REPORT ON SUMMER, 2020, STREAM SEDIMENT & ROCK SAMPLING IN THE SWIFT RIVER AREA, SOUTHERN YUKON

Field Work & Report By:

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Beausejour, Manitoba

Field Work: July 12 – 25 incl, 2020
Report Completed December 1, 2020

Summary of Reported Work:

Mining District: Watson Lake
Geographic Area: Swift River, NTS 105B-02&03, 131°05'W/60°02'N
Target Commodity: tantalum
Stream Sediment Samples: 13 samples
Boulder Samples: 47 samples
Bedrock Samples: 13 samples
Report Software: Microsoft Office Word, Paint

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SUMMARY

The southern Yukon and northern British Columbia is prospective for tin (Sn) and related lithophile mineralization in the area of the Cassiar Batholith, and especially around the nearby Seagull Batholith in south-central Yukon. A large regional Sn anomaly occurs in this area, with high values occurring in stream sediments around the Seagull Batholith. This reflects the erosional unroofing of this batholith.

Tantalum (Ta) is a rare metal which is closely associated with Sn, but is much less abundant and much higher in price. Tantalum is used in electronics to miniaturize electrolytic capacitors, and for a variety of alloy applications. Tantalum is geochemically associated with tin, lithium, rubidium, cesium and fluorine, hence the obvious interest in the fractionated Seagull Batholith The author undertook reconnaissance stream sediment sampling for tantalum in 2019, returning anomalous values between Swift River and Rancheria.

This report describes the results of a followup program of stream sediment, boulder and bedrock sampling undertaken during July, 2020, mainly in the area northeast of Swift River, where ground access was possible. A total of 73 samples, including 13 stream sediments, 47 boulders and 13 bedrock samples, were shipped to Activation Laboratories in Ancaster, Ontario. All samples were analyzed for 54 elements by ICP, plus fluorine (F).

The basic exploration hypothesis of this project was that an unexposed or subcropping cupola of the Seagull Batholith may be preserved east or southeast of its outcropping extent. It is well established that tantalum (Ta) mineralization occurs in the upper, most fractionated, portions of granitic magma systems. When a fractionated granitic intrusion is well exposed over a wide area, such as the Seagull Batholith is, it can be reasonably assumed that any significant Ta mineralization has already been eroded away. Since the Seagull Batholith shows increasing fractionation trends toward its east and southeast end, the best place to explore for a preserved cupola which might host a primary Ta deposit, would be to the southeast.

A general threshold for success in this project was set at about 100 ppm Ta. If analyses returned results greater than 100 ppm Ta, it would be worthwhile to

continue the project, but if results were less than 100 ppm, it could probably be concluded that Precambrian pegmatites offered much better Ta exploration targets than Cordilleran Cretaceous granites, at least in this area.

Results from this work program were generally disappointing, with the highest Ta in a stream sediment being 5.6 ppm, and the highest Ta in a boulder sample being 18.1 ppm. No evidence was found for any additional subcropping or unexposed cupolas of the Seagull Batholith to the east or southeast. Tantalum (Ta) levels in both stream sediments and boulder samples were far below the threshold that was set for continuing the project. As well, levels of niobium (Nb) and uranium (U), which are dilutionary and/or deleterious to a mineral concentrate, were at or well above Ta levels. Potential for a primary Ta deposit in this area appears to be very low, although Ta could still be a credit in a Sn concentrate from this district.

No further work is recommended for this type of Ta target in this area.

(signed, sealed,
Engineers Geoscientists Manitoba
Cert #4660)

William C. Hood, P.Geo.
December 1, 2020

INTRODUCTION

The southern Yukon and northern British Columbia is prospective for tin (Sn) and related lithophile mineralization in the area of the Cassiar Batholith, and especially around the nearby Seagull Batholith in south-central Yukon. A large regional Sn anomaly occurs in this area, with high values occurring in stream sediments around the Seagull Batholith. This reflects the erosional unroofing of this batholith. Several Sn occurrences are preserved under/in roof zones along the northwest side of the intrusion.

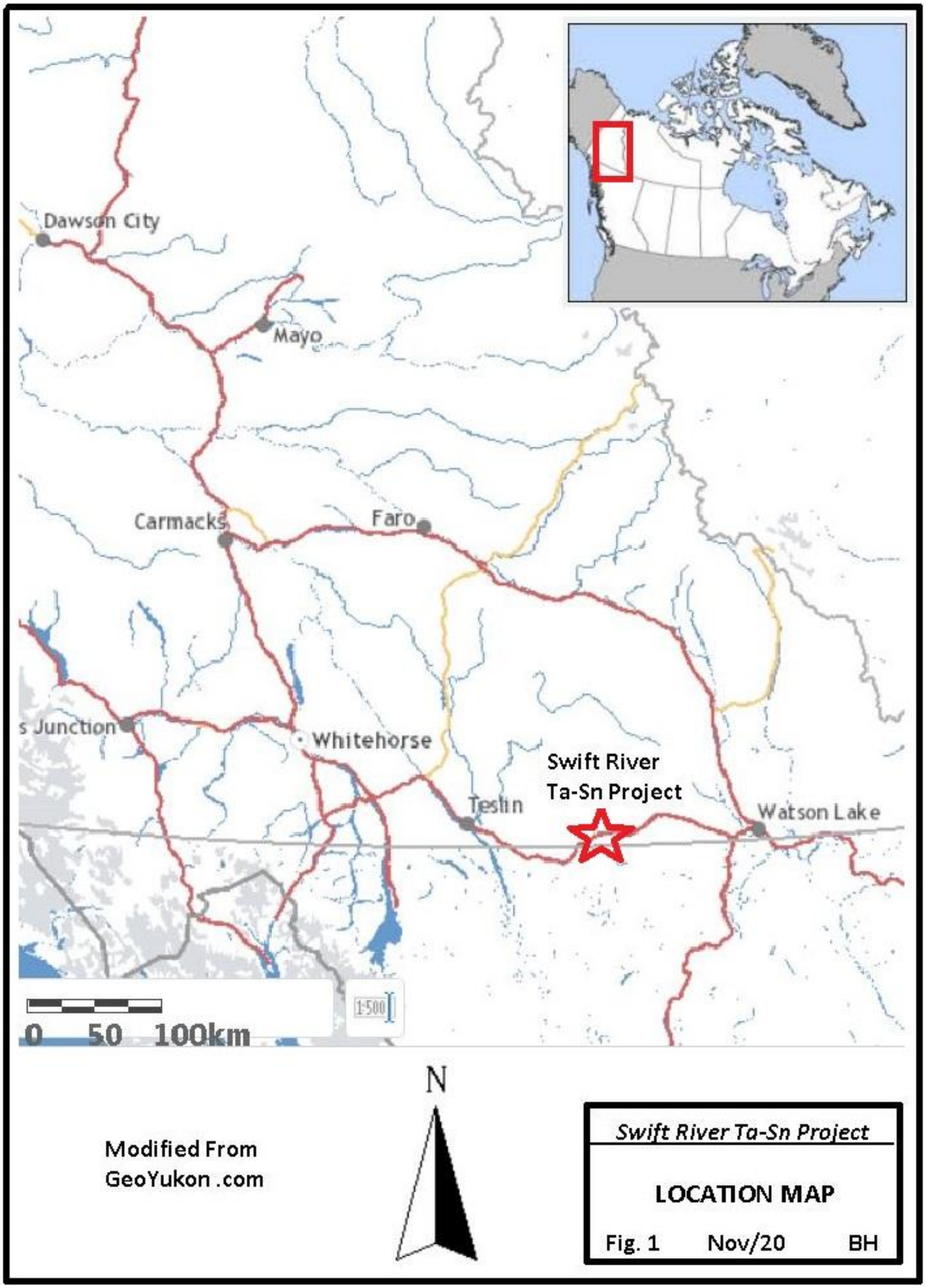
Tantalum (Ta) is a rare metal which is closely associated with Sn, but is much less abundant and much higher in price. Tantalum is used in electronics to miniaturize electrolytic capacitors, and for a variety of alloy applications. Tantalum is geochemically associated with tin, lithium, rubidium, cesium and fluorine, hence the obvious interest in the fractionated Seagull Batholith The author undertook reconnaissance stream sediment sampling for tantalum in 2019, returning anomalous values between Swift River and Rancheria.

This report describes the results of a followup program of stream sediment, boulder and bedrock sampling undertaken during July, 2020, mainly in the area northeast of Swift River, where ground access was possible.

LOCATION, ACCESS & PHYSIOGRAPHY

The project area lies in the south-central Yukon, near the British Columbia border, just east and northeast of the village of Swift River, about 150 km west of the town of Watson Lake (Fig. 1). Access to the project area is from highway #1, the Alaska Highway, and the Pine Lake road, which crosses the old Pine Lake airstrip, and then extends west from Dauphney Lake and Pine Lake, along the Swift River to Crescent Lake.

No services are available in Swift River, which has largely reduced to a highways department maintenance camp. A seasonal gas station/motel/campground is located near the highway #1 bridge over the Upper Rancheria River. The town of Watson Lake has complete facilities, including fuel, groceries, hardware, accommodations and government services.



Dawson City
Mayo
Carmacks
Faro
s Junction
Whitehorse
Teslin
Swift River
Ta-Sn Project
Watson Lake
0 50 100km
N
Modified From
GeoYukon .com
Swift River Ta-Sn Project
LOCATION MAP
Fig. 1 Nov/20 BH

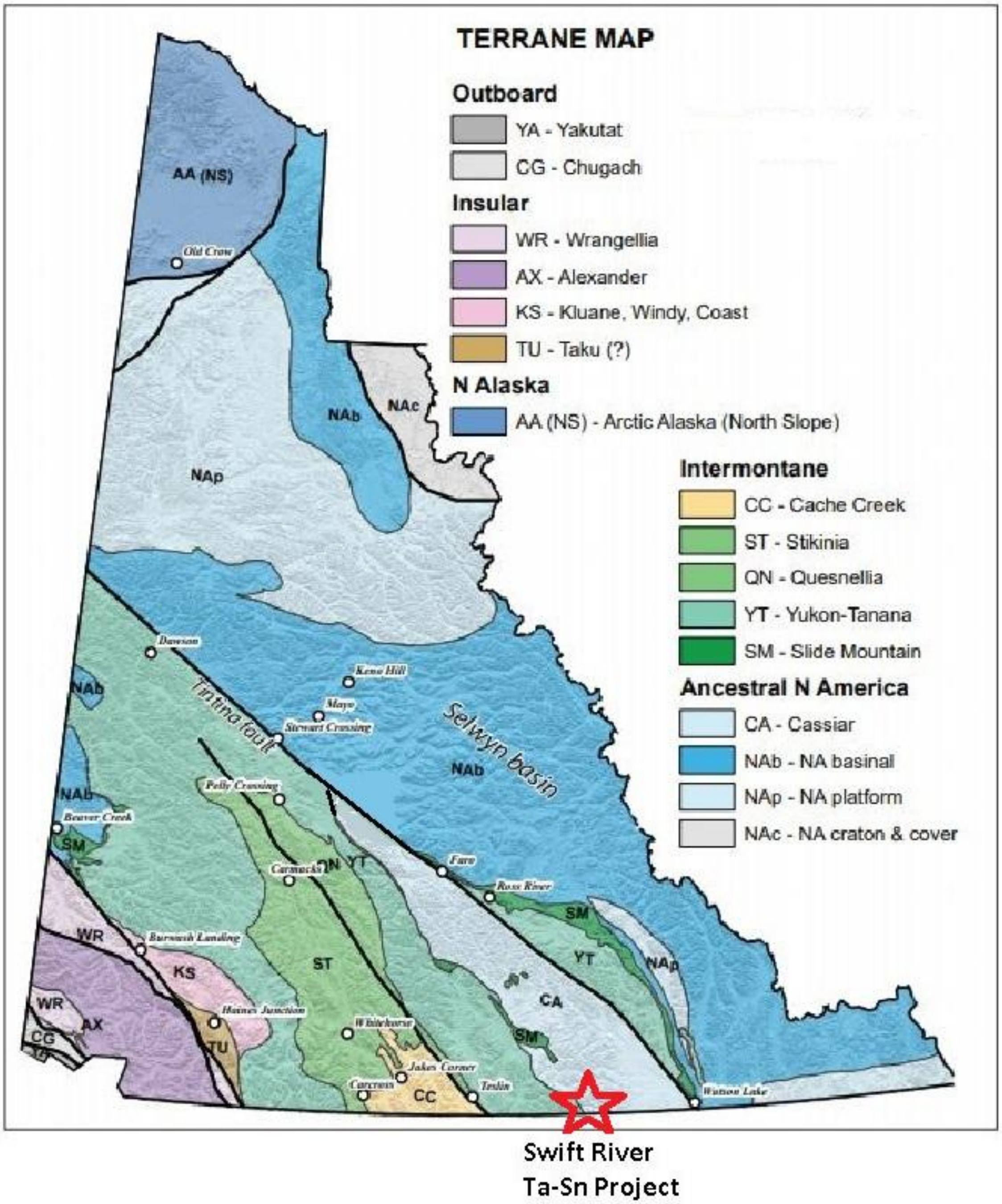
The project area lies within the northern Cassiar Mountains. In this area, high angular ridges are interspersed with wide glacial valleys. Vegetation is mainly pine and spruce, with treeline at about 1500 m elevation. The project area straddles the continental divide separating the watersheds of the Rancheria, Liard and Mackenzie Rivers which drain into the Beaufort Sea, from the Swift, Teslin and Yukon Rivers which drain into the Bering Sea.

GEOLOGY

The project area lies across the western boundary of the old North American continent, straddling Cassiar Terrane rocks and allochthonous packages of the Yukon-Tanana Terrane (Fig. 2 & 3). These rocks are intruded by Cretaceous age granite-granodiorite batholiths, the Cassiar Batholith and nearby Seagull Batholith, both with associated beryllium (Be) and tin (Sn) lithophile mineralization.

The area of interest in this work program lies between eastern end of the Seagull Batholith and the west, fault-bounded edge of the Cassiar Batholith (Fig. 4). Much of the area is underlain by sediments of the Swift River Group, including argillite, sandstone, conglomerate, chert and limestone, as well as the underlying Dorsey Group, with assorted phyllites, pelites, chert and tuff. Minor volcanics of the Klinkit Group are present in the southeast corner of the project area, and a series of thin fault slices of assorted lithologies outcrop along the northeast edge of the area of interest.

An important feature in this project is the north-south fault structure along the east end of the Seagull Batholith, and the thin slice of Screw Creek limestone along this structural feature. The basic exploration hypothesis of this project was that an unexposed or subcropping cupola of the Seagull Batholith may be preserved east of this north-south fault structure. It is well established that tantalum (Ta) mineralization occurs in the upper, most fractionated, portions of granitic magma systems. When a fractionated granitic intrusion is well exposed over a wide area, such as the Seagull Batholith is, it can be reasonably assumed that any significant Ta mineralization has already been eroded away. Since the Seagull Batholith shows increasing fractionation trends toward its east and southeast end, the best place to explore for a preserved cupola which might host

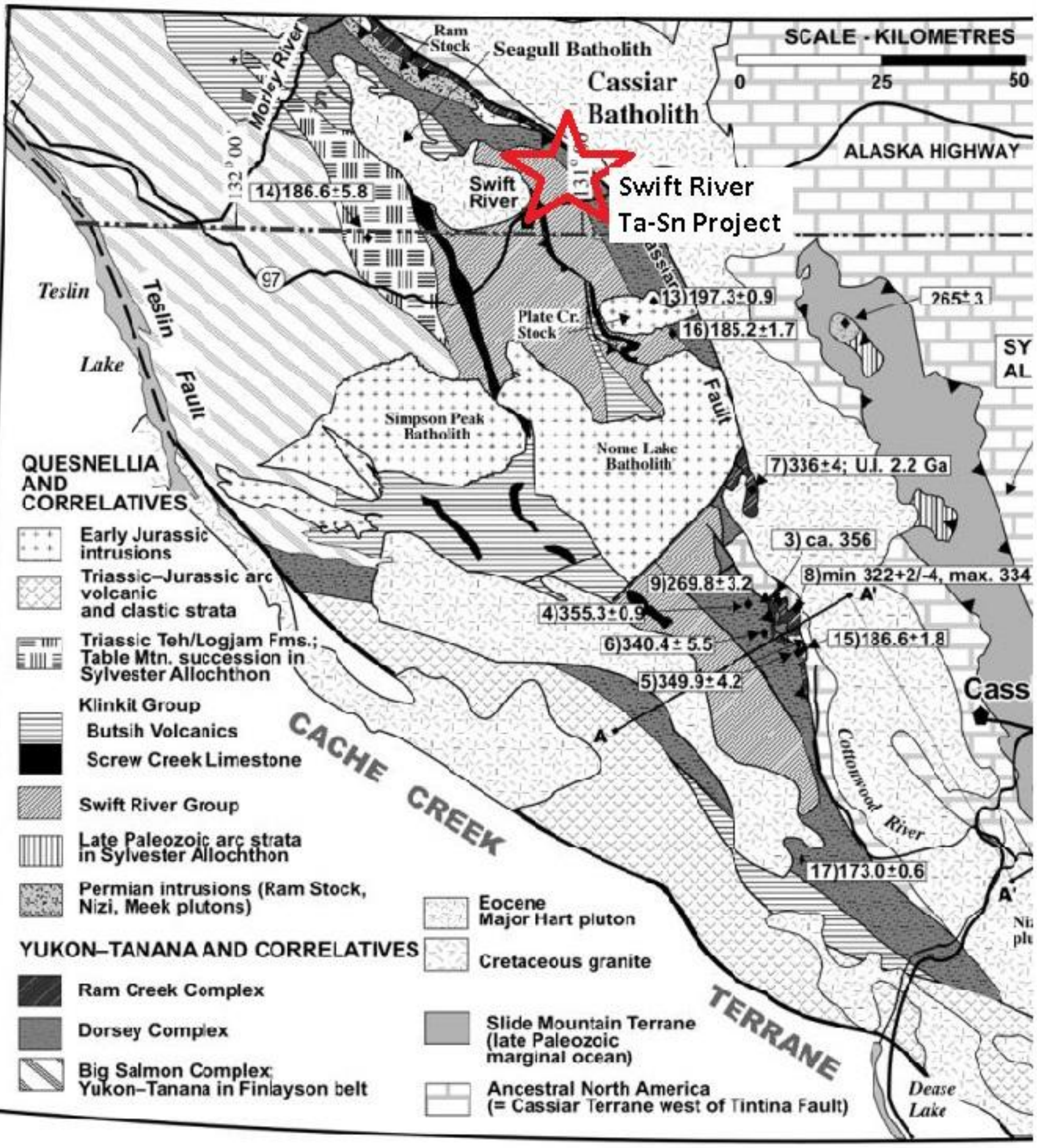


Modified from
Colpron & Nelson,
2011

Swift River Ta-Sn Project

YUKON GEOLOGY

Fig. 2 Nov/20 BH



Modified from
J.Nelson & R.Friedman
2004

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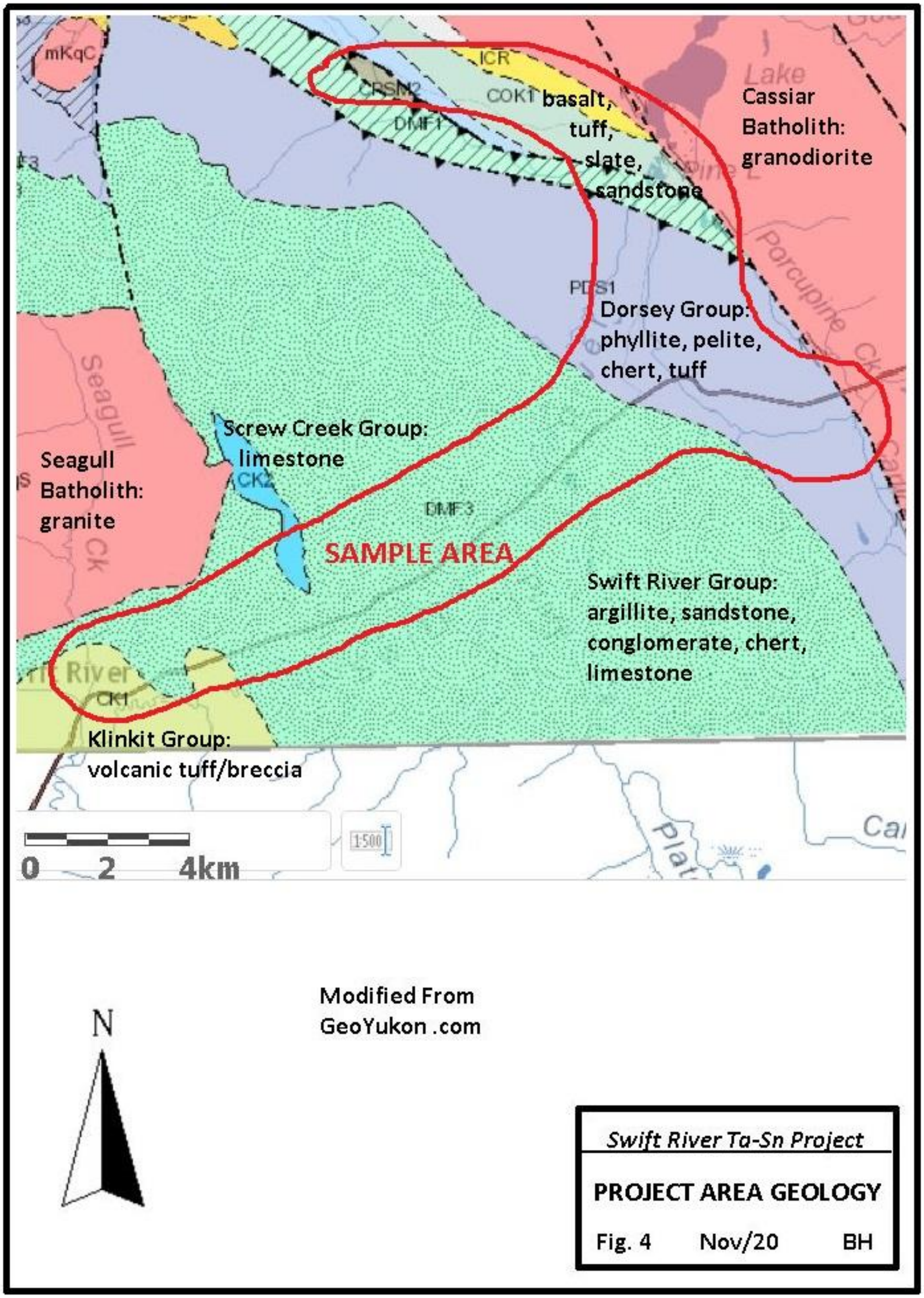
REGIONAL GEOLOGY

Fig. 3 Nov/20 BH



mKqC
ICR
CRSM2
COK1
DMF1
basalt, tuff, slate, sandstone
Lake
Cassiar Batholith: granodiorite
Porcupine Ck
PDS1
Dorsey Group: phyllite, pelite, chert, tuff
Seagull Ck
Screw Creek Group: limestone
CK2
Seagull Batholith: granite
DMF3
SAMPLE AREA
Swift River Group: argillite, sandstone, conglomerate, chert, limestone
River
CK1
Klinkit Group: volcanic tuff/breccia
0 2 4km
N
Modified From GeoYukon .com
Swift River Ta-Sn Project
PROJECT AREA GEOLOGY
Fig. 4 Nov/20 BH

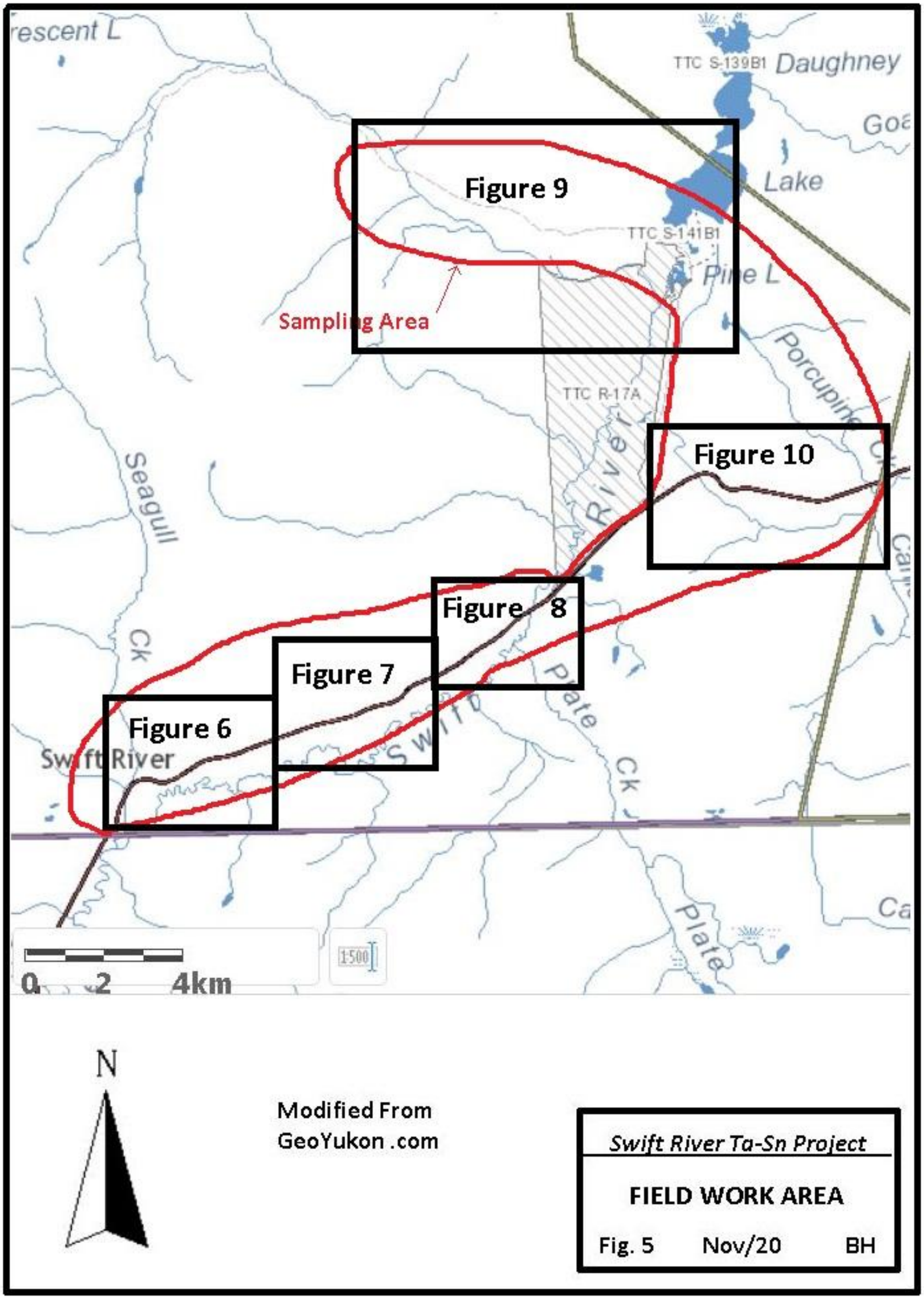
a primary Ta deposit, would be to the east of the north-south fault structure along the east end of the Seagull Batholith. Figure 4 also outlines the project sample area, which was based on both prospectivity and easy ground access.

WORK PROGRAM; SUMMER 2020

A small program of stream sediment, boulder and bedrock sampling was undertaken over 14 days during the period July 12 – 25, 2020. A total of 73 samples, including 13 stream sediments, 47 boulders and 13 bedrock samples, were shipped to Activation Laboratories in Ancaster, Ontario. All samples were collected on open Crown land, except for samples SWI-20-45 to -48 which were collected on an existing mining claim with permission from the claim holder. All samples were analyzed for 54 elements by sodium peroxide fusion/ICP, plus fluorine (F). Sample locations and descriptions are included in Appendix I. Analytical data is in Appendix II. Several photographs from this work are included in Appendix III. Sample locations and selected analytical results are plotted on Figures 6 – 10. Work was undertaken from a camp at Continental Divide Lodge, located along highway #1 within the project area (Photo 1, Appendix II).

The general idea behind the work program was to take a series of stream sediment samples around the prospective area at the southeast end of the Seagull Batholith to determine if a particular watershed was anomalous (Photo 2, Appendix III). Most of these samples were taken along the Swift River or tributaries draining into the Swift River. Several samples were also taken to the east along the Rancheria River watershed, which would be more reflective of the Cassiar Batholith, for comparison. It should be recognized in sampling of these surficial materials, that glaciation may have diluted or displaced anomalous materials.

A general threshold for success in this project was set at about 100 ppm Ta. If analyses returned results greater than 100 ppm Ta, it would be worthwhile to continue the project, but if results were less than 100 ppm, it could probably be concluded that Precambrian pegmatites offered much better Ta exploration targets going forward than Cordilleran Cretaceous granites, at least in this area.


Crescent L
TTC S-139B1
Daughney
Goa
Lake
Figure 9
TTC S-141B1
Pine L
Sampling Area
Porcupine
TTC R-17A
River
Figure 10
Seagull
Ck
Figure 8
Figure 7
Figure 6
Swift River
Swift
Plate
Ck
Plate
0 2 4km
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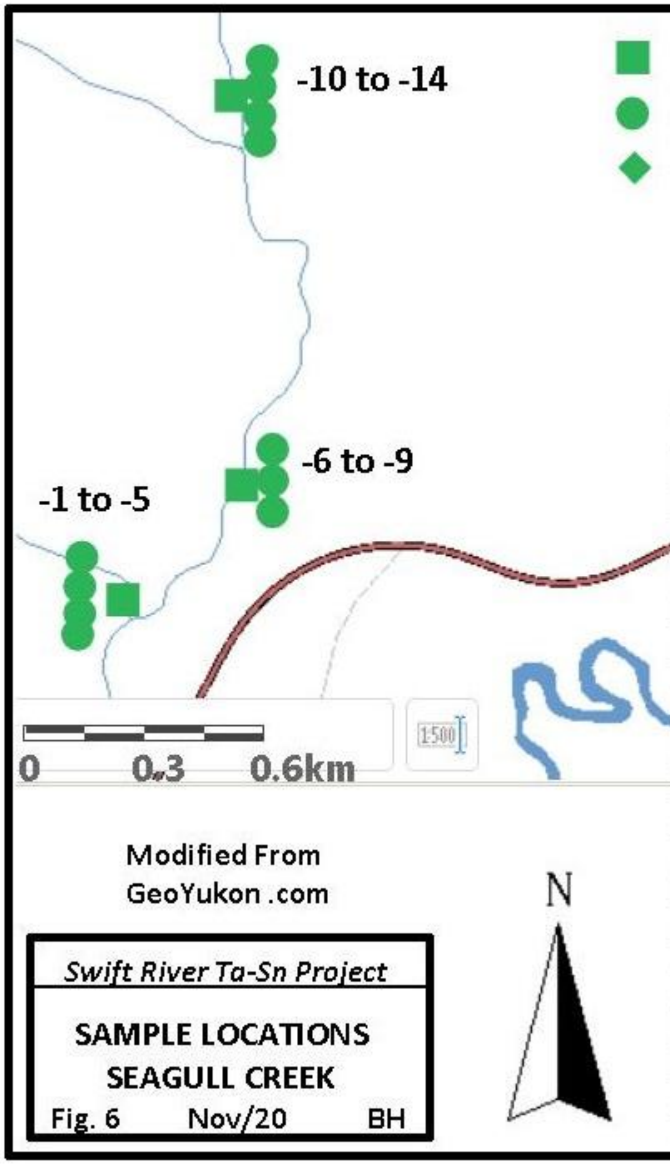
Swift River Ta-Sn Project
FIELD WORK AREA
Fig. 5 Nov/20 BH

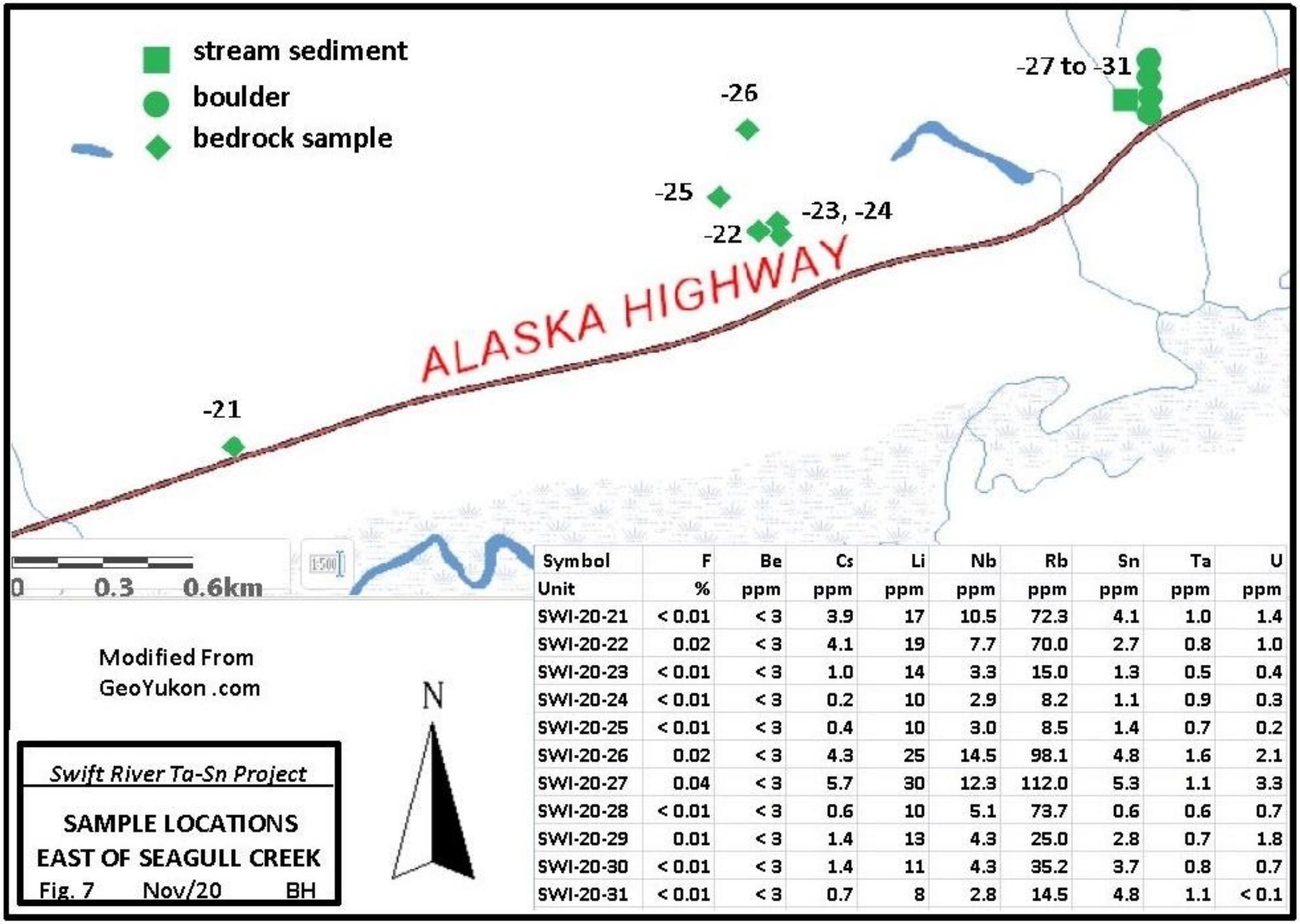


Symbol	F	Be	Cs	Li	Nb	Rb	Sn	Ta	U
Unit	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SWI-20-1	0.05	13	6.2	56	29.6	79.1	8.4	3.3	26.1
SWI-20-2	0.01	< 3	0.5	16	5.7	39.9	5.2	0.5	0.5
SWI-20-3	0.02	< 3	5.6	24	11.9	116.0	2.7	1.5	2.0
SWI-20-4	0.02	< 3	1.6	9	6.6	25.9	3.9	1.1	3.9
SWI-20-5	0.02	< 3	2.1	19	7.2	64.8	5.0	1.2	3.5
SWI-20-6	0.02	4	2.3	25	26.0	55.6	4.0	2.9	9.1
SWI-20-7	< 0.01	3	2.7	13	15.7	176.0	6.1	2.1	6.1
SWI-20-8	< 0.01	< 3	0.7	14	3.9	18.0	2.5	1.1	0.3
SWI-20-9	0.01	< 3	0.4	6	2.8	8.5	4.6	0.8	0.4
SWI-20-10	0.04	4	2.8	29	43.0	55.6	36.5	5.6	15.9
SWI-20-11	< 0.01	< 3	0.8	13	6.5	34.5	1.2	0.9	0.7
SWI-20-12	0.29	10	16.9	186	78.8	623.0	6.9	8.7	19.7
SWI-20-13	< 0.01	< 3	0.9	8	7.3	32.1	4.3	1.5	1.1
SWI-20-14	< 0.01	< 3	0.3	11	3.7	10.4	1.3	0.9	0.3
SWI-20-15	< 0.01	< 3	0.9	37	5.8	12.7	3.9	1.0	0.8
SWI-20-16	0.03	4	5.9	38	24.4	76.6	7.1	2.4	9.8
SWI-20-17	0.07	7	9.8	125	67.5	519.0	9.1	6.7	9.5
SWI-20-18	< 0.01	< 3	3.2	9	5.7	36.8	5.0	0.7	1.4
SWI-20-19	< 0.01	< 3	0.5	4	2.9	5.9	3.4	1.1	0.3
SWI-20-20	< 0.01	< 3	0.8	10	2.8	3.3	1.3	0.5	0.2

Swift River Ta-Sn Project

SAMPLE LOCATIONS
SEAGULL CREEK

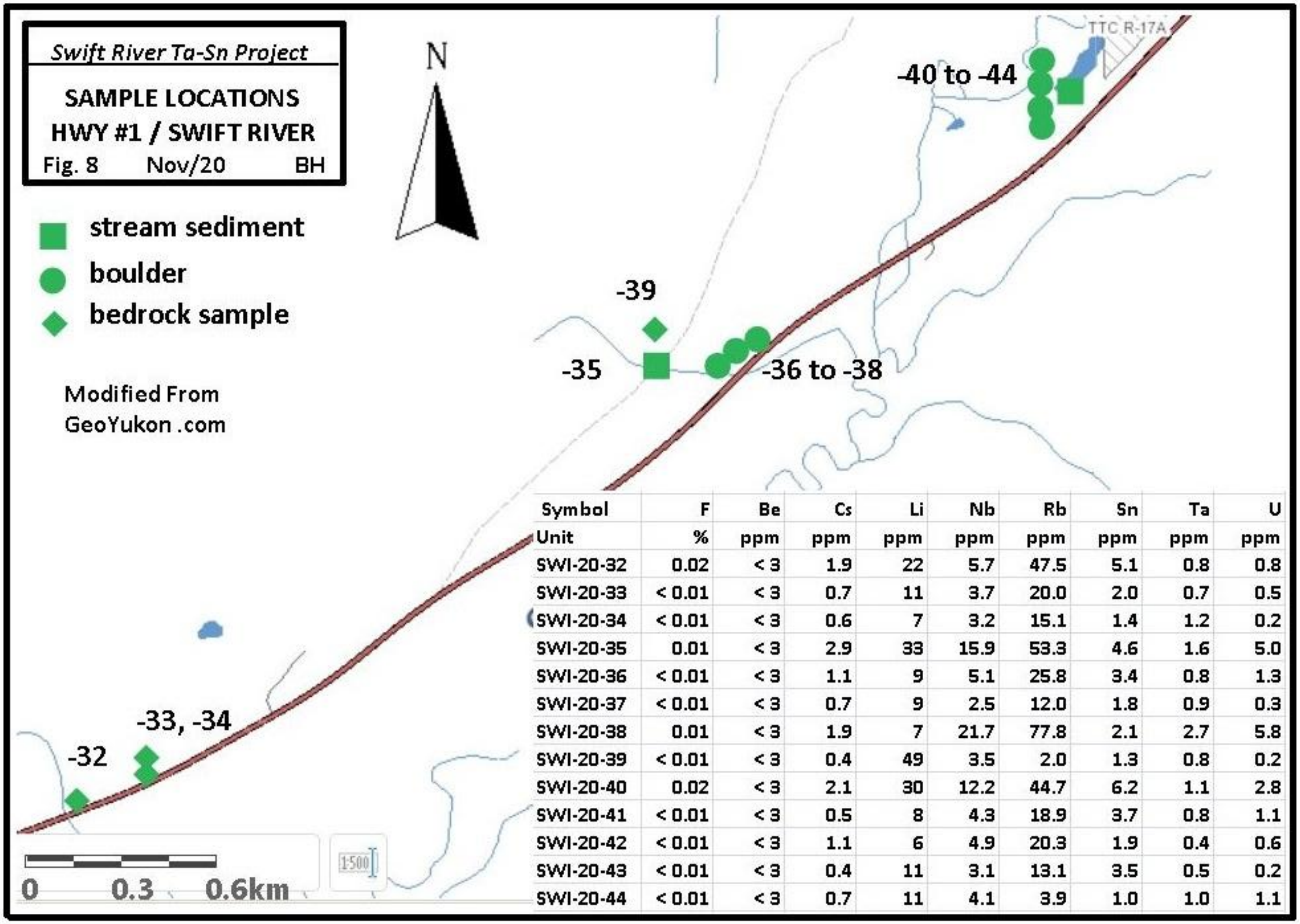
Fig. 6 Nov/20 BH



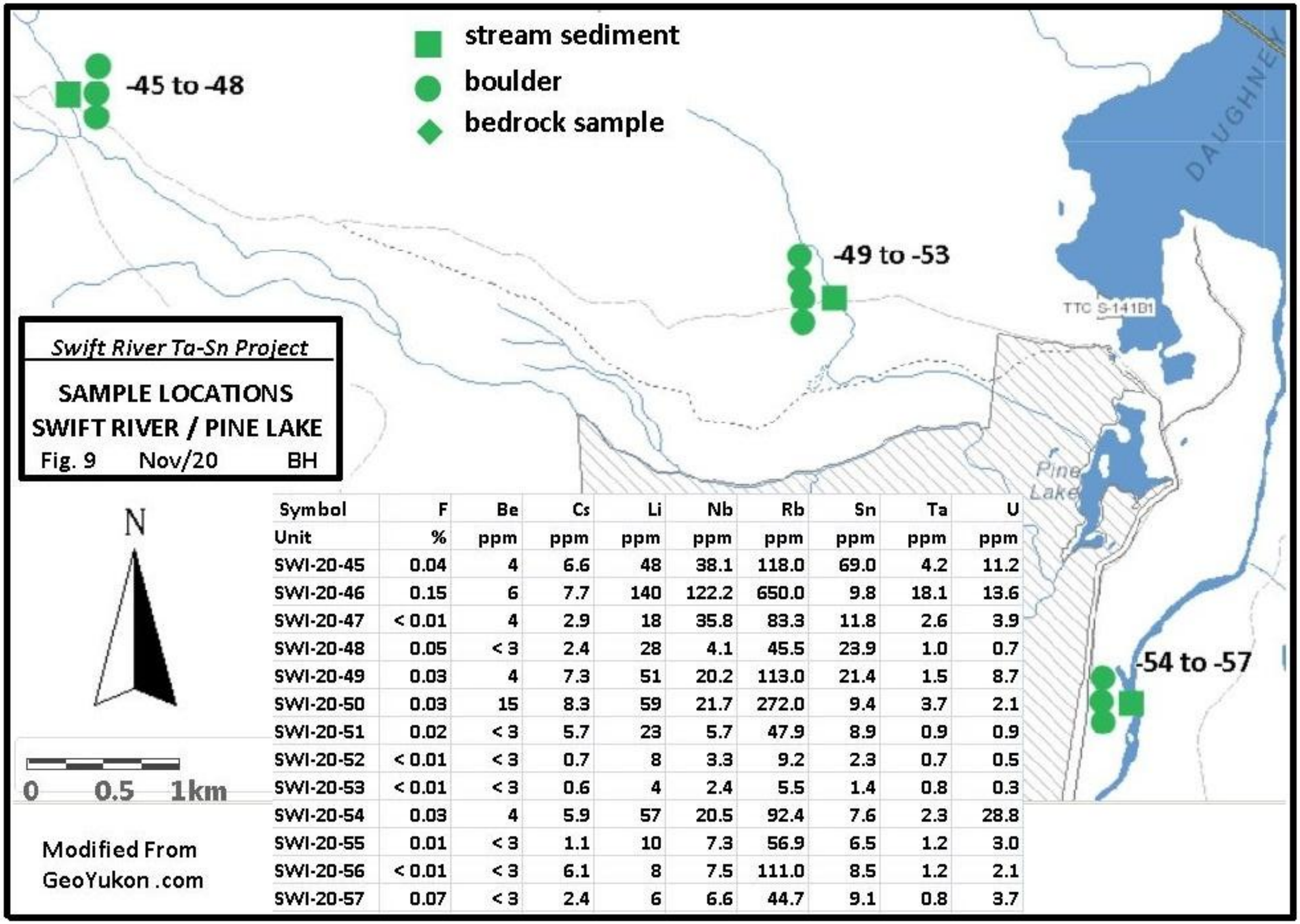
Symbol	F	Be	Cs	Li	Nb	Rb	Sn	Ta	U
Unit	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SWI-20-21	< 0.01	< 3	3.9	17	10.5	72.3	4.1	1.0	1.4
SWI-20-22	0.02	< 3	4.1	19	7.7	70.0	2.7	0.8	1.0
SWI-20-23	< 0.01	< 3	1.0	14	3.3	15.0	1.3	0.5	0.4
SWI-20-24	< 0.01	< 3	0.2	10	2.9	8.2	1.1	0.9	0.3
SWI-20-25	< 0.01	< 3	0.4	10	3.0	8.5	1.4	0.7	0.2
SWI-20-26	0.02	< 3	4.3	25	14.5	98.1	4.8	1.6	2.1
SWI-20-27	0.04	< 3	5.7	30	12.3	112.0	5.3	1.1	3.3
SWI-20-28	< 0.01	< 3	0.6	10	5.1	73.7	0.6	0.6	0.7
SWI-20-29	0.01	< 3	1.4	13	4.3	25.0	2.8	0.7	1.8
SWI-20-30	< 0.01	< 3	1.4	11	4.3	35.2	3.7	0.8	0.7
SWI-20-31	< 0.01	< 3	0.7	8	2.8	14.5	4.8	1.1	< 0.1

Swift River Ta-Sn Project

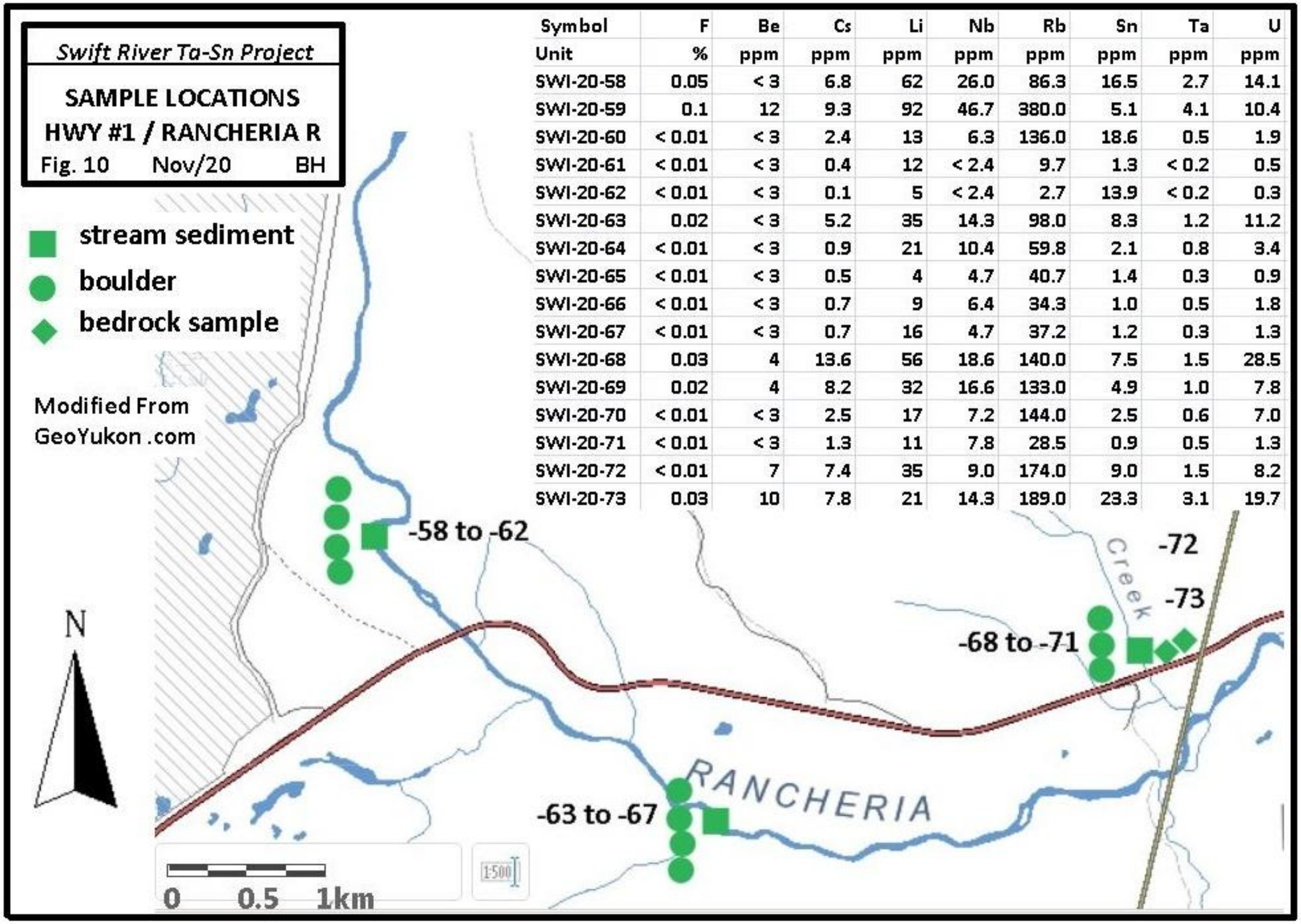
SAMPLE LOCATIONS
EAST OF SEAGULL CREEK
Fig. 7 Nov/20 BH



Symbol	F	Be	Cs	Li	Nb	Rb	Sn	Ta	U
Unit	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SWI-20-32	0.02	< 3	1.9	22	5.7	47.5	5.1	0.8	0.8
SWI-20-33	< 0.01	< 3	0.7	11	3.7	20.0	2.0	0.7	0.5
SWI-20-34	< 0.01	< 3	0.6	7	3.2	15.1	1.4	1.2	0.2
SWI-20-35	0.01	< 3	2.9	33	15.9	53.3	4.6	1.6	5.0
SWI-20-36	< 0.01	< 3	1.1	9	5.1	25.8	3.4	0.8	1.3
SWI-20-37	< 0.01	< 3	0.7	9	2.5	12.0	1.8	0.9	0.3
SWI-20-38	0.01	< 3	1.9	7	21.7	77.8	2.1	2.7	5.8
SWI-20-39	< 0.01	< 3	0.4	49	3.5	2.0	1.3	0.8	0.2
SWI-20-40	0.02	< 3	2.1	30	12.2	44.7	6.2	1.1	2.8
SWI-20-41	< 0.01	< 3	0.5	8	4.3	18.9	3.7	0.8	1.1
SWI-20-42	< 0.01	< 3	1.1	6	4.9	20.3	1.9	0.4	0.6
SWI-20-43	< 0.01	< 3	0.4	11	3.1	13.1	3.5	0.5	0.2
SWI-20-44	< 0.01	< 3	0.7	11	4.1	3.9	1.0	1.0	1.1



Symbol	F	Be	Cs	Li	Nb	Rb	Sn	Ta	U
Unit	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SWI-20-45	0.04	4	6.6	48	38.1	118.0	69.0	4.2	11.2
SWI-20-46	0.15	6	7.7	140	122.2	650.0	9.8	18.1	13.6
SWI-20-47	< 0.01	4	2.9	18	35.8	83.3	11.8	2.6	3.9
SWI-20-48	0.05	< 3	2.4	28	4.1	45.5	23.9	1.0	0.7
SWI-20-49	0.03	4	7.3	51	20.2	113.0	21.4	1.5	8.7
SWI-20-50	0.03	15	8.3	59	21.7	272.0	9.4	3.7	2.1
SWI-20-51	0.02	< 3	5.7	23	5.7	47.9	8.9	0.9	0.9
SWI-20-52	< 0.01	< 3	0.7	8	3.3	9.2	2.3	0.7	0.5
SWI-20-53	< 0.01	< 3	0.6	4	2.4	5.5	1.4	0.8	0.3
SWI-20-54	0.03	4	5.9	57	20.5	92.4	7.6	2.3	28.8
SWI-20-55	0.01	< 3	1.1	10	7.3	56.9	6.5	1.2	3.0
SWI-20-56	< 0.01	< 3	6.1	8	7.5	111.0	8.5	1.2	2.1
SWI-20-57	0.07	< 3	2.4	6	6.6	44.7	9.1	0.8	3.7



Symbol	F	Be	Cs	Li	Nb	Rb	Sn	Ta	U
Unit	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SWI-20-58	0.05	< 3	6.8	62	26.0	86.3	16.5	2.7	14.1
SWI-20-59	0.1	12	9.3	92	46.7	380.0	5.1	4.1	10.4
SWI-20-60	< 0.01	< 3	2.4	13	6.3	136.0	18.6	0.5	1.9
SWI-20-61	< 0.01	< 3	0.4	12	< 2.4	9.7	1.3	< 0.2	0.5
SWI-20-62	< 0.01	< 3	0.1	5	< 2.4	2.7	13.9	< 0.2	0.3
SWI-20-63	0.02	< 3	5.2	35	14.3	98.0	8.3	1.2	11.2
SWI-20-64	< 0.01	< 3	0.9	21	10.4	59.8	2.1	0.8	3.4
SWI-20-65	< 0.01	< 3	0.5	4	4.7	40.7	1.4	0.3	0.9
SWI-20-66	< 0.01	< 3	0.7	9	6.4	34.3	1.0	0.5	1.8
SWI-20-67	< 0.01	< 3	0.7	16	4.7	37.2	1.2	0.3	1.3
SWI-20-68	0.03	4	13.6	56	18.6	140.0	7.5	1.5	28.5
SWI-20-69	0.02	4	8.2	32	16.6	133.0	4.9	1.0	7.8
SWI-20-70	< 0.01	< 3	2.5	17	7.2	144.0	2.5	0.6	7.0
SWI-20-71	< 0.01	< 3	1.3	11	7.8	28.5	0.9	0.5	1.3
SWI-20-72	< 0.01	7	7.4	35	9.0	174.0	9.0	1.5	8.2
SWI-20-73	0.03	10	7.8	21	14.3	189.0	23.3	3.1	19.7

Given the low percentage of Ta within a deposit, stream sediment samples were relatively large, about 4 liters (5 to 10 kg), in order to obtain a more representative sample. Samples were generally collected from gravelly stream deposits, where Ta minerals of density 7 to 8 g/cc might be expected to accumulate. Samples were wet screened at camp to obtain a -4mm component of about 1.5 liters (about 3 kg). A representative sample of about 0.5 liters (0.5 to 1 kg) of this -4mm material was then split and dried for shipping to the lab. A representative sample of the +4mm component was saved for later visual lithological estimates (Photo 3, Appendix III).

At each stream sediment sample location, 3 or 4 representative boulders were collected with the objective of trying to identify any specific lithology hosting Ta mineralization. At each sample location, a general attempt was made to collect a boulder of unfractionated granite, fractionated granite, a (quartz) vein lithology and an alteration or brecciated lithology.

In the course of this field work, an area of substantial quartz veining and hornfelsing of sediments was located (Photo 4, Appendix III). It was felt that this area might represent the geologic environment above a granite cupola related to the Seagull Batholith. Since this target area was easily accessible, near highway #1, a series of bedrock samples was taken to provide a geochemical profile across this target. Lithogeochemistry is widely used to locate subsurface pegmatites in Precambrian terrains, using lithium (Li), rubidium (Rb) and cesium (Cs) as pathfinder elements. Li is particularly mobile and useful for detecting subsurface fractionated granitic magmatic rocks.

Sample locations, as well as select analytical data, have been plotted on Figures 6 – 10, roughly from west to east. Although multi-element analyses were received, 9 elements are of particular interest with regard to exploration for Ta within fractionated granitic magma systems. These include tantalum (Ta), niobium (Nb), tin (Sn), uranium (U), beryllium (Be), lithium (Li), rubidium (Rb), cesium (Cs) and fluorine (F). A significant factor in Ta exploration relates to the mineralogy, chemistry and dollar value of an expected mill concentrate, where one would seek high Ta, but low Nb, Sn and U, which are dilutionary and/or deleterious.

Figure 6 shows results from the Seagull Creek area, which would be expected to reflect material shed from the southeast end of the Seagull Batholith. Stream sediment samples SWI-20-1, -6, -10 and -16 all show some enrichment in the elements of interest that reflect fractionation in the Seagull Batholith. Sample SWI-20-10 returned the highest Ta content in stream sediments, at 5.6 ppm, but with both Nb and U higher than Ta. The specific lithology reflecting this fractionation is clearly shown in boulder sample SWI-20-12, a porphyritic phase described as “granite;……..light grey, fine-grained, massive; 65% grey feldspar, 25% grey quartz, 5% K-feldspar phenocrysts, 5% biotite/amphibole”. This boulder sample returned 8.7 ppm Ta, along with significant elevation in F, Li, Rb and Cs.

Figure 7 displays a series of mainly bedrock samples several km east of Seagull Creek, in the area of the north-south fault structure at the southeast end of the Seagull Batholith. Yukon MINFILE showing 105B 034, the Plate occurrence, is reported in this area. It is variably described as a stream sediment and float boulder anomaly with elevated values of barium (Ba), lead (Pb), zinc (Zn), copper (Cu), tin (Sn) and silver (Ag). In the course of looking for this “occurrence”, an area of strong hornfelsing and significant quartz veining was located, as delineated by samples SWI-20-22 to -26 (Photo 4, Appendix III). Since this could be characteristic of the environment above a subsurface granite cupola, additional bedrock samples were collected both east and west of this area, in order to provide a bedrock lithogeochemical profile across this feature. Lithium (Li), the main pathfinder element for this type of target, was essentially flat, and certainly not anomalous across samples SWI-20-21, -22 to -26, and -32 to -34, discounting this area as a granite cupola target.

As can be seen on Figure 8, covering the area around the highway #1/Swift River crossing, all elements of interest are low, probably reflecting increasing distance from the outcropping area of the Seagull Batholith, and lack of any other sources east of that intrusion.

Figure 9 shows samples northeast of the Seagull Batholith and in the Pine Lake/Daughney Lake area. Samples SWI-20-45 to -48 would be expected to reflect the shallow northeast dipping roof of the Seagull Batholith which hosts a number of Sn occurrences. Stream sediment sample SWI-20-45 returned the second highest Ta content, with 4.2 ppm, and the highest Sn content, with 69.0 ppm. Boulder sample SWI-20-46, from the same location, returned the highest Ta content in the work program, with 18.1 ppm. From the sample description in Appendix I, this sample is “granite;……. light grey-brown, medium-grained, massive; 65% light brown altered feldspar, 30% grey quartz, 4% black biotite, 1% black amphibole”. This sample clearly reflects the fractionated phase of the Seagull Batholith with 650 ppm Rb, the highest Rb in the program, but with 122.2 ppm Nb and 13.6 ppm U, suggesting that concentrates from this type of mineralization could be problematic.

Figure 10 shows samples collected in the area of the highway #1 bridge over the Rancheria River. Samples from this area would be expected to reflect the large Cassiar Batholith to the east, rather than the Seagull Batholith to the west. Although not to levels that would be of interest in this program, it is noteworthy that fractionation levels in samples SWI-20-58 to -73 on Figure 10, are higher than levels shown in samples SWI-20-21 to -44 to the west (Figures 7 & 8), and almost as high as levels in samples SWI-20-1 to -20 in the Seagull Creek area (Figure 6). This suggests the possibility of a fractionated phase of the Cassiar Batholith being present along its west faulted boundary. This is supported by samples SWI-20-72 and -73 from a mylonitized white granite lithology exposed in a highway cut immediately east of Porcupine Creek, which returned elevated levels in elements indicating magmatic fractionation.

CONCLUSIONS & RECOMMENDATIONS

Results from this work program were generally disappointing. No evidence was found for any additional subcropping or unexposed cupolas of the Seagull Batholith to the east or southeast. Tantalum (Ta) levels in both stream sediments and boulder samples were far below the threshold that was set for continuing the project. As well, levels of niobium (Nb) and uranium (U), which are dilutionary and/or deleterious to a mineral concentrate, were at or well above Ta levels. Potential for a primary Ta deposit in this area appears to be very low, although Ta could still be a credit in a Sn concentrate from this district.

No further work is recommended for this type of Ta target in this area.

(signed, sealed,
Engineers Geoscientists Manitoba
Cert #4660)
William C. Hood, P.Geo.
December 1, 2020

CERTIFICATE

For: William C. Hood, P.Geo.
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1) I am a graduate of the University of Manitoba (1979) with a B.Sc. (Honours) Degree in Science (Geology) and I have practiced my profession since that time.

2) I am a Registered Professional Geoscientist with Engineers Geoscientists Manitoba since 1982.

3) I have been employed by Tantalum Mining Corporation (1979-1983), Province of Manitoba Departments of Labour (1992 – 1995) & Energy and Mines (1995 - 1997), and ProAm Exploration Corporation (1997 – 2000), as well as operating my own business as W.C. Hood, Consulting Geologist (1983 – 1992 & 2000 – present).

4) I have researched, conducted and supervised a wide range of exploration programs for hydrothermal gold, volcanogenic copper-zinc, magmatic nickel-copper-PGE, pegmatitic tantalum-lithium-cesium, kimberlitic diamonds and various industrial mineral commodities.

(signed, sealed,
Engineers Geoscientists Manitoba
Cert #4660)

William C. Hood, P.Geo.
December 1, 2020

APPENDIX I – SAMPLE DESCRIPTIONS & ASSAY CERTIFICATES

-UTM coordinates are NAD83, Zone 9.

SWI-20-1: stream sediment; collected on tributary about 50-100m west of Seagull Ck; 377999E/6654711N, 909m; sample from lower end of a gravel-boulder bar along inside of bend on north side of creek; brown clay-sand-gravel; screened sample is brown & sandy; +4mm is 55% grey to brown sediment/schist, 40% white to pink-brown granite/granodiorite & 5% light grey quartz.
SWI-20-2: granite; boulder from same location as SWI-20-1; white, massive, medium-grained, weakly magnetic; 60% white feldspar, 25% grey quartz, 10% black amphibole, 5% black biotite, trace pyrite.
SWI-20-3: granite; boulder from same location as SWI-20-1; pink-brown, aplitic, massive, fine-grained; probable mix of pink feldspar, quartz & mica; slightly rusty along seams.
SWI-20-4: cherty mudstone; boulder from same location as SWI-20-1; black, very fine-grained, grossly layered/bedded; weakly brecciated with minor calcite veinlets.
SWI-20-5: quartz; boulder from same location as SWI-20-1; white to grey, fine-grained, sugary; 10% altered brown schist fragment inclusions, minor pyrite.
SWI-20-6: stream sediment; Seagull Ck; 378362E/6655007N, 914m; sample from brown silt-sand-gravel bar under alder thicket along east side of creek; screened sample is light brown & silt-sand; +4mm is 55% grey to brown sediment/schist, 40% white to pink-brown granite/granodiorite & 5% light grey quartz.
SWI-20-7: aplitic granite; boulder from same location as SWI-20-6; composite sample from two similar boulders; white to pink-brown, fine-grained, massive; 60% white to pink feldspar, 35% grey quartz, 5% grey rounded inclusions up to 5mm size, minor pyrite.
SWI-20-8: cherty siltstone; boulder from same location as SWI-20-6; grey, very fine-grained, weakly schistose; about 5% of sample is a light brown sericite schist band with local kink folding.
SWI-20-9: quartz; boulder from same location as SWI-20-6; composite sample from three boulders; range from fine-grained & sugary to coarse-grained; 5% black schist inclusions; 5% rusty patches probably after Fe carbonate; minor pyrite.

SWI-20-10: stream sediment; Seagull Ck; 378345E/6656000N, 933m; sample from brown sand-gravel bar behind large boulder along east side of creek; screened sample is brown & sandy; +4mm is 60% grey to brown sediment/schist, 38% white to pink-brown granite/granodiorite & 2% grey quartz.
SWI-20-11: granite; boulder from same location as SWI-20-10; white, medium-grained, massive; 60% white feldspar, 25% grey quartz, 10% black amphibole, 5% black biotite.
SWI-20-12: granite; boulder from same location as SWI-20-10; light grey, fine-grained, massive; 65% grey feldspar, 25% grey quartz, 5% K-feldspar phenocrysts, 5% biotite/amphibole.
SWI-20-13: sandstone; boulder from same location as SWI-20-10; pinkish-brown, fine-grained, massive; about 90% fine rounded quartz grains; slightly rusty.
SWI-20-14: quartz; boulder from same location as SWI-20-10; 90% white to grey fine-grained quartz, 5% black graphitic schist inclusions, 5% rusty patches probably after Fe-carbonate.
SWI-20-15: sandstone; bedrock sample; Hwy #1 road cut; 380661E/6655276N, 906m; greenish-grey, fine-grained, massive; well cemented feldspathic sandstone with 10% rounded quartz grains.
SWI-20-16: stream sediment; unnamed creek; 381817E/6655668N, 917m; sample from brown sand-gravel area behind boulders on west side of creek; screened sample is brown & sandy; +4mm is 75% grey to brown sediment/schist, 24% pink-brown granite/granodiorite & 1% white quartz.
SWI-20-17: granite; boulder from same location as SWI-20-16; light brown, medium-grained, massive, weakly altered; 60% white to light brown altered feldspar, 25% grey quartz, 10% black biotite, 5% black amphibole.
SWI-20-18: sandstone(?); boulder from same location as SWI-20-16; brown, medium- to coarse-grained, schistose; probable sheared & rusty sandstone to conglomerate with elongate grains of black graphitic shale up to 3x10mm in matrix of fine-grained feldspar grains with minor quartz; about 20% rusty sericite schist.
SWI-20-19: chert; boulder from same location as SWI-20-16; grey, very fine-grained, brecciated; about 5% irregular white calcite veinlets.
SWI-20-20: quartz; boulder from same location as SWI-20-16; composite sample from two similar boulders; white to rusty light brown, medium- to coarse-grained, massive.

SWI-20-21: sandstone; bedrock sample from probable outcrop in Hwy #1 road cut; 382452E/6655815N, 959m; grey-brown, fine-grained, massive; well-sorted & well-cemented with about half white feldspar grains & half grey quartz grains.
SWI-20-22: siltstone(?); bedrock sample; 384254E/6656514N, 1010m; grey-brown, fine-grained, weakly schistose; heavily altered sediment.
SWI-20-23: quartz; bedrock sample; 384317E/6656532N, 998m; light grey, very fine-grained, massive; sample from 5m thick cross-cutting quartz vein trending north-south/60E; minor light brown carbonate alteration.
SWI-20-24: quartz; bedrock sample; same general location & lithology as SWI-20-23.
SWI-20-25: quartz; bedrock sample; 384129E/6656643N, 1017m; white to grey, fine- to coarse-grained, massive to fractured; sample from area of abundant irregular quartz veins in an area of hornfelsed sediments; sample is a mix of 60% white fractured quartz, 40% grey altered fine-grained wallrock inclusions & minor light brown altered carbonate.
SWI-20-26: sandstone; bedrock sample; 384235E/6656888N, 1010m; light grey, fine-grained, massive; well cemented feldspathic sandstone with 10% quartz grains; sample from 2m thick bed trending 320/35S in area of predominantly black graphitic sediments.
SWI-20-27: stream sediment; unnamed creek; 385528E/6656928N, 978m; sample of brown to black sand-gravel from behind large boulder on west edge of creek; lots of graphitic schist, sericite schist & quartz boulders in this creek; screened sample is brown & sandy; +4mm is 75% black graphitic schist, 10% white granite/granodiorite, 10% white quartz & 5% grey to yellow-brown sericite schist.
SWI-20-28: granodiorite; boulder from same location as SWI-20-26; white to light grey, fine- to medium-grained, massive; 70% white feldspar, 20% grey quartz, 9% black biotite, 1% disseminated pyrite.
SWI-20-29: conglomerate; boulder from same location as SWI-20-26; rusty brown on weathered surface, grey on fresh surface, massive; chert pebble conglomerate with rounded light to dark grey clasts up to 1.5 cm size; matrix/cement is mainly Fe-carbonate which is rusty & weathering out.
SWI-20-30: quartz vein/graphite schist; boulder from same location as SWI-20-26; mix of 60% coarse-grained massive white quartz vein that is 8cm thick in 40% black graphitic schist wallrock.
SWI-20-31: quartz; boulder from same location as SWI-20-26; white, coarse-grained, massive; 90% white quartz & 10% pasty white Fe-carbonate.

<u>SWI-20-32</u>: sericite schist; bedrock sample; 386068E/6657024N, 990m; sample from low outcrop on north side of Hwy #1; grey, fine-grained, strongly schistose; rusty on weathered surface; schistosity trends about 280/30S.

<u>SWI-20-33</u>: sericite schist; bedrock sample; 386311E/6657140N, 1011m; sample from large open cut about 50m north of Hwy #1; rock was used for riprap at Hwy #1/Swift River crossing; light yellow-brown to rusty, fine-grained, schistose; about 70% very fine-grained sugary quartz, 30% yellow-brown sericite, minor pyrite.

<u>SWI-20-34</u>: sericite schist; bedrock sample from same location as SWI-20-33; grey, fine-grained, schistose; about 70& very fine-grained sugary quartz, 30% grey sericite.

<u>SWI-20-35</u>: stream sediment; unnamed creek; 388025E/6658352N, 978m; sample from sandy gravel from between old timbers put down in stream crossing of old overgrown bush road; screened sample is brown & sandy; +4mm is 70% grey to brown sediment/schist, 25% white to pink-brown granite/granodiorite & 5% white to grey quartz.

<u>SWI-20-36</u>: sandstone; boulder from same creek as SWI-20-35 but about 300m east along north ditch of Hwy #1; 388329E/6658393N, 926m; white, fine-grained, massive; sample appeared to be aplitic granite in field but probable well-cemented fine sandstone with 20% rounded grey quartz grains.

<u>SWI-20-37</u>: granite; boulder from same creek as SWI-20-35 but about 300m east along north ditch of Hwy #1; 388329E/6658393N, 926m; white to beige, medium-grained, weakly schistose; probable granite with 60% white feldspar, 25% grey quartz, 10% yellowish-brown sericite & 5% grey-brown biotite patches from altered wallrock.

<u>SWI-20-38</u>: granite; boulder from same creek as SWI-20-35 but about 300m east along north ditch of Hwy #1; 388329E/6658393N, 926m; composite sample of three small boulders that are very similar in appearance; white, fine- to medium-grained, massive; 70% white feldspar, 30% grey quartz, minor red-brown garnet, minor fine black minerals.

<u>SWI-20-39</u>: quartz; bedrock sample taken from outcrop about 25m north of SWI-20-35; 387976E/6658352N, 979m; large area of irregular quartz veining east of small beaver pond; local pyrite along south side of veining; strong lineation in area -60/320; white to brownish, medium-grained, weakly schistose; 85% white to light grey sugary to medium-grained quartz, 10% rusty altered sericite/biotite; 5% pyrite in cubes up to 2mm size, minor altered carbonate.

<u>SWI-20-40</u>: stream sediment; sample from southwest shore of small pond in cutoff meander about 100m southeast of the Swift River; 389367E/6659138N,

913m; sample from area of brown-black sand gravel in area of mud & boulders; screened sample is brown & sandy; +4mm is 70% grey to brown sediment/schist, 29% white to pink-brown granite/granodiorite & 1% white to grey quartz.
SWI-20-41: granite; boulder from same location as SWI-20-40; pasty white, fine- to medium-grained, weakly banded & gneissic. Weakly sheared; 70% white feldspar, 30% quartz, minor fine-grained black minerals.
SWI-20-42: granite; boulder from same location as SWI-20-40; light grey-brown, fine-grained, weakly schistose & sheared; altered with 10% light brown carbonate & sericite, 60% altered feldspar, 30% grey quartz, minor black minerals.
SWI-20-43: sericite schist; boulder from same location as SWI-20-40; white to reddish-pink, fine-grained, schistose; about 70& sugary quartz, 30% altered sericite.
SWI-20-44: quartz vein; boulder from same location as SWI-20-40; sample consists of a mix white quartz veining & altered sandstone wallrock; overall rock is about 20% carbonate, 20% rounded quartz clastic grains & 60% vein quartz.
SWI-20-45: stream sediment; Swift River; 386218E/6669825N, 1053m; sample from brown pebbly sand in gravel bar along northeast shore of Swift River about 10m northwest of road crossing; screened sample is grey-brown & sandy; +4mm is 55% grey to brown sediment/schist, 40% white to pink-brown granite/granodiorite & 5% white quartz.
SWI-20-46: granite; boulder from same location as SWI-20-45; light grey-brown, medium-grained, massive; 65% light brown altered feldspar, 30% grey quartz, 4% black biotite, 1% black amphibole.
SWI-20-47: granite; boulders from same location as SWI-20-45; composite sample of two similar aplitic granite boulders; white to light brown, fine-grained, massive to slightly banded; about 70% weakly altered feldspar & 30% grey quartz.
SWI-20-48: quartz; boulders from same location as SWI-20-45; composite sample of several quartz vein boulders; variable white to grey, fine- to coarse-grained, massive to schistose; 90% quartz, 10% carbonate/sericite/rusty alteration.
SWI-20-49: stream sediment; unnamed creek; 391180E/6668174N, 1025m; sample from brown sand-gravel area along east side of small creek about 10m north of Swift River road; screened sample is grey-brown & sandy; +4mm is 85% grey to brown sediment/schist, 14% white to pink-brown granite/granodiorite & 1% white quartz.
SWI-20-50: granite; boulder from same location as SWI-20-49; light pink-brown, medium-grained, weakly foliated; 50% light pink-brown feldspar, 35% grey quartz, 15% silver muscovite.

SWI-20-51: limestone; boulder from same location as SWI-20-49; pasty white to grey, fine-grained, brecciated; abundant carbonate fracture fillings.
SWI-20-52: quartz; boulder from same location as SWI-20-49; white to light brown, fine- to medium-grained, massive to schistose; mix of about 50% white quartz & 50% light brown carbonate & sericite.
SWI-20-53: quartz; boulder from same location as SWI-20-49; variable grey, medium- to coarse-grained, massive; 85% quartz with 15% altered carbonate-sericite along fracture fillings; rusty along weathered edges of sample.
SWI-20-54: stream sediment; Upper Rancheria River; 392987E/6665374N, 980m; sample from rusty brown coloured gravelly boulder bar along the west shore of river about 300m east of the north end of the Pine Lake air strip; screened sample is brown & silt-sand; +4mm is 80% brown sediment/schist, 15% pink-brown granite/granodiorite & 5% white quartz, but all pebbles in this sample have a dark brown clay-rust coating.
SWI-20-55: diorite; boulder from same location as SWI-20-54; grey, medium-grained, massive; 70% light grey feldspar, 20% black amphibole, 10% grey quartz.
SWI-20-56: granite; boulder from same location as SWI-20-54; light brownish-grey, very fine-grained, weakly foliated; probable aplitic granite with about 70% feldspar & 30% quartz; weakly altered.
SWI-20-57: siltstone; brown-grey to black, very fine-grained, thin bedded & contorted; intermediate composition sediment that has been altered & brecciated.
SWI-20-58: stream sediment; Upper Rancheria River; 392652E/6662469N, 969m; sample from sand-gravel-boulder bar along east shore of river; screened sample is brown & sandy; +4mm is 80% grey-brown sediment/schist, 19% pink-brown granite/granodiorite & 1% white quartz.
SWI-20-59: granite; boulder from same location as SWI-20-58; light pink-brown, medium- to coarse-grained, massive; 60% stained/altered pink-brown feldspar in crystals up to 4x6mm, 30% grey quartz, 5% black amphibole & 5% black biotite.
SWI-20-60: granodiorite; boulder from same location as SWI-20-58; grey to brown, mostly fine-grained, massive; 70% light grey feldspar, 20% grey quartz, 10% biotite in rounded pods up to 3mm size, minor pyrite; altered brownish along weathered edges.
SWI-20-61: quartz; boulder from same location as SWI-20-58; white to light grey, medium-grained, massive; minor rusty carbonate, minor pyrite.
SWI-20-62: quartz; boulder from same location as SWI-20-58; white, very coarse-grained, massive; 10% altered biotite, minor altered carbonate.

<u>SWI-20-63</u>: stream sediment; Rancheria River; 394722E/6660529N, 943m; sample from clay-sand-boulder bar under exposed roots of large tree along northeast shore of river; screened sample is brown & sandy; +4mm is 80% grey-brown sediment/schist, 18% pink-brown granite/granodiorite & 2% white to grey quartz.
<u>SWI-20-64</u>: granodiorite; boulder from same location as SWI-20-63; grey, fine-grained, weakly foliated; 80% grey feldspar, 10% grey quartz & 10% biotite/sericite forming weak foliation.
<u>SWI-20-65</u>: granite; boulder from same location as SWI-20-63; white-beige, fine- to medium-grained, massive; 65% pasty white feldspar locally altered to light yellowish-brown, 30% grey quartz & 5% biotite/chlorite
<u>SWI-20-66</u>: sandstone; boulder from same location as SWI-20-63; brown-grey, fine-grained, weakly brecciated; probable well-cemented quartz sandstone; weakly altered & brecciated with minor black chlorite fracture fillings.
<u>SWI-20-67</u>: quartz vein; boulder from same location as SWI-20-63; white to grey, very coarse-grained, massive to schistose; mix of about 60% quartz with 40% coarse patches of dark green-brown chlorite/biotite.
<u>SWI-20-68</u>: stream sediment; Porcupine Creek; 397486E/6661490N, 943m; sample from sand-gravel bar along braided meandering creek with lots of granite boulders; screened sample is brown & silt-sand; +4mm is 90% pink-brown granite/granodiorite, 9% dark grey sediment/schist & 1% white to grey quartz.
<u>SWI-20-69</u>: granodiorite; boulder from same location as SWI-20-68; grey, medium- to coarse-grained, strongly porphyritic, foliated; about 40% light grey feldspar phenocrysts up to 4x8mm size in a dark grey matrix of fine- to medium grained feldspar, quartz & biotite.
<u>SWI-20-70</u>: granite; boulder from same location as SWI-20-68; light grey, fine- to medium-grained, massive; 70% light grey feldspar, 30% grey quartz & minor biotite/chlorite.
<u>SWI-20-71</u>: diorite(?); boulder from same location as SWI-20-68; dark grey, fine-grained, weakly schistose; 80% dark grey plagioclase feldspar & 20% black amphibole, minor pyrite.
<u>SWI-20-72</u>: granite; bedrock sample from rock cut on north side of Highway #1; 397699E/6661396N, 986m; outcrop is mainly porphyritic granodiorite with local heavily sheared white lithology; pasty white, fine- to medium-grained, schistose; 60% altered white feldspar, 30% light grey quartz & 10% silvery muscovite.
<u>SWI-20-73</u>: granite; bedrock sample from rock cut on north side of Highway #1; 397699E/6661396N, 986m; outcrop is mainly porphyritic granodiorite with local heavily sheared white lithology; pasty white, fine-grained, strongly schistose;

probable felsic granite but mylonitized into a very fine-grained mix of sugary feldspar, quartz & mica with about 2% fine black minerals that are possible tourmaline.

APPENDIX II – ANALYTICAL DATA

Quality Analysis ... Actlabs *Innovative Technologies*

Report No.:	**A20-10250**
Report Date:	**17-Sep-20**
Date Submitted:	**31-Aug-20**
Your Reference:	**WOLF PROJECT**

WILLIAM C. HOOD
PO BOX 1722
BEAUSEJOUR MB R0E0C0
Canada

ATTN: BILL HOOD

CERTIFICATE OF ANALYSIS

73 Rock and Soil samples were submitted for analysis.

The following analytical package(s) were requested:		Testing Date:
4F-F	QOP Fluorine (Fusion Specific Ion Electrode-ISE)	2020-09-10 14:11:34
UT-7	QOP Sodium Peroxide (Sodium Peroxide Fusion ICPOES + ICPMS)	2020-09-09 14:31:51

REPORT A20-10250

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 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 material submitted for analysis.

Notes:

CERTIFIED BY:

Emmanuel Eseme , Ph.D.
Quality Control Coordinator

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Results **Activation Laboratories Ltd.** **Report: A20-10250**

Analyte Symbol	F	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Ho	Hf
Unit Symbol	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	5	10	3	3	2	0.01	2	0.8	0.2	30	0.1	2	0.3	0.1	0.1	0.05	0.2	0.1	0.7	0.2	10
Method Code	FUS-ISE	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
SWI-20-1	0.05	6.12	33	50	671	13	< 2	1.92	< 2	132	15.3	220	6.2	39	18.5	11.6	1.3	4.93	14.5	15.7	2.0	4.3	10
SWI-20-2	0.01	8.30	< 5	< 10	1740	< 3	< 2	2.29	< 2	10.9	3.1	100	0.5	4	1.0	0.5	1.0	1.57	20.3	0.8	1.1	0.3	< 10
SWI-20-3	0.02	6.72	7	40	887	< 3	< 2	0.17	< 2	55.0	7.3	110	5.6	15	2.2	1.6	1.1	2.11	15.9	3.4	1.8	0.5	< 10
SWI-20-4	0.02	1.29	23	70	250	< 3	< 2	< 0.01	< 2	16.3	2.1	240	1.6	40	1.3	0.9	0.3	1.39	4.5	1.2	2.4	0.3	< 10
SWI-20-5	0.02	3.57	< 5	< 10	412	< 3	< 2	2.24	< 2	32.6	3.9	210	2.1	9	2.4	1.2	0.7	0.99	9.0	2.7	1.3	0.5	< 10
SWI-20-6	0.02	6.15	14	30	866	4	< 2	2.72	< 2	80.7	14.2	200	2.3	27	8.6	5.2	1.3	3.74	15.6	7.1	2.0	1.8	10
SWI-20-7	< 0.01	6.97	434	< 10	529	3	< 2	0.38	< 2	31.5	0.4	100	2.7	10	4.0	2.7	0.2	0.56	16.7	3.2	1.4	0.9	< 10
SWI-20-8	< 0.01	0.72	15	< 10	213	< 3	< 2	< 0.01	< 2	10.0	< 0.2	90	0.7	7	0.6	0.2	0.2	0.19	3.6	0.7	1.5	< 0.2	< 10
SWI-20-9	0.01	0.38	6	< 10	254	< 3	< 2	0.31	< 2	4.0	0.4	110	0.4	55	0.4	< 0.1	0.1	0.66	1.9	0.4	1.7	< 0.2	< 10
SWI-20-10	0.04	5.99	34	40	730	4	< 2	2.68	< 2	131	14.2	230	2.8	30	10.3	5.5	1.5	5.78	18.8	10.3	2.1	2.4	20
SWI-20-11	< 0.01	8.41	< 5	< 10	1700	< 3	< 2	2.54	< 2	15.7	4.2	90	0.8	6	1.2	0.8	1.0	1.80	19.7	1.5	1.0	< 0.2	< 10
SWI-20-12	0.29	6.58	10	< 10	22	10	< 2	0.42	< 2	150	< 0.2	120	16.9	6	17.4	11.9	< 0.1	1.04	34.8	14.0	3.0	3.9	< 10
SWI-20-13	< 0.01	2.12	9	20	239	< 3	< 2	0.20	< 2	29.7	1.4	110	0.9	9	1.5	0.8	0.6	0.77	5.5	1.8	1.3	0.3	< 10
SWI-20-14	< 0.01	0.60	< 5	< 10	71	< 3	< 2	0.80	< 2	7.3	3.0	290	0.3	12	0.8	0.4	< 0.1	0.61	2.1	0.4	1.8	< 0.2	< 10
SWI-20-15	< 0.01	10.6	6	< 10	489	< 3	< 2	5.35	< 2	23.0	27.9	120	0.9	116	3.7	2.3	1.5	7.51	20.8	3.2	1.9	0.8	< 10
SWI-20-16	0.03	5.35	34	50	964	4	< 2	1.83	< 2	93.4	17.4	210	5.9	36	9.0	5.3	2.0	4.64	12.7	8.5	2.2	2.1	10
SWI-20-17	0.07	6.21	7	30	29	7	< 2	0.12	< 2	130	0.9	90	9.8	5	11.0	7.1	< 0.1	1.00	28.1	8.7	3.5	2.4	10
SWI-20-18	< 0.01	1.80	11	20	1380	< 3	< 2	0.08	< 2	8.7	4.1	150	3.2	131	1.7	1.0	0.7	9.58	6.3	1.3	1.9	0.2	< 10
SWI-20-19	< 0.01	0.25	< 5	< 10	180	< 3	< 2	0.30	< 2	2.3	2.1	170	0.5	11	< 0.3	0.2	0.2	0.41	1.1	0.2	2.1	< 0.2	< 10
SWI-20-20	< 0.01	0.17	< 5	< 10	26	< 3	< 2	0.10	< 2	0.9	3.1	90	0.8	6	< 0.3	0.1	0.1	0.31	< 0.2	< 0.1	2.5	< 0.2	< 10
SWI-20-21	< 0.01	5.74	6	20	555	< 3	< 2	0.88	< 2	53.1	5.7	190	3.9	23	2.7	1.3	1.0	1.78	13.0	3.2	1.5	0.5	< 10
SWI-20-22	0.02	3.20	26	20	> 10000	< 3	< 2	0.05	< 2	30.3	7.7	140	4.1	34	2.4	1.3	5.3	3.56	14.7	3.1	2.4	0.5	< 10
SWI-20-23	< 0.01	0.51	6	10	2880	< 3	< 2	0.04	< 2	10.8	0.3	140	1.0	9	< 0.3	0.2	0.9	0.29	0.6	0.3	1.4	< 0.2	< 10
SWI-20-24	< 0.01	0.40	< 5	< 10	747	< 3	< 2	0.02	< 2	5.5	0.7	140	0.2	19	0.5	0.5	0.3	0.34	1.2	1.0	1.5	< 0.2	< 10
SWI-20-25	< 0.01	0.29	5	< 10	813	< 3	< 2	0.02	< 2	3.2	1.3	130	0.4	5	< 0.3	0.1	0.3	0.28	1.0	0.2	1.9	< 0.2	< 10
SWI-20-26	0.02	8.77	< 5	< 10	2050	< 3	< 2	1.51	< 2	51.6	2.1	90	4.3	12	3.1	1.4	1.9	2.55	17.0	3.0	1.5	0.6	< 10
SWI-20-27	0.04	6.78	26	60	3310	< 3	< 2	0.87	< 2	53.0	11.1	130	5.7	60	4.5	2.7	1.6	3.98	15.7	5.1	1.8	1.2	< 10
SWI-20-28	< 0.01	7.36	< 5	< 10	1470	< 3	< 2	0.68	< 2	17.0	4.1	120	0.6	15	1.1	0.9	0.7	1.49	13.4	1.3	0.7	0.2	< 10
SWI-20-29	0.01	1.25	7	20	773	< 3	< 2	1.96	< 2	10.7	3.5	120	1.4	25	0.9	0.4	0.4	0.88	3.0	1.0	1.4	< 0.2	< 10
SWI-20-30	< 0.01	1.43	8	< 10	722	< 3	< 2	0.08	< 2	13.9	0.4	120	1.4	7	1.1	0.4	0.8	0.58	2.8	1.2	1.2	< 0.2	< 10
SWI-20-31	< 0.01	0.90	< 5	< 10	9480	< 3	< 2	0.11	< 2	< 0.8	0.3	160	0.7	9	< 0.3	< 0.1	2.2	0.29	1.3	< 0.1	1.5	< 0.2	< 10
SWI-20-32	0.02	3.23	< 5	30	2840	< 3	< 2	0.08	< 2	22.3	2.8	100	1.9	38	0.8	0.5	0.9	2.29	5.9	1.1	1.5	0.2	< 10
SWI-20-33	< 0.01	1.44	< 5	< 10	3470	< 3	< 2	0.02	< 2	6.8	0.6	90	0.7	8	0.5	0.4	0.7	0.31	6.1	0.7	1.8	< 0.2	< 10
SWI-20-34	< 0.01	0.58	< 5	< 10	202	< 3	< 2	0.11	< 2	4.0	0.3	130	0.6	10	0.3	0.2	0.1	0.21	1.1	< 0.1	1.7	< 0.2	< 10
SWI-20-35	0.01	5.66	17	370	941	< 3	< 2	2.16	< 2	58.1	17.0	190	2.9	61	4.1	2.3	1.3	4.27	12.8	5.6	1.7	0.9	10
SWI-20-36	< 0.01	1.63	13	10	293	< 3	< 2	0.06	< 2	27.3	3.1	110	1.1	7	2.0	1.0	0.3	0.69	3.1	2.1	1.4	0.5	< 10
SWI-20-37	< 0.01	0.63	< 5	< 10	519	< 3	< 2	0.07	< 2	3.7	2.7	140	0.7	12	0.3	0.3	0.3	0.32	3.3	0.2	1.9	< 0.2	< 10
SWI-20-38	0.01	7.50	5	< 10	230	< 3	< 2	0.86	< 2	7.6	0.4	80	1.9	10	3.2	1.8	0.3	0.30	16.7	2.1	2.1	0.7	< 10
SWI-20-39	< 0.01	0.09	17	< 10	68	< 3	< 2	0.20	< 2	7.8	7.1	110	0.4	10	0.7	0.4	0.2	1.06	0.5	0.6	1.7	< 0.2	10
SWI-20-40	0.02	5.33	9	20	732	< 3	< 2	8.71	< 2	47.2	8.4	210	2.1	33	4.1	2.5	1.5	2.70	11.1	4.3	1.2	1.0	< 10
SWI-20-41	< 0.01	2.33	6	< 10	60	< 3	< 2	0.30	< 2	29.3	1.1	90	0.5	6	1.0	0.7	0.4	0.61	2.4	2.3	1.6	< 0.2	< 10
SWI-20-42	< 0.01	0.68	15	< 10	698	< 3	< 2	< 0.01	< 2	6.3	1.0	130	1.1	89	1.2	0.8	0.3	1.94	2.0	0.8	2.3	0.2	< 10
SWI-20-43	< 0.01	0.61	< 5	< 10	657	< 3	< 2	0.06	< 2	3.9	< 0.2	110	0.4	7	< 0.3	0.2	0.1	0.27	1.0	0.1	1.5	< 0.2	< 10
SWI-20-44	< 0.01	1.32	< 5	< 10	32	< 3	< 2	0.17	< 2	30.9	2.3	140	0.7	25	1.2	0.6	0.3	0.71	3.6	1.7	1.1	0.2	< 10
SWI-20-45	0.04	7.15	37	120	891	4	< 2	1.92	2	137	14.2	170	6.6	21	7.6	5.3	2.1	4.07	19.6	9.5	2.3	1.9	20
SWI-20-46	0.15	6.29	16	20	72	6	< 2	0.25	< 2	158	0.3	70	7.7	5	11.9	8.8	< 0.1	0.81	40.3	9.1	3.2	2.9	10
SWI-20-47	< 0.01	6.80	10	< 10	720	4	< 2	3.49	< 2	35.3	3.0	80	2.9	26	6.2	3.1	0.5	2.35	22.8	5.9	1.4	1.5	< 10
SWI-20-48	0.05	1.90	16	< 10	292	< 3	< 2	1.37	< 2	7.2	2.1	100	2.4	2300	1.0	0.5	0.4	1.13	4.7	0.8	1.9	0.2	< 10
SWI-20-49	0.03	6.82	14	90	832	4	< 2	1.68	< 2	109	13.7	190	7.3	34	6.9	4.3	1.7	4.02	16.6	7.9	2.0	1.4	10

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Analyte Symbol	F	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Ho	Hf
Unit Symbol	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	5	10	3	3	2	0.01	2	0.8	0.2	30	0.1	2	0.3	0.1	0.1	0.05	0.2	0.1	0.7	0.2	10
Method Code	FUS-ISE	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
SWI-20-50	0.03	7.53	< 5	20	101	15	< 2	0.37	< 2	5.8	0.4	70	8.3	3	1.5	0.6	0.1	0.57	20.8	0.8	2.7	< 0.2	< 10
SWI-20-51	0.02	9.99	14	< 10	456	< 3	< 2	8.02	< 2	56.8	16.2	200	5.7	12	4.5	2.3	1.0	3.24	22.3	4.2	1.9	0.9	< 10
SWI-20-52	< 0.01	0.30	6	< 10	17	< 3	< 2	0.05	< 2	13.2	1.6	100	0.7	4	0.5	0.3	0.1	0.34	1.0	0.7	1.4	< 0.2	< 10
SWI-20-53	< 0.01	0.32	< 5	< 10	65	< 3	< 2	0.03	< 2	2.5	0.9	100	0.6	10	0.3	0.3	0.2	0.54	1.1	0.3	1.4	< 0.2	< 10
SWI-20-54	0.03	6.73	51	50	734	4	< 2	2.14	< 2	84.8	10.8	190	5.9	23	6.1	3.6	1.6	4.62	18.2	7.1	1.5	1.2	< 10
SWI-20-55	0.01	8.80	< 5	< 10	1210	< 3	< 2	4.92	< 2	25.0	18.8	130	1.1	33	4.1	2.5	1.4	4.81	16.8	3.0	2.3	0.8	< 10
SWI-20-56	< 0.01	4.63	9	< 10	684	< 3	10	2.47	< 2	58.8	3.6	90	6.1	7	2.5	1.0	0.7	1.55	8.8	2.6	1.3	0.4	< 10
SWI-20-57	0.07	5.74	29	< 10	2280	< 3	< 2	4.52	< 2	21.1	12.2	320	2.4	36	5.1	3.2	1.4	5.09	17.1	3.6	1.1	1.2	< 10
SWI-20-58	0.05	6.83	33	60	747	< 3	< 2	3.23	< 2	99.0	16.9	210	6.8	40	6.3	4.2	1.8	5.14	17.6	7.9	1.9	1.6	10
SWI-20-59	0.10	6.26	5	30	154	12	< 2	0.22	< 2	150	1.4	70	9.3	3	8.7	5.1	0.3	1.18	25.5	9.9	2.3	1.6	< 10
SWI-20-60	< 0.01	8.31	66	< 10	1440	< 3	2	3.68	< 2	25.9	8.4	90	2.4	53	1.7	1.0	0.6	2.50	15.1	1.7	1.7	0.5	< 10
SWI-20-61	< 0.01	0.26	< 5	< 10	112	< 3	< 2	0.04	< 2	2.5	0.3	90	0.4	6	< 0.3	< 0.1	0.1	0.30	0.2	0.2	1.4	< 0.2	< 10
SWI-20-62	< 0.01	0.24	< 5	< 10	16	< 3	< 2	0.06	< 2	4.3	0.5	90	0.1	5	< 0.3	0.2	< 0.1	0.66	0.7	0.2	1.2	< 0.2	< 10
SWI-20-63	0.02	6.04	23	50	844	< 3	< 2	1.99	< 2	62.7	11.0	190	5.2	20	4.1	1.9	1.3	3.79	15.6	4.5	1.7	0.8	< 10
SWI-20-64	< 0.01	5.09	< 5	< 10	590	< 3	< 2	0.25	< 2	80.6	6.4	100	0.9	9	2.8	1.6	1.0	1.56	13.7	4.5	1.3	0.5	10
SWI-20-65	< 0.01	8.84	< 5	< 10	423	< 3	< 2	3.42	< 2	11.4	0.9	70	0.5	10	1.1	0.6	0.6	0.50	18.2	1.1	1.0	0.2	< 10
SWI-20-66	< 0.01	2.70	6	< 10	180	< 3	< 2	0.55	< 2	34.1	4.6	110	0.7	17	1.7	0.8	0.9	1.31	8.0	2.0	1.4	0.4	< 10
SWI-20-67	< 0.01	1.85	< 5	< 10	170	< 3	< 2	0.25	< 2	21.9	8.1	110	0.7	42	0.9	0.6	0.3	1.53	3.9	1.1	1.5	0.2	< 10
SWI-20-68	0.03	6.80	12	40	771	4	< 2	1.55	< 2	143	9.1	120	13.6	22	6.8	3.7	2.0	2.83	20.3	9.4	2.1	1.3	10
SWI-20-69	0.02	7.43	< 5	< 10	1650	4	26	0.55	< 2	67.5	1.7	80	8.2	8	7.0	3.4	1.4	1.31	16.2	4.8	2.0	1.3	< 10
SWI-20-70	< 0.01	7.38	< 5	< 10	1010	< 3	< 2	0.48	< 2	19.6	0.3	70	2.5	8	1.5	0.7	1.1	0.52	13.6	1.5	2.1	0.4	< 10
SWI-20-71	< 0.01	2.70	10	< 10	166	< 3	< 2	0.15	< 2	49.3	3.9	140	1.3	7	2.1	1.0	0.8	1.66	5.0	2.7	1.3	0.5	10
SWI-20-72	< 0.01	7.60	< 5	50	382	7	< 2	0.63	< 2	17.8	1.0	70	7.4	4	2.0	1.0	0.4	0.57	12.9	1.1	2.2	0.5	10
SWI-20-73	0.03	7.85	< 5	210	134	10	2	0.33	< 2	4.1	< 0.2	60	7.8	7	0.9	0.5	< 0.1	0.45	17.5	0.9	3.4	0.2	< 10

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Analyte Symbol	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	Pb	Pr	Rb	S	Sb	Se	Si	Sm	Sn	Sr	Ta	Tb	Te
Unit Symbol	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.2	0.1	0.4	3	0.01	3	1	2.4	0.4	10	0.8	0.1	0.4	0.01	2	8	0.01	0.1	0.5	3	0.2	0.1	6
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
SWI-20-1	< 0.2	1.4	70.6	56	1.10	1150	3	29.6	70.3	70	28.1	17.3	79.1	0.04	2	44	27.8	14.4	8.4	189	3.3	3.3	< 6
SWI-20-2	< 0.2	1.6	5.2	16	0.45	378	2	5.7	6.2	30	10.1	1.7	39.9	< 0.01	< 2	30	> 30.0	1.3	5.2	694	0.5	0.1	< 6
SWI-20-3	< 0.2	2.6	29.8	24	0.38	358	< 1	11.9	20.4	70	29.2	6.3	116	< 0.01	< 2	< 8	> 30.0	3.9	2.7	55	1.5	0.4	< 6
SWI-20-4	< 0.2	0.7	10.5	9	0.12	61	29	6.6	9.1	30	25.0	2.6	25.9	0.08	7	15	> 30.0	1.6	3.9	37	1.1	0.2	< 6
SWI-20-5	< 0.2	1.9	19.5	19	0.96	389	20	7.2	16.9	50	7.0	4.2	64.8	< 0.01	< 2	< 8	> 30.0	2.2	5.0	102	1.2	0.4	< 6
SWI-20-6	< 0.2	1.4	46.3	25	1.20	799	< 1	26.0	38.2	50	17.2	11.2	55.6	0.02	< 2	38	> 30.0	8.5	4.0	328	2.9	1.3	< 6
SWI-20-7	< 0.2	3.8	16.7	13	0.04	74	< 1	15.7	13.4	10	37.7	3.8	176	0.05	3	< 8	> 30.0	2.9	6.1	101	2.1	0.7	< 6
SWI-20-8	< 0.2	0.4	3.9	14	0.05	18	< 1	3.9	3.0	30	7.1	1.1	18.0	< 0.01	< 2	< 8	> 30.0	0.5	2.5	20	1.1	0.2	10
SWI-20-9	< 0.2	0.2	2.1	6	0.07	261	2	2.8	2.5	40	20.2	0.5	8.5	0.06	< 2	15	> 30.0	0.5	4.6	50	0.8	< 0.1	11
SWI-20-10	0.3	1.3	78.9	29	1.52	1280	< 1	43.0	57.8	70	15.5	16.4	55.6	0.02	< 2	< 8	> 30.0	9.9	36.5	257	5.6	1.8	< 6
SWI-20-11	< 0.2	1.3	9.1	13	0.54	370	< 1	6.5	8.6	20	11.2	1.8	34.5	< 0.01	< 2	15	> 30.0	2.0	1.2	735	0.9	0.2	9
SWI-20-12	< 0.2	4.1	81.7	186	0.02	134	2	78.8	58.6	30	33.8	16.9	623	0.03	< 2	< 8	> 30.0	13.1	6.9	18	8.7	2.4	< 6
SWI-20-13	< 0.2	0.8	15.9	8	0.10	354	< 1	7.3	10.9	20	24.4	3.5	32.1	0.04	< 2	< 8	> 30.0	2.2	4.3	37	1.5	0.3	< 6
SWI-20-14	< 0.2	0.2	3.0	11	0.19	553	22	3.7	1.9	30	7.1	0.9	10.4	0.01	< 2	< 8	> 30.0	0.3	1.3	38	0.9	0.1	< 6
SWI-20-15	< 0.2	0.6	11.1	37	3.23	1300	< 1	5.8	15.3	70	9.3	3.6	12.7	0.01	< 2	< 8	22.6	3.4	3.9	435	1.0	0.5	< 6
SWI-20-16	< 0.2	1.4	56.4	38	1.32	2860	< 1	24.4	46.3	60	18.1	12.7	76.6	0.04	3	22	29.6	9.4	7.1	153	2.4	1.6	< 6
SWI-20-17	< 0.2	4.0	70.5	125	0.03	148	< 1	67.5	46.0	20	25.7	14.4	519	< 0.01	< 2	< 8	> 30.0	8.8	9.1	19	6.7	1.7	15
SWI-20-18	< 0.2	0.7	4.3	9	0.10	177	< 1	5.7	5.5	30	8.7	1.1	36.8	0.03	3	< 8	> 30.0	0.9	5.0	17	0.7	0.3	9
SWI-20-19	< 0.2	0.2	1.0	4	0.03	918	1	2.9	1.2	50	5.0	0.2	5.9	< 0.01	< 2	< 8	> 30.0	0.2	3.4	25	1.1	< 0.1	< 6
SWI-20-20	< 0.2	< 0.1	< 0.4	10	0.02	76	5	2.8	< 0.4	30	4.5	0.1	3.3	0.01	< 2	< 8	> 30.0	< 0.1	1.3	24	0.5	< 0.1	< 6
SWI-20-21	< 0.2	1.7	30.5	17	0.25	449	10	10.5	21.2	40	10.3	6.8	72.3	0.01	< 2	< 8	> 30.0	2.6	4.1	117	1.0	0.5	< 6
SWI-20-22	< 0.2	1.8	14.5	19	0.19	1590	< 1	7.7	15.3	40	6.7	3.8	70.0	0.05	4	15	> 30.0	3.4	2.7	116	0.8	0.4	7
SWI-20-23	< 0.2	0.4	7.2	14	0.02	27	2	3.3	5.1	20	7.6	1.4	15.0	0.02	< 2	< 8	> 30.0	0.9	1.3	29	0.5	< 0.1	< 6
SWI-20-24	< 0.2	0.2	3.3	10	0.03	45	4	2.9	2.8	20	4.5	1.0	8.2	0.01	< 2	< 8	> 30.0	0.4	1.1	14	0.9	0.1	< 6
SWI-20-25	< 0.2	0.2	1.3	10	0.02	12	2	3.0	0.8	20	5.6	0.3	8.5	< 0.01	< 2	< 8	> 30.0	< 0.1	1.4	17	0.7	< 0.1	7
SWI-20-26	< 0.2	2.6	29.8	25	0.60	657	< 1	14.5	22.0	30	15.4	6.0	98.1	0.03	< 2	< 8	> 30.0	4.7	4.8	267	1.6	0.5	< 6
SWI-20-27	< 0.2	2.7	29.0	30	0.77	1410	< 1	12.3	25.8	70	28.8	6.0	112	0.02	< 2	15	> 30.0	5.3	5.3	87	1.1	0.9	10
SWI-20-28	< 0.2	2.4	10.3	10	0.62	194	< 1	5.1	8.3	40	7.0	1.8	73.7	0.04	< 2	29	> 30.0	0.9	0.6	407	0.6	0.3	< 6
SWI-20-29	< 0.2	0.7	5.0	13	1.03	230	3	4.3	5.6	40	8.9	1.4	25.0	0.14	< 2	< 8	> 30.0	0.8	2.8	31	0.7	0.2	< 6
SWI-20-30	< 0.2	0.8	7.5	11	0.13	75	2	4.3	5.3	20	26.7	1.4	35.2	< 0.01	< 2	< 8	> 30.0	1.9	3.7	25	0.8	0.2	7
SWI-20-31	< 0.2	0.8	< 0.4	8	0.01	346	4	2.8	0.5	40	4.7	< 0.1	14.5	0.05	< 2	< 8	> 30.0	< 0.1	4.8	46	1.1	< 0.1	< 6
SWI-20-32	< 0.2	1.2	12.9	22	0.62	169	< 1	5.7	11.4	30	10.9	2.8	47.5	0.03	< 2	< 8	> 30.0	1.8	5.1	23	0.8	0.2	< 6
SWI-20-33	< 0.2	0.7	3.1	11	0.11	31	< 1	3.7	3.5	20	5.8	0.8	20.0	0.03	< 2	< 8	> 30.0	0.3	2.0	18	0.7	< 0.1	< 6
SWI-20-34	< 0.2	0.4	1.7	7	0.04	23	1	3.2	1.7	30	3.8	0.3	15.1	< 0.01	< 2	< 8	> 30.0	0.3	1.4	20	1.2	< 0.1	9
SWI-20-35	< 0.2	1.3	32.1	33	1.09	1330	< 1	15.9	25.0	70	19.2	7.3	53.3	0.06	< 2	15	29.0	4.3	4.6	238	1.6	0.6	< 6
SWI-20-36	< 0.2	0.8	14.7	9	0.06	242	4	5.1	13.3	30	5.1	3.2	25.8	< 0.01	< 2	< 8	> 30.0	1.5	3.4	29	0.8	0.3	< 6
SWI-20-37	< 0.2	0.3	1.8	9	0.05	174	< 1	2.5	2.2	30	5.5	0.3	12.0	< 0.01	< 2	< 8	> 30.0	0.5	1.8	17	0.9	< 0.1	< 6
SWI-20-38	< 0.2	2.2	4.0	7	0.04	291	< 1	21.7	3.6	30	25.0	1.1	77.8	0.01	< 2	< 8	> 30.0	1.8	2.1	240	2.7	0.5	< 6
SWI-20-39	< 0.2	< 0.1	4.1	49	0.06	469	< 1	3.5	3.4	30	9.0	0.8	2.0	0.55	< 2	< 8	> 30.0	0.6	1.3	25	0.8	< 0.1	< 6
SWI-20-40	< 0.2	1.1	26.7	30	1.08	462	< 1	12.2	25.0	60	16.4	6.3	44.7	0.06	< 2	< 8	24.9	4.0	6.2	267	1.1	0.7	< 6
SWI-20-41	< 0.2	0.5	14.7	8	0.11	68	< 1	4.3	12.2	20	17.8	3.0	18.9	0.05	< 2	22	> 30.0	2.5	3.7	129	0.8	0.3	< 6
SWI-20-42	< 0.2	0.4	4.8	6	0.05	92	< 1	4.9	4.5	20	18.3	1.0	20.3	0.02	3	14	> 30.0	0.7	1.9	15	0.4	0.1	< 6
SWI-20-43	< 0.2	0.3	2.1	11	0.04	27	2	3.1	1.3	20	4.8	0.4	13.1	0.02	< 2	< 8	> 30.0	0.4	3.5	19	0.5	< 0.1	8
SWI-20-44	< 0.2	< 0.1	14.1	11	0.08	218	3	4.1	11.2	50	13.6	3.1	3.9	0.04	< 2	17	> 30.0	1.6	1.0	52	1.0	0.2	< 6
SWI-20-45	0.5	2.1	78.0	48	1.36	929	< 1	38.1	57.2	70	25.8	17.2	118	0.03	3	< 8	> 30.0	9.4	69.0	162	4.2	1.3	< 6
SWI-20-46	< 0.2	3.8	84.5	140	0.02	68	9	122.2	50.5	20	28.8	17.1	650	0.02	3	< 8	> 30.0	9.7	9.8	21	18.1	1.7	7
SWI-20-47	0.2	2.1	17.9	18	0.56	473	12	35.8	22.1	20	27.0	4.8	83.3	0.01	3	< 8	> 30.0	5.0	11.8	247	2.6	1.1	10
SWI-20-48	< 0.2	0.3	3.8	28	0.30	217	3	4.1	3.2	40	155	0.8	45.5	0.03	< 2	< 8	> 30.0	0.7	23.9	53	1.0	0.2	< 6
SWI-20-49	< 0.2	2.1	66.6	51	1.14	767	< 1	20.2	53.7	80	31.1	12.8	113	0.04	3	29	29.4	8.0	21.4	181	1.5	1.3	< 6

Analyte Symbol	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	Pb	Pr	Rb	S	Sb	Se	Si	Sm	Sn	Sr	Ta	Tb	Te
Unit Symbol	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.2	0.1	0.4	3	0.01	3	1	2.4	0.4	10	0.8	0.1	0.4	0.01	2	8	0.01	0.1	0.5	3	0.2	0.1	6
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
SWI-20-50	< 0.2	3.4	2.7	59	0.10	184	< 1	21.7	1.9	20	17.6	0.8	272	0.01	< 2	< 8	> 30.0	0.5	9.4	44	3.7	0.2	< 6
SWI-20-51	< 0.2	0.7	31.0	23	3.49	776	< 1	5.7	26.3	50	19.0	7.0	47.9	< 0.01	7	14	25.0	4.9	8.9	387	0.9	0.5	< 6
SWI-20-52	< 0.2	0.1	6.4	8	0.04	81	2	3.3	5.0	20	4.3	1.5	9.2	0.01	< 2	< 8	> 30.0	0.4	2.3	16	0.7	0.1	< 6
SWI-20-53	< 0.2	0.1	1.9	4	0.10	275	< 1	2.4	1.6	20	17.1	0.2	5.5	0.01	< 2	< 8	> 30.0	0.8	1.4	21	0.8	< 0.1	< 6
SWI-20-54	< 0.2	1.6	54.6	57	1.13	1170	3	20.5	41.0	80	23.5	11.1	92.4	0.07	< 2	21	27.5	8.1	7.6	196	2.3	1.2	< 6
SWI-20-55	0.3	1.7	13.8	10	2.57	999	< 1	7.3	12.3	40	9.0	3.4	56.9	< 0.01	2	14	26.9	2.2	6.5	283	1.2	0.6	< 6
SWI-20-56	< 0.2	2.6	32.2	8	0.22	599	< 1	7.5	22.1	30	30.7	6.4	111	0.03	3	< 8	> 30.0	4.0	8.5	126	1.2	0.5	< 6
SWI-20-57	0.3	1.3	11.1	6	3.06	1460	4	6.6	16.7	70	10.3	3.2	44.7	0.03	7	22	29.7	3.9	9.1	246	0.8	0.8	12
SWI-20-58	< 0.2	1.5	52.2	62	1.98	1410	< 1	26.0	40.5	80	26.4	11.6	86.3	0.05	< 2	15	27.1	7.5	16.5	203	2.7	1.2	< 6
SWI-20-59	< 0.2	4.0	83.5	92	0.06	146	1	46.7	58.4	20	25.3	16.8	380	< 0.01	< 2	15	> 30.0	10.0	5.1	26	4.1	1.5	< 6
SWI-20-60	0.2	3.5	15.6	13	0.86	524	1	6.3	12.9	20	55.6	2.9	136	0.26	< 2	< 8	> 30.0	1.5	18.6	426	0.5	0.4	< 6
SWI-20-61	< 0.2	0.1	1.2	12	0.02	38	< 1	< 2.4	1.4	10	4.0	0.3	9.7	0.04	< 2	< 8	> 30.0	0.3	1.3	12	< 0.2	< 0.1	14
SWI-20-62	0.2	< 0.1	1.9	5	0.09	247	< 1	< 2.4	1.7	20	14.5	0.4	2.7	< 0.01	< 2	< 8	> 30.0	0.2	13.9	18	< 0.2	< 0.1	< 6
SWI-20-63	< 0.2	1.9	36.8	35	1.10	904	1	14.3	27.6	50	23.2	7.9	98.0	0.03	< 2	< 8	> 30.0	5.4	8.3	178	1.2	0.7	< 6
SWI-20-64	< 0.2	1.5	43.7	21	0.33	241	< 1	10.4	32.6	20	48.6	8.7	59.8	0.11	< 2	< 8	> 30.0	6.5	2.1	131	0.8	0.7	< 6
SWI-20-65	< 0.2	0.9	8.1	4	0.21	117	< 1	4.7	5.8	30	10.1	1.6	40.7	< 0.01	< 2	21	> 30.0	0.9	1.4	865	0.3	0.2	< 6
SWI-20-66	< 0.2	0.8	19.3	9	0.35	482	< 1	6.4	15.7	30	9.2	3.9	34.3	< 0.01	< 2	29	> 30.0	2.6	1.0	48	0.5	0.3	< 6
SWI-20-67	< 0.2	0.8	18.4	16	0.49	192	< 1	4.7	12.6	40	16.1	3.7	37.2	< 0.01	< 2	< 8	> 30.0	1.8	1.2	55	0.3	0.2	< 6
SWI-20-68	< 0.2	2.4	84.1	56	0.70	493	< 1	18.6	66.1	40	32.3	18.2	140	0.03	< 2	< 8	> 30.0	9.5	7.5	197	1.5	1.4	< 6
SWI-20-69	< 0.2	3.5	40.5	32	0.24	172	4	16.6	25.3	20	43.8	7.6	133	< 0.01	< 2	< 8	> 30.0	4.0	4.9	372	1.0	0.7	< 6
SWI-20-70	< 0.2	4.2	10.4	17	0.10	101	< 1	7.2	8.2	20	44.0	2.1	144	< 0.01	5	15	> 30.0	1.8	2.5	306	0.6	0.3	7
SWI-20-71	< 0.2	0.6	26.1	11	0.23	636	3	7.8	17.6	50	9.2	4.8	28.5	0.01	< 2	15	> 30.0	4.8	0.9	65	0.5	0.5	< 6
SWI-20-72	< 0.2	3.4	8.7	35	0.09	347	< 1	9.0	4.7	20	37.8	2.2	174	< 0.01	< 2	15	> 30.0	1.3	9.0	129	1.5	0.3	13
SWI-20-73	< 0.2	2.9	2.3	21	0.09	217	< 1	14.3	1.8	40	19.8	0.4	189	< 0.01	< 2	< 8	> 30.0	1.0	23.3	47	3.1	0.2	< 6

Analyte Symbol	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn
Unit Symbol	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.1	0.01	0.1	0.1	0.1	5	0.7	0.1	0.1	30
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
SWI-20-1	27.9	0.52	0.6	1.9	26.1	116	3.9	119	10.6	160
SWI-20-2	1.2	0.13	0.2	0.1	0.5	35	1.3	5.7	1.2	40
SWI-20-3	12.2	0.27	0.7	0.2	2.0	39	2.0	17.3	1.9	60
SWI-20-4	2.5	0.12	< 0.1	< 0.1	3.9	118	1.6	8.7	1.3	< 30
SWI-20-5	6.1	0.17	0.3	0.2	3.5	110	0.8	12.9	1.5	< 30
SWI-20-6	15.5	0.58	0.4	0.8	9.1	123	7.2	51.1	5.1	100
SWI-20-7	19.4	0.03	1.3	0.4	6.1	< 5	3.4	24.7	3.0	< 30
SWI-20-8	0.9	0.04	0.1	0.1	0.3	13	1.0	2.0	0.7	< 30
SWI-20-9	0.5	0.02	< 0.1	< 0.1	0.4	18	1.0	2.1	0.8	70
SWI-20-10	34.4	0.70	0.3	1.1	15.9	165	6.2	66.3	7.1	110
SWI-20-11	1.8	0.16	0.2	< 0.1	0.7	45	< 0.7	7.1	0.6	40
SWI-20-12	73.0	0.05	3.4	1.8	19.7	< 5	6.9	117	11.7	30
SWI-20-13	5.8	0.16	0.2	0.1	1.1	19	1.9	9.4	1.3	< 30
SWI-20-14	0.8	0.02	< 0.1	< 0.1	0.3	15	1.5	2.7	0.5	< 30
SWI-20-15	1.9	0.67	< 0.1	0.4	0.8	295	2.2	22.7	2.3	100
SWI-20-16	19.3	0.72	0.5	1.0	9.8	113	2.9	53.7	5.2	90
SWI-20-17	70.6	0.06	2.9	1.2	9.5	< 5	3.0	69.8	7.4	40
SWI-20-18	2.3	0.09	0.6	0.1	1.4	70	1.8	8.3	1.3	50
SWI-20-19	0.2	< 0.01	< 0.1	< 0.1	0.3	< 5	0.9	2.8	0.6	< 30
SWI-20-20	< 0.1	< 0.01	< 0.1	< 0.1	0.2	< 5	0.7	0.6	0.5	30
SWI-20-21	12.4	0.24	0.3	0.3	1.4	37	1.0	15.7	1.9	< 30
SWI-20-22	4.5	0.18	0.4	0.2	1.0	139	3.0	10.6	2.3	50
SWI-20-23	0.5	0.03	< 0.1	< 0.1	0.4	10	1.8	1.7	0.7	< 30
SWI-20-24	0.3	0.01	< 0.1	< 0.1	0.3	11	1.3	3.6	0.8	30
SWI-20-25	0.2	0.01	< 0.1	< 0.1	0.2	7	0.9	1.2	0.7	< 30
SWI-20-26	7.0	0.21	0.6	0.3	2.1	50	1.2	19.5	2.2	100
SWI-20-27	10.0	0.38	0.4	0.3	3.3	100	2.8	31.9	2.9	140
SWI-20-28	3.0	0.15	0.4	< 0.1	0.7	41	1.0	7.3	1.4	< 30
SWI-20-29	1.4	0.06	< 0.1	< 0.1	1.8	28	1.5	3.4	0.9	50
SWI-20-30	1.8	0.08	0.1	0.1	0.7	33	1.6	3.5	0.7	< 30
SWI-20-31	< 0.1	< 0.01	0.2	< 0.1	< 0.1	< 5	1.0	0.5	0.4	30
SWI-20-32	2.7	0.13	0.2	< 0.1	0.8	87	1.6	4.8	1.0	60
SWI-20-33	1.4	0.08	< 0.1	< 0.1	0.5	27	< 0.7	2.0	0.5	< 30
SWI-20-34	0.5	0.03	< 0.1	< 0.1	0.2	6	< 0.7	1.7	0.6	30
SWI-20-35	11.1	0.61	0.4	0.4	5.0	127	3.1	28.2	2.6	210
SWI-20-36	4.2	0.13	0.1	0.2	1.3	17	1.3	12.8	1.2	< 30
SWI-20-37	0.4	0.02	< 0.1	< 0.1	0.3	< 5	1.5	2.8	0.8	< 30
SWI-20-38	11.2	0.01	0.6	0.2	5.8	< 5	4.0	21.6	2.1	< 30
SWI-20-39	0.8	0.03	< 0.1	< 0.1	0.2	< 5	3.4	5.9	0.9	80
SWI-20-40	6.8	0.48	0.2	0.5	2.8	92	2.4	33.4	2.6	40
SWI-20-41	9.4	0.07	0.1	0.1	1.1	< 5	1.8	5.8	0.7	30
SWI-20-42	0.8	0.05	0.1	0.1	0.6	55	1.5	5.8	0.9	30
SWI-20-43	0.4	0.03	< 0.1	< 0.1	0.2	15	1.7	2.7	0.6	30
SWI-20-44	7.4	0.06	< 0.1	< 0.1	1.1	10	2.0	7.4	1.1	50
SWI-20-45	32.1	0.55	1.0	0.8	11.2	112	7.9	50.8	4.3	210
SWI-20-46	74.8	0.04	3.1	1.4	13.6	< 5	5.5	93.2	10.4	< 30
SWI-20-47	13.4	0.17	1.0	0.5	3.9	45	38.5	38.0	3.9	480
SWI-20-48	1.4	0.08	0.3	0.1	0.7	26	2.0	6.3	0.9	1630
SWI-20-49	21.8	0.54	0.9	0.8	8.7	99	7.3	45.1	4.5	140

Analyte Symbol	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn
Unit Symbol	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.1	0.01	0.1	0.1	0.1	5	0.7	0.1	0.1	30
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
SWI-20-50	2.2	0.04	1.6	< 0.1	2.1	7	2.7	5.7	0.7	60
SWI-20-51	2.3	0.55	0.6	0.4	0.9	284	2.1	23.5	3.2	40
SWI-20-52	1.3	0.03	< 0.1	< 0.1	0.5	8	1.5	4.3	0.8	< 30
SWI-20-53	0.5	< 0.01	< 0.1	< 0.1	0.3	< 5	2.5	1.8	0.6	40
SWI-20-54	21.4	0.44	0.7	0.5	28.8	114	4.4	34.8	3.6	110
SWI-20-55	5.5	0.61	0.4	0.4	3.0	191	2.0	28.8	2.8	50
SWI-20-56	17.1	0.15	0.8	0.2	2.1	20	2.6	12.0	2.1	170
SWI-20-57	2.8	0.56	0.5	0.5	3.7	388	3.4	30.5	3.3	110
SWI-20-58	17.0	0.63	0.9	0.6	14.1	136	9.7	39.2	4.5	150
SWI-20-59	53.4	0.09	1.9	0.7	10.4	< 5	4.2	49.4	4.7	50
SWI-20-60	5.4	0.20	1.4	0.2	1.9	72	2.9	11.5	1.5	150
SWI-20-61	0.3	< 0.01	< 0.1	< 0.1	0.5	< 5	< 0.7	2.1	0.7	< 30
SWI-20-62	0.5	0.01	< 0.1	< 0.1	0.3	< 5	< 0.7	2.0	0.5	140
SWI-20-63	13.8	0.37	0.7	0.4	11.2	100	3.7	23.4	2.5	80
SWI-20-64	22.9	0.27	0.2	0.2	3.4	29	1.4	17.4	2.4	< 30
SWI-20-65	3.0	0.07	0.3	< 0.1	0.9	19	< 0.7	5.7	1.1	< 30
SWI-20-66	6.8	0.18	0.2	0.2	1.8	26	1.4	8.3	1.3	< 30
SWI-20-67	3.2	0.07	< 0.1	< 0.1	1.3	17	< 0.7	7.5	0.9	50
SWI-20-68	32.6	0.43	1.0	0.4	28.5	69	3.5	39.9	3.1	90
SWI-20-69	47.9	0.16	1.2	0.6	7.8	21	1.5	37.3	3.4	60
SWI-20-70	10.9	0.05	1.2	0.1	7.0	< 5	1.5	11.3	1.3	< 30
SWI-20-71	8.9	0.24	< 0.1	0.2	1.3	13	2.5	10.8	1.4	< 30
SWI-20-72	5.0	0.04	1.0	0.2	8.2	< 5	1.3	14.0	1.7	40
SWI-20-73	1.7	0.01	1.2	0.1	19.7	6	3.9	5.2	0.9	120

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Analyte Symbol	F	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Ho	Hf
Unit Symbol	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	5	10	3	3	2	0.01	2	0.8	0.2	30	0.1	2	0.3	0.1	0.1	0.05	0.2	0.1	0.7	0.2	10
Method Code	FUS-ISE	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
NIST 694 Meas	3.09																						
NIST 694 Cert	3.2																						
NIST 694 Meas	3.09																						
NIST 694 Cert	3.2																						
NIST 694 Meas	3.24																						
NIST 694 Cert	3.2																						
PTM-1a Meas			2090								> 5000			> 10000									
PTM-1a Cert			2200								20500.00			249600.00									
NIST 696 Meas		> 25.0																					
NIST 696 Cert		28.9																					
DTS-2b Meas		0.22			16			0.06			132	> 10000		8							0.7		
DTS-2b Cert		0.240			16.0			0.0900			120	15500		3.00							0.700		
GBW 07239 (NCS DC 70007) Meas			< 5				< 2			61.5	11.5			47					21.2		12.7		
GBW 07239 (NCS DC 70007) Cert			1				1			60.3	13.5			49					23.1		12.4		
Oreas 74a (Fusion) Meas			51								561	1790		1130				13.6					
Oreas 74a (Fusion) Cert			50								581	1800.00		1240.000				13.7					
Oreas 74a (Fusion) Meas			50								559	1820		1210				13.7					
Oreas 74a (Fusion) Cert			50								581	1800.00		1240.000				13.7					
Oreas 74a (Fusion) Meas			56								547	1850		1190									
Oreas 74a (Fusion) Cert			50								581	1800.00		1240.000									
OREAS 101a (Fusion) Meas										1260	49.8			418	32.2	19.1	7.7	11.4		42.0		6.9	
OREAS 101a (Fusion) Cert										1396	48.8			434	33.3	19.5	8.06	11.06		43.4		6.46	
SARM 3 Meas					422					267				9			1.3						
SARM 3 Cert					450					240.000				13			1.2						
NCS DC86303 Meas													342										
NCS DC86303 Cert													350										
NCS DC86303 Meas													359										
NCS DC86303 Cert													350										
NCS DC86314 Meas													2940										
NCS DC86314 Cert													2830										
CZN-4 Meas		0.07	346						2670		97.7			4140									
CZN-4 Cert		0.0715	356.0000						2604.0000		93.5			4030.000									
OREAS 922 (Peroxide Fusion) Meas		7.49			466		17	0.48		78.5	21.3	150	7.1	2970	5.7	2.8	1.6	5.84	22.3	5.8		1.1	10
OREAS 922		7.59			481		11	0.49		88.0	20.9	90	7.5	2220	5.75	3.38	1.52	5.71	21.2	6.94		1.20	5.93

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Analyte Symbol	F	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Ho	Hf
Unit Symbol	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	5	10	3	3	2	0.01	2	0.8	0.2	30	0.1	2	0.3	0.1	0.1	0.05	0.2	0.1	0.7	0.2	10
Method Code	FUS-ISE	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
(Peroxide Fusion) Cert																							
OREAS 922 (Peroxide Fusion) Meas					479		9			83.5	22.2	140	7.2	2230	5.4	3.3	1.4		20.9	5.5		1.0	< 10
OREAS 922 (Peroxide Fusion) Cert					481		10			88.0	20.9	90	7.5	2220	5.75	3.38	1.52		21.2	6.94		1.20	5.93
OREAS 922 (Peroxide Fusion) Meas					462		9			79.0	20.4	140	9.0	2150	5.4	2.5	1.3		18.2	5.7		1.2	< 10
OREAS 922 (Peroxide Fusion) Cert					481		10			88.0	20.9	90	7.5	2220	5.75	3.38	1.52		21.2	6.94		1.20	5.93
OREAS 621 (Peroxide Fusion) Meas		6.85	77		2680	< 3	4	1.97	279	52.5	28.5	120	3.6	3540				3.80	25.6				
OREAS 621 (Peroxide Fusion) Cert		6.63	85		2610	2	4	2.00	295	52.0	31.4	49	3.6	3680				3.71	26.5				
OREAS 621 (Peroxide Fusion) Meas			81		2580	< 3	4		280	54.3	30.8	110	4.1	3640					20.0				
OREAS 621 (Peroxide Fusion) Cert			85		2610	2	4		295	52.0	31.4	49	3.6	3680					26.5				
CCU-1e Meas		0.14	1100						74		312			> 10000				> 30.0					
CCU-1e Cert		0.139	1010						74.2		301			229000				30.7					
CCU-1e Meas			1130						83		307			> 10000									
CCU-1e Cert			1010						74.2		301			229000									
CCU-1e Meas			1100						75		317			> 10000									
CCU-1e Cert			1010						74.2		301			229000									
OREAS 680 (Peroxide Fusion) Meas		7.31	116		661		< 2	5.67	11	38.6	323	2100	4.5	8930	3.1	1.4	1.3	11.9	17.0	4.0		0.5	
OREAS 680 (Peroxide Fusion) Cert		7.19	120		649		1.66	5.80	8.18	38.7	334	2140	3.94	9040	3.07	1.74	1.30	11.9	16.5	3.77		0.580	
OREAS 139 (Peroxide Fusion) Meas		3.67	320			3	7	1.22	281	46.9	26.0		2.7	274		1.6		11.7	7.5				
OREAS 139 (Peroxide Fusion) Cert		3.70	332			3.17	6.64	1.20	296	49.4	26.0		3.21	274		1.69		11.9	10.2				
OREAS 139 (Peroxide Fusion) Meas		3.68	320			4	7	1.18	263	51.0	25.0		3.3	290		1.5		11.8	12.7				
OREAS 139 (Peroxide Fusion) Cert		3.70	332			3.17	6.64	1.20	296	49.4	26.0		3.21	274		1.69		11.9	10.2				
OREAS 139 (Peroxide Fusion) Meas			314			3	6		268	47.4	27.5		4.1	275		1.1			10.5				
OREAS 139 (Peroxide Fusion) Cert			332			3.17	6.64		296	49.4	26.0		3.21	274		1.69			10.2				
OREAS 624 (Peroxide Fusion) Meas		4.30	117		1050		22	1.55	138	31.7	286		1.7	> 10000				16.6	20.4				

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Analyte Symbol	F	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Ho	Hf
Unit Symbol	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	5	10	3	3	2	0.01	2	0.8	0.2	30	0.1	2	0.3	0.1	0.1	0.05	0.2	0.1	0.7	0.2	10
Method Code	FUS-ISE	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
OREAS 624 (Peroxide Fusion) Cert		4.32	115		1070		21.3	1.49	133	32.9	273		1.32	30800				16.3	22.1				
OREAS 624 (Peroxide Fusion) Meas		4.22	123		964		20	1.54	135	34.6	278		1.3	> 10000				16.3	23.1				
OREAS 624 (Peroxide Fusion) Cert		4.32	115		1070		21.3	1.49	133	32.9	273		1.32	30800				16.3	22.1				
OREAS 624 (Peroxide Fusion) Meas			126		1070		21		133	32.9	276		1.8	> 10000					24.4				
OREAS 624 (Peroxide Fusion) Cert			115		1070		21.3		133	32.9	273		1.32	30800					22.1				
OREAS 124 (Peroxide Fusion) Meas		4.64						0.09										1.58					
OREAS 124 (Peroxide Fusion) Cert		4.62						0.0880										1.56					
AMIS 0250 (Flourine) Meas	8.67																						
AMIS 0250 (Flourine) Cert	8.99																						
AMIS 0250 (Flourine) Meas	8.56																						
AMIS 0250 (Flourine) Cert	8.99																						
AMIS 0250 (Flourine) Meas	9.18																						
AMIS 0250 (Flourine) Cert	8.99																						
AMIS 0346 (Peroxide Fusion) Meas																		> 30.0					
AMIS 0346 (Peroxide Fusion) Cert																		44.3					
AMIS 0346 (Peroxide Fusion) Meas																							
AMIS 0346 (Peroxide Fusion) Cert																							
SWI-20-7 Orig		6.92	436	< 10	502	3	< 2	0.36	< 2	31.8	0.2	130	3.0	9	3.9	2.7	0.2	0.55	16.3	3.2	1.5	1.0	< 10
SWI-20-7 Dup		7.02	432	< 10	556	4	< 2	0.40	< 2	31.3	0.6	70	2.4	11	4.1	2.7	0.2	0.56	17.1	3.2	1.3	0.8	< 10
SWI-20-15 Orig	< 0.01																						
SWI-20-15 Dup	0.01																						
SWI-20-21 Orig		5.72	6	20	548	< 3	< 2	0.92	< 2	54.7	6.3	260	4.2	25	2.7	1.4	1.0	1.80	12.8	3.4	1.4	0.5	< 10
SWI-20-21 Dup		5.76	6	30	563	< 3	< 2	0.84	< 2	51.5	5.2	120	3.7	22	2.6	1.2	0.9	1.75	13.1	3.0	1.7	0.6	< 10
SWI-20-29 Orig		1.25	7	20	778	< 3	< 2	1.97	< 2	10.6	3.8	110	1.3	27	0.8	0.4	0.3	0.87	3.2	1.3	1.6	< 0.2	< 10
SWI-20-29 Dup		1.25	7	20	767	< 3	< 2	1.95	< 2	10.8	3.1	120	1.5	23	1.0	0.4	0.4	0.88	2.8	0.8	1.2	0.2	< 10
SWI-20-32 Orig	0.01																						
SWI-20-32 Dup	0.02																						
SWI-20-44 Orig		1.33	< 5	< 10	31	< 3	< 2	0.17	< 2	29.5	2.8	170	0.5	10	1.4	0.6	0.3	0.73	4.4	1.3	1.3	0.2	< 10
SWI-20-44 Dup		1.31	6	10	33	< 3	< 2	0.18	< 2	32.3	1.7	120	0.9	40	1.0	0.6	0.4	0.70	2.8	2.0	1.0	0.2	< 10

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Analyte Symbol	F	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge	Ho	Hf
Unit Symbol	%	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.01	0.01	5	10	3	3	2	0.01	2	0.8	0.2	30	0.1	2	0.3	0.1	0.1	0.05	0.2	0.1	0.7	0.2	10
Method Code	FUS-ISE	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
SWI-20-50 Orig	0.03	7.53	< 5	20	101	15	< 2	0.37	< 2	5.8	0.4	70	8.3	3	1.5	0.6	0.1	0.57	20.8	0.8	2.7	< 0.2	< 10
SWI-20-50 Split PREP DUP	0.03	7.41	6	20	122	14	< 2	0.35	< 2	6.2	0.3	80	7.7	9	1.3	0.6	< 0.1	0.57	24.3	1.2	3.2	0.3	< 10
SWI-20-52 Orig		0.30	7	< 10	14	< 3	< 2	0.03	< 2	13.4	1.1	100	0.6	4	0.6	0.2	0.1	0.34	0.7	0.8	1.6	< 0.2	< 10
SWI-20-52 Dup		0.30	5	< 10	20	< 3	< 2	0.06	< 2	13.0	2.1	110	0.8	3	0.4	0.3	0.2	0.34	1.4	0.6	1.3	< 0.2	10
SWI-20-63 Orig	0.02																						
SWI-20-63 Dup	0.02																						
SWI-20-68 Orig		6.74	12	40	762	4	< 2	1.49	< 2	149	9.0	120	13.4	23	7.3	3.8	1.8	2.83	21.2	9.6	2.5	1.2	20
SWI-20-68 Dup		6.86	11	40	781	4	< 2	1.61	< 2	137	9.2	120	13.7	21	6.2	3.6	2.2	2.84	19.4	9.2	1.6	1.3	10
SWI-20-73 Orig	0.03	7.85	< 5	210	134	10	2	0.33	< 2	4.1	< 0.2	60	7.8	7	0.9	0.5	< 0.1	0.45	17.5	0.9	3.4	0.2	< 10
SWI-20-73 Split PREP DUP	0.02	7.81	< 5	190	122	10	< 2	0.35	< 2	4.8	< 0.2	70	6.6	4	1.0	0.8	< 0.1	0.44	15.9	0.6	2.7	< 0.2	< 10
Method Blank	< 0.01																						
Method Blank	< 0.01																						
Method Blank	< 0.01																						
Method Blank		< 0.01						< 0.01										< 0.05					
Method Blank		< 0.01	< 5	< 10	3	< 3	< 2	< 0.01	< 2	< 0.8	0.3	130	0.6	< 2	< 0.3	< 0.1	< 0.1	< 0.05	< 0.2	< 0.1	< 0.7	< 0.2	< 10
Method Blank		< 0.01	< 5	< 10	4	< 3	< 2	0.02	< 2	< 0.8	< 0.2	80	0.4	< 2	< 0.3	< 0.1	< 0.1	< 0.05	0.3	< 0.1	< 0.7	< 0.2	< 10
Method Blank		< 0.01	< 5	< 10	4	< 3	< 2	0.03	< 2	< 0.8	< 0.2	70	0.4	3	< 0.3	< 0.1	< 0.1	< 0.05	0.2	< 0.1	< 0.7	< 0.2	< 10
Method Blank			< 5	< 10	4	< 3	< 2		< 2	< 0.8	0.3	80	0.1	3	< 0.3	< 0.1	< 0.1		< 0.2	< 0.1	< 0.7	< 0.2	< 10
Method Blank		< 0.01	< 5	< 10	< 3	< 3	< 2	< 0.01	< 2	< 0.8	0.3	60	0.5	3	< 0.3	< 0.1	< 0.1	< 0.05	< 0.2	< 0.1	< 0.7	< 0.2	< 10
Method Blank		< 0.01	< 5	< 10	6	< 3	< 2	< 0.01	< 2	< 0.8	1.8	110	0.1	10	< 0.3	< 0.1	< 0.1	< 0.05	< 0.2	< 0.1	< 0.7	< 0.2	< 10
Method Blank		< 0.01	< 5	< 10	4	< 3	< 2	< 0.01	< 2	< 0.8	< 0.2	100	0.3	< 2	< 0.3	< 0.1	< 0.1	< 0.05	0.2	< 0.1	< 0.7	< 0.2	< 10
Method Blank			< 5	< 10	4	< 3	< 2		< 2	< 0.8	0.7	110	< 0.1	4	< 0.3	< 0.1	< 0.1		< 0.2	< 0.1	< 0.7	< 0.2	< 10
Method Blank		< 0.01	< 5	< 10	< 3	< 3	< 2	< 0.01	< 2	< 0.8	0.4	60	< 0.1	5	< 0.3	< 0.1	< 0.1	< 0.05	< 0.2	< 0.1	< 0.7	< 0.2	< 10
Method Blank			< 5	< 10	< 3	< 3	< 2		< 2	< 0.8	0.3	70	0.2	7	< 0.3	< 0.1	< 0.1		< 0.2	< 0.1	< 0.7	< 0.2	< 10
Method Blank		< 0.01	< 5	< 10	< 3	< 3	< 2	< 0.01	< 2	< 0.8	< 0.2	90	< 0.1	< 2	< 0.3	< 0.1	< 0.1	< 0.05	< 0.2	< 0.1	< 0.7	< 0.2	< 10

Analyte Symbol	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	Pb	Pr	Rb	S	Sb	Se	Si	Sm	Sn	Sr	Ta	Tb	Te
Unit Symbol	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.2	0.1	0.4	3	0.01	3	1	2.4	0.4	10	0.8	0.1	0.4	0.01	2	8	0.01	0.1	0.5	3	0.2	0.1	6
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
NIST 694 Meas																							
NIST 694 Cert																							
NIST 694 Meas																							
NIST 694 Cert																							
NIST 694 Meas																							
NIST 694 Cert																							
PTM-1a Meas										> 10000				22.9									
PTM-1a Cert										474400.00				22.4									
NIST 696 Meas																							
NIST 696 Cert																							
DTS-2b Meas					> 30.0	778				3740	8.6		4.2		< 2		18.3						
DTS-2b Cert					29.8	830				3780	4.00		2.00		0.600		18.4						
GBW 07239 (NCS DC 70007) Meas			38.8			> 10000	1180		33.1	50	23.4	8.2							35.7				
GBW 07239 (NCS DC 70007) Cert			37.4			11500	1100		29.8	20.9	26.1	7.40							33.2				
Oreas 74a (Fusion) Meas										> 10000				7.20			15.0						
Oreas 74a (Fusion) Cert										32400.00				7.25			15.14						
Oreas 74a (Fusion) Meas										> 10000				7.18			15.1						
Oreas 74a (Fusion) Cert										32400.00				7.25			15.14						
Oreas 74a (Fusion) Meas										> 10000													
Oreas 74a (Fusion) Cert										32400.00													
OREAS 101a (Fusion) Meas		2.2	778		1.21	984	21		363			114						46.5				6.1	
OREAS 101a (Fusion) Cert		2.34	816		1.23	964	21.9		403			134						48.8				5.92	
SARM 3 Meas			222			5580		909.1	47.1		45.3		204							3890			
SARM 3 Cert			250.000			5960.000		978	48		43		190							4565			
NCS DC86303 Meas				2110									1360										
NCS DC86303 Cert				2100									1330										
NCS DC86303 Meas				2120									1350										
NCS DC86303 Cert				2100									1330										
NCS DC86314 Meas				> 10000									> 5000						155				
NCS DC86314 Cert				18100.00									11400						152				
CZN-4 Meas											1800			> 25.0		58	0.27						
CZN-4 Cert											1861.0000			33.07		86.7	0.295						
OREAS 922 (Peroxide Fusion) Meas	0.4	2.6	42.7	41	1.60	895		15.8	32.8	60	62.7	8.6	157	0.35			> 30.0	7.1	13.2	69	1.0	1.1	
OREAS 922	0.3	2.60	45.6	29	1.61	880		15.2	38.9	40	64.0	10.6	167	0.389			30.51	7.31	10.0	58.0	1.3	1.02	

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Analyte Symbol	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	Pb	Pr	Rb	S	Sb	Se	Si	Sm	Sn	Sr	Ta	Tb	Te
Unit Symbol	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.2	0.1	0.4	3	0.01	3	1	2.4	0.4	10	0.8	0.1	0.4	0.01	2	8	0.01	0.1	0.5	3	0.2	0.1	6
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
(Peroxide Fusion) Cert																							
OREAS 922 (Peroxide Fusion) Meas	0.5		43.6	41		881		15.4	37.3	50	63.1	9.6	176					6.1	10.6	65	1.6	0.8	
OREAS 922 (Peroxide Fusion) Cert	0.3		45.6	29		880		15.2	38.9	40	64.0	10.6	167					7.31	10.0	58.0	1.3	1.02	
OREAS 922 (Peroxide Fusion) Meas	0.3		43.3	34		791		14.7	37.7	50	65.6	10.2	156					7.0	11.9	61	1.5	0.9	
OREAS 922 (Peroxide Fusion) Cert	0.3		45.6	29		880		15.2	38.9	40	64.0	10.6	167					7.31	10.0	58.0	1.3	1.02	
OREAS 621 (Peroxide Fusion) Meas	2.3	2.3	27.8		0.52	509	16	10.7	20.9		> 5000	5.3	88.6	4.50	147		28.7			105			
OREAS 621 (Peroxide Fusion) Cert	1.9	2.23	26.1		0.516	554	14	10.4	24.2		13300	6.64	89.0	4.51	146		28.1			101			
OREAS 621 (Peroxide Fusion) Meas	2.0		29.7			569	14	10.9	21.5		> 5000	5.8	84.1		140					92			
OREAS 621 (Peroxide Fusion) Cert	1.9		26.1			554	14	10.4	24.2		13300	6.64	89.0		146					101			
CCU-1e Meas					0.74	106					> 5000			> 25.0	117								69
CCU-1e Cert					0.706	96.0					7030			35.3	104								61.8
CCU-1e Meas						99					> 5000				115								59
CCU-1e Cert						96.0					7030				104								61.8
CCU-1e Meas						112					> 5000				110								61
CCU-1e Cert						96.0					7030				104								61.8
OREAS 680 (Peroxide Fusion) Meas		1.3	18.5	18	3.74	1250		6.6	19.3	> 10000	2480	4.5	72.7	5.18	20		20.8	3.9		393		0.6	
OREAS 680 (Peroxide Fusion) Cert		1.29	18.6	14.5	3.71	1240		5.09	20.8	21500	2580	4.99	76.0	5.14	19.7		20.6	4.26		420		0.550	
OREAS 139 (Peroxide Fusion) Meas	0.6	3.2	24.3	45	0.50	6460	8				> 5000		114	16.0	60		16.2			432		0.4	
OREAS 139 (Peroxide Fusion) Cert	0.690	3.30	23.1	40.4	0.501	6570	11.1				22000		145	16.04	63.0		16.34			479		0.500	
OREAS 139 (Peroxide Fusion) Meas	0.8	3.2	26.6	46	0.48	6640	9				> 5000		142	15.1	59		16.1			450		0.8	
OREAS 139 (Peroxide Fusion) Cert	0.690	3.30	23.1	40.4	0.501	6570	11.1				22000		145	16.04	63.0		16.34			479		0.500	
OREAS 139 (Peroxide Fusion) Meas	0.7		24.4	43		6830	6				> 5000		140		56					435		0.5	
OREAS 139 (Peroxide Fusion) Cert	0.690		23.1	40.4		6570	11.1				22000		145		63.0					479		0.500	
OREAS 624 (Peroxide Fusion) Meas	3.3	1.0	16.6	18	1.30	612	15	6.2	15.5		> 5000	3.5	29.7	13.3	68		20.6			50			

Analyte Symbol	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	Pb	Pr	Rb	S	Sb	Se	Si	Sm	Sn	Sr	Ta	Tb	Te
Unit Symbol	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.2	0.1	0.4	3	0.01	3	1	2.4	0.4	10	0.8	0.1	0.4	0.01	2	8	0.01	0.1	0.5	3	0.2	0.1	6
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
OREAS 624 (Peroxide Fusion) Cert	4.14	0.991	17.3	10.3	1.31	660	17.8	5.78	16.8		6120	4.27	33.0	13.2	72.0		20.5			47.6			
OREAS 624 (Peroxide Fusion) Meas	4.3	1.0	19.1	18	1.27	619	17	6.3	13.9		> 5000	4.0	27.9	12.1	71		19.9			44			
OREAS 624 (Peroxide Fusion) Cert	4.14	0.991	17.3	10.3	1.31	660	17.8	5.78	16.8		6120	4.27	33.0	13.2	72.0		20.5			47.6			
OREAS 624 (Peroxide Fusion) Meas	3.9		17.5	18		714	15	6.8	16.4		> 5000	4.1	34.3		65					53			
OREAS 624 (Peroxide Fusion) Cert	4.14		17.3	10.3		660	17.8	5.78	16.8		6120	4.27	33.0		72.0					47.6			
OREAS 124 (Peroxide Fusion) Meas		2.6			0.22												> 30.0						
OREAS 124 (Peroxide Fusion) Cert		2.62			0.224												38.2						
AMIS 0250 (Flourine) Meas																							
AMIS 0250 (Flourine) Cert																							
AMIS 0250 (Flourine) Meas																							
AMIS 0250 (Flourine) Cert																							
AMIS 0250 (Flourine) Meas																							
AMIS 0250 (Flourine) Cert																							
AMIS 0346 (Peroxide Fusion) Meas																							
AMIS 0346 (Peroxide Fusion) Cert																							
AMIS 0346 (Peroxide Fusion) Meas																							
AMIS 0346 (Peroxide Fusion) Cert																							
SWI-20-7 Orig	< 0.2	3.8	16.9	12	0.04	65	7	15.0	12.4	10	39.2	3.8	170	0.05	3	< 8	> 30.0	3.2	5.6	97	1.9	0.7	12
SWI-20-7 Dup	< 0.2	3.8	16.5	14	0.05	82	< 1	16.4	14.4	10	36.2	3.7	181	0.05	3	30	> 30.0	2.7	6.5	106	2.3	0.6	< 6
SWI-20-15 Orig																							
SWI-20-15 Dup																							
SWI-20-21 Orig	< 0.2	1.7	30.5	18	0.25	457	18	10.7	21.7	50	10.1	7.2	69.0	0.01	< 2	14	> 30.0	2.6	3.4	117	1.0	0.5	< 6
SWI-20-21 Dup	< 0.2	1.7	30.5	16	0.25	441	3	10.3	20.6	30	10.4	6.5	75.6	0.01	< 2	< 8	> 30.0	2.7	4.8	116	1.1	0.5	10
SWI-20-29 Orig	< 0.2	0.7	5.4	14	1.04	236	2	4.4	5.9	30	9.6	1.5	28.3	0.14	< 2	< 8	> 30.0	0.9	4.3	32	0.6	0.1	< 6
SWI-20-29 Dup	< 0.2	0.7	4.7	13	1.03	223	3	4.2	5.3	50	8.3	1.4	21.7	0.14	< 2	< 8	> 30.0	0.7	1.4	30	0.7	0.2	< 6
SWI-20-32 Orig																							
SWI-20-32 Dup																							
SWI-20-44 Orig	< 0.2	< 0.1	14.0	12	0.08	208	4	4.0	10.5	70	11.3	3.0	3.8	0.04	< 2	21	> 30.0	2.5	1.1	51	0.7	0.3	9
SWI-20-44 Dup	< 0.2	< 0.1	14.2	11	0.08	227	1	4.3	11.9	20	15.9	3.2	4.0	0.03	< 2	14	> 30.0	0.8	0.8	52	1.2	0.2	< 6

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Analyte Symbol	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	Pb	Pr	Rb	S	Sb	Se	Si	Sm	Sn	Sr	Ta	Tb	Te
Unit Symbol	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.2	0.1	0.4	3	0.01	3	1	2.4	0.4	10	0.8	0.1	0.4	0.01	2	8	0.01	0.1	0.5	3	0.2	0.1	6
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
SWI-20-50 Orig	< 0.2	3.4	2.7	59	0.10	184	< 1	21.7	1.9	20	17.6	0.8	272	0.01	< 2	< 8	> 30.0	0.5	9.4	44	3.7	0.2	< 6
SWI-20-50 Split PREP DUP	< 0.2	3.3	3.2	51	0.11	234	< 1	20.4	2.6	30	17.3	0.6	286	0.02	< 2	20	> 30.0	0.6	5.8	37	3.1	0.1	9
SWI-20-52 Orig	< 0.2	0.1	5.8	9	0.04	83	2	3.5	4.8	30	4.6	1.6	8.1	0.02	< 2	< 8	> 30.0	0.6	3.7	15	0.9	0.1	< 6
SWI-20-52 Dup	< 0.2	0.1	7.0	8	0.04	79	2	3.1	5.2	20	4.0	1.5	10.2	0.01	< 2	< 8	> 30.0	0.2	0.9	17	0.5	0.2	< 6
SWI-20-63 Orig																							
SWI-20-63 Dup																							
SWI-20-68 Orig	< 0.2	2.3	85.5	56	0.71	479	< 1	19.0	70.0	40	32.2	19.3	142	0.03	< 2	< 8	> 30.0	9.0	7.3	191	1.4	1.3	< 6
SWI-20-68 Dup	< 0.2	2.4	82.6	56	0.68	507	< 1	18.2	62.2	40	32.4	17.2	137	0.04	< 2	< 8	> 30.0	10.0	7.7	202	1.5	1.5	< 6
SWI-20-73 Orig	< 0.2	2.9	2.3	21	0.09	217	< 1	14.3	1.8	40	19.8	0.4	189	< 0.01	< 2	< 8	> 30.0	1.0	23.3	47	3.1	0.2	< 6
SWI-20-73 Split PREP DUP	< 0.2	2.9	2.3	21	0.09	188	< 1	14.8	2.8	10	19.2	0.4	190	< 0.01	< 2	< 8	> 30.0	0.3	20.9	51	3.4	0.2	< 6
Method Blank																							
Method Blank																							
Method Blank																							
Method Blank		< 0.1			< 0.01									< 0.01			< 0.01						
Method Blank	< 0.2	< 0.1	< 0.4	8	< 0.01	7	6	2.8	< 0.4	20	4.6	< 0.1	2.5	< 0.01	< 2	< 8	< 0.01	< 0.1	4.1	14	1.2	< 0.1	7
Method Blank	< 0.2	< 0.1	< 0.4	< 3	< 0.01	6	< 1	4.0	< 0.4	20	3.6	< 0.1	< 0.4	< 0.01	< 2	< 8	< 0.01	< 0.1	3.5	12	1.7	< 0.1	22
Method Blank	< 0.2	< 0.1	< 0.4	10	< 0.01	9	< 1	< 2.4	< 0.4	20	0.9	< 0.1	< 0.4	< 0.01	< 2	21	< 0.01	< 0.1	3.5	17	2.1	< 0.1	7
Method Blank	< 0.2		< 0.4	4		10	< 1	2.5	< 0.4	30	4.1	< 0.1	0.5		< 2	< 8		< 0.1	3.4	12	2.2	< 0.1	< 6
Method Blank	< 0.2	< 0.1	< 0.4	< 3	< 0.01	5	< 1	< 2.4	< 0.4	20	4.3	< 0.1	1.2	< 0.01	< 2	15	< 0.01	0.1	1.2	15	< 0.2	< 0.1	< 6
Method Blank	< 0.2	< 0.1	< 0.4	< 3	< 0.01	14	2	3.1	< 0.4	40	3.5	< 0.1	2.2	< 0.01	< 2	14	< 0.01	< 0.1	3.9	9	0.7	< 0.1	19
Method Blank	< 0.2	< 0.1	< 0.4	5	< 0.01	12	< 1	3.7	< 0.4	70	2.0	< 0.1	0.6	< 0.01	< 2	21	< 0.01	< 0.1	0.6	14	0.5	< 0.1	13
Method Blank	< 0.2		< 0.4	10		< 3	< 1	3.7	< 0.4	80	2.0	< 0.1	1.9		< 2	< 8		< 0.1	2.7	14	0.5	< 0.1	16
Method Blank	< 0.2	< 0.1	< 0.4	5	< 0.01	11	< 1	< 2.4	< 0.4	10	0.9	< 0.1	< 0.4	< 0.01	< 2	< 8	< 0.01	< 0.1	2.4	11	0.4	< 0.1	11
Method Blank	< 0.2		< 0.4	10		6	< 1	< 2.4	< 0.4	20	2.5	< 0.1	3.1		< 2	< 8		< 0.1	3.9	13	0.5	< 0.1	< 6
Method Blank	< 0.2	< 0.1	< 0.4	6	< 0.01	14	< 1	< 2.4	< 0.4	40	3.4	< 0.1	0.6	< 0.01	< 2	14	< 0.01	< 0.1	< 0.5	12	0.6	< 0.1	< 6

Analyte Symbol	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn
Unit Symbol	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.1	0.01	0.1	0.1	0.1	5	0.7	0.1	0.1	30
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
NIST 694 Meas										
NIST 694 Cert										
NIST 694 Meas										
NIST 694 Cert										
NIST 694 Meas										
NIST 694 Cert										
PTM-1a Meas										
PTM-1a Cert										
NIST 696 Meas										
NIST 696 Cert										
DTS-2b Meas						24				50
DTS-2b Cert						22.0				45.0
GBW 07239 (NCS DC 70007) Meas							1010	38.8		140
GBW 07239 (NCS DC 70007) Cert							1000.00	34.2		120
Oreas 74a (Fusion) Meas										
Oreas 74a (Fusion) Cert										
Oreas 74a (Fusion) Meas										
Oreas 74a (Fusion) Cert										
Oreas 74a (Fusion) Meas										
Oreas 74a (Fusion) Cert										
OREAS 101a (Fusion) Meas	35.7	0.39		2.8	420	76		188	16.7	
OREAS 101a (Fusion) Cert	36.6	0.395		2.90	422	83		183	17.5	
SARM 3 Meas	65.3				17.8	86		19.4		440
SARM 3 Cert	66				14	81		22		395
NCS DC86303 Meas							10.4			
NCS DC86303 Cert							8.90			
NCS DC86303 Meas							9.9			
NCS DC86303 Cert							8.9			
NCS DC86314 Meas							75.4			
NCS DC86314 Cert							79.0			
CZN-4 Meas										> 10000
CZN-4 Cert										550700.00
OREAS 922 (Peroxide Fusion) Meas	17.9	0.44	0.8	0.5	3.7	89		30.8	3.4	270
OREAS 922 (Peroxide Fusion) Cert	17.7	0.439	0.9	0.510	3.6	92.0		31.1	3.17	280

Analyte Symbol	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn
Unit Symbol	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.1	0.01	0.1	0.1	0.1	5	0.7	0.1	0.1	30
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
OREAS 922 (Peroxide Fusion) Meas	16.4		0.8	0.4	3.4	92		28.4	3.1	260
OREAS 922 (Peroxide Fusion) Cert	17.7		0.9	0.510	3.6	92.0		31.1	3.17	280
OREAS 922 (Peroxide Fusion) Meas	18.1		0.9	0.5	3.4	93		31.1	3.4	300
OREAS 922 (Peroxide Fusion) Cert	17.7		0.9	0.510	3.6	92.0		31.1	3.17	280
OREAS 621 (Peroxide Fusion) Meas	8.4	0.19	2.1		2.8	37	3.5	14.3	1.5	> 10000
OREAS 621 (Peroxide Fusion) Cert	8.6	0.181	2.0		3.0	36.3	2.6	13.9	1.03	52200
OREAS 621 (Peroxide Fusion) Meas	8.4		2.0		2.7	32	3.2	13.8	1.3	> 10000
OREAS 621 (Peroxide Fusion) Cert	8.6		2.0		3.0	36.3	2.6	13.9	1.03	52200
CCU-1e Meas			3.0							> 10000
CCU-1e Cert			2.69							30200
CCU-1e Meas			2.7							> 10000
CCU-1e Cert			2.69							30200
CCU-1e Meas			2.6							> 10000
CCU-1e Cert			2.69							30200
OREAS 680 (Peroxide Fusion) Meas	6.3	0.52			1.6	216		17.3	1.8	2300
OREAS 680 (Peroxide Fusion) Cert	6.73	0.523			1.55	224		16.2	1.52	2320
OREAS 139 (Peroxide Fusion) Meas	7.8	0.15	34.8		12.3			16.7		> 10000
OREAS 139 (Peroxide Fusion) Cert	7.54	0.157	35.4		12.2			17.1		133600.00
OREAS 139 (Peroxide Fusion) Meas	8.0	0.15	34.0		12.3			16.6		> 10000
OREAS 139 (Peroxide Fusion) Cert	7.54	0.157	35.4		12.2			17.1		133600.00
OREAS 139 (Peroxide Fusion) Meas	7.7		37.0		11.7			18.0		> 10000
OREAS 139 (Peroxide Fusion) Cert	7.54		35.4		12.2			17.1		133600.00
OREAS 624 (Peroxide Fusion) Meas	3.9	0.15	1.0		1.3	29	4.9	17.0	2.0	> 10000
OREAS 624 (Peroxide Fusion)	4.12	0.146	0.940		1.34	43.3	4.58	17.3	1.94	24100

Analyte Symbol	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn
Unit Symbol	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.1	0.01	0.1	0.1	0.1	5	0.7	0.1	0.1	30
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
Cert										
OREAS 624 (Peroxide Fusion) Meas	3.8	0.15	0.9		1.3	25	5.1	17.6	2.5	> 10000
OREAS 624 (Peroxide Fusion) Cert	4.12	0.146	0.940		1.34	43.3	4.58	17.3	1.94	24100
OREAS 624 (Peroxide Fusion) Meas	4.3		0.7		1.3	26	5.4	16.9	2.1	> 10000
OREAS 624 (Peroxide Fusion) Cert	4.12		0.940		1.34	43.3	4.58	17.3	1.94	24100
OREAS 124 (Peroxide Fusion) Meas		0.26								
OREAS 124 (Peroxide Fusion) Cert		0.254								
AMIS 0250 (Flourine) Meas										
AMIS 0250 (Flourine) Cert										
AMIS 0250 (Flourine) Meas										
AMIS 0250 (Flourine) Cert										
AMIS 0250 (Flourine) Meas										
AMIS 0250 (Flourine) Cert										
AMIS 0346 (Peroxide Fusion) Meas		14.9				2670				
AMIS 0346 (Peroxide Fusion) Cert		15.0				2700				
AMIS 0346 (Peroxide Fusion) Meas						2830				
AMIS 0346 (Peroxide Fusion) Cert						2700				
SWI-20-7 Orig	19.2	0.03	1.4	0.5	6.1	< 5	2.9	24.3	2.8	< 30
SWI-20-7 Dup	19.6	0.03	1.3	0.4	6.1	< 5	3.9	25.1	3.2	< 30
SWI-20-15 Orig										
SWI-20-15 Dup										
SWI-20-21 Orig	12.1	0.24	0.3	0.3	1.6	36	1.0	15.1	1.9	40
SWI-20-21 Dup	12.6	0.24	0.2	0.2	1.2	38	1.1	16.4	1.8	< 30
SWI-20-29 Orig	1.3	0.06	< 0.1	< 0.1	1.9	24	2.3	3.5	1.0	60
SWI-20-29 Dup	1.4	0.06	0.2	0.1	1.7	33	0.8	3.4	0.8	40
SWI-20-32 Orig										
SWI-20-32 Dup										
SWI-20-44 Orig	7.4	0.06	< 0.1	< 0.1	1.1	12	1.1	7.1	1.0	60
SWI-20-44 Dup	7.4	0.06	< 0.1	0.1	1.1	9	2.8	7.8	1.1	50
SWI-20-50 Orig	2.2	0.04	1.6	< 0.1	2.1	7	2.7	5.7	0.7	60

Analyte Symbol	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn
Unit Symbol	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Lower Limit	0.1	0.01	0.1	0.1	0.1	5	0.7	0.1	0.1	30
Method Code	FUS-MS-Na2O2	FUS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2	FUS-MS-Na2O2
SWI-20-50 Split PREP DUP	2.0	0.04	1.5	< 0.1	2.0	< 5	3.4	8.7	1.0	40
SWI-20-52 Orig	1.2	0.03	< 0.1	< 0.1	0.5	6	2.2	5.0	0.7	< 30
SWI-20-52 Dup	1.3	0.03	< 0.1	< 0.1	0.4	9	0.8	3.5	0.9	< 30
SWI-20-63 Orig										
SWI-20-63 Dup										
SWI-20-68 Orig	35.0	0.43	0.9	0.5	29.5	73	3.5	42.2	3.0	80
SWI-20-68 Dup	30.1	0.42	1.2	0.4	27.6	65	3.5	37.6	3.2	100
SWI-20-73 Orig	1.7	0.01	1.2	0.1	19.7	6	3.9	5.2	0.9	120
SWI-20-73 Split PREP DUP	1.6	0.01	1.4	0.1	14.9	5	2.3	5.2	1.1	30
Method Blank										
Method Blank										
Method Blank										
Method Blank		< 0.01								
Method Blank	< 0.1	< 0.01	< 0.1	< 0.1	< 0.1	< 5	< 0.7	0.2	0.3	< 30
Method Blank	< 0.1	< 0.01	< 0.1	< 0.1	< 0.1	< 5	< 0.7	< 0.1	0.3	< 30
Method Blank	< 0.1	< 0.01	< 0.1	< 0.1	< 0.1	< 5	1.5	< 0.1	0.5	< 30
Method Blank	< 0.1		< 0.1	< 0.1	< 0.1	< 5	1.5	< 0.1	0.2	< 30
Method Blank	< 0.1	< 0.01	< 0.1	< 0.1	0.2	< 5	1.0	< 0.1	0.5	< 30
Method Blank	< 0.1	< 0.01	< 0.1	< 0.1	< 0.1	< 5	2.2	< 0.1	0.4	< 30
Method Blank	< 0.1	< 0.01	< 0.1	< 0.1	0.1	< 5	1.2	< 0.1	0.3	< 30
Method Blank	< 0.1		< 0.1	< 0.1	0.1	< 5	1.6	< 0.1	0.4	< 30
Method Blank	< 0.1	< 0.01	< 0.1	< 0.1	< 0.1	< 5	< 0.7	< 0.1	0.3	< 30
Method Blank	< 0.1		< 0.1	< 0.1	< 0.1	< 5	< 0.7	0.1	0.6	< 30
Method Blank	< 0.1	< 0.01	< 0.1	< 0.1	0.1	< 5	< 0.7	0.2	1.0	< 30

APPENDIX III – PHOTOGRAPHS

Photo 1. Camp at Continental Divide Lodge campground between Swift River and Rancheria.

Photo 2: Author selfie along unnamed creek, collecting samples SWI-20-27 to -31.

Photo 3. Author wet screening stream sediment samples to +4mm and -4mm for visual examination and laboratory analysis, respectively.

Photo 4. Large quartz vein in outcrop at sample site SWI-20-23 and -24.