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**2022 PROSPECTING PROGRAM:  
MCDONALD PROPERTY**

MACMURCHY TOWNSHIP  
LARDER LAKE MINING DIVISION  
NORTHEASTERN ONTARIO, CANADA

**GREAT LAKES NICKEL LTD.**  
545 King Street North  
Waterloo, Ontario  
N2L 5Z6

March 24<sup>th</sup>, 2023

Prepared By:  
Joerg Kleinboeck, P.Geo.

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## **EXECUTIVE SUMMARY**

The author was requested by Great Lakes Nickel Ltd. (“Great Lakes” or “GLN”) to complete a technical report for assessment purposes on a prospecting program that GLN completed in the spring of 2021 on their 100% owned McDonald Property (“Property”).

The McDonald Property is situated approximately 8 km northeast of the village of Shining Tree, Ontario. The Property is located within MacMurchy Township, is comprised of 4 boundary mining cell claims totalling 22.6 ha, and is bound by UTM NAD83 Z17N coordinates 486,850E to 487,470E and 5,271,500N to 5,271,900N.

The Property lies within the southern Abitibi sub-province where the supracrustal rocks in the area can be grouped into the Pacaud, Deloro, Kidd-Munro, Tisdale, and Porcupine assemblages that were deposited between 2,760 Ma and 2,680 Ma (Ayer et al., 2013). The Property falls entirely within the Deloro assemblage of volcanic rocks and is underlain by massive mafic metavolcanic rocks.

The Property hosts the historical McIntyre-McDonald gold occurrences that were discovered by prospecting in 1911. A 55 ft deep shaft was sunk that same year, referred to as the North Shaft, followed by the South Shaft that was sunk to a depth of 50 ft the following year. The South Shaft is located approximately 20 m south of the claim/Property boundary. Quartz veins range in thickness from <1 cm to over 50 cm and occur as small boudins to larger lenses measuring several m’s in length and reportedly strike north-northeast at the North Shaft, and northeast the South Shaft.

From June 9<sup>th</sup> through to June 10<sup>th</sup>, 2022, a total of 12 grab samples were collected and submitted for analysis. Samples were collected proximal to the North Shaft in areas that were stripped by previous operators. Samples 860443 through to 860449 were collected northeast of the North Shaft where previous stripping exposed a network of north-northeast-orientated anastomosing quartz+carbonate veins that range from <1 cm to >30 cm in width. Samples 5318 through to 5321 and 860450 were collected from another area that was also previously stripped that is located east of the North Shaft and which exposed several northeast-orientated quartz+carbonate veinlets up to 30 cm in width.

The host rock at both locations is generally a massive mafic volcanic flow that has been pervasively altered by carbonate proximal to the quartz veins that contains trace amounts of finely disseminated pyrite and occasional visible gold. Results from the grab samples that were submitted for analysis returned gold values that ranged from 41 ppb to 18,300 ppb (18.3 g/t).

The quartz veins that comprise the McDonald gold occurrence may represent the northeastern extension of the structure that hosts the Queen Elizabeth Vein located approximately 800 m to the southwest. Quartz veins on the Property have been noted to also have a northwest orientation, and may represent the southeastern extension of the structure that hosts the Saville or Evelyn veins that are located approximately 500 m to the northwest that would project to the immediate south of the Property. It is recommended a GIS compilation be completed on the historical work that has been completed on the Property. As well, areas that were previously stripped in 2017 should be power-washed, channel sampled, and mapped in detail to provide GLN a geological interpretation that can be used to effectively target the gold-bearing structures on Property.

## **1.0 INTRODUCTION**

On June 9<sup>th</sup> and 10<sup>th</sup>, 2022, a reconnaissance prospecting program was completed on the McDonald Property. A total of 12 grab samples were collected from two previously stripped outcrops that are located proximal the North Shaft. Results from the grab samples returned gold values that ranged from 23 ppb to 18,300 ppb (18.3 g/t). This work forms the basis for this assessment report.

## **2.0 PROPERTY DETAILS**

### **2.1 Location and Access**

The McDonald Property is situated approximately 8 km northeast of the village of Shining Tree, Ontario, within MacMurchy Township.

Access to the Property is provided by an overgrown logging road known as the Violet Lake Road that intersects Highway 560 approximately 5 km to the east of the village of Shining Tree, Ontario.

### **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 birch, with coniferous trees that include spruce and balsam, and a minor amount of pine. In the lower ground, typically more wet in character, black spruce, tamarack, alder swales, and cedar predominate.



Figure 1: Location of the McDonald Property, Ontario.

### 2.3 Claims

The Property, comprised of 4 boundary mining cell claims totalling, is comprised of 4 boundary mining cell claims totalling 22.6 ha, and is bound by UTM NAD83 Z17N coordinates 486,850E to 487,470E and 5,271,500N to 5,271,900N.

The claims are owned 100% by Great Lakes Nickel Ltd.

Claim details are provided in Table 1 and shown in Figure 2.

The author has not sought a formal legal opinion with regard to the ownership status of the claims comprising the Property and has in all aspects of tenure relied on materials made available on the Ministry of Northern Development, Mines, Natural Resources and

Forestry's website (<https://www.mlas.mndm.gov.on.ca>). The author expresses no opinion as to the ownership status of the Property.

**Table 1: Unpatented Mining Claim Details**

Township / Area	Tenure ID	Anniversary Date	Tenure Status	Tenure %	Work Required	Work Applied	Total Reserve
MACMURCHY	282825	2023-06-04	Active	100	200	469	0
MACMURCHY	205815	2023-06-04	Active	100	200	469	0
MACMURCHY	186326	2023-06-04	Active	100	200	469	0
MACMURCHY	150354	2023-06-04	Active	100	200	469	0



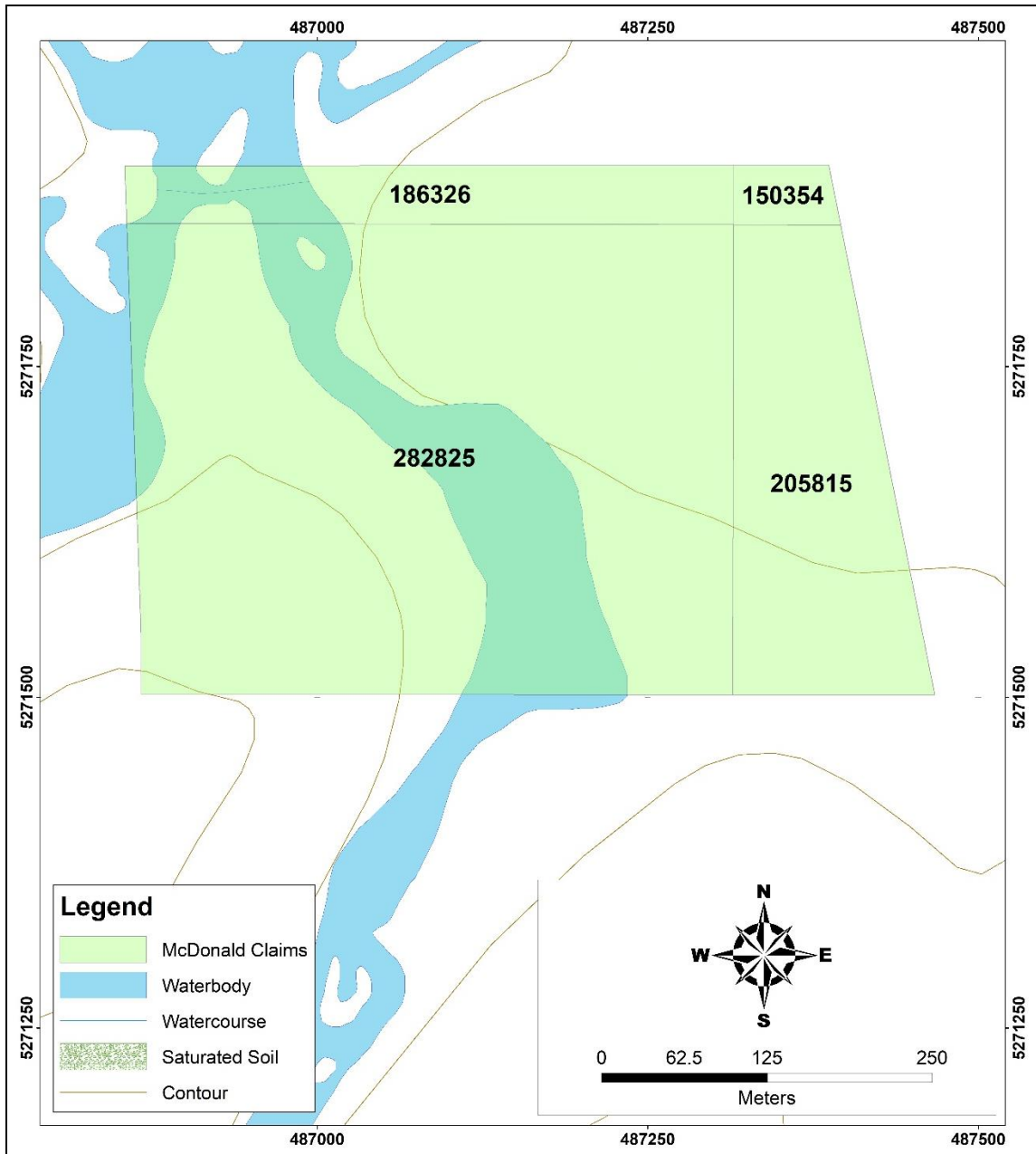


Figure 2: Tenure map for the McDonald Property.

### **3.0 PREVIOUS WORK**

1911-1912: Two shafts were sunk to a depth of 50 ft and 55 ft on quartz-carbonate veins that were discovered by prospecting.

2002-2017: Mr. Roy Annett completed prospecting, geological mapping, and mechanized stripping in the vicinity of the historical shafts. Highlights of the work completed by Mr. Annett include 20.3 g/t Au, 3.2 g/t Ag over a chip sampled length of 0.5 m, and 11.25 g/t Au, 1.4 g/t Ag over a chip sampled length of 1.0 m at the South Shaft, and 96.00 g/t Au, 12.00 g/t Ag over a chip sampled length of 1.0 m at the North Shaft.

### **4.0 GEOLOGY**

#### **4.1 Regional Geology**

The Shining Tree area is part of the southern Abitibi sub-province and is situated approximately 120 air kilometres north of Sudbury, Ontario. The Shining Tree area is roughly 40 by 28 kilometres in size and encompasses 12 townships: Cabot, Kelvin, Natal, Knight, Connaught, Churchill, MacMurchy, Tyrrell, Miramichi, Asquith, Fawcett and Leonard.

A recent description of the geology of the western Abitibi is provided by Ayer et al (2013). It differs from older interpretations (e.g., Carter, 1977, 1989; Johns 1999, 2000) due to a better understanding of the age relationships in this part of the Abitibi greenstone belt. This latest work suggests that rocks are autochthonous rather than allochthonous terranes accreted in the Archean. Ayer et al. grouped supracrustal rocks of the Shining Tree area into the Pacaud, Deloro, Kidd-Munro, Tisdale and Porcupine assemblages that are dominated by volcanic rocks dated between 2,760 Ma and 2,704 Ma. These rocks have been unconformably overlain by the Porcupine assemblage rocks (2,690 to 2,680 Ma) which consists of younger volcanic and clastic sedimentary rocks along with

similarly aged monzonite, diorite, and syenite-like intrusives occurring as stocks and dykes.

The Pacaud assemblage (2,760 Ma to 2,735 Ma) is composed mainly of massive and pillowed basalts and associated minor spinifex or cumulate textured aluminum-enriched komatiites. It has an apparent thickness of about five kilometres. The high aluminum content of the komatiites is unusual for the Abitibi greenstone belt and suggests a deep mantle source (Sproule et al., 2000). The assemblage is believed to have formed in an extensional marine basin, possibly with a plume influence, that closed as subduction was initiated with the development of island arc volcanics to produce the calc-alkaline suite of the Deloro assemblage (Oliver et al., 1998).

The Deloro assemblage (2,734 Ma to 2,724 Ma) is dominated by mafic to felsic calc-alkaline volcanic rocks; tholeiitic mafic volcanic rocks occur locally. Oxide iron formations are common in the upper parts of the package and are regionally extensive. The assemblage has a maximum thickness of about five kilometres; it overlies the older Pacaud assemblage conformably. Ayer et al. (2002) correlate the Deloro assemblage with the Hunter Mine Group in Quebec about 300 kilometres to the east. This correlation implies that the Deloro assemblage formed a regional extensive sheet at the time of formation. The geochemical signature of these rocks suggests the formation in a deep ocean basin due to subduction in a rift related arc or back-arc environment.

The Kidd-Munro assemblage (2,720 Ma to 2,710 Ma) is a diverse assemblage dominated by tholeiitic to calc-alkaline basalts and komatiites, some of which are aluminum-depleted; minor felsic volcanic rocks and iron formations occur as well. In the Shining Tree area, the Kidd-Munro assemblage is interpreted to unconformably overlie the Deloro assemblage. Geochemical signatures suggest a mantle plume in a mid-ocean ridge setting as a source for the rocks.

The Tisdale assemblage (2,710 Ma to 2,704 Ma) consists of tholeiitic komatiites, basalts and rhyolites as well as calc-alkaline intermediate to felsic volcanic rocks; locally, iron

formations occur. Geochemical signatures suggest a shallower source and crustal contamination of the rocks during formation compared to rocks in the older assemblages.

The Porcupine assemblage (2,690 Ma to 2,680 Ma) is the youngest assemblage in the area and are predominantly found in close proximity to large scale faults or breaks (Figure 3). The assemblage consists primarily of clastic sedimentary rocks with only a small amount of volcanic rocks and similar aged monzonites, diorite and syenite-like intrusives as stocks and dykes.

Locally, the Archean assemblages are overlain by Proterozoic age Cobalt Group sedimentary rock and intruded by Nipissing gabbro and Matachewan-type diabase dikes (Oliver et al., 1998).

Rocks in the Shining Tree area have undergone lower to middle greenschist facies metamorphism; primary volcanic textures are generally preserved (Oliver et al., 1998).

Structurally, rocks in the Shining Tree area older than 2.7 Ga have suffered from two main phases of deformation and associated metamorphism. The Porcupine and/or Timiskaming assemblages have undergone a single period of deformation and are metamorphosed to a lesser degree than the older assemblages. Both deformational phases are related to the Kenoran Orogeny which is believed to have been most intense between 2720 and 2660 (Oliver et al., 1998). According to Henderson (2004), rocks in the area generally lack signs of ductile deformation; instead, deformation is focused along brittle faults which appear to strike consistently N-S, NW-SE and NE-SW while foliation is almost absent, if not for the rare discrete shear zone.

## **4.2 Property Geology**

The Property is underlain by north-westerly trending mafic to intermediate metavolcanic rocks as shown on geological map P.3521 and in Figure 3. Intruding the above rocks are late north-south to north-northwest trending Matachewan-type diabase dykes that represent the youngest known rocks on the Property.

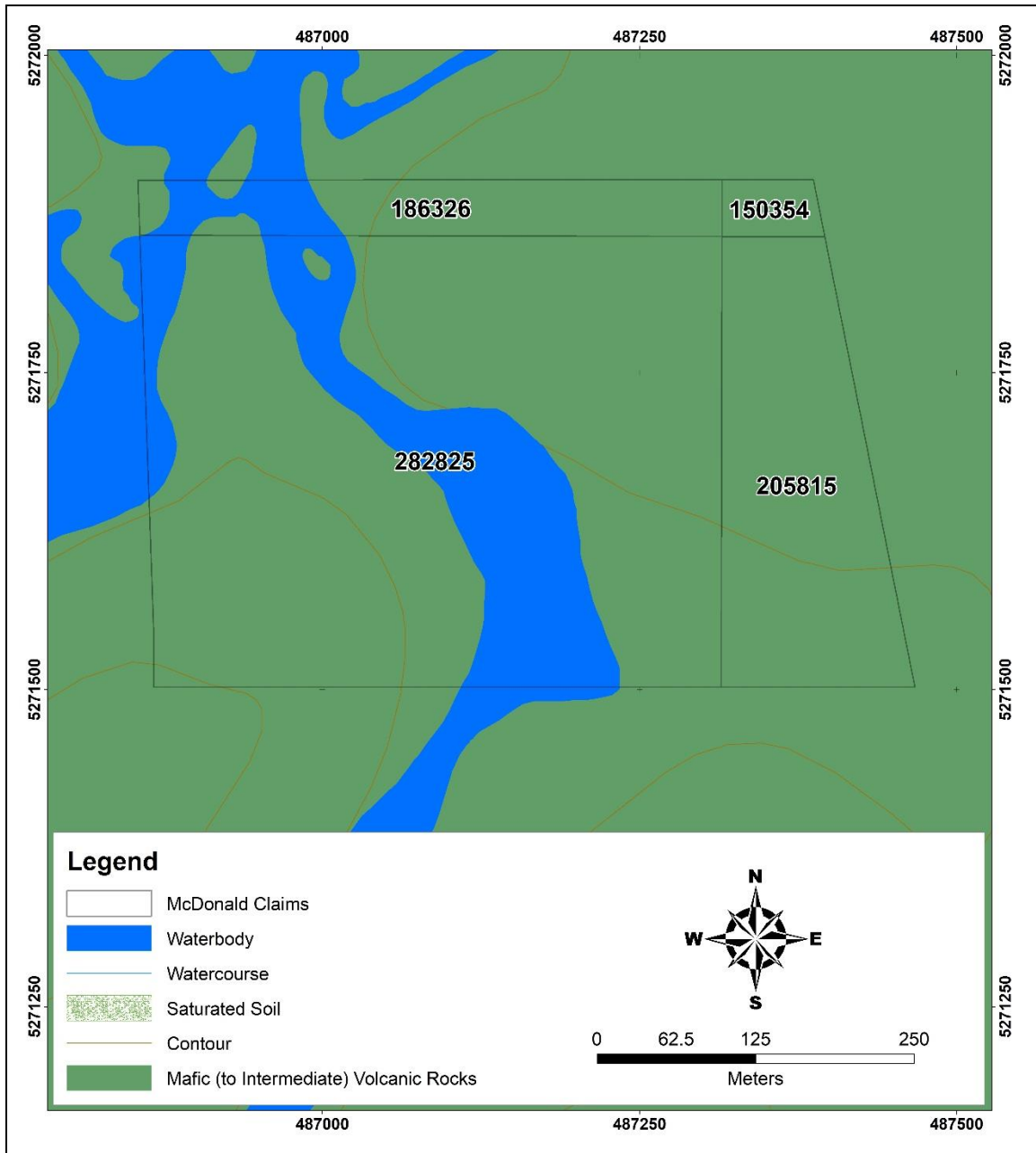


Figure 3: Property Geology (after MRD 282)

## **5.0 PROSPECTING PROGRAM**

### **5.1 Methods**

From June 9<sup>th</sup> through to June 10<sup>th</sup>, 2022, a total of 12 grab samples were collected and submitted for analysis. Samples 860443 through to 860449 were collected northeast of the North Shaft where previous stripping exposed a network of north-northeast-orientated anastomosing quartz+carbonate veins that range from <1cm to >30 cm in width. Sample 5321 was collected at the claim boundary southwest of the North Shaft.

The host rock is generally a massive mafic volcanic flow that has been pervasively altered by carbonate proximal to the quartz veins that contains trace amounts of finely disseminated pyrite and occasional visible gold. Results from the grab samples that were submitted for analysis returned gold values that ranged from 41 ppb to 18,300 ppb (18.3 g/t).

Table 2 provides the sample descriptions and analytical results of the samples collected, while Figure 4 shows the grab sample locations in relationship to claim tenure and the North and South Shafts. Figure 5 shows the GPS tracks along with the sample locations. All samples were collected on mining claim 282825.

The assay certificate for the grab samples is provided in Appendix II, and available sample pictures are provided in Appendix III. A daily log of activities is provided in Appendix IV.

**Table 2: Sample Descriptions**

Date	Sampler	Sample #	Easting	Northing	Rock Type	Texture	Alteration	Mineralization	Comments	Au (ppb)
2022-06-09	D.Hiltz	860443	486971	5271635	Quartz vein		strong pervasive carbonate alteration present in wallrock	trace diss py.	collected from main vein exposed in stripped area	330
2022-06-09	D.Hiltz	860444	486971	5271626	Quartz vein		strong pervasive carbonate alteration present in wallrock	trace diss py.	collected from west side of main vein (30cm in width)	5520
2022-06-09	D.Hiltz	860445	486968	5271632	Alter Volcanic	fine to medium grained	strong pervasive carbonate alteration present in wallrock	trace diss py.	collected from west side of main vein (30cm in width)	208
2022-06-09	D.Hiltz	860446	486968	5271632	Quartz vein		strong pervasive carbonate alteration present in wallrock	trace diss py.	collected at eastern contact of vein with wallrock	428
2022-06-09	D.Hiltz	860447	486963	5271630	Alter Volcanic	fine to medium grained	strong pervasive carbonate alteration present in wallrock	trace diss py.	altered volcanics with 2cm quartz veinlet	839
2022-06-09	D.Hiltz	860448	486959	5271633	Quartz vein		strong pervasive carbonate alteration present in wallrock	trace diss py.	collected from east side of main vein.	248
2022-06-10	D.Hiltz	860449	486958	5271634	Mafic Volcanic	fine to medium grained	weak pervasive carbonate	trace diss py.	collected from rock face at edge of stripped area	82
2020-06-10	D.Hiltz	860450	486972	5271607	Mafic Volcanic	medium grained	weak pervasive carbonate	trace diss py.	collected from east side of main vein.	748
2022-06-10	D.Hiltz	5318	486975	5271601	Mafic Volcanic	medium to coarse grained	weak pervasive carbonate	trace diss py.	collected from	140
2022-06-10	D.Hiltz	5319	486974	5271601	Quartz vein		strong pervasive carbonate alteration present in wallrock	trace diss py.	collected from rock face/hillside	101
2022-06-10	D.Hiltz	5320	486979	5271596	Quartz vein		strong pervasive carbonate alteration present in wallrock	trace diss py.	30cm quartz vein within second stripped area	18300
2022-06-10	D.Hiltz	5321	486913	5271503	Quartz vein		strong pervasive carbonate alteration present in wallrock	trace diss py.	30cm quartz vein trending E-W	41

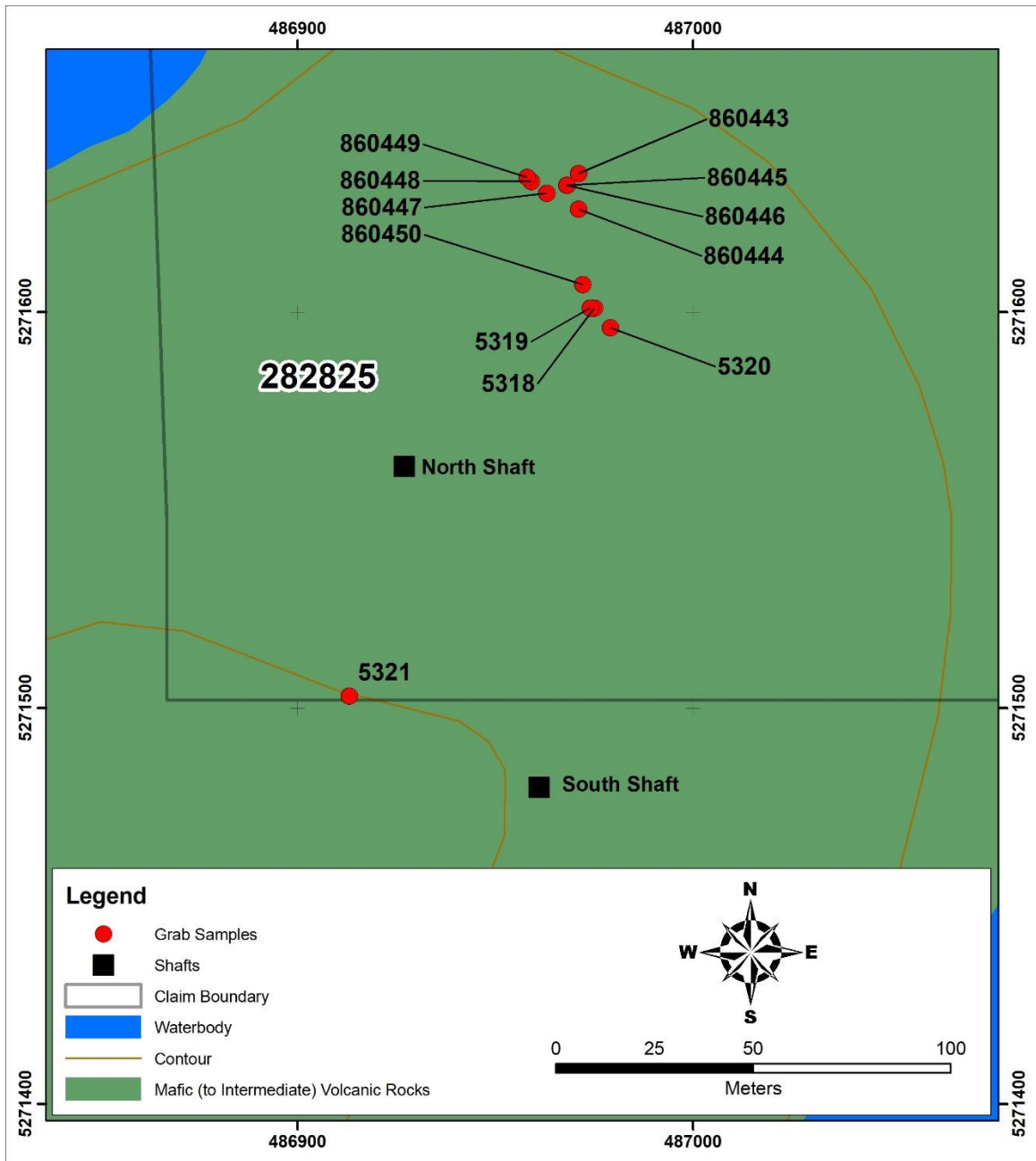


Figure 4: Grab Sample Locations



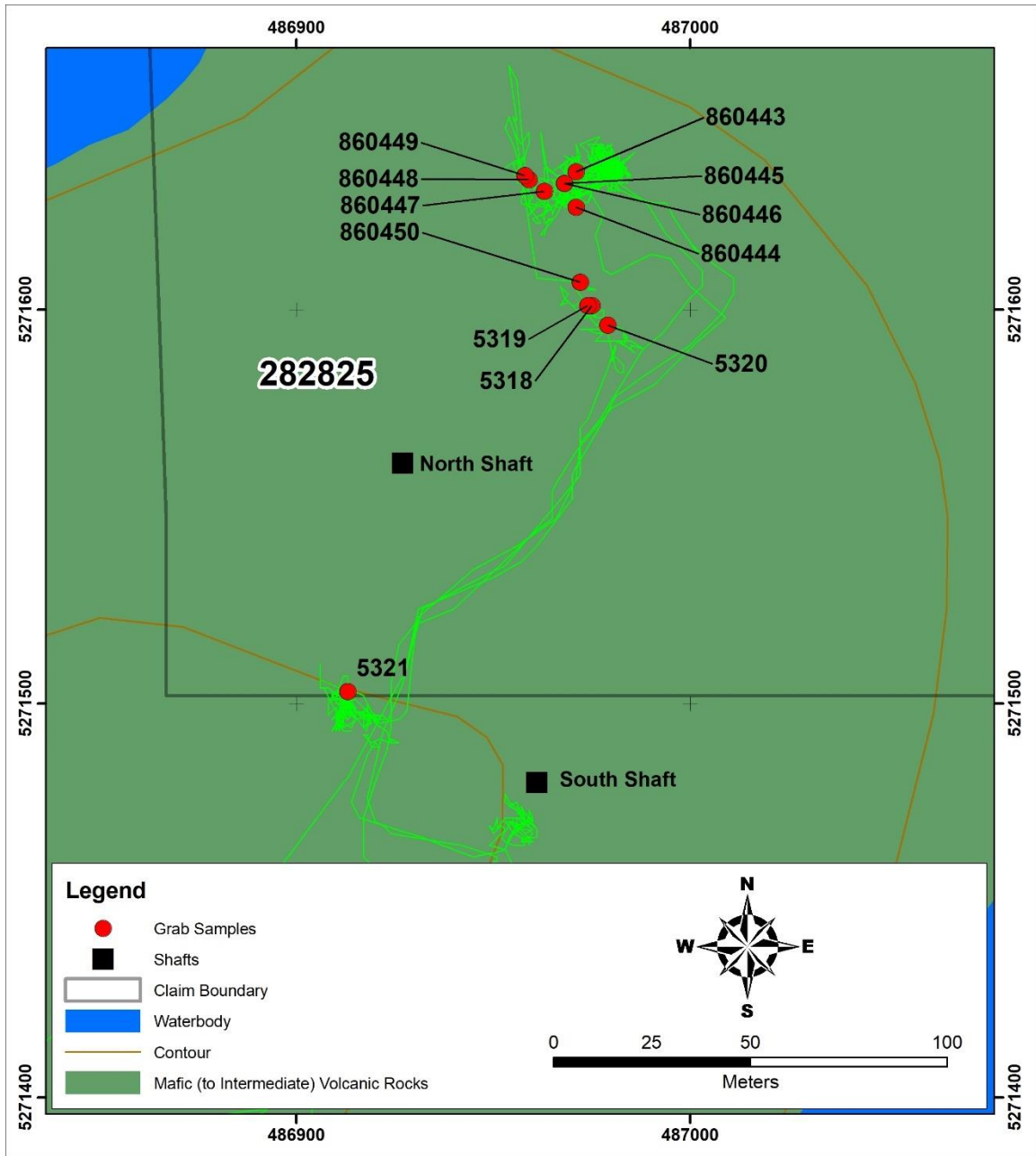


Figure 5: Grab Sample Locations with GPS Tracks

Samples were delivered by the author to Activation Laboratories in North Bay, Ontario.

Once the samples were received and dried at the laboratory, the samples were then crushed to 80% passing 10 mesh (2 mm) and then split into 250 g sub-sample size using a Jones Riffle Splitter. These sub-samples were then pulverized (using rings and pucks to 90% passing 200 mesh (0.075 mm) and homogenized prior to analysis. Gold analysis was performed using a 30 g charge by fire assay using lead collection with a silver inquant (1A2 package). The lower detection limit is 5 ppb, and the upper detection limit is 5000 ppb. A gravimetric finish (1A3 package) is completed for samples that return greater than 5000 ppb which included crushing of the entire sample to -150 mesh and subsequently sieved through a 150 mesh screen. The entire +150 mesh portion was then assayed, along with two duplicate cuts of the -150 mesh portion. Results are reported as a calculated weighted average of gold in the entire sample.

## **6.0 CONCLUSIONS & RECOMMENDATIONS**

The mineralized quartz veins that comprise the McIntyre-McDonald gold occurrences in the North Shaft area may represent the northeastern extension of the structure that hosts the Queen Elizabeth Vein located approximately 800 m to the southwest. Quartz veins on the Property have been noted to also have a northwest orientation, and may represent the southeastern extension of the structure that hosts the Saville or Evelyn veins that are located approximately 500 m to the northwest that would project to the immediate south of the Property. It is recommended a GIS compilation be completed on the historical work that has been completed on the Property. As well, areas that were previously stripped in 2017 should be power-washed, channel sampled, and mapped in detail to provide GLN a geological interpretation that can be used to effectively target the gold-bearing structures on Property.

## 8.0 REFERENCES

- Ayer, J. A., 2002. Evolution of the southern Abitibi greenstone belt based on U-Pb geochronology: autochthonous volcanic construction followed by plutonism, regional deformation and sedimentation, *Precambrian Research* 115.
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Tindale, J.L. 2003. Report on program of stripping, trenching, sampling, geological mapping on the historic McDonald Property of Roy Annett, MacMurchy Township, Larder Lake Mining Division.

**Appendix I**  
**Statement of Qualifications**

## Statement of Qualifications

I, Joerg Martin Kleinboeck of 147 Lakeside Drive, North Bay, Ontario, do hereby certify that:

I am a graduate of Laurentian University, Sudbury, Ontario with a B.Sc. Geology, 2000, and have been practising my profession as a geologist since.

I am a member with the Association of Professional Geoscientists of Ontario (#1411).

I have an active prospector's license for the province of Ontario (#1002600).

I am a member of the Prospectors and Developers Association of Canada.

I do not hold any securities of Great Lakes Nickel Ltd., or hold any interest in the subject claims that comprise the McDonald Property.



Joerg Martin Kleinboeck  
March 24<sup>th</sup>, 2023  
North Bay, Ontario

---

**Appendix II**  
**Assay Certificate**





Report No.: A22-15441  
 Report Date: 14-Nov-22  
 Date Submitted: 21-Oct-22  
 Your Reference: McDonald

JMK Exploration Consulting  
 147 Lakeside Dr.  
 North Bay ON P1A 3E1  
 Canada

ATTN: Joerg Kleinboeck

## CERTIFICATE OF ANALYSIS

19 Rock samples were submitted for analysis.

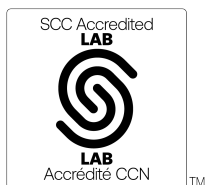
The following analytical package(s) were requested:		Testing Date:
1A2	QOP AA-Au (Au - Fire Assay AA)	2022-11-07 12:03:33
1A3	QOP AA-Au (Au - Fire Assay Gravimetric)	2022-11-11 15:46:19

REPORT      **A22-15441**

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:

If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3



LabID: 266

**ACTIVATION LABORATORIES LTD.**  
 41 Bittern Street, Ancaster, Ontario, Canada, L9G 4V5  
 TELEPHONE +905 648-9611 or +1.888.228.5227 FAX +1.905.648.9613  
 E-MAIL Ancaster@actlabs.com ACTLABS GROUP WEBSITE www.actlabs.com

CERTIFIED BY:

---

Rob Hoffman  
 Region Manager

Analyte Symbol	Au	Au
Unit Symbol	ppb	g/tonne
Lower Limit	5	0.03
Method Code	FA-AA	FA- GRA
5318	140	
5319	101	
5320	> 5000	18.3
5321	41	
860443	330	
860444	> 5000	5.52
860445	208	
860446	428	
860447	839	
860448	248	
860449	82	
860450	748	

Analyte Symbol	Au	Au
Unit Symbol	ppb	g/tonne
Lower Limit	5	0.03
Method Code	FA-AA	FA- GRA
OREAS 239 (Fire Assay) Meas	3580	
OREAS 239 (Fire Assay) Cert	3550	
Oreas E1336 (Fire Assay) Meas	516	
Oreas E1336 (Fire Assay) Cert	510.000	
OREAS L15 Meas		7.11
OREAS L15 Cert		7.18
OREAS L16 Meas		13.3
OREAS L16 Cert		12.97
5318 Orig	144	
5318 Dup	135	
5327 Orig	> 5000	
5327 Dup	> 5000	
Method Blank	< 5	
Method Blank	< 5	
Method Blank		< 0.03
Method Blank		< 0.03

## **Appendix III**

### **Sample Pictures**































## **Appendix IV**

### **Daily Log**

### McDonald Prospect - Daily Log

<b>Date</b>	<b>Description</b>
2022-06-09	Left Shining Tree by truck on Hwy 560 east to Violet Lake Road entrance. Road/ATV trail overgrown, had to spend some time opening up access route. Located old stripped areas, started taking samples 860443-860450.
2022-06-10	Left Shining Tree by truck on Hwy 560 east to Violet Lake Road entrance. Collected samples 5318 to 5321.