated. All data reported should be used in geochemical mapping. Actual detectable levels can be significantly < 1 ppt.

### Laboratory Replicate Analysis:

- An equal aliquot of a random sample is analyzed as a laboratory replicate.
- Due to the large amount of data, the estimate of method variability is reported as the percent coefficient of Variation (%CV).
- A laboratory replicate analysis is reported at a frequency of 1 for every 15 samples analyzed.
- The variability of field duplicate samples are similarly reported if identified.

### Historical SGH Precision:

- Although the SGH analysis reports results at such trace ppt concentration levels, the average %CV for laboratory replicates is excellent at an average of 8% within a range of  $\pm 4\%$ .
- Field duplicates have historically been 3 to 5% higher than laboratory replicates.



# SGH DATA INTERPRETATION

**Summary:** See Appendix F for more details

SGH Interpretation and Report:

- Due to the very large data set provided by the SGH analysis, this interpretation report is provided to offer guidance in regards to the results of this geochemistry for the survey.
- In our interpretation procedure, we separate the 162 compound results into 19 SGH sub-classes. These classes include specific alkanes, alkenes, Thiophenes, aromatic, and polyaromatic compounds. The concentrations of the individual hydrocarbons within a class are simply summed. None of these compounds are gaseous at room temperature.
- At this time the magnitude of the hydrocarbon class data has not been proven to imply a higher grade or quantity of the mineralization if present.
- A "geochemical anomaly threshold value" should not be calculated for SGH data as any background or noise has already been filtered out through the use of a Reporting Limit instead of some type of detection limit.
- SGH hydrocarbon data should never be interpreted individually. Interpretation must always use a compound class.
- Multiple SGH Classes are compared. Multiple SGH Classes that have been associated with the presence of specific mineralization are called SGH Pathfinder Classes that together represent the forensic signature or fingerprint identification that is associated with a specific type of mineralization or petroleum play.
- The anomalies of each class are compared as to their geochromatographic dispersion and ability to vector to a common location that may be referenced as a potential drill target.
- The agreement and behaviour between SGH Pathfinder Classes for a type of target, as a template of Classes, is compared against SGH research and orientation studies. The quality of agreement is expressed as an SGH Rating of confidence that the SGH anomalies of the survey being interpreted are similar to the behaviour of these classes over known mineralization.
- The interpretation is customized for the project survey by the Author. The SGH Rating and Interpretation is subjective and based on the experience from 1,000+ SGH survey interpretations. The interpretation is not conducted or assisted by any computerized process.

# SGH CHARACTERISTICS

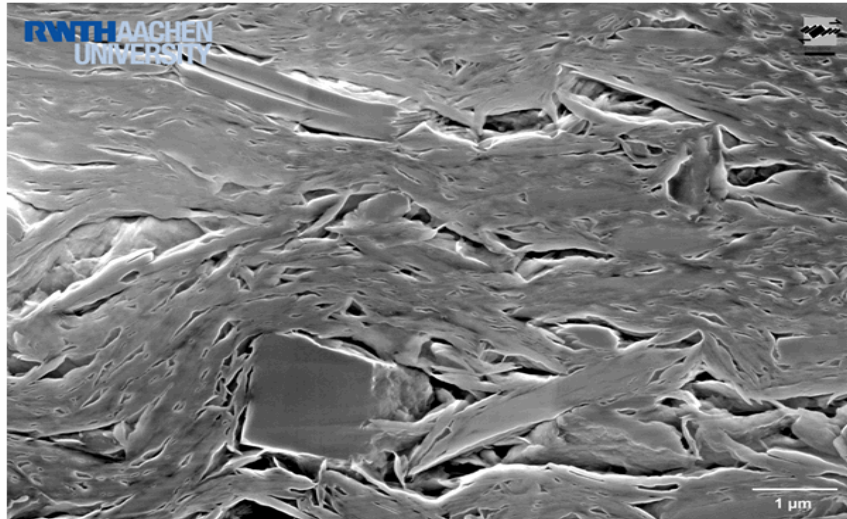
**Summary:** See Appendix G for more details

## SGH Characteristics:

- The pattern of SGH anomalies are usually of high contrast and easily observed.
- SGH is able to illustrate exceptionally symmetrical anomalies in spite of exotic overburden and barriers such as permafrost, shale and basalt caps, previously thought to be impenetrable.
- Inorganic geochemistry can illustrate anomalies of metals that have been mobilized by surficial physical processes. As SGH is essentially “blind” to the inorganic content of a sample, SGH anomalies illustrate the true source of mineralization as it is not affected by the effects of terrain or from mobilized cover such as from glacial transport.
- As SGH hydrocarbons are essentially non-polar, highly symmetrical anomalies are observed. As such symmetry is rare in geochemistry this provides a higher level of confidence to the interpretation that is reflected by a higher SGH Rating Score in comparison to known case studies.
- SGH can be analyzed on samples collected in different seasons or adjacent years. The combined data most often does not require any data leveling.

## SGH INTERPRETATION – LATEST ENHANCEMENTS

SGH continues to be developed even after 18 years since inception. Although the sample preparation and analysis has stayed the same, in the last 10 years in particular it is the interpretation and understanding of the SGH data and the intricacies of the SGH signatures that have been more refined. In the last 4 years this understanding has extended to the ability to make some prediction of depth from just the use of this geochemistry. A “first” for a geochemistry that is unique to SGH. Today the latest SGH development is the introduction of the concept of the “transparent overburden”. The basis of this ability is the understanding that SGH is a Nano-geochemistry. The term “Nano” is not only used to describe the capability in detecting “Nano” quantities of these hydrocarbon based bacterial decomposition products, with the ability to detect 1 nanogram per kilogram (ng/Kg or 1 part-per-trillion), but “Nano” also describes the size of the hydrocarbon compounds detected which are typically < 1 micron in size. These relatively non-polar hydrocarbons are far smaller in size than inorganic oxides and sulphides. This difference is the reason why SGH anomalies are reliable vertical projections of mineral and/or petroleum based targets. This SGH Nano-geochemistry thus makes even the most exotic overburden “transparent”. The SEM (Scanning Electron Microscope) image below illustrates the large number of micron sized pore spaces in “Boom Clay”, specific high density clay, used to cap deep chambers of high hazard and radioactive wastes. To SGH, this is just a sieve that these hydrocarbons are able to still migrate through by Nano-Capillary action. Inorganic oxides and sulphide anomalies from targets below such complex overburden may be laterally displaced as they must rely on faults and shears in order to migrate to the surface.

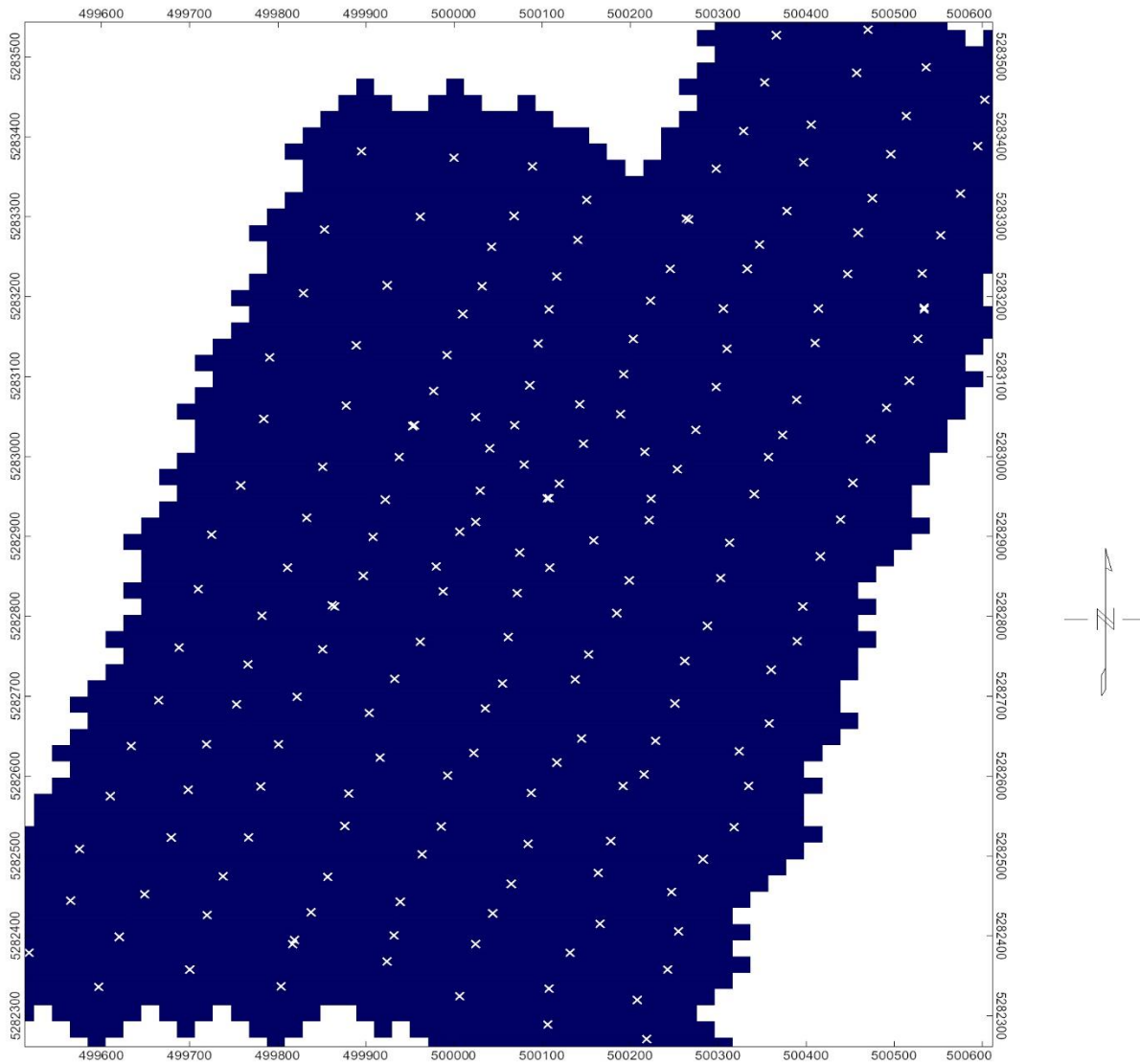


This new understanding of the rationale of why SGH anomalies are so reliable in their vertical projection of the location of mineralization and in the ability to so accurately delineate shallow and deep mineralization has further lead to the ability to use SGH to review different layers of the overburden as it relates to the mineral target due to the wide molecular weight range of the SGH Nano-geochemistry. Another factor that aids in this review of layers, much like peeling back the layers of a sweet-onion, is the understanding of weathering processes in the 5 metres near the surface that includes the Vadose zone.

# INTERPRETATION OF SGH RESULTS – A20-15019

## JAMIESON GEOLOGICAL – WALKER KNIGHT SGH SOIL SURVEY

This report is based on the SGH results from the analysis of a total of 193 soil samples from the Walker Knight survey. 80 newly submitted samples were combined with samples submitted with A14-07256. The survey can be described as a grid with sample spacing of approximately 50m and line spacing of approximately 100m. The samples were shipped to Actlabs Global Headquarters, then prepared for analysis. Sample coordinates were provided for mapping of the SGH results for these samples in UTM format. A sample location map is shown below.



## SGH INTERPRETATION - JAMIESON GEOLOGICAL QUALITY ASSURANCE – WALKER KNIGHT SGH SOIL SURVEY

Note that the associated SGH results are presented in a separate Excel spreadsheet. This data is semi-quantitative and is presented in units of pg/g or *parts-per-trillion* (ppt) as the concentration of specific hydrocarbons in the sample. The number of samples submitted and total combined for this survey is more than adequate to use SGH as an exploration tool. SGH has been proven to discriminate between false mobilized soil anomalies and is able to actually locate the source target deposition. SGH is a deep-penetrating geochemistry and has been proven to locate Copper, Gold, VMS, and other types of mineralization as well as for petroleum targets at several hundred metres below the surface irrespective of the type of overburden. Note that the SGH data is only reviewed for the particular target deposit type requested, in this case for the presence of copper and gold. It is assumed that there is only one potential target. If known, in surveys with several complex geophysical targets, to obtain the best interpretation the client should indicate that there are possibly multiple targets. The possibility of multiple geophysical targets should be known due to potential overlap and increased complexity of the resulting geochromatographic anomalies, which could alter the interpretation as to which targets are mineralized or not.

**The overall precision of the SGH analysis for the total combined samples at the Walker Knight SGH Soil Survey was excellent** as demonstrated by the 14 samples taken from this survey which were used for laboratory replicate analysis and were randomized within the analytical run list. The average Coefficient of Variation (%CV) of the replicate results for the samples in this survey was **11.1%** which represents an excellent level of analytical performance especially at such low parts-per-trillion concentrations.

The **location of Field Duplicate samples was not identified from the newly submitted Walker Knight SGH Soil Survey samples.** It is typically observed that the variability of field duplicates are 5% to 8% CV higher than for laboratory duplicates of random samples taken from the survey. Note that the SGH geochemistry does not detect all organic hydrocarbons present in the samples.

No other statistics were used on the data for this report for mapping or interpretation purposes aside from the use of a Kriging trending algorithm in the GeoSoft Oasis Montaj mapping software. **This interpretation is based only on the analytical results provided by the SGH Nano-Geochemistry from this submission of samples for the Walker Knight survey samples.** A template or group of SGH Pathfinder Classes that have been found to be associated with buried Copper and Gold targets was used as the basis for the interpretation of these areas. The final interpretation is customized and conducted by the author. Although the term "template" or "signature" appears in this SGH Report, a computerized interpretation is not used.

## SGH INTERPRETATION - SGH TARGET PATHFINDER CLASS MAPS

The maps shown in plan and in 3D views in this report are SGH "Pathfinder Class maps" for targeting various chemical classes of hydrocarbon flux signatures related to Redox conditions, Copper and gold type targets. This report may have been expanded by the author to include additional SGH information that may help understand the structure of the findings if present at the Walker Knight survey area. The maps shown represent the simple summation of several individual hydrocarbon compound concentrations that are grouped from within the same organic chemical class. SGH Pathfinder Class maps have been shown to be robust as they are each described using from 4 to 14 chemically related SGH compounds (unless otherwise stated) which are simply summed to create each chemical class map. Thus, each map has a higher level of confidence as it is not illustrating just one compound measurement.

The Copper and Gold templates of SGH Pathfinder Classes uses primarily low and medium molecular weight classes of hydrocarbon compounds. At least three Pathfinder Class maps, associated with the SGH signature developed must be present to begin to be considered for assignment of a good rating relative to the SGH performance in case studies over known Copper and Gold types of mineralization (some of these maps might not be shown in this report). These SGH classes must also concur and support a consistent interpretation in relation to the expected geochromatographic characteristics of the Pathfinder Class. The *overall* SGH interpretation Rating has even a higher level of confidence as it further implies the consensus between at least three SGH pathfinder classes. A combination of these SGH Pathfinder Classes potentially defines the signature of a target at depth if present. Each of the SGH Pathfinder Class maps shown in this report is a specific *portion* of the SGH signature relative to the presence of Copper and Gold as described. Each pathfinder class map is still just one of the Pathfinder Class maps used in the interpretation template for Copper and Gold. Additional interpretation information which may contain additional SGH Pathfinder Class maps is available as a Supplementary Report at an additional price (see Appendix H).

## **A20-15019 – JAMIESON GEOLOGICAL WALKER KNIGHT - SGH SOIL SURVEY - SGH INTERPRETATION SGH TARGET PATHFINDER CLASS MAPS**

Note that any concentration value in the accompanying Excel spreadsheet greater than the "Reporting Limit" of 1 ppt is important data and has been able to depict mineralization or petroleum plays at depth under cover in other projects. The majority of the variability or noise has already been eliminated; additional filtering will adversely affect any interpretation. Note again that a Kriging trending algorithm has been applied to the mapping routine in the Geosoft Oasis Montaj software in the development of the SGH Class maps. SGH concentrations are in some way probably related to the amount of mineralization or petroleum resource present, which probably defines the characteristics or quantity of the biofilm(s) in contact with the target, as well as being related to the depth to the target. SGH results have also been shown to correlate well with geophysical measurements such as magnetic anomalies and those of CSAMT.

The SGH Class maps are the plot of the sums of the particular hydrocarbon class in parts-per-trillion concentration. The dark blue areas of these maps represent very low or non-detect values or areas where no samples were taken. For plotting purposes the values at the Reporting Limit are plotted as one-half of this filtering, or one-half of 1.0 ppt. The hotter colours represent higher concentrations of the sum of the class with the highest values being purple in colour. The lowest concentrations that may be at 0.5 ppt, are shown in blue.

SGH is a "deep penetrating" geochemistry but also works well for deep targets as well as relatively shallow targets. Targets shallower than about 3 to 5 metres (or potentially outcrop) will have a reduced SGH signal due to interaction with atmospheric conditions and samples taken right at surface outcrops will have even weaker signals due to a higher degree of weathering from various environmental processes on these volatile and semi-volatile organic hydrocarbons.

In the interpretation of SGH data there are several goals. In order of importance they are:

- Review for the presence of Redox Cells
- Vector to the location of a mineral target
- Delineate the mineral target
- Identify the type of mineral target
- Describe the features of the possible mineral target
- See if there is information on the basement structure
- Predict a drill target
- Predict the possible depth to the mineral target

Not every goal is expected to be able to be achieved with each SGH data set or survey.

## **A20-15019 – JAMIESON GEOLOGICAL WALKER KNIGHT SGH SOIL SURVEY SGH INTERPRETATION RATING AND CLARIFICATION**

Often a geochemistry such as SGH is used as an economical exploration investigation tool to provide more information on an exploration target as some geological body or help prioritize some geophysical target. Such occurrences are in general expected to change the chemistry of the immediate overburden which in turn is expected to result in a chemical anomaly as detected in surficial samples. The author believes that it is important to convey to the client the presence of an anomaly even if there is only part of the SGH signature present that may be related to the mineral signature or template requested. In other words, the anomaly illustrated in the report may not be representative of the mineralization sought as only a part of the SGH signature is present, but the anomaly may confirm the presence of some geological or geophysical target which may be valuable to the client for comparison with other data. In addition it would confirm the ability and sensitivity of SGH to show geological or geophysical occurrences. Example: A well defined rabbit-ear anomaly on an SGH Pathfinder Class map in a report, even though it may have a lower rating of 2.0 or 3.0, may illustrate to the exploration geologist that SGH does agree that there is some geological body at depth that is changing the chemistry and forming a Redox cell in the overburden. However the SGH forensic signature Rating indicates that there is a lower confidence that the "identification" of that body is likely to be say Gold (if the SGH Gold template is requested). This information would provide a confirmation that a target does exist, however if the SGH Rating indicates that the target has a lower level of confidence then the target does not have the forensic signature of the mineralization sought. SGH would thus provide a savings to the exploration program and divert focus to potentially other targets having a higher confidence in the SGH identification Rating for Gold in this example.

**Thus, the SGH rating must always be considered in conjunction with the SGH Pathfinder Class map(s) shown in the report.** It is this rating that provides an insight into the authors' complete interpretation and is a measure of the confidence and to what degree the complete SGH signature compares with the SGH results from over case studies of similar known deposits. Unfortunately, the interpretation of a visual, as the SGH map provided, is so ingrained in humans that the reader may erroneously disregard the author's subjective rating to a large degree. As of November 25, 2011, the author now highlights the rating directly on the page having the plan view of the SGH Pathfinder Class map chosen to be illustrated. Thus to the reader of the report, the authors Rating is actually **MORE IMPORTANT** than the readers instinctive interpretation of just the one map provided. Again, SGH should not be used in isolation from other site information, and that a Rating of 4.0 is when, in the authors' estimation, a signature only starts to have a good identification relative to that type of mineralization, and that the survey may warrant further study although it is not a specific recommendation to drill test the anomaly. As the SGH interpretation is represented by a signature, the SGH Pathfinder Class map(s) illustrated in reports is always only "PART" of the specific SGH signature or template that the client requests (i.e. for Gold, etc.). No one SGH map can represent the complete signature due to the different amounts of spatial dispersion of the anomalies that are expected for the variety of SGH chemical classes within each signature. Thus the author selects the one SGH Class Map relative to the mineralization requested that best represents an anomaly that estimates the overall signature found in the survey.



## **A20-15019 – JAMIESON GEOLOGICAL – WALKER KNIGHT SGH "REDOX" INTERPRETATION**

As a general comment in regard to the SGH results at the Walker Knight SGH Soil Survey, the SGH data in general had moderate signal strength and the SGH Class maps in this report are quite good in contrast. It's important to not think of contrast with SGH as Signal:Noise as by using a "Reporting Limit" the noise has already been completely or nearly completely removed.

One of the first steps in the interpretation of the spatial aspect of SGH data is to locate potential Redox conditions in the overburden. Redox conditions have been well known to be related to blind mineral or petroleum targets; however, Redox conditions can also be attributed to other geological bodies that are of no particular interest. SGH signatures have been shown to be able to differentiate between these targets. SGH has been described by the Ontario Geological Survey of Canada (OGS) as a "Redox Cell locator". Redox Cells can be related to the presence of bacteriological activity related to mineralization but also may be related to the presence of geological bodies such as Granite Gneiss, Dunite, etc. Recently SGH has been shown to be far more sensitive to depicting Redox conditions than even measurements using pH or ORP tests. It is important to understand that; not only is SGH a Redox cell locator, but due to the forensic signature of mineralization used in the interpretation process, SGH can discriminate mineral targets and other target types from geological bodies, other magnetically detected targets, mineralized versus non-mineralized conductors, cultural effects, etc. even in surveys over highly difficult or exotic terrain that often requires the collection of multiple sample types. In the interpretation it is not necessary to detect a Redox cell if mineralization is within approximately 30 metres of the surface as this would be insufficient depth to develop a dispersion halo anomaly. Many SGH surveys for Gold, Petroleum, and other mineral and petroleum based targets can result in multiple types of anomalies, depending on the class of SGH compounds, even over the same target and in the same set of samples. Thus "Apical", "Segmented-Nested-Halo", and "Rabbit-Ear" or "Segmented Halo" type anomalies are all typically observed within the SGH data set from the effect of Redox cells that have developed over mineralization and their interaction with Redox conditions and the electromotive forces produced by the subsequent Electrochemical Cell. Different types of anomalies have also been associated with the depth to the target. The types of anomalies developed have been recently explained by the use of the 3D-SGH model of interpretation. The highly symmetrical anomalies illustrated by SGH data closely follow the expected self-organizing patterns of neutral species within an electrochemical cell in recent experiments in physics laboratories. The highly symmetrical anomalies are also able to be observed as the Nano-sized dimensions of these organic hydrocarbons are much smaller than inorganic oxides and sulphides. Thus the SGH hydrocarbons can migrate through the Nano-sized fissures of even clay, basalt, and permafrost caps by means of Nano-capillary action. The simple fact that the SGH anomalies are geometrically symmetrical and not random further improves the confidence of SGH interpretations.

## **A20-15019 – JAMIESON GEOLOGICAL – WALKER KNIGHT SGH SOIL SURVEY - SGH "COPPER and GOLD" INTERPRETATION**

Remember that signals near the edges of the survey or at the ends of transects can appear to be higher due to the Kriging trending algorithm applied for mapping. For this reason, these anomalies may not be interpreted.

These SGH Class maps are only a portion of the SGH Copper and Gold signature used in each interpretation. There is not any one SGH Class map that can, as a single map, be reliably used to interpret the presence of Copper or Gold or any other type of mineralization. Again, as signals or anomalies due to any analytical, sample preparation, or sampling procedure "noise" have been removed through the use of the Reporting Limit filter, any SGH anomaly on this Pathfinder Class Map has a high probability of being real data. The SGH Pathfinder Class maps shown are highly sensitive in illustrating strong results for Copper and Gold based on previous research and case studies. Other SGH Classes at the Walker Knight surveys also agree with the interpretation shown in the following pages.

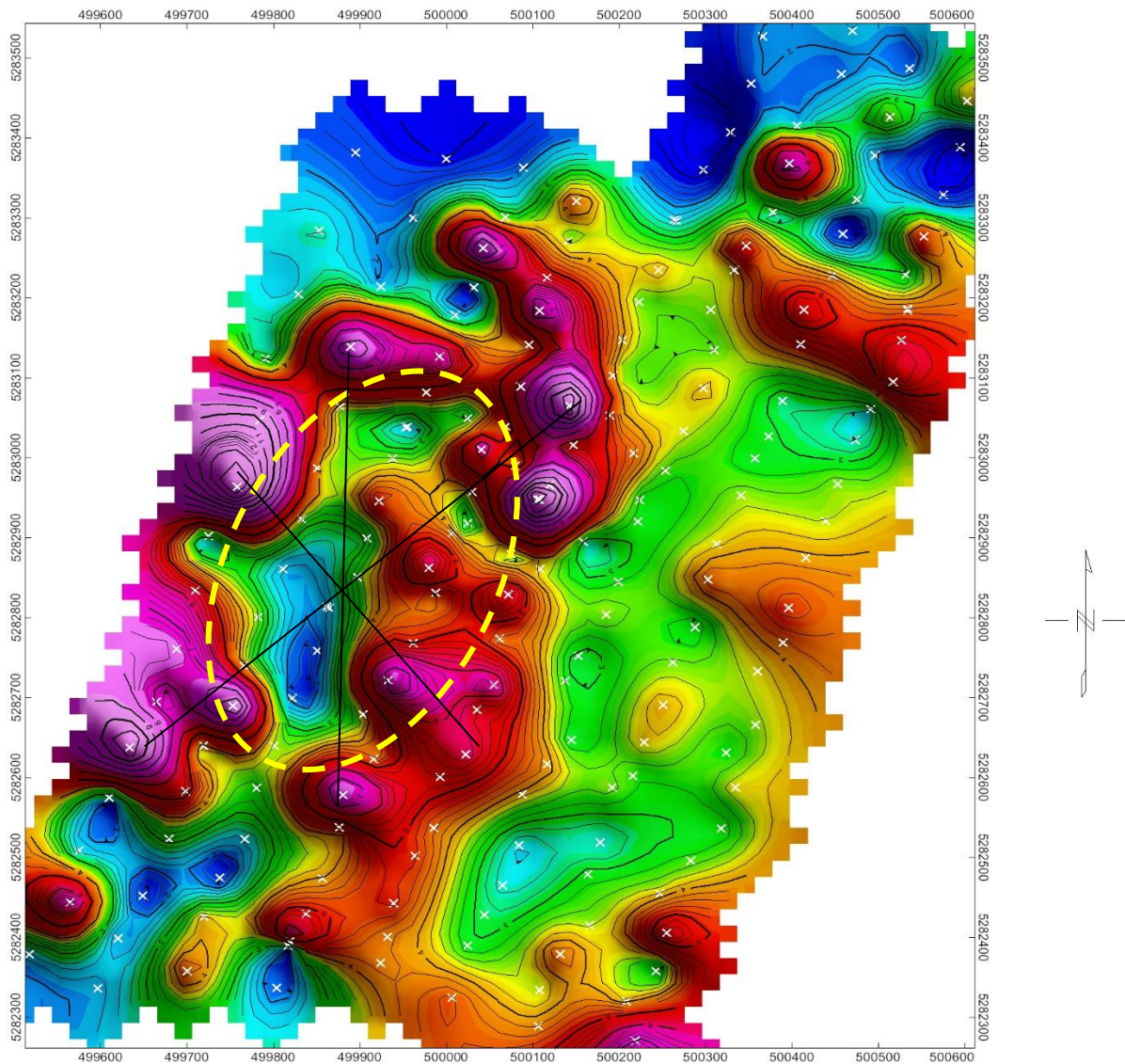
This portion of the SGH hydrocarbon signatures is predicted to be associated with Copper and Gold targets as the detection of those hydrocarbon residues produced by the decomposition of microbes and bacteria from the life cycle death phase that have been feeding on Copper and Gold. These residues have subsequently migrated to the surface as a flux of different classes of hydrocarbons or decomposition products. During migration to the surface, dispersion away from the mineralization is expected. The distance of dispersion is dependent on the principle of geochromatography that is in generally related to the average molecular weight of the class. It has been found that the complexity of the overburden does not affect the geochromatographic dispersion of the SGH classes of this Nano-Geochemistry, unless a situation is encountered such as that of a "major" fault that may result in a very slight deflection of this path. This is the basis of the 3D-SGH interpretation as the relatively neutral hydrocarbons that SGH detects are spatially observed as very symmetrical anomalies (as presented by the creator at the IAGS conference in Finland in 2011 and further at the IAGS conference in New Zealand in November of 2013 and Tucson Arizona in 2015).

## **A20-15019 – JAMIESON GEOLOGICAL – WALKER KNIGHT SGH GOLD INTREPRETATION**

Page 23 of this report, and in 3D-view on page 24, although based on only one hydrocarbon response, is still the most representative of the full SGH signature for gold mineralization. This map illustrates what appears to be a symmetrical segmented halo anomaly. The black lines on page 23 that connect opposing anomalies illustrates the excellent symmetry of the anomalies associated with this Redox zone. Such symmetry provides a high level of confidence that these anomalies are not random occurrences. The intersection of the black lines as the center of the Redox conditions is expected to be the most reliable vertical projection of gold mineralization. This segmented halo anomaly would also suggest a deeper mineralization source than previously reported, unfortunately an estimation of depth could not be obtained. Other SGH Pathfinder Class Maps associated with the presence of Gold mineralization (not shown in this report) support this interpretation of this anomaly at the Walker Knight SGH Survey.

Again, the prediction of this anomaly for Gold mineralization is based only on SGH.

# A20-15019 – JAMIESON GEOLOGICAL – WALKER KNIGHT SGH "GOLD" PATHFINDER CLASS MAP



SYMMETRICAL SEGMENTED HALO ANOMALY = POTENTIAL GOLD MINERALIZATION

**SGH SIGNATURE RATING RELATIVE TO "GOLD" = 4.5 OF 6.0**



Results represent only the material tested. Actlabs is not liable for any claim/damage from the use of this report in excess of the test cost. Samples are discarded in 90 days unless requested otherwise. This report is only to be reproduced in full.

February 19, 2021

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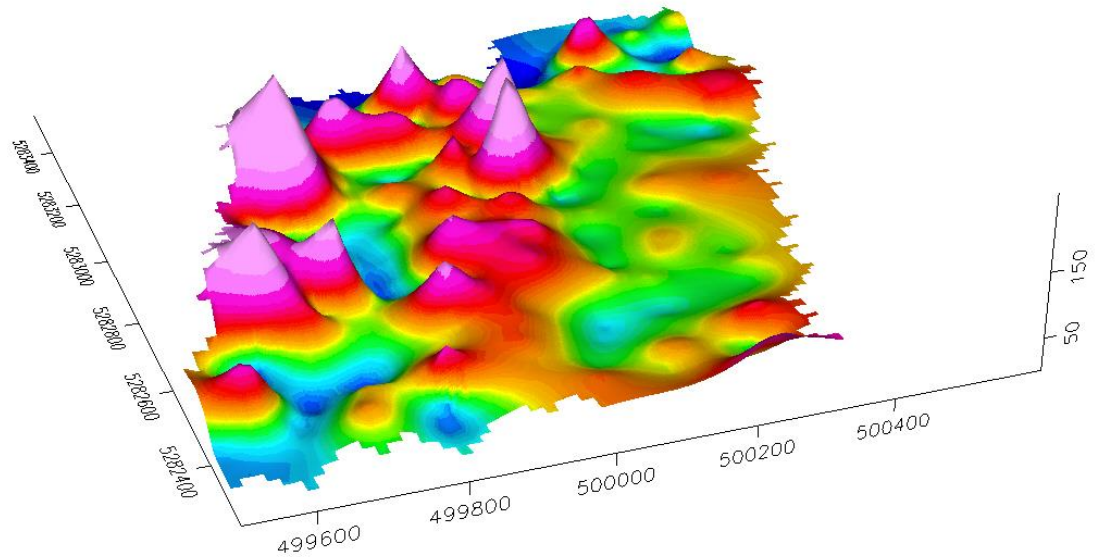
A20-15019

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# A20-15019 – JAMIESON GEOLOGICAL – WALKER KNIGHT SGH "GOLD" PATHFINDER CLASS MAP



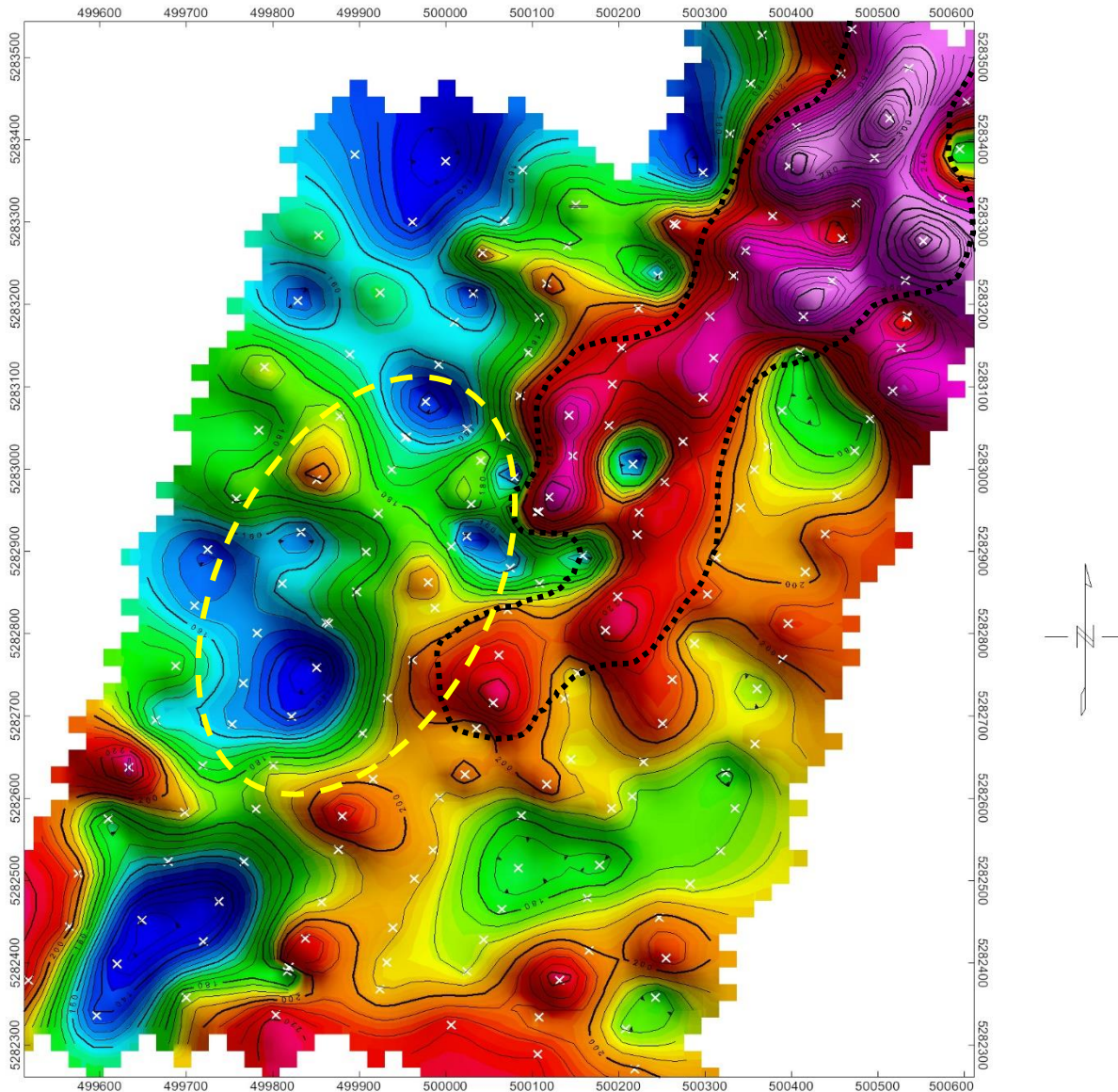
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## **A20-15019 – JAMIESON GEOLOGICAL – WALKER KNIGHT SGH COPPER INTREPRETATION**

Page 26 of this report, and in 3D-view on page 27, shows the anomalies from the most reliable SGH Pathfinder Class in predicting the presence of Copper Mineralization. This map continues to illustrate a northeasterly trending apical anomalous zone. This is shown with the dotted black outline. We believe that mineralization might exist at these locations as a vertical projection beneath these anomalies. Other SGH Pathfinder Class Maps associated with the presence of Copper mineralization (not shown in this report) lend support to this interpretation of these anomalies at the Walker Knight SGH survey. The SGH Gold interpretation is also shown on page 26 for reference.

Again, the prediction of these anomalies for Copper mineralization is based only on SGH.

# A20-15019 – JAMIESON GEOLOGICAL – WALKER KNIGHT SGH "COPPER" PATHFINDER CLASS MAP



PREDICTED COPPER ZONE WITHIN BLACK OUTLINE

**SGH SIGNATURE RATING RELATIVE TO "COPPER" = 4.0 OF 6.0**



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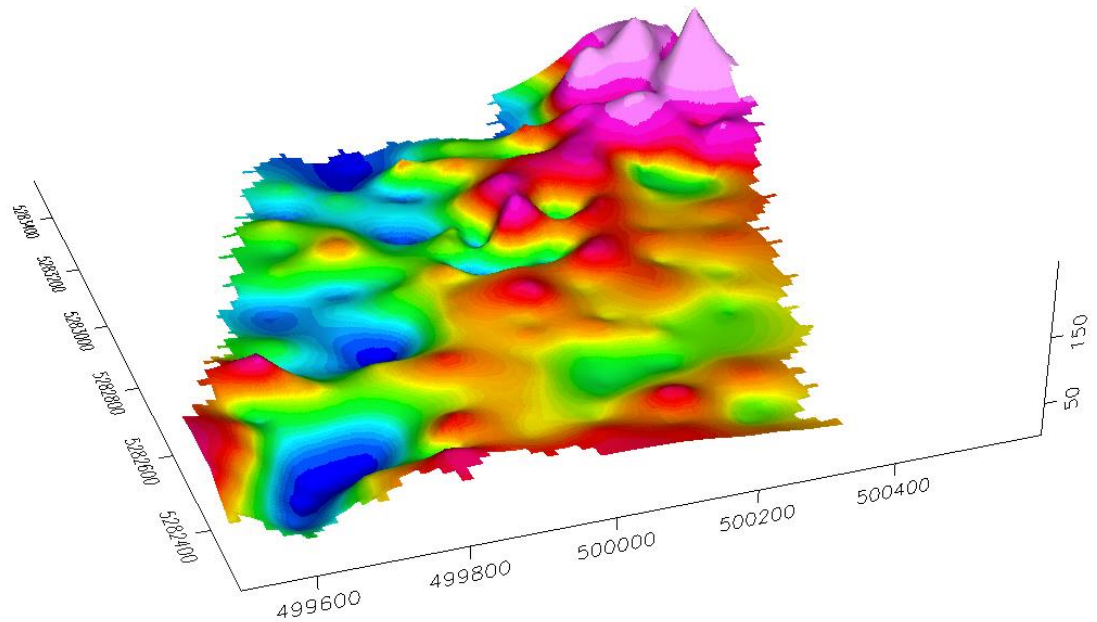
A20-15019

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# A20-15019 – JAMIESON GEOLOGICAL – WALKER KNIGHT SGH "COPPER" PATHFINDER CLASS MAP



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# **A20-15019 – JAMIESON GEOLOGICAL WALKER KNIGHT SGH SOIL SURVEY - SGH INTERPRETATION FOR THE PRESENCE OF MINERALIZATION**

The interpretation of the SGH data on page 23 relative to the presence of Gold mineralization at the Walker Knight survey may be based on what may appear to be the presence of a Redox Zone. Based also on the makeup of the SGH signatures, this Redox Zone may be associated with the possible presence of mineralization. The SGH Copper signature from the interpretation of the SGH data on page 26 continues its northeasterly trend in the north half of the survey.

The SGH data from the new submission of samples submitted with A20-15019 had a slightly lesser response than the previous data submitted with A14-07256 for Copper although a slightly higher response was detected for that of gold. This difference in response required the use of data leveling, keep in mind that resulting data is considered "an approximation" and is thus reflected in the lower SGH confidence rating.

In general, SGH is not a perfect confirmatory technique for inorganic chemistry's. Inorganic methods will show the highest anomalies for outcrops at surface whereas the SGH sensitivity is reduced at this point due to further degradation by environmental exposure to sun, rain, UV, etc. This reduction may not be seen on the maps provided due to normalization to the highest response in the map overall. SGH predicts whether the mineralization is present at subcrop or deeper portions relative to the mineralized structure.

The subjective SGH confidence rating for this survey assigned to the anomaly in general on these maps where the anomalies coincide on their location is on average 4.5 on a scale of 6.0. This Rating means that, based only on SGH, that there is a high probability that mineralization may be present. Note, as the SGH Rating is one of confidence, in our judgment an assignment of a Rating of 0.0 cannot be given out. From client feedback in recent years, a few grass roots exploration surveys that have been interpreted with an SGH Confidence Rating of 4.0 ( $\pm 0.5$ ) have been drill tested and have had successful mineralization intersections. However, the frequency of success is much more prevalent for those targets that have associated SGH Rating Scores of  $\geq 5.0$ .

The SGH Ratings shown on pages 23 and 26 in this and all SGH reports are based on a scale of 6.0, in 0.5 increments, with a value of 6.0 being the best. The SGH Ratings discussed in relation to mineralization represents the similarity of these SGH results with other SGH case studies and orientation studies over known mineralization. These SGH signatures or templates have been constantly refined and enhanced since inception and has been proven to be effective and reliable. The SGH templates are based on the interpretation from over 1,100 interpretations of surveys in many different geographical regions and from a wide variety of lithologies. The degree of confidence in the SGH Rating only starts to be "good" at a level of 4.0. A Rating of 4.0 or more is an indication that this SGH Nano-Geochemistry predicts that the zone(s) described may warrant more work or more consideration.

# **A20-15019 – JAMIESON GEOLOGICAL WALKER KNIGHT SGH SOIL SURVEY - SGH INTERPRETATION FOR THE PRESENCE OF MINERALIZATION**

Any identification of a drill target is not an explicit recommendation by Activation Laboratories Ltd. to drill test the associated location or SGH anomaly. A drill target is implied to ensure that the reader is aware of the location having the highest confidence of being the location of the vertical projection of mineralization, based only on SGH data. This is also not a recommendation for vertical drilling. Vertical drilling may not be the best approach to test the SGH anomaly in this area although SGH anomalies are very much a vertical projection of the target at depth regardless of the makeup of the overburden. Activation Laboratories Ltd. has no experience in actual exploration drilling techniques. Other geological, geochemical and/or geophysical information should also be considered.

It must be remembered that other SGH Class maps not shown in this report have also been reviewed to support the interpretation shown. To deduce the most scientifically sound interpretation of the SGH surveys, the client should use a combination of the SGH results shown in this report with additional geochemical, geophysical, and geological information to possibly obtain a more confident and precise target location. This is not a statement to convey some lower level of confidence in SGH results. This statement is made to recognize the proper use and interpretation of any scientific data. Whenever possible, multiple methods should always be employed so that any decisions do not rely on any one technique.

# **A20-15019 – JAMIESON GEOLOGICAL WALKER KNIGHT SGH SOIL SURVEY - SGH SURVEY RECOMMENDATIONS**

In general, the number of samples was more than adequate to show what the author believes to be valuable information at the Walker Knight survey. Our recommendation states to use a minimum of 50 sample locations to be taken with at least 2 or 3 samples taken within 1 metre of a location as field duplicates. Survey designs that use a regular grid are very powerful tools although a 4:1 ratio as spacing between transects: spacing of samples along transects has also had excellent results with SGH. Additional sampling to the northeast of this survey could potentially better define the full extent of the copper mineralization. Additional infill samples should be able to be easily added to the current data set without data leveling 90+% of the time. As the interpretation is difficult for surveys having less than 50 sample locations and the corresponding confidence is significantly lower, surveys with less than 50 sample locations may not be accepted and may be returned to the client at their expense. We believe a survey with less than 50 sample locations is not beneficial or cost effective to the client.

## **GENERAL RECOMMENDATIONS FOR ADDITIONAL OR IN-FILL SAMPLING FOR SGH ANALYSIS**

In general, if the client decides that in-fill sampling may be warranted, to obtain the best results from additional sampling for SGH it is usually recommended that sample locations from the original survey within, or bordering, the area of interest be re-sampled rather than just combining new sample results with the sample data from the initial survey. Although several SGH surveys have previously been easily and directly, combined without data leveling, it cannot be guaranteed that data leveling will not be required. It has been found that data leveling is more apt to be required should the new samples be collected under significantly different environmental conditions than during the initial sample survey, i.e. summer collection versus winter collection

The process of data leveling adds a minimum of 3 to 5 days of work to conduct the additional data evaluation, develop additional plots of the results, conduct new interpretations, and additional report descriptions. Results from data leveling is also always considered "an approximation", thus the confidence in a combined interpretation will be lower than the interpretation from samples collected during one excursion to the field and submitted as one survey. An additional cost will be invoiced should data leveling operations be required if the client requests that two SGH data sets be interpreted and reported together. Thus re-sampling a few of the original sample locations will provide a faster turnaround time for results and provide more accurate and confident surveys for evaluation and aid in deciding specific drill targets.

Date Received at Actlabs: November 23, 2020

Date Analysis Complete: December 6, 2020

Interpretation Report: February 19, 2021

## **JAMIESON GEOLOGICAL CORP.**

PO Box 127, 4 Private Rd.

Blue Diamond, Nevada, USA

89004

**Attention: Jamie Walker**

**RE: Your Reference: Walker Knight**

**Activation Laboratories Workorder: A20-15019**

### **CERTIFICATE OF ANALYSIS**

*This Certificate applies to the associated Excel Spreadsheet of Hydrocarbon results combined with the discussion and SGH Pathfinder Class maps of the data shown in this report.*

80 Samples were analyzed for this submission.

Sample preparation –Actlabs Ancaster - S4: Drying at 40°C and Sieving with -80 mesh collected

Interpretation relative to Copper and Gold targets was requested.

The following analytical package was requested and analyzed at Actlabs Ancaster Canada:

Analysis Code SGH – Soil Gas Hydrocarbon Geochemistry using High Resolution Gas Chromatography/Mass Spectrometry (HRGC/MS)

**REPORT/WORKORDER: A20-15019**

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at the time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of the material submitted for analysis.

Notes: The SGH – Soil Gas Hydrocarbon Geochemistry is a semi-quantitative analytical procedure to detect and measure 162 hydrocarbon compounds as the organic signature in the sample material collected from a survey area. It is not an assay of Mineralization but is a predictive geochemical tool used for exploration. This certificate pertains only to the SGH data presented in the associated Microsoft Excel spreadsheet of results.

Mr. Dale Sutherland, is the creator of the SGH and OSG organic geochemical methods. He is a Chartered Chemist (C.Chem.) and Forensic Scientist specializing in organic chemistry. He is a member of the Association of the Chemical Profession of Ontario, the Association of Applied Geochemists, the International Association of GeoChemistry, the Ontario Prospectors Association, the Association for Mineral Exploration British Columbia, the Geochemical Society Association, the Ontario Petroleum institute, the Chemical Institute of Canada, and the Canadian Society for Chemistry, as well as having memberships in several national and international Forensic associations. He is not a professional geologist.

CERTIFIED BY:



Jeff Brown

Organics Supervisor

Activation Laboratories Ltd.

## APPENDIX "A"

### List of terms

- 1. SGH** – "SOIL GAS HYDROCARBON" GEOCHEMISTRY – a Predictive Geochemistry, used for delineate buried inorganic mineral deposits and organic petroleum plays. This is the original name used to describe this geochemistry since inception in 1996. Code SGH is still used when submitting samples.
- 2. 3D-SGH**- "3D- SPATIAL TEMPORAL GEOCHEMICAL HYDROCARBONS - the method of interpreting SGH and OSG results based on the Redox/Electrochemical Cell model developed by Activation Laboratories Ltd. in 2011.
- 3. Redox cell**- an area of oxidation-reduction reactions or exchange of electrons that is produced over geological bodies, mineralization and petroleum based plays.
- 4. Electrochemical cell**- the effect of adjacent chemically reduced areas and chemically oxidized areas as a Redox cell produces a electrical gradient that obeys the physics of a typical Electrochemical cell.
- 5. Anthropogenic contamination**- the introduction of impurities/compounds of the same type as those that are being analyzed by human actions that could lead to erroneous results.
- 6. Background areas**- the area around a mineral deposit that is beyond the effect of the Redox cell formed over geological bodies or exploration targets. Sampling is required into background areas to produce data that has sufficient contrast to illustrate and differentiate anomalies associated with exploration targets.
- 7. Background subtracted**- A sample taken some distances away as to not contain any elements of the target being analyzed.
- 8. Biofilm**- a layer of microorganisms and microbe and their related secretions and decomposition products, in this case found to inhabit mineral deposits .
- 9. Biomarker**- a compound used as an indicator of a biological state. In this case a biological substance used to indicate the presence of a mineral deposit.
- 10. Blind mineralization** – buried mineralization that shows no physical indication of its existence at the surface
- 11. Compound** – used synonymously with the term hydrocarbon in this report
- 12. Compound chemical class** – a group of hydrocarbons that are similar in size, structure, and molecular weight such that their chemical characteristics, such as water solubility, partition coefficients, vapour pressures, etc. are similar
- 13. Cultural activities** – human initiated processes that may affect the physical and chemical characteristics at the earth's surface
- 14. Delineating targets**- indicate the position or outlines of an exploration target as a vertical projection of the target at depth.
- 15. Geochemical anomalies** – inorganic element or organic hydrocarbon measurements that are significantly different than the average low level measurements or background in a survey i.e. the needle in a haystack is an anomaly
- 16. Dispersion patterns** – the movement/ spreading of something. In this context the spatial arrangements of hydrocarbons caused by their movements to the surface from some depth.

- 17. Exploration tool** – a geological, geophysical or geochemical method that attempts to illustrate data in exploration activities that may indicate the presence of mineralization or petroleum plays.
- 18. Fit for purpose**- this method is ideal for its intended use.
- 19. Forensic signature**- a grouping or pattern found to identify a substance having multiple characteristics with a high degree of specificity.
- 20. High specificity**- as in being very specific to the mineralization.
- 21. Anomalies**- this is the spatial representation of data that illustrates a high or low response as well as the combined spatial shape of anomalous data from several neighbouring samples in a survey that can form anomalies described as Rabbit-Ear, Halo, Segmented-halo, nested-halo, etc.
- 22. Inorganic geochemistry** – the measurement of inorganic elements in a survey of near surface samples as a tool for exploration
- 23. Data leveling** – a technique that attempts to normalize the data sets obtained between two or more sampling programs. The results of data leveling is always considered as an approximation.
- 24. Lithologies**- the characteristics and classifications of rock.
- 25. Locations**- the physical/ geographical position or coordinates of samples in a survey.
- 26. Noise**- interference in a measurement which is independent of the data signal.
- 27. Nugget effect**- Anomalously high precious metal assays resulting from the analysis of samples that may not adequately represent the composition of the bulk material tested due to non-uniform distribution of high-grade nuggets in the material to be sampled. (Webster’s online dictionary)
- 28. Organic geochemistry**- the Soil Gas Hydrocarbon geochemistry (SGH), or now more accurately named as Spatiotemporal Geochemical Hydrocarbons, is the analysis to detect specific organic, or carbon based, hydrocarbon compounds in a sample. The Organo-Sulphur Geochemistry (OSG) is the analysis to detect specific organic compounds that have sulphur joined to carbon in its molecular structure.
- 29. Percent Coefficient of Variation (%CV)** – a measure of data variability
- 30. Project maintenance** – an activity where the associated cost is applied to the exploration, advancement, and/or operation of activities associated with a particular claim
- 31. Rating**- a value given to the overall confidence in the SGH results
- 32. Real (in relation to data)**- any rational or irrational number
- 33. Reporting Limit** – minimum concentration of an analyte that can be accurately measured for a given analytical method.
- 34. Sample matrix**- the components of a sample other than the analyte.
- 35. Sample type** – soil, till, humus, lake bottom sediment, sand, snow, etc.
- 36. Semi-quantitative**- yielding an approximation of the quantity or amount of a substance
- 37. SGH anomalies** (“Apical”, “Nested-Halo”, and “Rabbit-Ear” or “Halo”)
- 38. SGH Pathfinder** (class map/compounds)
- 39. SGH template** – a set of hydrocarbon classes that together form a geochemical signature that has been associated with the presence of a particular type of mineralization the majority of the time
- 40. Surficial bound hydrocarbons** –
- 41. Surficial samples**- a sample from near the earth’s surface.
- 42. Survey**- the area, position, or boundaries of a region to be analyzed, as set out by the client.

**43. Project-** a planned undertaking

**44. Transect-** A straight line or narrow section through an object or across a section of land.

**45. Target-** Target refers to the ore body of interest

**Target signature:** the unique characteristics that identify the target.

**Target type:**

i.e. Gold, Nickel, Copper, Uranium, SEDEX, VMS, Lithium Pegmatites, IOCG, Silver, Ni-Cu-PGE, Tungsten, Polymetallic, Kimberlite as well as Coal, Oil and Gas.

**46. Threshold-** level or point at which data is accepted as significant or true.

**47. Total measurement error-** An estimate of the error in a measurement. Based on either limitation of the measuring instruments or from statistical fluctuations in the quantity being measured.

**48. Visible (in terms of signature)-** the portion shown in a chart or map

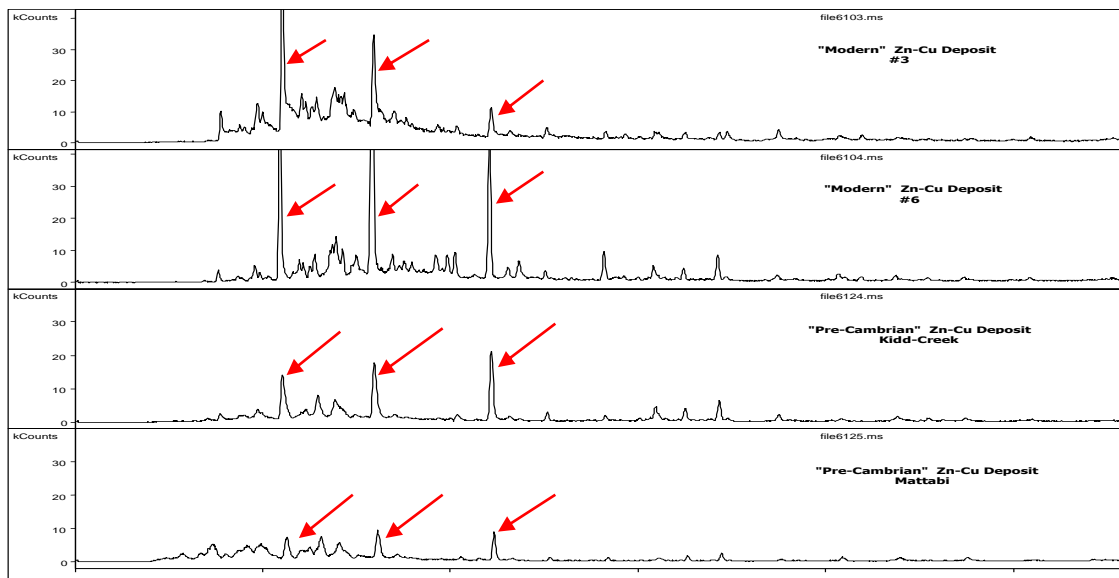


## APPENDIX "B"

### EXAMPLE OF AN SGH FORENSIC GEOCHEMICAL SIGNATURE EXAMPLE SHOWN FOR A VMS TARGET

The following analyses examine the Volcanic Massive Sulphide (VMS) deposit in various known locations. These analyses show how the gas chromatography indicates the reality of deposits. For all the profiles in this section, the red arrows indicate the signature of the VMS, which have all been found by organic geochemistry. These forensic geochemical signatures are shown to be consistent for similar target areas; therefore, the analyses are reliable indicators for the presence of VMS.

One of the first experiments in 1996 in the development of the SGH analysis was to observe if an SGH response could be obtained directly from an ore sample. From office shelf specimens, small rock chips were obtained which were then crushed and milled. The fine pulp obtained was then subjected to the SGH analysis. These shelf specimen samples were from well known VMS deposits of the Mattabi deposit from the Archean Sturgeon Lake Camp in Northwestern Ontario and from the Kidd Creek Archean volcanic-hosted copper-zinc deposit. Even these specimen samples contain a geochemical record of the hydrocarbons produced by the bacteria that had been feeding on these deposits at depth. As a comparison, SGH analysis were similarly conducted on modern-day VMS ore samples taken from a "black smoker" hydrothermal volcanic vent from the deep sea bed of the Juan de Fuca Ridge where high concentrations of microbial growth was also known to exist. The raw data profiles as GC/MS Total Ion Chromatograms are shown below to illustrate the "visible" portion of the VMS signature obtained from the SGH analysis.

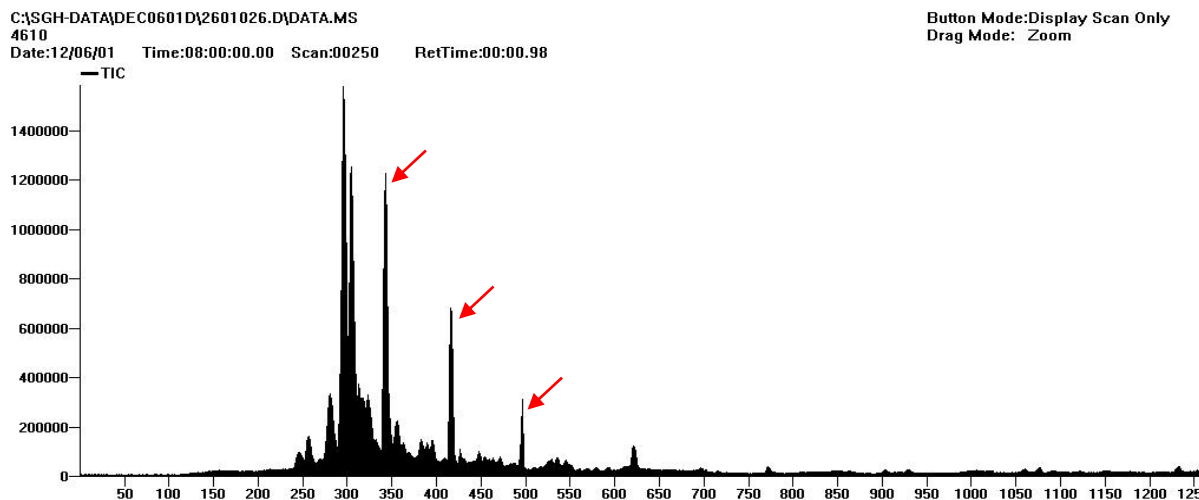


The above profiles are:

- First profile: Samples from modern day "black smokers"
- Second profile: Samples from modern day "black smokers"
- Third profile: Samples from Pre-Cambrian Zn-Cu Kidd Creek deposit
- Fourth profile: Samples from Mattabi deposit

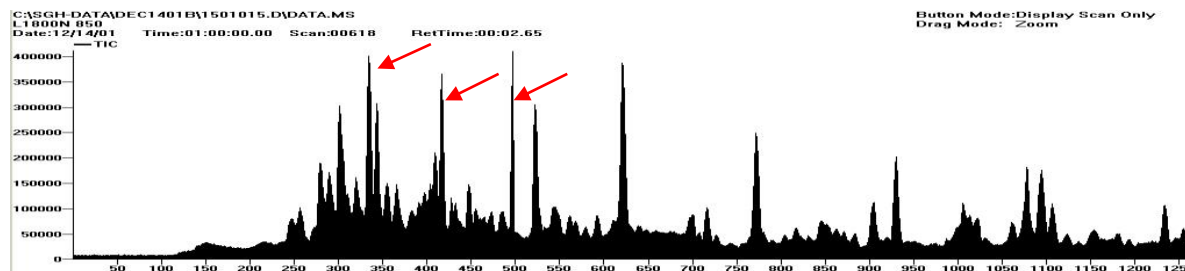
The red arrows point to three compounds that are a *portion* of the SGH signature for VMS type deposits. This visible portion of the VMS signature of hydrocarbons can easily be seen in the analysis of each of these four samples.

The next question in our early objectives was to see if this SGH signature could also be observed in *surficial soil samples* that had been taken over VMS deposits. Through our research projects, soil samples were obtained from over the Ruttan Cu-Zn VMS deposit near Leaf Rapids, Manitoba and located in the Paleoproterozoic Rusty Lake greenstone belt. The profile obtained, as observed in the raw GC/MS chromatogram, is shown in this next image below:



The three compounds indicated by the red arrows represent the same *visible portion* of the VMS signature observed from the modern day black smoker samples and the ore samples taken from the Mattabi and Kidd Creek, even though this soil was taken from over a different VMS deposit in a geographically different area. Is this coincidence?

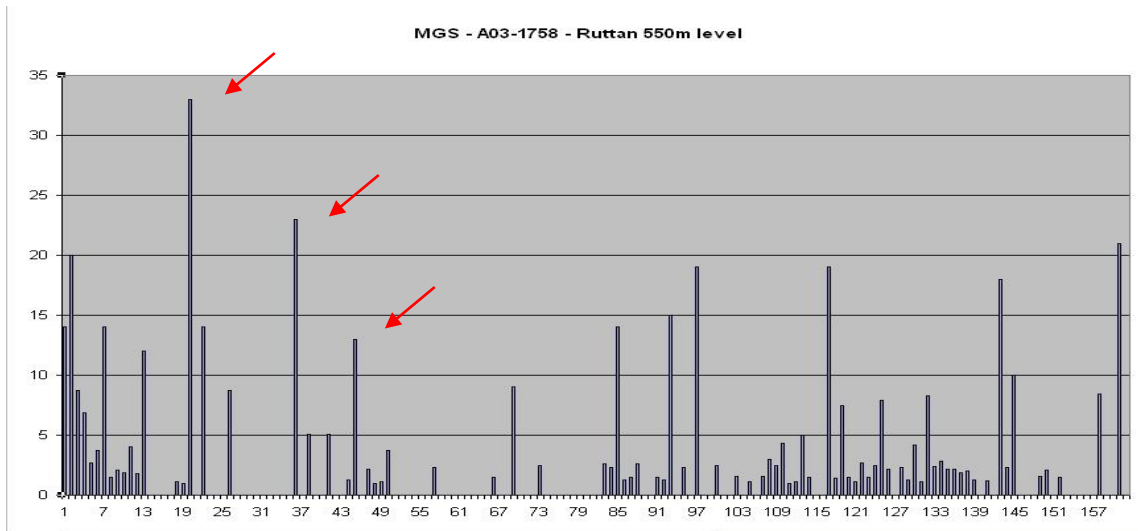
Another soil sample was obtained from Noranda's Gilmour South base-metal occurrence in the Bathurst Mining camp in northern New Brunswick. As shown below, this sample contained a very complex SGH signature, however the visible portion of the VMS signature as indicated by the red arrows is still observed as in the black smoker, Mattabi and Kidd Creek ore samples.



In research conducted by the Ontario Geological Survey, this same portion of the SGH signature was also observed over the VMS deposit at Cross Lake in Ontario. **Note that the visible signature shown as the three compounds indicated by the red arrows is only a small portion of the**

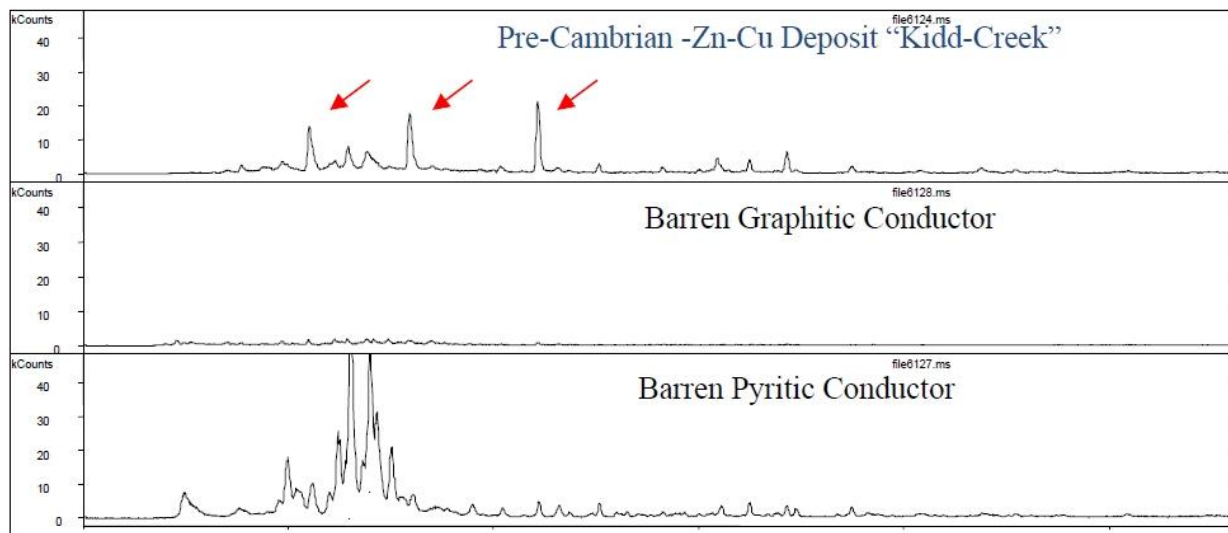
**complete SGH VMS signature.** The full VMS signature is made up of at least three groups, as three organic chemical classes, that together contain at least 35 of the individual SGH hydrocarbons.

The chromatograms shown on the preceding page from the GC/MS analysis are not used directly in the interpretation of SGH data. As we are only interested in a specific list of 162 hydrocarbons, the mass spectrometer and associated software programs specifically identifies the hydrocarbons of interest, runs calculations using relative responses to a short list of hydrocarbons used as standards, and develops an Excel spreadsheet of semi-quantitative concentration data to represent the sample. Thus the SGH results for a sample, like that observed in ore from the Ruttan, are filtered to obtain the concentrations for the specific 162 hydrocarbons. A simple bar graph drawn from the Excel spreadsheet of the hydrocarbons and their concentrations results in a DNA like *forensic SGH signature* as shown below. The portion discussed here as the "visible" SGH VMS signature in the GC/MS chromatograms, is again shown by the red arrows.



Through the work done in the SGH CAMIRO research projects, it was observed that the hydrocarbon signature produced by the SGH technique appeared to also be able to be used to differentiate barren from ore-bearing conductors. This was explored further through the submission and analysis of specific specimen samples that represented a barren pyritic conductor and a barren graphitic conductor.

The GC/MS chromatograms from these two specimens are compared to that obtained from the Kidd-Creek ore as shown below. This diagram conclusively shows that the SGH signatures obtained from the two types of barren conductors are completely different than that obtained by SGH over VMS type ore. SGH is thus able to differentiate between ore-bearing conductors and barren conductors as **the Forensic SGH Geochemical signature is different.**



SGH has been described by the Ontario Geological Survey of Canada (OGS) as a “REDOX cell locator”. Many SGH surveys for Gold and other mineral targets can result in multiple types of anomalies, depending on the class of SGH compounds, even over the same target and in the same set of samples. Thus “Apical”, “Nested-Halo”, and “Rabbit-Ear” or “Halo” type SGH anomalies are all typically observed from the effect of REDOX cells that have developed over deposits. REDOX cells are also related to the presence of bacteriological activity.

The VMS template of SGH Pathfinder Classes uses low and medium weight classes of hydrocarbon compounds. Again, at least three Pathfinder Class group maps, associated with the SGH signature for VMS, must be present to begin to be considered for assignment of a good rating. The Pathfinder Class anomalies in these maps must logically concur and support a consistent interpretation in relation to the expected geochromatographic characteristics of the Pathfinder Class, for a specific area.

The interpretation development history for VMS SGH Pathfinder Class map(s) shown in this report is similar to the development history for other target types. The reader should not draw a conclusion that SGH is used only for sulphide based mineralization as some of the most intense SGH anomaly has been associated with Kimberlites where sulphides are essentially not present.

## **APPENDIX "C"**

### **SOIL GAS HYDROCARBON SURVEY DESIGN AND SAMPLING**

Sample Type and Survey Design: It is highly recommended that a *minimum* of 50 sample "locations" is preferred to obtain enough samples into background areas on both sides of *small* suspected targets (wet gas plays, Kimberlite pipes, Uranium Breccia pipes, veins, etc.). SGH is not interpreted in the same way as inorganic based geochemical method. SGH must have enough samples over both the target and background areas in order to fully study the dispersion patterns or geochromatography of the SGH classes of compounds. Based on our minimum recommendation of at least 50 sample locations we further suggest that all samples be *evenly spaced* with about one-third of the samples over the target and one-third on each side of the target in order for SGH to be used for exploration. Targets other than gas plays, pipes, dykes or veins usually require additional samples to represent both the target and background areas.

SGH has been shown to be very robust to the use of different sample types even "within" the same survey or transect. Research has illustrated that it is far more important to the ultimate interpretation of the results to take a complete sample transect or grid than to skip samples due to different sample media. The most ideal natural sample is still believed to be soil from the "Upper B-Horizon", however excellent results can also be obtained from other soil horizons, humus, peat, lake-bottom sediments, and even snow. The sampling design is suggested to use evenly spaced samples from 15 metres to 200 metres and line spacing from 50 metres to 500 metres depending on the size and type of target. A 4:1 ratio is suggested, however, larger orientation surveys have also been successful. Ideally even large grids should have one-third of the samples over the target and two-thirds of the samples into anticipated background areas. This will allow the proper assessment of the SGH geochromatographic vectoring and background site signature levels with minimal bias. Individual samples taken at significant distances from the main survey area to represent background are not of value in the SGH interpretation as SGH results are not background subtracted. Samples can be drip dried in the field and do not need special preservation for shipping and has been specifically designed to avoid common contaminants from sample handling and shipping. SGH has also been shown to be robust to cultural activities even to the point that successful results and interpretation has been obtained from roadside right-of-ways. In conclusion, the conditions for the sample type and survey design include:

- Fist sized samples are retrieved from a shallow dug hole in the 15-40 cm range of depth.
- Different sample types can be taken even "within" the same survey or transect, data leveling is rarely ever required. SGH is highly effective in areas of very difficult terrain. The Golden Rule is to always take a sample.
- Samples should be evenly spaced in a grid or a series of transects with sample lines spaced at a ratio of up to 4:1 (line spacing: sample spacing).
- A minimum of 50 sample "locations" is recommended with one-third over the target and one-third on each side of the target into background if this can be predicted. This provides the opportunity of optimal data contrast.
- If very wet, samples can be drip dried in the field.
- No special preservation is required for shipping.

## **APPENDIX "D"**

### **SAMPLE PREPARATION AND ANALYSIS**

Upon receipt at Activation Laboratories the samples are air-dried in isolated and dedicated environmentally controlled rooms set to 40°C. The dried samples are then sieved. In the sieving process, it is important that compressed air is not used to clean the sieves between samples as trace amounts of compressor oils "may" poison the samples and significantly affect some target signatures. Solvents such as Acetone, Methanol, and Hexane cannot be used at any time for cleaning sample containers or sampling apparatus ie. Cleaning sieves between samples. The use of solvents at this time severely reduces the response of the hydrocarbons measured. At Activation Laboratories a vacuum is used to clean the sieve between each sample. The -80 mesh sieve fraction (<177 microns, although different mesh sizes can be used at the preference of the exploration geologist) is collected and packaged in a Kraft paper envelope and transferred from our sample preparation department to our Organics Geochemical department also in our World Headquarters in Ancaster, Ontario, Canada. Each sample is then extracted, separated by gas chromatography and analyzed by mass spectrometry using customized parameters enabling the highly specific detection of the 162 targeted hydrocarbons at a *reporting limit* of one part-per-trillion (ppt). This trace level limit of reporting is critical to the detection of these hydrocarbons that, through research, have been found to be related at least in part to the breakdown and release of hydrocarbons from the death phase of microbes directly interacting with a deposit at depth. The hydrocarbon signatures are directly linked to the deposit type, which is used as a food source. The hydrocarbons that are mobilized and metabolized by the microbes are released in the death phase of each successive generation. Very few of the hydrocarbons measured are actually due to microbe cell structure, or hydrocarbons present or formed in the genesis of the deposit or from anthropogenic contamination. The results of the SGH analysis is reported in raw data form in an Excel spreadsheet as "semi-quantitative" concentrations without any additional statistical modification.

## **APPENDIX "E"**

### **SGH DATA QUALITY**

#### **Reporting Limit**

The SGH Excel spreadsheet of results contains the raw unaltered concentrations of the individual SGH compounds in units of "part-per-trillion" (ppt). The reporting of these ultra low levels is vital to the measurement of the small amounts of hydrocarbons now known to be leached/metabolized and subsequently released by dead bacteria that have been interacting with the ore at depth. To ensure that the data has a high level of confidence, a "reporting limit" is used. The reporting limit of 1 ppt actually represents a level of confidence of approximately 5 standard deviations where SGH data is assured to be "real" and non-zero. Thus in SGH the use of a reporting limit automatically removes site variability, and there is no need to further background subtract any data as the reporting limit has already filtered out any site background effects. Thus we recommend that all data that is equal to or greater than 2 ppt should be used in any data review. It is important to review all SGH data as low values that may be the centre of halo anomalies and higher values as apical anomalies or as halo ridges are all important.

#### **Laboratory Replicate Analysis**

A laboratory replicate is a sample taken randomly from the submitted survey being analyzed and are not unrelated samples taken from some large stockpile of bulk material. In the Organics laboratory an equal portion of this sieved sample, or pulp, is taken and analyzed in the same manner using the Gas Chromatography/Mass Spectrometer. The comparison of laboratory replicate and field duplicate results for chemical tests in the parts-per-million or even parts-per-billion range has typically been done using an absolute "relative percent difference (RPD)" statistic which is an easy proxy for error estimation rather than a more complete analysis of precision as specified by Thompson and Howarth. An RPD statistic is not appropriate for SGH results as the reporting limit for SGH is *1 part-per-trillion*. Further, *SGH is a semi-quantitative technique* and was not designed to have the same level of precision as other less sensitive geochemistry's as it is only used as an exploration tool and not for any assay work. SGH is also designed to cover a wide range of organic compounds with an unprecedented 162 compounds being measured for each sample. In order to analyze such a wide molecular weight range of compounds, sacrifices were made to the variability especially in the low molecular weight range of the SGH analysis. The result is that the first fifteen SGH compounds in the Excel spreadsheet is expected to exhibit more imprecision than the other 147 compounds. An SGH laboratory replicate is a large set of data for comparison even for just a few pairs of analyses. Precision calculations using a Thompson and Howarth approach should only be used for estimating error in individual measurements, and not for describing the average error in a larger data set. In geochemical exploration geochemists seek concentration patterns to interpret and thus rigorous precision in individual samples is not required because the concentrations of many samples are interpreted collectively. For these reasons recent and independent research at Acadia University in Canada promote that a percent Coefficient of Variation (%CV) should be used as a universal measurement of relative error in all geochemical applications. As SGH results are a relatively large data set for nearly all submissions, %CV is a better statistic for use with SGH. By using %CV, the concentration of duplicate pairs is irrelevant because the units of concentration cancel out in the formation of the coefficient of variation ratio. For SGH, the %CV is calculated on all values  $\geq 2$  ppt. These values are averaged and represent a value for each pair of replicate analysis of the sample. All of the %CV values for the replicates are then averaged to

report one %CV value to represent the overall estimate of the relative error in the laboratory sub-sampling from the prepared samples, and any instrumental variability, in the SGH data set for the survey. Actlabs' has successfully addressed the analytical challenge to minimize analytical variability for such a large list of compounds. Thus as SGH is also interpreted as a signature and is solely used for exploration and not assay measurement, the data from SGH is "*fit for purpose*" as a geochemical exploration tool.

### **Historical SGH Precision**

In the general history of geochemistry, studies indicate that a large component of total measurement error is introduced during the collection of the initial sample and in sub-sampling, and that only a subordinate amount of error in the result is introduced during preparation and analysis. A historical record encompassing many projects for SGH, including a wide variety of sample types, geology and geography, shows that the consistency and precision for the analysis of SGH *is excellent* with an overall precision of 6.8% Coefficient of Variation (%CV). When last calculated, this number had a range of a maximum of 12.4% CV, a minimum of 3.0% CV, with a standard deviation of 1.6%, in a population made up of over 400 targets (over 45,000 samples) interpreted since June of 2004. Again the precision of 6.8% CV included all of the sample types as soil from different horizons, peat, till, humus, lake-bottom sediments, ocean-bottom sediments, and even snow. When field duplicates have been revealed to us, we have found that the precision of the field duplicates are in the range of about 9 to 12 %CV. As SGH is interpreted using a combination of compounds as a chemical "class" or signature, the affect of a few concentrations that may be imprecise in a direct comparison of duplicates is not significant. Further, projects that have been re-sampled at different times or seasons are expected to have different SGH concentrations. The SGH anomalies may not be in exactly the same position or of the same intensity due to variable conditions that may have affected the dispersion of different pathfinder classes. However, the SGH "signature" as to the presence of the specific mix of SGH pathfinder classes will definitely still exist, and will retain the ability to identify the deposit type and vector to the same target location.



# APPENDIX "F"

## SGH DATA INTERPRETATION

### SGH Interpretation Report

All SGH submissions must be accompanied by relative or UTM coordinates so that we may ensure that the sample survey design is appropriate for use with SGH, and to provide an SGH interpretation with the results. In our interpretation procedure, we separate the results into 19 SGH sub-classes. These classes include specific alkanes, alkenes, thiophenes, aromatic, and polyaromatic compounds. Note that none of the SGH hydrocarbons are "gaseous" at room temperature and pressure. The classes are then evaluated in terms of their geochromatography and for coincident compound class anomalies that are unique to different types of mineralization. Actlabs uses a six point scale in assigning a subjective rating of similarity of the SGH signatures found in the submitted survey to signatures previously reviewed and researched from known case studies over the same commodity type. Also factored into this rating is the appropriateness of the survey and amount of data/sample locations that is available for interpretation. This rating scale is described in detail in the following section.

### SGH PATHFINDER CLASS MAGNITUDE

The magnitude of any individual concentration or that of a hydrocarbon class *does not imply* that the data is of more importance or that mineralization is of higher quantity or grade. SGH interpretation must use the review of the combination of specific hydrocarbon classes to make any interpretation.

### GEOCHEMICAL ANOMALY THRESHOLD VALUE

In the interpretation of "inorganic" geochemical data one of the determinations to be made is to calculate a "Threshold" value above which data is considered anomalous. This is done on an element by element basis. In the interpretation of this "organic" geochemical data this determination is done differently. The determination of a threshold value is not calculated for each hydrocarbon compound. The determination of a threshold value is also a concentration below which geochemical data is considered as "noise" for the purposes of geochemical interpretation. As discussed, SGH uses a "Reporting Limit" instead of some type of Detection Limit. The amount of noise that is already eliminated in the data, as below the Reporting Limit of 1 part-per-trillion (shown in the data spreadsheet as "-1" as "not-detected at a Reporting Limit of 1 ppt") is equivalent to approximately 5 standard deviations of variability. *To thus calculate an additional Threshold Value is a loss of real and valuable data.* Further, in the interpretation of SGH data, individual compounds are not considered (unless explicitly mentioned in the report). The interpretation of SGH data is exclusively conducted by "compound chemical class" which is the sum of four to fourteen individual hydrocarbons in the same organic chemical class as these compounds naturally have the same chemical properties that ultimately define their spatial dispersion characteristics in their rise from a mineral target through the overburden. This combined class is more reliable than the measurement of any one compound. SGH also eliminates the need for a Threshold value determination above the Reporting Limit due to the "high specificity" of the specific hydrocarbons and the classes they form. Each of the hydrocarbons has been hand selected due to their lower probability of being found in general surface soils. Further, only those classes where the majority of the compounds are detected above the Reporting Limit are considered in the interpretation. This defines the SGH geochemistry as having less geochemical noise due to the use of a reporting limit and as having higher confidence in the use of groups (classes) of data instead of

individual compounds. However the most important aspect of interpretation is the use of a forensic signature. At least three specific "Pathfinder" classes, based on the combinations or template of classes we have developed, must be present to define the hydrocarbon signature to confidently predict the presence of a specific type of mineral target. *Do not calculate another Threshold value.* **Fact:** It has been proven many times that important SGH anomalies that depict mineralization at depth can exist even with data at 3 ppt.

## **Mobilized Inorganic Geochemical Anomalies**

It is important to note that SGH is essentially "blind" to any inorganic content in samples as only *organic* compounds as hydrocarbons are measured. Thus inorganic geochemical surface anomalies that have migrated away from the mineral source, and thus may be interpreted and found to be a false target location, is not detected and does not affect SGH results. This fact is of great advantage when comparing the SGH results to inorganic geochemical results. If there is agreement in the location of the anomalies between the organic and inorganic technique, such as Actlabs' Enzyme Leach, a significant increase in confidence in the target location can be realized. If there is no agreement or a shift in the location of the anomalies between the techniques, the inorganic anomaly may have been mobilized in the surficial environment.

## **The Nugget Effect**

As SGH is "blind" to the inorganic content in the survey samples, any concern of a "nugget effect" will not be encountered with SGH data. A "nugget effect" may be of a concern for other inorganic geochemical methods from surveys over copper, gold, lead, nickel, etc. type targets.

## **SGH DATA LEVELING**

The combination of SGH data from different field sampling events has rarely required leveling in order to combine survey grids. The only circumstances that have occasionally required leveling has been the combination of samples that are very fine in texture, thus having a combined large surface area to samples of peat that may be in nearby areas. Even after maceration of the peat and in using the maximum size of sample amenable to this test method, peat samples have a significantly lower surface area. Peat samples have only required leveling in one survey in the last 500 SGH interpretations.

In only the last year it has been observed that SGH data *may* require leveling when different field sampling events have significantly different soil temperature. It has been documented that only when "soil" samples are taken from "frozen" ground that data leveling may be required as frozen sample act as a frozen cap to the hydrocarbon flux and may collect a higher concentration of hydrocarbon compounds compared to sampling during seasons where the samples are not frozen. Only two surveys have required leveling in the last 500 SGH interpretations.

The author has taken introductory training in the leveling of geochemical data. If leveling is required, both data sets are reviewed in terms of maximum, minimum and average values for each SGH Pathfinder Class intended for use in the interpretation. Data is sectioned into quartiles and each section is assigned specific leveling factors that are then applied to one data set. It should be noted that any type of data leveling is an approximation.

## **APPENDIX "G"**

### **SGH RATING SYSTEM DESCRIPTION**

To date SGH has been found to be successful in the depiction of buried mineralization for Gold, Nickel, VMS, SEDEX, Uranium, Cu-Ni-PGE, IOCG, Base Metal, Tungsten, Lithium, Polymetallic, and Copper, as well as for Kimberlites, Coal Seam, Wet Gas and Oil Plays. SGH data has developed into a dual exploration tool. From the interpretation, a vertical projection of the predicted location of the target can be made as well as a statement on the rating of the comparability of the identification of the anticipated target type to that from known case studies, as an example: if the client anticipates the target to be a Gold deposit, what is the rating or comparability that the target is similar to the SGH results over a Gold deposit in Nunavut, shear hosted and sediment hosted deposits in Nevada, or Paleochannel Gold mineralization in Western Australia.

- **A rating of "6"** is the highest or best rating, and means that the SGH classes most important to describing a Gold related hydrocarbon signature are all present and consistently vector to the same location with well defined anomalies. To obtain this rating there also needs to be other SGH classes that when mapped lend support to the predicted location.
- **A rating of "5"** means that the SGH classes most important to describing a Gold signature are all present and consistently describe the same location with well defined anomalies. The SGH signatures may not be strong enough to also develop additional supporting classes.
- **A rating of "4"** means that the SGH classes most important to describing a Gold signature are mostly present describing the location with well defined anomalies. Supporting classes may also be present.
- **A rating of "3"** means that the SGH classes most important to describing a Gold signature are mostly present and describe the same location with fairly well defined anomalies. Some supporting classes may or may not be present.
- **A rating of "2"** means that some of the SGH classes most important to describing a Gold signature are present but a predicted location is difficult to determine. Some supporting classes may be present
- **A rating of "1"** is the lowest rating, and means that one of the SGH classes most important to describing a Gold signature is present but a predicted location is difficult to determine. Supporting classes are also not helpful.

The SGH rating is directly and significantly affected by the survey design. Small data sets, especially if significantly <50 sample locations, or transects/surveys that are geographically too short *will automatically receive a lower rating no matter how impressive an SGH anomaly might be.* When there is not enough sample locations to adequately review the SGH class geochromatography, or when the sample spacing is inadequate, or if the spacing is highly variable such that it biases the interpretation of the results, then the confidence in the interpretation of any geochemistry is adversely affected. The SGH rating is not just a rating of the agreement between the SGH pathfinder classes for a particular target type; it is a rating of the overall confidence in the SGH results from this particular survey. The interpretation is only based on the SGH results without any information from other geochemical, geological or geophysical information unless otherwise specified.

### **HISTORY & UNDERSTANDING**

The subjective SGH rating system has been used since 2004 when Activation Laboratories started providing an SGH Interpretation Report with every submission for SGH analysis to aid our clients in understanding this organic geochemistry and ensuring that they obtain the best results for their

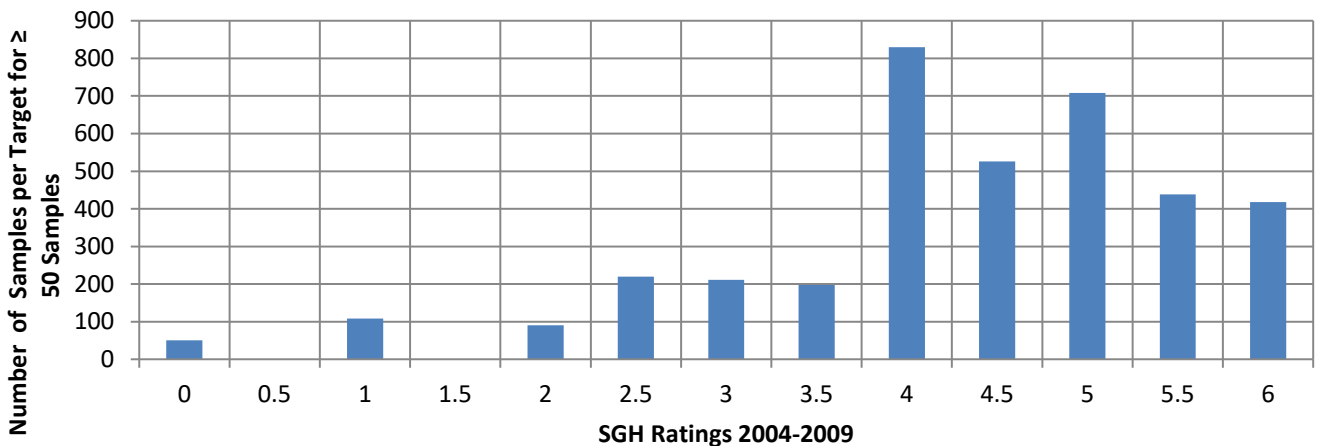
surveys. As explained in the previous section, the SGH rating is not just a rating of how definitive an SGH anomaly is, and it is not based just on the map(s) provided in this report. It is a rating of “confidence in the interpreted anomaly” from the combination of:

- (i) are the expected SGH Pathfinder Classes of compounds present from the template for this target type (one Pathfinder Class map is shown in the report, at least three must be present to adequately describe the correct signature for a particular target),
- (ii) how well do these SGH Pathfinder Classes agree in describing a particular area,
- (iii) how well does this agreement compare to SGH case studies over known targets of that type,
- (iv) how well is the interpreted anomaly defined by the survey (i.e. a single transect does not provide the same confidence as a complete grid of samples), and
- (v) is there at least a minimum of 50 sample locations in the survey so that there may be an adequate amount of data to observe the geochromatography of the different SGH Pathfinder Class of compounds.

The question often arises by clients as to the frequency of a rating, e.g. “how often is a rating of 5.0 given in an interpretation”. To better understand this we present this review of the history of the SGH rating program since 2004 and some of the underlying situations that can affect the historical rating charts. Originally it was recommended that a minimum of 35 sample location be used for small target exploration, however it was quite quickly realized that this is often insufficient and at least 50 sample locations were required. In 2007 the rating scale was refined to include increments of 0.5 units rather than just integer values from 0 to 6.

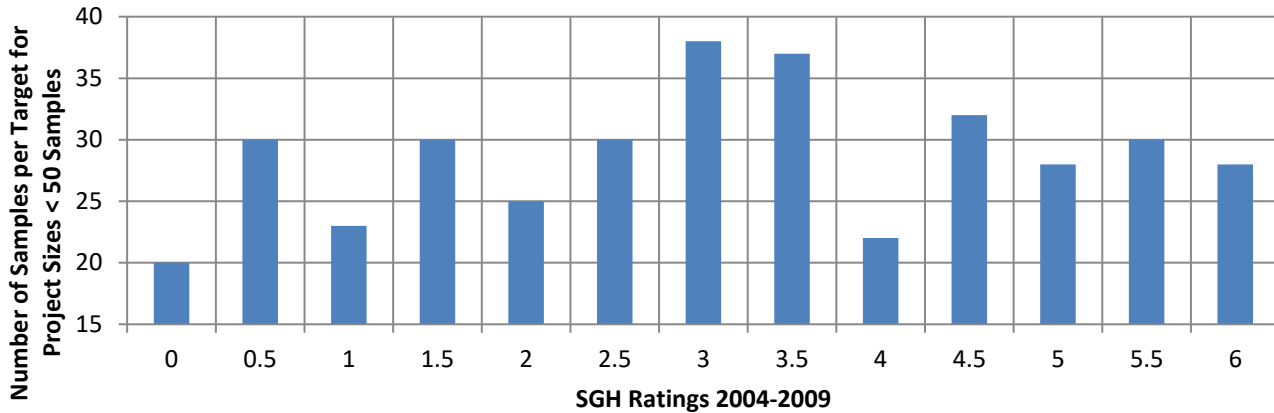
A rating frequency may be biased high as most clients conduct an orientation study over a known target, thus several of these projects result in high ratings. Note that, at this time, the rating is not said to be linked to grade of a deposit or depth to the target. Even in exploration surveys clients tend to submit samples over more promising targets due to knowledge of the geology and prior geochemical or geophysical results. As shown in the following chart, projects with SGH data from 200 or more sample locations have a higher level of confidence in the interpretation as the geochromatography of the SGH Pathfinder Classes of compounds can be more completely observed and reviewed.

### SGH Ratings vs Number of Samples per Target for ≥ 50 Samples



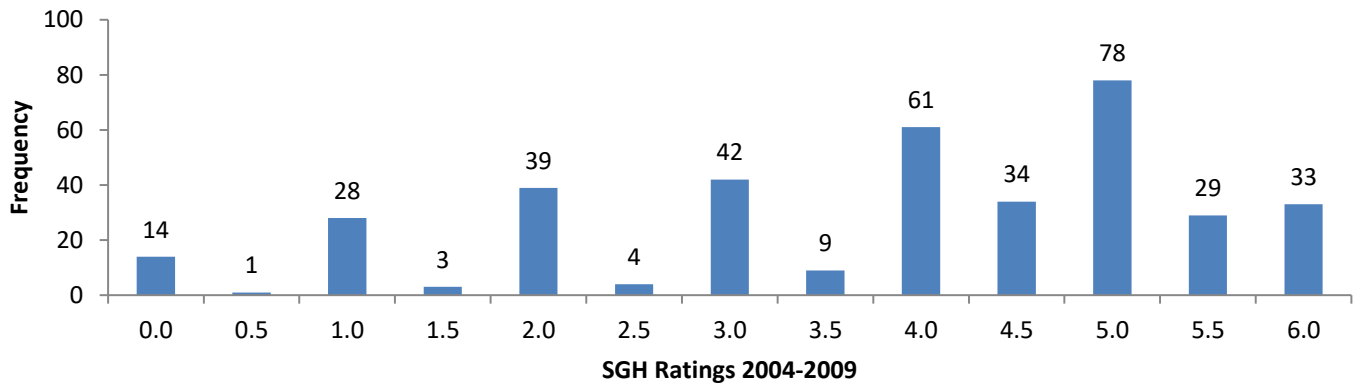
The rating frequency may be biased low as research projects often include a bare minimum of samples to reduce costs. Research projects may also be over targets known to be difficult to depict with geochemistry. Multiple targets in close vicinity in a survey may result in a low bias as the Pathfinder Class geochromatography is more difficult to deconvolute. Ratings may also be biased low if less than the recommended 50 sample locations are submitted as indicated by the following chart. This chart also illustrates that there is no interpretation bias to a particular rating value.

### SGH Ratings vs Number of Samples per Target for < 50 Samples

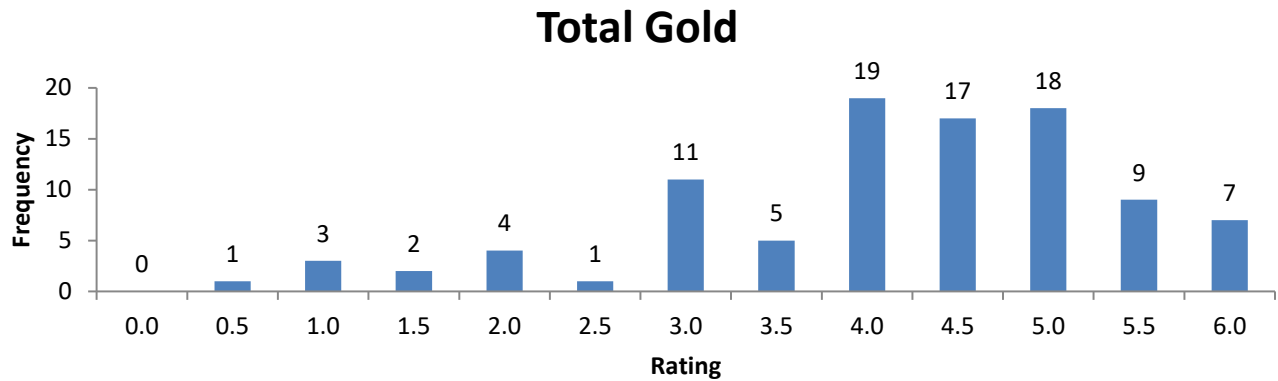


The overall rating frequency for over 400 targets from January 2004 to December 2009 is shown in the chart below illustrating that surveys over more promising targets are most often submitted for best use of research or exploration dollars. It also indicates that the 0.5 increments were less frequent as they started in 2007.

### SGH Rating History



More specific for SGH interpretation for Gold targets, the overall rating frequency for 97 targets from January 2004 to December 2009 is shown in the chart below that also illustrates that surveys over more promising Gold targets are most often submitted for best use of research or exploration dollars.



## APPENDIX "H"

**NOTE: THERE IS NEW PRICING FOR THE SGH GEOCHEMISTRY**

**SAMPLE PREPARATION:** CODE S4 - \$4.25 per sample

**INTERPRETATION FOR ONE COMMODITY TARGETS:** Included in the price of analysis of \$48.00 per sample

**INTERPRETATION FOR MULTI-COMMODITY TARGETS:** i.e. VMS, SEDEX, Polymetallic, IOCG, IOCGU, Cu-Au-Porphyry, etc. – add additional price of \$500 is applied to cover the additional time in interpretation.

**"ADDITIONAL INTERPRETATIONS": (\$ 500.00) - if within 60 days after delivery of the report.**

The SGH data can be interpreted multiple times in comparison to a variety of SGH templates developed for exploration for different mineral targets or petroleum plays. The samples do not have to be reanalyzed. This can be addressed as a separate section of a report or as a separate report based on the client's wishes. The price is per survey area, e.g. if there are two projects in a submission, perhaps a North area and South area, and both survey areas are to be interpreted for say Gold and Copper, the first interpretation is included in the SGH analysis price, the second interpretation for each area would be priced at \$1000 per area, thus a total of \$2000.

## Results A20-15019

Jamieson Geological Inc.  
Walker Knight Survey

SGH Units – ppt (Parts-per-trillion)

	SGH-Copper	SGH-Gold
00 7+00N	179.2	2.2
00 7+50N	181.8	3.5
00 8+00N	167.6	2.8
00 8+50N	182.9	5.0
00 9+00N	164.7	3.4
00 9+00N-R	174.0	3.6
00 9+50N	160.4	2.6
1E 13+00N	188.3	4.6
1E 12+50N	176.7	3.3
1E 12+00N	208.7	5.3
1E 11+50N	175.1	8.3
1E 11+00N	179.0	3.6
1E 10+50N	200.9	6.4
1E 10+00N	179.3	4.3
1E 9+50N	192.5	7.1
1E 9+00N	192.4	3.7
1E 8+50N	179.0	4.4
1E 8+00N	204.9	6.5
1E 7+50N	188.1	4.1
1E 7+00N	201.1	5.0
1E 6+50N	189.8	7.3
1E 6+50N-R	197.9	9.1
1E 6+00N	183.4	3.5
1E 5+50N	198.2	4.2
1E 5+00N	216.5	9.0
1E 4+50N	191.5	3.8
1E 4+00N	189.3	3.9
1E 3+50N	215.5	5.2
1E 3+00N	218.0	7.3
2E 3+00N	193.5	4.3
2E 3+50N	192.6	4.2
2E 4+00N	196.4	4.9
2E 4+50N	196.6	5.0
2E 5+00N	197.3	4.3
2E 5+50N	192.8	5.4
2E 6+00N	203.6	6.1
2E 6+50N	188.2	5.0
2E 6+50N-R	193.7	5.7
2E 7+00N	229.9	6.7
2E 7+50N	213.3	4.4
2E 8+00N	204.8	6.4
2E 8+50N	179.9	3.5
2E 9+00N	214.9	17.4
2E 9+00N DUP	208.0	7.5
5E 3+00N	202.4	7.5
5E 3+50N	182.2	3.8
5E 4+00N	179.0	2.7



Results A20-15019

Jamieson Geological Inc.  
Walker Knight Survey

SGH Units – ppt (Parts-per-trillion)

	SGH-Copper	SGH-Gold
5E 4+50N	211.5	6.0
5E 5+00N	202.2	3.7
5E 5+50N	187.1	3.3
5E 6+00N	185.0	3.0
5E 6+50N	184.1	3.8
5E 7+00N	178.1	3.1
5E 7+00N-R	176.7	3.0
5E 7+50N	195.7	3.5
5E 8+00N	185.4	3.7
5E 8+50N	200.6	4.1
5E 9+00N	210.4	4.8
5E 9+50N	195.6	4.1
5E 10+00N	208.0	3.5
5E 10+50N	192.5	3.6
5E 11+00N	180.6	2.5
5E 11+50N	181.2	2.4
5E 12+00N	267.4	5.8
5E 12+50N	236.3	5.5
5E 13+00N	202.6	4.4
4E 13+00N	280.6	4.2
4E 12+50N	291.7	5.7
4E 12+00N	171.0	4.4
4E 12+00N-R	168.0	4.4
4E 11+50N	175.1	2.7
4E 11+00N	192.1	3.2
4E 10+50N	191.7	3.0
4E 10+00N	197.0	3.6
4E 9+50N	197.0	3.7
4E 9+00N	209.4	4.4
4E 8+50N	188.2	2.9
4E 8+00N	210.1	3.5
4E 7+50N	207.8	4.0
4E 7+00N	194.4	3.8
4E 6+50N	183.0	3.2
4E 6+00N	196.7	3.6
4E 5+50N	169.8	2.4
4E 5+00N	185.9	3.2
4E 4+50N	195.9	3.6
4E 4+50N-R	203.0	3.4
4E 4+00N	229.6	4.6
4E 3+50N	199.9	3.5
4E 3+00N	215.4	4.2
3E 3+00N	215.1	4.7
3E 3+50N	187.7	3.0
3E 4+00N	189.4	2.9
3E 4+50N	177.3	2.5
3E 5+00N	168.1	2.3

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SGH Units – ppt (Parts-per-trillion)

		SGH-Copper	SGH-Gold
3E 5+50N		178.2	3.9
3E 6+00N		208.2	4.3
3E 6+50N		189.2	2.9
3E 7+00N		191.7	3.1
3E 7+00N DUP		197.3	3.1
3E 7+50N		189.2	2.8
3E 8+00N		219.6	3.5
3E 8+00N-R		234.8	3.8
3E 8+50N		221.3	3.2
3E 9+00N		212.4	3.2
3E 9+50N		219.5	3.0
3E 10+00N		218.2	3.3
3E 10+50N		210.8	3.7
3E 11+00N		232.5	4.0
3E 11+50N		233.7	3.4
3E 12+00N		232.7	3.5
3E 12+50N		221.4	3.6
3E 13+00N		259.1	5.5
2E 13+00N		197.9	2.9
2E 12+50N		153.3	4.0
2E 12+00N		208.3	3.4
2E 11+50N		220.1	4.1
2E 11+00N		220.4	3.5
2E 11+00N-R		219.8	3.5
2E 10+50N		212.8	4.4
2E 10+00N		233.4	5.0
2E 9+50N		268.9	10.5
1-WKG-20-SGH	1	132.3	3.7
2-WKG-20-SGH	2	150.4	2.9
3-WKG-20-SGH	3	130.0	2.5
4-WKG-20-SGH	4	269.4	19.1
5 WKG-20-SGH	5	156.5	3.6
5 WKG-20-SGH-R	6	146.1	1.3
6-WKG-20-SGH	7	123.5	4.7
7-WKG-20-SGH	8	244.7	13.3
8-WKG-20-SGH	9	150.3	2.7
9-WKG-20-SGH	10	163.6	1.3
10-WKG-20-SGH	11	131.0	4.7
11-WKG-20-SGH	12	161.4	7.3
12 WKG-20-SGH	13	162.5	2.0
13-WKG-20-SGH	14	137.5	0.9
14-WKG-20-SGH	15	206.2	10.4
15-WKG-20-SGH	16	155.9	2.6
16-80 WKG-20-SGH	17	166.3	1.9
17-80 WKG-20-SGH	18	122.5	1.0
18-80 WKG-20-SGH	19	131.2	2.1
19-80 WKG-20-SGH	20	173.2	1.9

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Walker Knight Survey

SGH Units – ppt (Parts-per-trillion)

		SGH-Copper	SGH-Gold
20-80 WKG-20-SGH	20	178.5	16.9
20-80 WKG-20-SGH-R	21	147.6	1.9
21-80 WKG-20-SGH	22	188.6	3.4
22-80 WKG-20-SGH	23	193.7	2.2
23-80 WKG-20-SGH	24	142.2	2.4
24-80 WKG-20-SGH	25	173.5	2.7
25-80 WKG-20-SGH	26	148.7	1.6
26-80 WKG-20-SGH	27	155.3	2.1
27-80 WKG-20-SGH	28	118.3	1.7
28-80 WKG-20-SGH	29	133.1	1.3
29-80 WKG-20-SGH	30	190.5	3.3
30-80 WKG-20-SGH	31	186.9	3.3
31-80 WKG-20-SGH	32	160.8	2.3
32-80 WKG-20-SGH	33	125.0	1.3
33-80 WKG-20-SGH	34	135.3	4.0
34-80 WKG-20-SGH	35	193.1	4.6
35-80 WKG-20-SGH	35	145.3	2.5
35-80 WKG-20-SGH-R	36	127.2	1.6
36-80 WKG-20-SGH	37	122.1	1.8
37-80 WKG-20-SGH	38	118.8	1.3
38-80 WKG-20-SGH	39	162.2	3.3
39-80 WKG-20-SGH	40	197.3	5.5
40-80 WKG-20-SGH	41	172.0	2.9
41-80 WKG-20-SGH	42	152.7	11.0
42-80 WKG-20-SGH	43	155.5	3.4
43-80 WKG-20-SGH	44	152.7	3.6
44-80 WKG-20-SGH	45	163.8	2.0
45-80 WKG-20-SGH	46	147.2	3.3
46-80 WKG-20-SGH	47	207.7	3.7
47-80 WKG-20-SGH	48	166.1	10.6
48-80 WKG-20-SGH	49	185.6	16.4
49-80 WKG-20-SGH	50	141.8	1.5
50-80 WKG-20-SGH	50	141.6	2.3
50-80 WKG-20-SGH-R	51	158.9	9.2
51-80 WKG-20-SGH	52	181.8	7.8
52-80 WKG-20-SGH	53	155.8	6.2
53-80 WKG-20-SGH	54	243.4	13.1
54-80 WKG-20-SGH	55	163.7	1.6
55-80 WKG-20-SGH	56	207.5	2.2
56-80 WKG-20-SGH	57	207.0	7.6
57-80 WKG-20-SGH	58	215.0	2.1
58-80 WKG-20-SGH	59	225.5	1.6
59-80 WKG-20-SGH	60	155.0	1.7
60-80 WKG-20-SGH	61	207.3	4.6
61-80 WKG-20-SGH	62	278.2	2.7
62-80 WKG-20-SGH	63	413.1	5.2
63-80 WKG-20-SGH	64	240.4	0.9

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Jamieson Geological Inc.  
Walker Knight Survey

SGH Units – ppt (Parts-per-trillion)

		SGH-Copper	SGH-Gold
64-80 WKG-20-SGH	65	155.2	0.5
65-80 WKG-20-SGH	65	258.8	5.1
65-80 WKG-20-SGH-R	66	237.6	3.2
66-80 WKG-20-SGH	67	292.8	1.6
67-80 WKG-20-SGH	68	338.2	3.9
68-80 WKG-20-SGH	69	293.1	1.7
69-80 WKG-20-SGH	70	231.0	2.8
70-80 WKG-20-SGH	71	203.3	0.8
71-80 WKG-20-SGH	72	212.7	2.1
72-80 WKG-20-SGH	73	323.5	8.6
73-80 WKG-20-SGH	74	259.7	2.1
74-80 WKG-20-SGH	75	206.9	1.8
75-80 WKG-20-SGH	76	254.1	2.3
76-80 WKG-20-SGH	77	178.9	2.1
77-80 WKG-20-SGH	78	168.4	2.0
78-80 WKG-20-SGH	79	170.8	0.5
79-80 WKG-20-SGH	80	131.0	0.5
80-80 WKG-20-SGH	80	239.6	3.0
80-80 WKG-20-SGH-R	81	207.2	1.0

## Walker Knight Gold Project - 2020 Spatiotemporal Geochemical Hydrocarbon SGH Survey and Sampling

(WKG-20-SGH-##)	UTM East - Sample	UTM North - Sample	Material	Sample Date	SGH - Gold	SGH - Copper	Samplers Comments
1	500080	5282990	B	Nov., 10, 2020	132.3	3.7	B Horizon 15-20 cm; Waypoints 500080 528290; Slight north slope, med orange brown soil;
2	500075	5282880	B	Nov., 10, 2020	150.4	2.9	BH 15-25 cm; Waypoint 500075 528881; Slight south slope, med dark orange brown soil;
3	500025	5282918	B	Nov., 10, 2020	130.0	2.5	Slight west slope, med orange brown soil; BH 15-20 cm; Waypoint 500025 5282918;
4R	500106	5282948	B	Nov., 10, 2020	269.4	19.1	Repeat Slight west slope, med dark orange brown soil; BH 20 cm; Waypoint 500106 5282895;
5	500159	5282895	B	Nov., 10, 2020	156.5	3.6	BH 15 cm; Waypoint 500159 5282895; Mod west slope, med orange brown soil;
6	500217	5283006	B	Nov., 10, 2020	146.1	1.3	Sample # 06 Waypoint 500217 5283006; Slight north slope, med orange brown
7	500143	5283065	B	Nov., 10, 2020	123.5	4.7	BH 15 cm; Slight south west slope, med orange dark brown; Waypoints 500143 5283065;
8	500025	5283049	B	Nov., 10, 2020	244.7	13.3	Slight west slope, med orange brown soil; BH 25 cm; Waypoints 500025 5283049;
9R	499953	5283038	B	Nov., 10, 2020	150.3	2.7	BH 15 cm; Mod east slope, med orange dark brown; Waypoints 499953 5283038;
10	499977	5283082	B	Nov., 10, 2020	163.6	1.3	Slight east slope, med orange brown soil; BH 10 cm; Waypoints 499977 5283082;
11	499992	5283127	B	Nov., 10, 2020	131.0	4.7	BH 10 cm; Slight south east slope, med orange brown; Waypoints 499992 5283127;
12	500010	5283178	B	Nov., 10, 2020	161.4	7.3	Slight north slope, med orange brown soil; BH 10 cm;
13	500032	5283213	B	Nov., 10, 2020	162.5	2.0	BH 15 cm; mod southeast slope, med orange brown soil; Waypoints 500032 5283213;
14	500043	5283262	B	Nov., 10, 2020	137.5	0.9	Slight northwest slope, med orange brown; Waypoints 500043 5283262; BH 15-20 cm;
15	500068	5283301	B	Nov., 10, 2020	206.2	10.4	BH 10 cm; Slight south east slope, med orange dark brown; Waypoints 500068 5283301;
16	500089	5283363	B	Nov., 11, 2020	155.9	2.6	Slight southeast slope, med orange brown soil; Waypoints 500089 5283363; BH 15 cm;
17	500000	5283374	B	Nov., 11, 2020	166.3	1.9	BH 10-15 cm; Slight southwest slope, light med brown; Waypoints 500000 5283374;
18	499962	5283300	B	Nov., 11, 2020	122.5	1.0	BH 15 cm; Slight southwest slope, med dark orange brown; Waypoints 499962 5283300;
19	499924	5283214	B	Nov., 11, 2020	131.2	2.1	BH 15 cm; Slight northeast slope, med orange brown; Waypoints 499924 5283214;
20	499889	5283139	B	Nov., 11, 2020	173.2	1.9	BH 15-20 cm; Slight east slope, med dark orange brown; Waypoints 499889 5283139;
21	499878	5283064	B	Nov., 11, 2020	188.6	3.4	BH 15-20 cm; Slight south slope, dark orange brown; Waypoints 499878 5283064;
22	499791	5283124	B	Nov., 11, 2020	193.7	2.2	BH 15-20 cm; Waypoints 499791 5283124; Slight south slope, med dark orange brown soil;
23	499829	5283204	B	Nov., 11, 2020	142.2	2.4	BH 10 cm; mod southeast slope, med orange brown soil; Waypoints 499829 5283204;
24	499853	5283284	B	Nov., 11, 2020	173.5	2.7	Slight south slope, med dark orange brown soil; BH 15 cm; Waypoints 499853 5283284;
25	499895	5283382	B	Nov., 11, 2020	148.7	1.6	BH 25 cm; Slight south east slope, dark orange brown; Waypoints 499895 5283382;
26R	499862	5282814	B	Nov., 11, 2020	155.3	2.1	BH 15 cm; Mod northwest slope, med -dark orange; Waypoints 499862 5282814;
27	499851	5282759	B	Nov., 11, 2020	118.3	1.7	BH 10 cm; Slight southeast slope, dark orange brown; Waypoints 499851 5282759;
28	499822	5282699	B	Nov., 11, 2020	133.1	1.3	BH 15 cm; Slight west slope, dark orange brown soil; Waypoints 499822 5282699;
29	499801	5282640	B	Nov., 11, 2020	190.5	3.3	Slight south slope, med dark orange brown soil; BH 10-15 cm; Waypoints 499801 5282640;
30	499781	5282587	B	Nov., 11, 2020	186.9	3.3	BH 20 cm; Slight northeast slope, med-dark orange brown; Waypoints 499781 5282587;
31	499767	5282523	B	Nov., 11, 2020	160.8	2.3	BH 10 cm; Waypoints 499767 5282523; Slight west slope, med orange brown soil;
32	499738	5282475	B	Nov., 11, 2020	125.0	1.3	BH 10 cm; Slight west slope, med- dark orange soil; Waypoints 499738 5282475;
33	499720	5282426	B	Nov., 12, 2020	135.3	4.0	Slight north slope, med orange brown soil; BH 15 cm; Waypoints 499720 5282426;
34	499700	5282358	B	Nov., 12, 2020	193.1	4.6	BH 15 cm; Flat ground, med orange brown soil; Waypoints 499700 5282358;
35	499597	5282336	B	Nov., 12, 2020	145.3	2.5	BH 15 cm; Flat ground med dark orange soil; Waypoints 499597 5282336;
36	499620	5282399	B	Nov., 12, 2020	122.1	1.8	BH 15-20 cm; waypoints 499620 5282399; Mod northeast slope, Med orange brown soil;
37	499649	5282452	B	Nov., 12, 2020	118.8	1.3	Slight southwest slope, dark orange brown; BH 20-25 cm; Waypoints 499649 5282452;
38	499679	5282523	B	Nov., 12, 2020	162.2	3.3	BH 15-20 cm; mod east slope, med orange brown soil; Waypoints 499679 5282523;
39	499698	5282583	B	Nov., 12, 2020	197.3	5.5	BH 15-20 cm; mod east slope, med orange brown soil; Waypoints 499698 5282583;
40	499719	5282640	B	Nov., 12, 2020	172.0	2.9	Slight south east slope, med orange brown; BH 10-15 cm; Waypoints 499719 5282640;
41	499753	5282690	B	Nov., 12, 2020	152.7	11.0	BH 15 cm; Slight southeast slope, med orange brown soil; Waypoints 499753 5282690;
42	499766	5282740	B	Nov., 12, 2020	155.5	3.4	BH 15-20 cm; Slight south slope, med orange brown; Waypoints 499766 5282740;
43	499782	5282801	B	Nov., 12, 2020	152.7	3.6	BH 20 cm; Slight north slope, med orange brown; Waypoints 499782 5282801;
44	499811	5282861	B	Nov., 12, 2020	163.8	2.0	BH 20 cm; Slight south slope, med orange brown soil; Waypoints 499811 5282861;
45	499833	5282923	B	Nov., 12, 2020	147.2	3.3	BH 20 cm; Slight southeast slope, med orange brown soil; Waypoints 499833 5282923;
46	499851	5282987	B	Nov., 12, 2020	207.7	3.7	BH 20-25 cm; Slight southwest slope, med orange brown soil; Waypoints 499851 5282987;
47	499784	5283047	B	Nov., 12, 2020	166.1	10.6	BH 20 cm; Slight southwest slope, med orange brown soil; Waypoints 499784 5283047;
48	499758	5282964	B	Nov., 12, 2020	185.6	16.4	BH 15 cm; Slight west slope, dark orange brown soil; Waypoints 499758 5282964;
49	499725	5282902	B	Nov., 12, 2020	141.8	1.5	BH 15 cm; Slight northeast slope, med orange brown; Waypoints 499725 5282902;
50	499710	5282834	B	Nov., 12, 2020	141.6	2.3	BH 15-20 cm; Slight southeast slope, med orange brown soil; Waypoints 499710 5282834;
51	499688	5282761	B	Nov., 12, 2020	181.8	7.8	BH 15-20 cm; Slight south east slope, med orange brown; Waypoints 499688 5282761;
52	499665	5282695	B	Nov., 12, 2020	155.8	6.2	BH 20 cm; Slight southwest slope, med-dark orange brown soil; Waypoints 499665 5282695;
53	499634	5282638	B	Nov., 12, 2020	243.4	13.1	Slight northeast slope, dark orange brown soil; BH 25-30 cm; Waypoints 499634 5282638;

## Walker Knight Gold Project - 2020 Spatiotemporal Geochemical Hydrocarbon SGH Survey and Sampling

(WKG-20-SGH-##)	UTM East - Sample	UTM North - Sample	Material	Sample Date	SGH - Gold	SGH - Copper	Samplers Comments
54	499610	5282575	B	Nov., 13, 2020	163.7	1.6	BH 20 cm; Slight west slope, med-dark orange brown soil; Waypoints 499610 5282575;
55	499575	5282509	B	Nov., 13, 2020	207.5	2.2	Slight west slope, med orange brown soil; BH 20 cm; Waypoints 499575 5282509;
56	499565	5282444	B	Nov., 13, 2020	207.0	7.6	BH 15-20 cm; Flat ground, med orange brown soil; Waypoints 499565 5282444;
57	499518	5282379	B	Nov., 13, 2020	215.0	2.1	Flat ground, med orange brown soil; BH 20-25 cm; Waypoints 499518 5282379;
58	499804	5282337	B	Nov., 13, 2020	225.5	1.6	BH 25 cm; Slight south east slope, med orange brown; Waypoints 499804 5282337;
59R	499817	5282390	B	Nov., 13, 2020	155.0	1.7	BH 15-20 cm; Slight east slope, med dark orange brown; Waypoints 499817 5282390;
60R	500534	5283184	B	Nov., 13, 2020	207.3	4.6	BH 15-20 cm; Slight SE slope into cdr wet hole, med-dark orange brown soil; Waypoints 500534 5283184
61	500532	5283229	B	Nov., 13, 2020	278.2	2.7	Slight north slope, med-dark brown soil; BH 25-35 cm; Waypoints 500532 5283229;
62	500553	5283277	B	Nov., 13, 2020	413.1	5.2	BH 25 cm; Slight west slope, med-dark orange brown; Waypoints 500553 5283277;
63	500575	5283329	B	Nov., 13, 2020	240.4	0.9	Slight east slope, light brown-greyish brown; BH 30 cm; Waypoints 500575 5283329;
64	500595	5283388	B	Nov., 13, 2020	155.2	0.5	BH 20 cm; Slight northwest slope, med orange brown; Waypoints 500595 5283388;
65	500603	5283446	B	Nov., 13, 2020	258.8	5.1	BH 20 cm; Slight east slope, med orange brown soil; Waypoints 500603 5283446;
66	500536	5283487	B	Nov., 13, 2020	292.8	1.6	BH 25 cm; Slight east slope, med orange brown; Waypoints 500536 5283487;
67	500514	5283426	B	Nov., 14, 2020	338.2	3.9	BH 15 cm; No slope, med orange brown soil; Waypoints 500914 5281426;
68	500496	5283378	B	Nov., 14, 2020	293.1	1.7	BH 10-15 cm; Slight north slope, dark orange brown soil; Waypoints 500496 5283378;
69	500475	5283323	B	Nov., 14, 2020	231.0	2.8	BH 15 cm; Slight south slope, dark orange brown; Waypoints 500475 5283323;
70	500459	5283280	B	Nov., 14, 2020	203.3	0.8	BH 20 cm; Slight northeast slope, med orange brown; Waypoints 500459 5283280;
71	500378	5283307	B	Nov., 14, 2020	212.7	2.1	Slight west slope, med orange brown soil; BH 15 cm; Waypoints 500378 5283307;
72	500397	5283368	B	Nov., 14, 2020	323.5	8.6	BH 20 cm; Slight southwest slope, dark orange brown; Waypoints 500397 5283368;
73	500406	5283415	B	Nov., 14, 2020	259.7	2.1	Slight west slope, med orange brown soil; BH 10 cm; Waypoints 500406 5283415;
74	500457	5283480	B	Nov., 14, 2020	206.9	1.8	BH 25 cm; Slight northeast, dark brown soil; Waypoints 500457 5283480;
75	500470	5283534	B	Nov., 14, 2020	254.1	2.3	BH 15-20 cm; Slight southeast slope, med orange brown soil; Waypoints 500470 5283534;
76	500366	5283527	B	Nov., 14, 2020	178.9	2.1	BH 20 cm; Slight west slope, dark brown soil; Waypoints 500366 5283527;
77	500353	5283468	B	Nov., 14, 2020	168.4	2.0	Mod west slope, med orange brown soil; BH 15 cm; Waypoints 500353 5283468;
78	500329	5283407	B	Nov., 14, 2020	170.8	0.5	BH 20 cm; Mod west slope, med orange brown soil; Waypoints 500329 5283407;
79	500298	5283360	B	Nov., 14, 2020	131.0	0.5	BH 20-25 cm; Mod northwest slope, med orange brown soil; Waypoints 500298 5283360;
80	500264	5283298	B	Nov., 14, 2020	239.6	3.0	BH 20 cm; Slight southwest slope, med orange brown soil; Waypoints 500264 5283298;









Sample # 72



Sample # 73 (2)



Sample # 74 (2)



Sample # 75



Sample # 76 (2)



Sample # 77 (2)



Sample # 78 (2)



Sample # 79 (2)



Sample # 80R (2)



Sample # 01(2)



Sample # 42



Sample # 43



Sample # 44



Sample # 45



Sample # 46



Sample # 47



Sample # 48



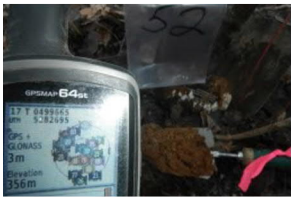
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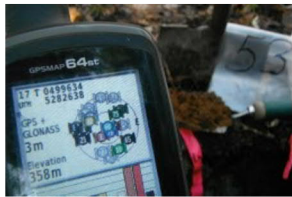
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Sample # 51



Sample # 52



Sample # 53



Sample # 54



Sample # 55



Sample # 56



Sample # 57



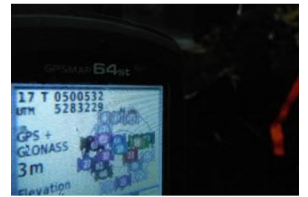
Sample # 58



Sample # 59R



Sample # 60R



Sample # 61



Sample # 62



Sample # 63



Sample # 64



Sample # 65



Sample # 66



Sample # 67



Sample # 68



Sample # 69



Sample # 70



Sample # 71



Sample # 72



Sample # 73



Sample # 74



Sample # 75



Sample # 76



Sample # 77



Sample # 78



Sample # 79



Sample # 80R



Sample # 01



Sample # 02



Sample # 03



Sample # 04R



Sample # 05



Sample # 06



Sample # 07



Sample # 08



Sample # 09



Sample # 10



Sample # 11



Sample # 12



Sample # 13



Sample # 14



Sample # 15



Sample # 16



Sample # 17



Sample # 18



Sample # 19



Sample # 20



Sample # 21



Sample # 22



Sample # 23



Sample # 24



Sample # 25



Sample # 26R



Sample # 27



Sample # 28



Sample # 29



Sample # 30



Sample # 31



Sample # 32



Sample # 33



Sample # 34



Sample # 35



Sample # 36



Sample # 37



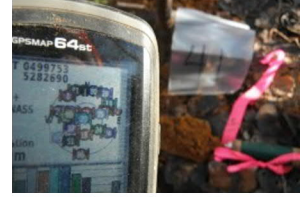
Sample # 38



Sample # 39



Sample # 40



Sample # 41