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# 2016 GEOLOGICAL ASSESSMENT REPORT ON THE SARGESSON LAKE PROPERTY (CLAIMS 4271853, 4271858 AND 4271859)

JANES TOWNSHIP SUDBURY MINING DIVISION, ONTARIO, CANADA

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Map 1: Geology of Sargesson Lake Property (1:5,000)

#### **EXECUTIVE SUMMARY**

This is a technical report for assessment purposes on the recently completed 2016 reconnaissance geological mapping, prospecting and sampling program on the Sargesson Lake property.

The claims are located 90 km east of Sudbury, Ontario within Janes Township in the Sudbury Mining Division. The property is bounded by UTM NAD 83 coordinates 17U 548593E to 552076E, and 5166893N to 5171000N. All three claims are staked mining claims and consist of a total of 42 units (672 Ha).

The claims were staked to cover known Ni-Cu-PGE showings similar to the Main showing on the Janes property located on claim 122022 west of the Sargesson Lake property. The Main showing contains notable palladium- dominated PGE mineralization associated with the contact zone of a large Nipissing gabbroic sheet.

In the summer of 2016, a program of reconnaissance geological mapping, prospecting and sampling was completed on the Sargesson Lake property. The 16day program commenced on May 28<sup>th</sup> and was completed by July 24<sup>th</sup>, 2016. The program focused on determining the extent of Ni-Cu-PGE mineralized Nipissing gabbro and the potential for paleo-placer gold mineralization in the Mississagi Formation. A total of 6 samples were collected. The analytical results for these samples will be reported in a separate assessment report.

#### **1.0 INTRODUCTION**

The Sargesson Lake property is located 90 km east of Sudbury, Ontario within Janes Township in the Sudbury Mining Division. The claims are on the eastern extent of two larger properties, Janes and Janes South. The Sargesson Lake property is bounded by UTM NAD 83 coordinates 17U 548593E to 552076E, and 5166893N to 5171000N. The contiguous staked claims consist of a total of 42 units that cover an area of approximately 672 Ha.

From May 28<sup>th</sup> to July 24<sup>th</sup>, 2016, a 16 day program of reconnaissance mapping, prospecting and sampling was completed on the Sargesson Lake property. This program forms the basis for this report.

# 2.0PROPERTY DETAILS

#### 2.1 Location and Access

The claims are located 90 km east of the City of Sudbury within Janes Township in the Sudbury Mining Division (Figure 1). The property is bounded by UTM NAD 83 coordinates 17U 548593E to 552076E, and 5166893N to 5171000N.

Excellent year round access to the claims can be gained along a series of bush roads branching off of Highway 535 that originates from the town of Hagar, Ontario. In the summer, the property can be accessed using a pick-up truck. During the winter months, access to the property would require the use of a snow machine.

A full range of services and supplies are provided in the city of Sudbury located 50 km to the west of Hagar. Accommodations, food, and limited supplies can be found in the towns of Hagar and Warren.

#### 2.2 Topography and Vegetation

The local terrain is typical of the Precambrian Shield, with low rolling hills and marshy areas. Vegetation on higher ground consists of a variety of hardwoods such as poplar and



Figure 1: Location of the Sargesson Lake Property in Ontario, Canada

birch, with coniferous trees that include spruce and balsam, and minor amounts of pine. In the lower ground, typically more wet in character, black spruce, tamarack, alder and cedar predominate. Water for exploration purposes is available from beaver ponds, marshes, small streams and lakes. Snowfall generally begins in November and extends into late March, early April. Lakes are usually passable with adequate ice thickness from late December through to late March. Between 50 and 100 mm of monthly rainfall is normal from April to October. The mean temperature is  $-13^{\circ}$ C in January and  $19^{\circ}$ C in July.

#### 2.3 Claims

The claims are located within Janes Township in the Sudbury Mining Division. They consist of a total of 42 units that cover an area of approximately 672 Ha (Figure 2,

## Table 1).



Figure 2: Location of the Sargesson Lake property claims, Janes Township, Ontario.

Claim No	Township Recorded		Due Date	Work Req	Units	Ha
4271853	Janes	2014-Jul-28	2016-Jul-28	6000	15	240
4271858	Janes	2015-Jun-08	2017-Jun-08	4400	11	176
4271859	Janes	2015-Jun-08	2017-Jun-08	6400	16	256
Total				16800	42	672

Table 1: Claim Summary, Janes Township

# **3.0 PREVIOUS WORK**

## 1964: H. Barry

The prospector trenched and pitted several chalcopyrite and pyrrhotite occurrences for several hundred metres in a northeast direction on the north eastern corner of claim 4271853.

#### 1964-1966: Pan Central Explorations Limited

In 1965 they performed 35.8 miles of line cutting followed by field mapping and a ground magnetometer survey. Also in 1965 they performed an 8 hole diamond drill program totaling 527 m to test the mineralized zone found by H. Barry located on claim 4271853. Drilling intersected a several hundred metre long mineralized zone parallel to the gabbrosediment contact. The drilling returned a best assay of 0.74% Ni, 0.11% Cu and 0.18 oz/t Au over 2.7 feet from hole J-2. No assays were reported for PGM's or for the 1966 drill program.

#### 1968: Foster Lake Mines Ltd.

Performed line cutting followed by ground magnetometer and VLF-EM surveys. The work covered half of claim 4271853 and 95 % of both claims 4271858 and 4271859.

#### 1997: Frank Racicot

Collected 17 grab samples from the old pits and trenches of Pan Central on claim 4271853. The most significant result was 705 ppb PGM.

#### 1999: Pacific Northwest Capital Corp and Consolidated Venturex Holdings Ltd.

Phase I: A 2.2 km north grid was cut, mapped and sampled over the Pan Central showings with general prospecting occurring over the remaining part of their property. A total of 68 samples were analyzed with a best grab sample that returned 2.1 g/t PGM, 0.76% Cu and 0.32% Ni.

Phase II: 1259 m were added to the main north grid and a 10.5 km south grid was cut mapped and sampled. A total of 46 samples were analyzed with a best grab sample that returned 2.8 g/t PGM, 731 ppm Cu and 369 ppm Ni. Also performed was a Phase I diamond drill program consisting of 320 m in 6 holes. The drilling is summarized in Table 2.

Hole No	From (m)	To (m)	Length (m)	Ni (%)	Cu (%)	PGM (g/t)
SL99-01	15.10	17.00	1.90	0.12	0.34	0.37
	30.00	31.20	1.20	0.13	0.19	1.34
SL99-02	25.00	28.70	3.70	0.11	0.31	0.41
	31.25	39.30	8.05	0.09	0.26	0.33
	41.45	44.00	2.55	0.13	0.21	0.66
SL99-03	23.00	26.55	3.55	0.03	0.05	0.31
SL99-04	8.00	9.50	1.50	0.02	0.03	0.30
	48.60	51.50	2.90	0.06	0.10	0.71
SL99-05	13.50	21.00	7.50	0.14	0.33	0.58
including	14.00	17.50	3.50	0.18	0.43	0.71
	22.65	25.95	3.30	0.08	0.18	0.41
SL99-06	36.95	37.15	0.20	0.11	0.14	0.45
	44.30	55.25	10.95	0.21	0.47	0.74
including	45.00	53.00	8.00	0.26	0.61	0.88
	56.00	58.47	2.47	0.06	0.02	0.27

Table 2: Summary	of the	1999	Diamond	Drill	Program

(PGM=Pt+Pd+Au)

#### 4.0GEOLOGY

The majority of the regional geology section was adapted from a technical report (43-101) completed by Hadyn Butler (2009) on the Chiniguchi River property (now known as the Janes property) on behalf of GoldTrain Resources Inc.

#### 4.1 Regional Geology

To the north and west of the property, the Archean basement is dominated by complex mesozonal gregarious granite-gneiss batholiths. As part of the Superior Province, a major portion of these gneisses consists of granodioritic gneiss. Infolded into these granite-gneiss domes are narrow greenstone belts with submarine tholeiitic basalts and andesites along with interflow chert horizons, some very large banded iron formations, and acid volcanics. Past producers in these greenstones included small volcanogenic massive sulphide ("VMS") deposits (mostly zinc) and iron mines.

Sometime before 2.4 gigayears ("Ga") passive anoxic sedimentation (with uraniferous conglomerates) and basaltic volcanism (Elsie Mountain and Stobie Formations) commenced above a major unconformity at the southern-rifted margin of the Archean-aged Superior Province. This sedimentation was accompanied by the injection of anorthosite-ultramafic complexes (East Bull Lake gabbros, and the Matachewan dyke swarm), and acid volcanics (Copper Cliff Formation) representing the remains of an early Proterozoic Large Igneous Province ("LIP"). Episodic sedimentation continued, and the sediments and volcanics are collectively known as the Huronian Supergroup. To the NE, Huronian sedimentation occurred in fault-bounded basins, forming the Cobalt Embayment. Part of the Cobalt Embayment is controlled by long-lived NNW faults showing sinistral displacements for a period of nearly 1Ga. The Sargesson Lake property lies near the southern margin of the Cobalt Embayment, and just north of the later Proterozoic (~1Ga) Grenville Front Tectonic Zone.

In the period 2.4 to 2.2 Ga, folding and metamorphism (up to upper amphibolite facies) of the Huronian sedimentary-volcanic packages commenced to the south during the Blezardian orogeny, and small-sized granitic plutons were injected. Just before the Blezardian folding ceased, regional basaltic magmatism in the form of well-differentiated tholeiitic diabase sheets (the Nipissing diabase LIP) injected the Huronian units, and the upper parts of its underlying Archean basement. The initiation of Huronian deformation certainly occurred pre-Nipissing, as indicated by the Nipissing sheets cutting early folds within the Huronian units. In places, pre-Nipissing metamorphism attained amphibolite facies. In the South Range of the Sudbury Structure, Blezardian tectonism led to a southward overturning of Huronian units.

The subsequent 1.9-1.7 Ga Penokean Orogeny imposed a static greenschist overprint on to Blezardian metamorphics accompanied by northward thrusting and dextral transpression. This new tectono-metamorphic event was accompanied by shearing and faulting along ENE lines following major faults that were part of the pre-2.4 Ga rifting event. The Sudbury Basin and its Ni-Cu-PGE ore bodies are the result of a 1.85 Ga meteorite impact melt sheet near the centre of a ~260 km wide impact basin. The impact hit the active Penokean mountain belt and its adjacent Archean-Proterozoic basement. Penokean shearing and ENE faulting continued after the impact. The Sargesson Lake property resides within the "outer zone of damage" of this large impact structure.

**4.2 Property Geology** (after Jobin-Bevans, 1999c and Dressler, 1979)

A steeply southeast dipping body of Nipissing gabbro underlies claim 4271853. There is a likelihood that this Sargesson Lake gabbro is a dyke-like extension emanating from the larger gabbroic body to the west on the Janes property (Jobin-Bevans, 1999c). Nipissing gabbro also transects the southern portion of the property.

This gabbro is bounded to the north, south and east by rocks of the Huronian Hough Lake Group, Mississagi Formation (previously mapped by Dressler (1979) as Lorrain Formation and reinterpreted by Long (1986) as Mississagi) and to the west by rocks of the Cobalt Group, Gowganda Formation.

The Nipissing gabbro includes hypersthene (mafic) gabbro, gabbro, leucogabbro, varitextured gabbro, and pegmatitic gabbro (Jobin-Bevans, 1999c). The recent mapping on claim 4271853 has shown the southern portion of the intrusion to be a quartz monzonite (chemical classification by Dressler, 1979) locally sheared and cataclystic. This rock intrudes the Nipissing gabbro and is believed to represent late differentiates of a Nipissing magma (Dressler, 1979). This quartz monzonite is spatially associated with an olivine gabbro dike, previously mapped by Dressler (1979) on the Janes property to the west. Within the quartz monzonite there are large rafts of Huronian metasediments that are up to about 15 m in size (Dressler, 1979). The quartz monzonite is very fine grained to aphanitic, in places porphyritic, showing a few small (maximum 0.5 mm by 1.0 mm) feldspar phenocrysts. The rocks are fine to medium grained. The aphanitic varieties are dark grey or almost black; the



Figure 3: Regional Geology

coarser grained ones are pinkish grey. On the weathered surface all types are pinkish giving it the impression of being a syenitic intrusion.

The rocks of the Mississagi Formation consist mostly of quartz sandstone/ arkose and bedded arenite. Recent mapping has found polymictic conglomerate on claim 4271859 at coordinates 551519E and 5167326N.

The rocks of the Gowganda formation consist of conglomerate, greywacke/lithic wacke and, quartz sandstone/ arkose. The conglomerate is matrix supported and composed of subrounded to angular pebbles, cobbles and miner boulders set in a fine to medium grained greywacke/lithic wacke. The clasts consist predominately of granitic rocks with lessor amounts of metasediments and metavolcanics. The greywacke/lithic wacke is feldspathic

and forms interbeds in and is gradational to the conglomerate. The conglomerate and greywacke/lithic wacke are difficult to distinguish between in limited outcrop exposure areas.

The east-west oriented Ess Creek Fault Zone passes through the lower half of claim 4271859 and coincides with the course of the Sturgeon River. It marks the southern boundary of the Huronian Supergroup and Nipissing rocks and affects rocks for about 1.0-1.5 km north of the Sturgeon River (Wetherup and Jobin-Bevans, 2001). K-feldspar-hornblende-biotite gneiss and amphibolite-biotite schist comprise most of the rocks within the Ess Creek Fault Zone. Rocks are recognizable as sheared Mississagi and Nipissing gabbro approximately 1 km north of the Sturgeon River. Rocks within the Ess Creek Fault Zone contain a well-developed mineral lineation which plunge moderately SE and a foliation that dips moderately S to SE (Wetherup and Jobin-Bevans, 2001).

The Sargesson Lake property is proximal to the Ess Creek Fault Zone and The Grenville Front Tectonic Zone. Therefore, the metamorphic grade ranges from low greenschist (chlorite zone) to upper greenschist facies (biotite-chlorite zone) as characterized by the presence of metamorphic biotite in the gabbroic rocks.

#### Ni-Cu-PGE Mineralization (from Jobin-Beavens, 1999c)

On the northern part of claim 4271853 the sulphide mineralization of the main showings is exposed in a series of old trenches and pits that occur over a northeast-southwest strike length of about 500 m dipping 60 degrees to the southeast to a depth of 55 m. The main area of sulphide mineralization occurs within 10-50 m of the basal gabbro-sedimentary contact and is mainly hosted by massive, medium-grained, hypersthene-bearing gabbro. Subordinate sulphides also occur in vari-textured to pegmatitic gabbro and fine- to medium-grained gabbro. Platinum-group metals are associated with Cu-Ni sulphides (chalcopyrite, pyrrhotite and pentlandite) that are primarily disseminated but can locally develop bleb textures (individual blebs up to 1.2 cm diameter). Previous work returned a best assay of 2.1 g/t PGM, 7594 ppm Cu, 3215 ppm Ni. Also, south of the main showings and approximately

125 m north of old pits, Ni-Cu-PGE mineralization was discovered in a medium-grained gabbro outcrop. The old pits were excavated into a quartz-carbonate vein system aimed at a gold target as seen on Lumbers, 1973, OGS geological compilation map. The Ni-Cu-PGE sulphide showing is within about 25 m of the northwestern contact and consists of scattered bleb and very-finely disseminated sulphide (~0.5% total visible sulphide). The showing returned 2.8 g/t PGM, 731 ppm Cu and 369 ppm Ni.

#### Potential Paleo-Placer Witwatersrand Type Gold Mineralization

Areas of the property are covered by the sedimentary rocks of the potentially gold rich Mississagi Formation. Within the conglomerates of the Mississagi Formation Inventus Mining, just E and NE of the Sargesson Lake property in Janes and Pardo Townships, has outlined significant gold mineralization. This could be the first large-scale Precambrian paleo-placer gold deposit in North America. The deposit has been shown by Long (1986) to be similar to the famous auriferous conglomerates of the Witwatersrand basin ore province in South Africa. The Witwatersrand has produced over 48,670 tonnes of gold between 1886 and 2000 (Conradie, 2000). This ore province is the largest and most important source of gold in the world (Frimmel and Minter, 2002). The 2016 mapping program has identified polymictic conglomerate on claim 4271859 (551519E, 5167326N) that has the potential to host paleo-placer gold mineralization.

#### 5.0 2016 PROGRAM

#### 5.1 Methods

In 2016 a reconnaissance geological mapping, prospecting and sampling program on the Sargesson Lake property was completed. The 16 day program occurred between May  $28^{\text{th}}$  and July  $24^{\text{th}}$ , 2016.

The program focused on determining the extent of Ni-Cu-PGE mineralized Nipissing gabbro and the potential for paleo-placer gold mineralization in the Mississagi Formation. A total of 6 samples were



Figure 4: Property Geology

collected. The analytical results will be presented in a separate report.

# 6.0 RESULTS and CONCLUSIONS

Previous work has found that an anomalous Ni-Cu-PGE mineralized zone is prevalent for 500 m in a northeast-southwest direction on the northeast corner of claim 4271853. The zone dips 60 degrees to the southeast and is at a depth of 55 m. The main sulphide mineralized zone occurs within 10-50 m of the basal gabbro-sedimentary contact and is mainly hosted by massive, medium-grained, hypersthene-bearing gabbro.

The southern portion of this part of the gabbro has been determined to be a quartz monzonite (chemical classification by Dressler, 1979) that is locally sheared and cataclystic. This rock intrudes the Nipissing gabbro and is believed to represent late differentiates of the Nipissing magma (Dressler, 1979). This quartz monzonite is spatially associated with an olivine gabbro dike, previously mapped by Dressler (1979) on the Janes property to the west. The authors believe the quartz monzonite to be associated with this dike and its regional structure. The quartz monzonite may represent ongoing magmatism and may be the locus of magma activity and fluids for the Ni-Cu-PGE mineralization. This could possibly be a feeder dike or conduit for a large economic deposit.

Recent mapping has also found Mississagi polymictic conglomerate on claim 4271859 (551519E, 5167326N) that has the potential to host paleo-placer gold mineralization.

In the 2016 program a total of 6 samples were collected (Table 2). The analytical results for these samples will be presented in a separate report.

Sample No	Easting	Northing	Rock Type	Mineralization
WP941	550844	5169635	Argillite	0.5% diss Sulphides
WP946	550895	5169563	Qtz Monz	0.5% diss Sulphides
WP957	551010	5169410	Qtz Monz	No Visible Sulphides
WP964	550735	5169637	Nip Gabbro	No Visible Sulphides
WP965	550818	5169753	Mafic Schist	No Visible Sulphides
WP967	550222	5167546	Mafic Schist	No Visible Sulphides

 Table 3: 2016 Sample Location and Descriptions

# 7.0 RECOMMENDATIONS

The following recommendations can be made on the basis of the 2016 program:

- Line cutting, detailed mapping and geochemical sampling
- Ground EM/MAG
- Detailed mapping and sampling of the subsequent geophysical anomalies
- Stripping, detailed mapping and channel sampling on anomalous areas that the pending assays dictate
- Stripping, detailed mapping and channel sampling on the polymictic conglomerate outcrop found on claim 4271859 (551519E, 5167326N)

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# Appendix I

## **Statement of Qualifications**

I, Randy I. Stewart, B.Sc. of 213 Kingsmount Boulevard, Sudbury, Ontario, P3E 1L1, do hereby certify that:

I graduated from the Mining Engineering Technician program at Cambrian College of Applied Arts and Technology, Sudbury, Ontario, in 2002.

I graduated with a Bachelor of Science Degree (Honours) in geology in 1991 from the University of Waterloo, Waterloo, Ontario.

Randy Irwin Stewart

July 24, 2016 Sudbury, Ontario

# **Statement of Qualifications**

I, Brian James Wright, of 92 Main Street, Markstay, Ontario, POM 2G0, do hereby certify that:

I am a Geological Technologist receiving my education from Haileybury School of Mines.

I have been actively involved in Mining and Exploration for 28 years.

Brian James Wright

July 24, 2016 Markstay, Ontario

