

# NI 43-101

INDEPENDENT TECHNICAL REPORT

ON THE

CASA BERARDI WEST PROPERTIES

**FOR** 

CENTURION MINERALS LTD.

Cochrane, Ontario 49.50°N, -79.83°W 49.33°N, -80.13°W 49.05°N, -79.66°W

Michael Kilbourne, P.Geo. Effective date June 30, 2022 Revised August 26, 2022

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# 1.0 SUMMARY

This technical report, entitled "43-101 Independent Technical Report on the Casa Berardi West for Centurion Minerals Ltd., Cochrane, Ontario" (this "Report") was prepared by Michael Kilbourne, P.Geo. (the "Author") at the request of Centurion Minerals Ltd., ("Centurion" or the "Company" or the "Issuer") a public company whose shares are listed on the TSX Venture Exchange under the symbol TSXV: CTN. This Report is specific to the standards dictated by National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("NI 43-101") in respect to the Casa Berardi West (the "Property"), which consists of 3 non-contiguous claim groups (Noseworthy, Newman and Hepburn claim groups collectively referred to as the Property) and covers a total area of approximately 4,715 hectares located 130 km northeast of Cochrane, Ontario. This Report assesses the technical merit and potential of the project area and recommends additional exploration.

## Property Description, Location and Access

The Properties are located northeast of Cochrane, Ontario (Figure 4.1) and consist of three (3) main claim groups or blocks namely the Noseworthy, Newman and Hepburn properties or claim groups. The nearest town is Cochrane, Ontario on Trans-Canada Highway 11 with a current approximate population of 5,300 inhabitants. The claim groups cover a combined region of 4,715 hectares. Coordinates and location are included in Table 1.1.

**Table 1.1** Property locations and sizes.

Casa Berardi West Claim Groups							
Property	Townships	NTS Sheet	UTM E	UTM N	Decimal	Decimal	Hectares
			Centre	Centre	Degrees N	Degrees W	
Noseworthy	Hoblitzell, Noseworthy	32E/12	584436	5483972	49.50	-79.83	985
Newman	Newman, Tomlinson	42H/08	562877	5465418	49.33	-80.13	2,841
Hepburn	Abbotsford, Adair, Hepburn	32E/04	597675	5434542	49.05	-79.66	889
UTM NAD83 Zone 17U							4,715

The most accessible route to the Property is traveling east for approximately 72 km along Provincial Road 652 that connects with the Trans-Canada Highway 11 at Cochrane, Ontario. At approximately km 72 logging roads north provide access to the Newman and Noseworthy claim groups. At km 102 along Road 652, logging roads provide access to the Hepburn claim group.

## Ownership and Agreements

The claims are registered to Gravel Ridge Resources and are subject to an option agreement (the "Option Agreement") entered into between the Issuer, Gravel Ridge Resources and 1544230 Ontario Inc. which is signed and dated June 22, 2022. Gravel Ridge Resources acquired the claims through the on-line MLAS staking program.

Centurion has entered into the Option Agreement pursuant to which it has the option to acquire a 100% interest in the Casa Berardi West Property for cash consideration totaling \$114,000 and the issuance of 600,000 common shares (the "Transaction") over a 3-year period. Centurion is a publicly traded company under the symbol TSXV:CTN. Gravel Ridge Resources is a private company formed under the Laws of Ontario. 1544230 Ontario Inc. is a private company formed under the Laws of Ontario. The Optionors will retain a 2.0% net smelter returns royalty (the "NSR") on the Property. Once the Issuer has acquired 100% interest in the Property under the Transaction, 1.0% of the NSR (that being 50% of the NSR) can be purchased by the Issuer for \$1,000,000 if the Issuer elects to do so. There are no outstanding underlying agreements on the mining claims which constitutes the Property. The date of Option Agreement was signed and is referenced June 22, 2022.

# History of Exploration

All three claim groups have undergone very little systematic exploration.

Underpinning the Newman claim group are 72 reverse circulation (RC) drill holes totaling 7,419.5 feet (2,261.4 m) completed by Chesbar Resources in 1987. Till samples 1-4 samples above bedrock returned high-grade till samples up to 38 g/t Au. Chesbar then completed 8 diamond drill holes totaling 4,980 feet (1,517.8 m). The program was designed to test the conductor north of the anomalous reverse circulation holes to test for a gold bearing horizon of mineralization and alteration. The most significant assay was obtained in a 3.0-foot sample (0.91 m) of kaolinite-chlorite schist from DDH 87-03. It assayed 1,650 ppb Au. It is felt that the source of the numerous till samples along the strike length of the property remain unexplained.

Airborne and ground geophysical surveys by several companies subsequently provided drill targets which provided good geological context but fairly insignificant results.

The Noseworthy claim group has seen little exploration. It has been part of larger more regional exploration programs of airborne geophysical surveys, ground geophysical surveys, mapping and prospecting. Trenching efforts by Cogema Canada Limited in 1986 appear off the claim group's boundary, but these should be georeferenced to substantiate. Highlights of the 5 trenched areas include Trench 1 returning a sample of 120 ppb Au, Trench 2 reporting up to 900 ppb Au and Trench 5 returning up to 110 ppb Au. Their

work concludes that a major structural discontinuity transects the central part of the property in an east-west direction and that this discontinuity and the rocks south of it may be more likely to host significant Au mineralization.

Again due to the lack of outcrop, the Hepburn claim group has undergone sporadic short-lived exploration efforts consisting mostly of airborne and ground geophysical programs that were part of larger more regional types of exploration.

Seal River Exploration Ltd. completed one diamond drill hole (PR-90-1) that investigated HLEM anomaly No. A-6 in 1990. The hole intersected 3 bands of cherty garnetiferous, sulphide-magnetite iron formation over widths of 2-4 m in amphibolitic mafic volcanics. From 117.65 m a 1 m section assayed 396 ppb Au. From 147.58 m, a 0.91 m section assayed 240 ppb Au. Seal River returned and drilled 3 more holes PR91-1 through PR91-3 totaling 306.93 m. Hole PR91-3 was drilled on the same HLEM anomaly 300m to the east of hole PR90-1 and intersected similar bands of cherty garnetiferous, sulphide-magnetite iron formation over widths of 0.5-2.13 m in amphibolitic mafic volcanics. Highlights from this hole include 306 ppb Au over 0.91 m.

#### Geology and Mineralization

The Casa Berardi West Property is located in the Abitibi Terrane of the Superior Province of Canada. The Abitibi Terrane of eastern Canada represents the world's largest Neoarchean terrane of supracrustal rocks. Straddling the border between the provinces of Ontario and Quebec, the belt covers an area that is approximately 700 km from southeast to northwest and 350 km from north to south. The belt is comprised of several major east-trending successions of folded volcanic and sedimentary rocks, with intervening intrusions.

The Casa Berardi West Property is located within the Harricana-Turgeon greenstone belt (HTGB) of the Abitibi Terrane. The Harricana-Turgeon Belt consists of the granitic intrusions, surrounded by felsic to mafic metavolcanic rocks, metasedimentary rocks and minor mafic to ultramafic intrusions. The Mistawak Batholith is the largest of the granitic intrusions and is composed of quartz monzonite and granodiorite. The metavolcanic and metasedimentary rocks have undergone low pressure, contact and regional metamorphism of greenschist- and lower amphibolite-facies circa 2.7-2.6 Ga.

Structurally, the three separate claim groups are proximal to regional crustal scale deformation zones. The Newman claim group hosts part of the Mikwam River Fault. The Noseworthy claim group lies just north of the Casa Berardi Deformation Zone, integrally related to the Mikwam gold deposit of Aurelius Resources to the east, and further into Quebec, the Casa Berardi gold mine. The Hepburn claim group lies along an extension of

rocks and structures believed to be related to the former Normetal VMS mine and more recently to the high-grade gold discovery at Perron by AMEX Exploration both located just inside the Quebec-Ontario provincial border.

There are thirteen (13) documented and registered Ontario Geological Survey (OGS) Mineral Deposit Inventory (MDI) occurrences within the Newman claim group. There are no registered MDI occurrences within the Noseworthy and Hepburn claim groups. The Author does recognize that there are numerous mineral occurrences (MDI) outside of the Noseworthy claim group along strike of stratigraphy.

The diamond drill logs from drilling programs conducted by Chesbar Resources and Dome Exploration on the Newman claim group also reported disseminated and stringer pyrite and pyrrhotite in a dacitic (tuffaceous) flow upwards of 5-10 m downhole. Sporadic sphalerite and disseminated chalcopyrite were also noted in the same units.

## **Deposit Types**

The structural and geological architecture of the Harricana-Turgeon greenstone belt and the Casa Berardi West Property is conducive to a variety of gold depositional environments similar in nature and significance to other gold-bearing deposits in Archean-aged greenstone belts hosted within the Abitibi Subprovince. These typically fall into the category of orogenic gold deposit types in brittle-ductile structurally related regimes. Quartz-carbonate vein gold systems analogous to those found at Casa Berardi (Quebec), Dome and Hollinger (Timmins, Ontario), Macassa (Kirkland Lake, Ontario) and Perron (Quebec) are all classified as orogenic gold deposits.

The Newman claim group hosts a banded iron formation. Banded iron formation hosted orogenic gold deposits of Canadian Archean greenstone belts include the Musselwhite gold mine, the Pickle Lake gold camp and the Geraldton-Beardmore gold camp. Important common features of BIF-hosted gold deposits include a strong association between native gold and iron sulfide minerals, the presence of gold-bearing quartz veins and/or shear zones, the occurrence of deposits in structurally complex terranes.

Additional types of mineralization on the Property that should be considered is VMS style Zn-Cu deposits, namely bimodal felsic dominated type VMS or Kuroko type. They usually form in the ocean-continent arc or nascent arc rifting. The Hepburn claim group lies along strike 15 km to the northwest of the former Normetal VMS deposit in Quebec.

## **Interpretation and Conclusions**

The Casa Berardi West Property lies in the Abitibi Subprovince. The Abitibi Subprovince is of outstanding economic importance as it contains some of the most important gold and base metal mining camps in Canada, with a total endowment of over 800 million metric tonnes (Mt) of polymetallic massive sulfide ore contained in volcanogenic massive sulfide (VMS) deposits and over 4,500 tonnes of gold largely hosted by orogenic, Au-rich VMS, and intrusion-centered gold deposits.

The structural and geological architecture of the Casa Berardi West Property is conducive to a variety of gold depositional environments similar in nature and significance to other gold-bearing deposits in Archean-aged greenstone belts hosted within the Abitibi Subprovince.

Mineralization on the Property consists of:

- BIF hosted sulphides with indications of orogenic gold mineralization
- Shear-hosted gold mineralization
- Disseminated copper-bearing sulphide mineralization in tuffaceous rocks

The following salient features of the Casa Berardi West Property makes this a Property of high merit:

- 1) A greenstone belt hosting supracrustal Archean-aged rocks within the metal endowed western Abitibi Subprovince.
- 2) Numerous high-grade gold-in-till anomalies on the Newman claim group that have yet to be explained.
- 3) An underexplored orogenic BIF gold hosted deposit model common to Archean supracrustal rocks and gold mining camps in the Superior Province.
- 4) Limited modern-day systematic exploration and with either no or very limited drilling.
- 5) Structural components around a syn-volcanic felsic intrusive stock providing paths for hydrothermal metal-bearing fluids.
- 6) Orogenic gold deposits (Casa Berardi and the newly discovered Perron deposit) along strike of the Noseworthy and Hepburn claim groups respectively.

It is of the Author's opinion that the styles of mineralization currently present on the property continue to be explored as historical results and the overall geological environment is very favourable for continued success.

#### **Recommendations**

The Casa Berardi West Property is an underexplored property that has proven thus far to yield important indications of orogenic gold mineralization. Applying modern day exploration techniques and up to date geological modeling based on similar model type deposits hosted within Archean greenstone belts like Harricana-Turgeon greenstone belt will potentially unlock clues for significant mineralization. For this, methodical, patient and diligent exploration is needed.

Compilation of all historical geological, geochemical and geophysical data into GIS referenced layers is the first and most important base of needed knowledge for methodical and diligent well-vectored exploration.

A high-resolution heliborne magnetic survey with 50 m line spacings should be flown over each claim group to aid in the structural and magnetic dynamics of the iron formations and aid in interpretation of geology. Follow-up structural interpretation to aid in vectoring those areas of the iron formation and host lithologies where folding and or shearing occurs will provide targets of merit for this orogenic gold deposit model. Ground-truthing the targets of high merit with mapping and sampling would follow in this Phase II Program.

A quaternary study of the Newman claim group and the gold-in-till anomalies should be studied by an expert with possible conclusions of a source for the gold grains and recommendations to locate that source.

Ground geophysical surveys of IP could also be used as a tool to further investigate those areas of potential from the mapping and sampling programs.

When the above is compiled, completed and interpreted and then applied to modern day orogenic gold model types, drilling should be performed on those targets with the highest merit and potential. A budget for a Phase I exploration program is estimated to cost \$138,105 followed by Phase II programs at an estimated to cost of \$847,000 (Table 1.2). Phase II is not dependent on the results of Phase I as the GIS compilation and heli-borne magnetic surveys provide the minimum requirements for vectored exploration.

**Table 1.2** Estimated budget for Phase I and II exploration expenditures.

Casa Berardi West Property Phase I al	•			
Exploration Item	Units	Unit Amount	Unit Cost	Item Cost
GIS Compilation and Interpretation	1	1	\$15,000	\$15,000
High-resolution heliborne magnetic survey,	km	270	\$15,000	\$13,000
Noseworthy claim group	KIII	270	\$55	\$14,650
High-resolution heliborne magnetic survey, Newman	km	1,020	\$55	\$56,100
claim group	KIII	1,020	\$55	\$50,100
High-resolution heliborne magnetic survey, Hepburn	km	720	\$55	\$39,600
claim group	Kill	720	<b>433</b>	<b>433,000</b>
Sub-Total				\$125,550
10% Contingency				\$12,555
Total				\$138,105
Phase II				
Exploration Item	Units	Unit Amount	Unit Cost	Item Cost
Strucutral interpretation of heliborne magnetic survey,	1	1	\$10,000	\$10,000
provide areas of merit for follow-up ground	_		7-3,555	7-0,000
investigation				
Ground-truthing, sampling and mapping, geologist plus	days	14	\$2,500	\$35,000
technician, assaying, gear and rentals	,.		, ,===	, ,
Quaternary study of Newman claim group and	1	1	\$25,000	\$25,000
· · · · · · · · · · · · · · · · · · ·			, -,	, -,
Chesbar Resources gold-in-till results by an expert				
Chesbar Resources gold-in-till results by an expert  Gound IP geophysical surveys over those areas	km	50	\$2,000	\$100,000
Gound IP geophysical surveys over those areas	km	50	\$2,000	\$100,000
	km metres	50 1,500	\$2,000 \$400	\$100,000 \$600,000
Gound IP geophysical surveys over those areas determined by mapping/sampling results			. ,	
Gound IP geophysical surveys over those areas determined by mapping/sampling results Diamond drilling targets of highest merit, heli-			. ,	
Gound IP geophysical surveys over those areas determined by mapping/sampling results  Diamond drilling targets of highest merit, helisupported			. ,	\$600,000

Subsequent exploration programs beyond Phase II will depend upon the success and results of the first two phases of exploration.

The author Michael Kilbourne P.Geo., is a Qualified Person as defined by Regulation 43-101, and that by reason of my education, affiliation with a professional association and past relevant work experience fulfil the requirements to be a "Qualified Person" for the purposes of Regulation 43-101.

## 2.0 INTRODUCTION

At the request of Centurion Minerals Ltd., a public company whose shares trade on the TSX Venture Exchange (TSXV:CTN), Michael Kilbourne, P.Geo. has completed an independent report on the Casa Berardi West Property company's which is subject to an option agreement to acquire 100% interest in the Property.

This report is an Independent Technical Report prepared to Canadian National Instrument 43-101 standards. This report assesses the technical merit and potential of the project area and recommends additional exploration.

This report has principally been prepared by Michael Kilbourne, P.Geo., (PGO #1591, OGQ #1971 and NAPEG # L4959) who has over 40 years in the exploration and mining industry in base and precious metal exploration and mining in Archean greenstone belts of the Canadian Shield similar to the Abitibi greenstone belt of Ontario. The author visited the three claim groups on June 6, 2022.

Michael Kilbourne, P.Geo. does not have a business relationship other than acting as an independent consultant for Centurion. The views expressed herein are genuinely held and considered independent of the aforementioned companies.

The report is based on the author's knowledge of greenstone belt hosted base and precious metal deposits, their mineralization, alteration and structural environments, observations of bedrock exposures, drill core and former underground and open pit experience at the Pamour Gold Mine in Timmins, Ontario from 1991-1996.

This report was based on information known to the author as of June 30, 2022.

#### 2.1 UNITS OF MEASURE, ABBREVIATIONS AND NOMENCLATURE

The units of measure presented in this Report, unless otherwise denoted, are in the metric system. A list of the main abbreviations and terms used throughout the Report are presented in Table 2.1.

 Table 2.1
 List of Abbreviations

Abbreviations	Full Description
AFRI	Assessement File Research Image
Ag	silver
As	arsenic
ATV	all terrain vehicle
Au	gold
Bi	bismuth
BIF	banded iron formation
С	celsius
cm	centimetre
Cu	copper
DFO	Department of Fisheries
EM	electromagnetic
Fe	iron
Ga	billions of years
Gn	galena
GPS	global positioning system
gpt	grams per tonne
GSC	Geological Survey of Canada
Hz	hertz
km	kilometre
LRIA	Lakes and Rivers Improvement Act
m	metre
Ma	millions of years
MDI	Mineral Deposit Inventory
MLAS	Mining Lands Administration Inventory
MENDM	Ministry of Energy, Northern Development and Mines
MNR	Ministry of Natural Resources
Mt	millions of tonnes
NAD83	North American Datum of 1983
NSR	net smelter return
OGS	Ontario Geological Survey
Pb	lead
PGO	Professional Geoscientists of Ontario
PLA	Public Lands Act
QA/QC	Quality Assurance/Quality Control
UTM	Universal Transverse Mercator coordinate system
VLF	very low frequency
VMS	volcanogenic massive sulphides
VTEM	Versatile Time Domain Electromagnetic

# 3.0 RELIANCE ON OTHER EXPERTS

The Author, Qualified and Independent Persons as defined by Regulation 43-101, was contracted by Centurion to study technical documentation relevant to the report and to recommend a work program if warranted. The Author has reviewed the mining titles and their statuses, as well as any agreements and technical data supplied by the Issuer (or its agents) and any available public sources of relevant technical information.

Claim status was supplied by the Issuer. The Author has verified the status of the claims using the Ontario government's online claim management system via the Mining Lands Administration System ("MLAS") website at: <a href="https://www.mlas.mndm.gov.on.ca">https://www.mlas.mndm.gov.on.ca</a>. The Author is not qualified to express any legal opinion with respect to the government of Ontario mining claim allocations.

The author relied on reports and opinions as follows for information that is not within the Authors' fields of expertise:

• Information regarding the purchase agreement between the Issuer and Gravel Ridge Resources and 1544230 Ontario Inc. was supplied by David Tafel, CEO for Centurion in an email dated June 27, 2022. The Author is not qualified to express any legal opinion with regards to purchase agreements, satisfaction of terms and possible litigation.

# 4.0 PROPERTY DESCRIPTION and LOCATION

# 4.1 LOCATION

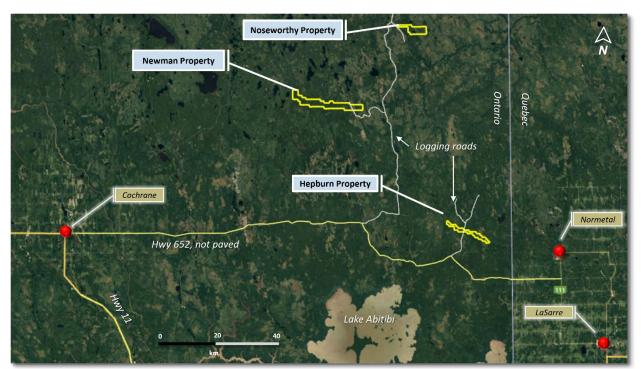
The Properties are located northeast of Cochrane, Ontario (Figure 4.1) and consist of three (3) main claim groups or blocks namely the Noseworthy, Newman and Hepburn properties or claim groups. The nearest town is Cochrane, Ontario on Trans-Canada Highway 11 with a current approximate population of 5,300 inhabitants. The claim groups cover a combined region of 4,715 hectares. Coordinates and location are included in Table 4.1.

 Table 4.1
 Property locations and sizes.

Casa Berardi							
Property	Townships	NTS Sheet	UTM E	UTM N	Decimal	Decimal	Hectares
			Centre	Centre	Degrees N	Degrees W	
Noseworthy	Hoblitzell, Noseworthy	32E/12	584436	5483972	49.50	-79.83	985
Newman	Newman, Tomlinson	42H/08	562877	5465418	49.33	-80.13	2,841
Hepburn	Abbotsford, Adair, Hepburn	32E/04	597675	5434542	49.05	-79.66	889
UTM NAD83 Zone 17U							4,715

Figure 4.1 Regional location map of the Casa Berardi Property, northeastern Ontario.





**Figure 4.2** Local locations of the 3 claims groups consisting of the Property.

# 4.2. MINING TENURE AND OWNERSHIP

The Property consists of 3 non-contiguous claim groups described as the following:

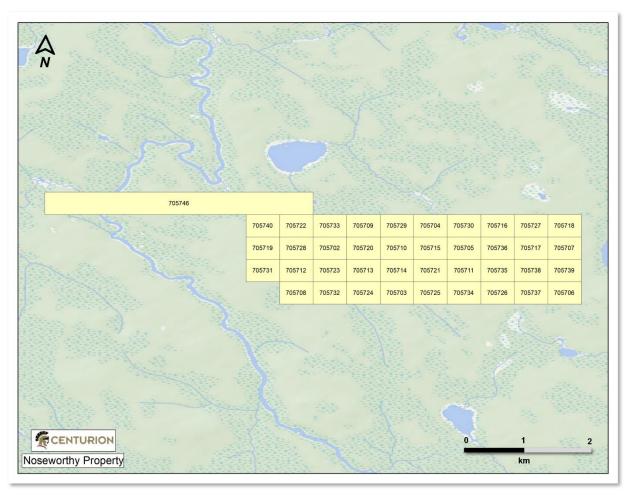
- Noseworthy claim group, consisting of 39 single cell mining claims (SCMC) and 1 multi-cell mining claim (MCMC) (47 single cell mining claims in total) covering an area of 985 hectares.
- Newman claim group consisting of 7 multi-cell mining claims (135 single cell mining claims) covering an area of 2,841 hectares.
- Hepburn claim group consisting of 42 single cell mining claims covering an area of 889 hectares.

The claims are registered to Gravel Ridge Resources and are subject to an option agreement (the "Option Agreement") entered into between the Issuer, Gravel Ridge Resources and 1544230 Ontario Inc. which is signed and dated June 22, 2022. Gravel Ridge Resources acquired the claims through the on-line MLAS staking program. Table 4.1 through 4.3 provides details of the claim groups pertaining to the Option Agreement. Figure 4.3 through 4.5 displays the claim fabric.

**Table 4.1** List of mineral claims of the Noseworthy claim group pertaining to the Option Agreement. Source Centurion Minerals Ltd. Confirmed through MLAS.

Tenure ID	Туре	Status	Issue Date	Anniversary Date	MLAS Client#, Ownership	Number of
						single cells
705702	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705703	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705704	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705705	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705706	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705707	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705708	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705709	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705710	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705711	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705712	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705713	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705714	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705715	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705716	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705717	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705718	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705719	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705720	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705721	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705722	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705723	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705724	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705725	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705726	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705727	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705728	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705729	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705730	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705731	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705732	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705733	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705734	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705735	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705736	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705737	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705738	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705739	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705740	SCMC	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	1
705746	МСМС	Active	2022-02-09	2024-02-09	(10002746) Gravel Ridge Resources	8
						47
						т,

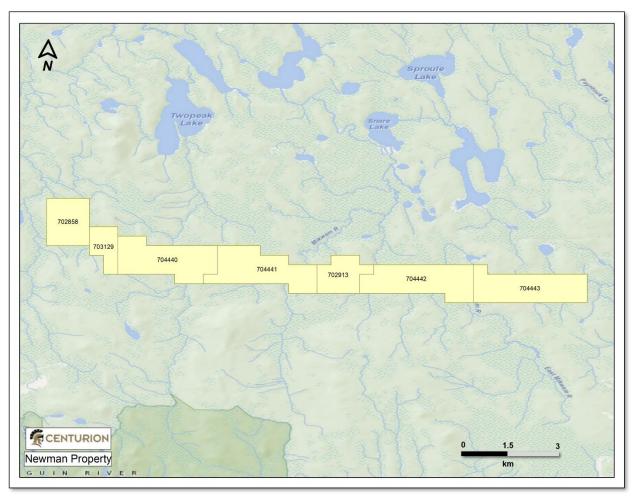
**Figure 4.3** Claim fabric and geometry of the Noseworthy claim group in Table 4.1 of the Option Agreement. Source MLAS.



**Table 4.2** List of mineral claims of the Newman claim group pertaining to the Option Agreement. Source Centurion Minerals Ltd. Confirmed through MLAS.

Tenure ID	Туре	Status	Issue Date	Anniversary	MLAS Client#, Ownership	Number of
				Date		single cells
702913	MCMC	Active	2022-01-27	2024-01-27	(10002746) Gravel Ridge Resources Ltd.	12
702858	MCMC	Active	2022-01-27	2024-01-27	(10002746) Gravel Ridge Resources Ltd.	15
704443	MCMC	Active	2022-02-04	2024-01-27	(10002746) Gravel Ridge Resources Ltd.	25
704442	MCMC	Active	2022-02-04	2024-01-27	(10002746) Gravel Ridge Resources Ltd.	25
704441	MCMC	Active	2022-02-04	2024-01-28	(10002746) Gravel Ridge Resources Ltd.	25
704440	MCMC	Active	2022-02-04	2024-01-28	(10002746) Gravel Ridge Resources Ltd.	25
703129	MCMC	Active	2022-01-28	2024-01-28	(10002746) Gravel Ridge Resources Ltd.	8
						135

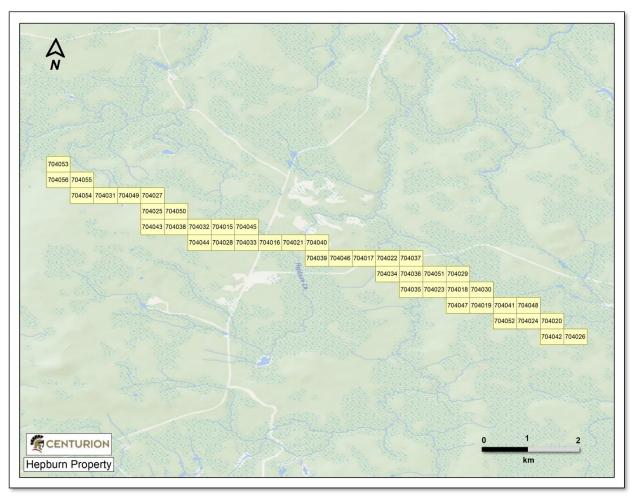
**Figure 4.4** Claim fabric and geometry of the Newman claim group in Table 4.2 of the Option Agreement. Source MLAS.



**Table 4.3** List of mineral claims of the Hepburn claim group pertaining to the Option Agreement. Source Centurion Minerals Ltd. Confirmed through MLAS.

Tenure ID	Туре	Status	Issue Date	Anniversary Date	MLAS Client#, Ownership	Number of
						single cells
704015	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704016	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704017	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704018	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704019	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704020	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704021	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704022	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704023	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704024	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704025	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704026	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704027	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704028	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704029	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704030	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704031	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704032	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704033	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704034	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704035	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704036	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704037	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704038	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704039	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704040	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704041	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704042	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704043	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704044	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704045	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704046	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704047	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704048	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704049	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704050	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704051	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704052	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704053	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704054	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704055	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
704056	SCMC	Active	2022-02-02	2024-02-02	(10002746) Gravel Ridge Resources Ltd.	1
						42

**Figure 4.5** Claim fabric and geometry of the Hepburn claim group in Table 4.3 of the Option Agreement. Source MLAS.



## 4.3 OPTION AND UNDERLYING AGREEMENTS

Centurion has entered into the Option Agreement pursuant to which it has the option to acquire a 100% interest in the Casa Berardi West Property for cash consideration totaling \$114,000 and the issuance of 600,000 common shares (the "Transaction") over a 3-year period. Centurion is a publicly traded company under the symbol TSXV:CTN. Gravel Ridge Resources is a private company formed under the Laws of Ontario. 1544230 Ontario Inc. is a private company formed under the Laws of Ontario. The Optionors will retain a 2.0% net smelter returns royalty (the "NSR") on the Property. Once the Issuer has acquired 100% interest in the Property under the Transaction, 1.0% of the NSR (that being 50% of the NSR) can be purchased by the Issuer for \$1,000,000 if the Issuer elects to do so. There are no outstanding underlying agreements on the mining claims which constitutes the Property in Tables 4.1 through 4.3. The date of Option Agreement was signed and is referenced June 22, 2022 (the "Effective Date").

#### 4.4 THE TRANSACTION

Centurion will need to satisfy the terms and conditions of the Option Agreement made with the Optionor in order to gain 100% interest in the 3 claim groups listed in Table 4.1 through 4.3. This includes:

- 1) Within 60 days of signing the Option Agreement, a payment of cash totaling collectively \$20,000:
- 2) Upon receipt of TSXV approval the issuance of 400,000 common shares.
- 3) An additional cash payment of \$24,000 and the issuance of 200,000 common shares collectively to the Optionors on or before the 1st anniversary of the receipt of the TSXV Exchange approval;
- 4) An additional cash payment of \$30,000 collectively to the Optionors on or before the 2nd anniversary of the receipt of the TSXV Exchange approval; and
- 5) An additional cash payment of \$40,000 to the Optionors on or before the 3rd anniversary of the receipt of the TSXV Exchange approval.

Upon satisfaction of the above payments, the option granted to the Issuer pursuant to the Option Agreement shall be deemed to be exercised and an undivided 100% right, title and interest to the Property shall be automatically transferred to Centurion.

If the Issuer exercises the Option Agreement in full to acquire a 100% interest in the Property, Centurion or its assigns shall have the right at any time to purchase from the Optionor 1.0% (being 50%) percent of the NSR from the Optionors for \$1,000,000. Upon such purchase and payment being made, the NSR shall thereafter be calculated as being reduced to 1.0%.

#### 4.5 ENVIROMENTAL LIABILITIES

The Author is unaware of any current environmental liabilities connected with the Property.

Permitting is required for many aspects of mineral exploration. Since the type of work being proposed for the Casa Berardi West Property is considered preliminary exploration by the Ontario government, the permitting process isn't particularly onerous. These permits will be acquired by the Issuer when required.

Under the Mining Act, prospecting and staking in Ontario can occur on privately owned lands. A prospector must respect the rights of the property owner. Staking cannot disrupt other land use such as crops, gardens or recreation areas, and the prospector is liable for any damage made while making property improvements. A claim holder may also explore

on privately owned lands. Prior notification is required, and exploration must be done in a way that respects the rights of the property owner.

Water crossings, including culverts, bridges and winter ice bridges, require approval from the Ministry of Natural Resources. This applies to all water crossings whether on Crown, municipal, leased or private land and includes water crossings for trails. Authorization may take the form of a work permit under the Public Lands Act ("PLA") or approvals under the Lakes and Rivers Improvement Act ("LRIA").

In circumstances where there is potential to affect fish or fish habitat, the federal Department of Fisheries and Oceans ("DFO") must be contacted. Proper planning and care must be taken to mitigate impact on water quality and fish habitat. Where impact on fish habitat is unavoidable, a Fisheries Act Authorization will be required from DFO. In some cases, the Ministry of Natural Resources and your local conservation authority may also be involved.

A work permit is required from MNR for the construction of all roads, buildings or structures on Crown lands with the exception of roads already approved under the Crown Forest Sustainability Act. Private forest access roads may not be accessible to the public unless under term and conditions of an agreement with the land holder.

Exploration diamond drilling may only occur on a valid mining claim. Ministry of Labour regulations regarding the workplace safety and health standards must be met during a drilling project. Notice of drilling operations must be given to the Ministry of Labour.

All drill and boreholes should be properly plugged if there is a risk of the following:

- a physical hazard,
- groundwater contamination,
- artesian conditions, or
- adverse intermingling of aquifers

Appropriate plugging methods may vary and will depend on the type of hole and geology. Ontario Water Resources Act water well regulations may apply.

The Author knows of no significant factors and risks that may affect access, title or the right or ability to perform work on the property. The claim group is located within First Nation Treaty Lands. It is the responsibility of Centurion to consult and build agreeable relationships with those First Nations group(s) before any exploration efforts or mining is to proceed.

# 5.0 ACCESSIBILTY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE and PHYSIOGRAPHY

# 5.1 ACCESSIBILITY

The Casa Berardi West Property is located 130 km northeast of Cochrane, Ontario. The most accessible route to the Property is traveling east for approximately 72 km along Provincial Road 652 that connects with the Trans-Canada Highway 11 at Cochrane, Ontario. At approximately km 72 logging roads north provide access to the Newman and

Noseworthy claim groups. At km 102 along Road 652, logging roads provide access to the Hepburn claim group. (Figure 5.1).

Noseworthy Property

Newman Property

A Replace Cochrane

Logging roads

Hepburn Property

Lake Abitibi

Lake Abitibi

Figure 5.1. Locations and access into the Casa Berardi West Property.

#### 5.2 CLIMATE

Climate in the area is typical of the northeastern Ontario boreal climate, with cold winters exhibiting moderate snowfall and warm summers. Average January-February temperatures range from -10°C (day) to -30°C (night), and average July-August temperatures are between 25°C (day) and 15°C (night) with extremes of about -40°C in winter and 35°C in summer (www.meteoblue.com). Work can be done (subject to snow and freezing) for most of the year. Certain mapping, mechanized stripping, and soil sampling activities are best performed in snow-free conditions, whereas drilling can be done almost any time of year.

## 5.3 LOCAL RESOURCES

The closest community of substantial size is Cochrane, Ontario 130 km to the southwest. The population of Cochrane is approximately 5,300 and its economy is primarily forestry driven with subordinate mining and general health care and retail services. Cochrane can be used as a source of supplies, some exploration supplies and personnel.

#### 5.4 INFRASTRUCTURE

The closest rail line in the area is located in Cochrane as well as a major hydro transmission line that could provide power in the event of production. The expanse of the total property at 4,715 hectares and the smallest parcel at 889 hectares, provides ample space for the sufficiency of surface rights for mining operations, potential tailings storage areas, potential waste disposal areas, heap leach pad areas, and potential processing plant sites.

## 5.5 PHYSIOGRAPHY

The Case Berardi West Property is located within the Canadian Shield, which is a major physiographic division of Canada. The Property is situated in an area comprised of wetlands and forests of black spruce, tamarack and poplar. Topography on the Property is generally flat and locally swampy with local relief changes granitic ridges. Elevation across the Property ranges from ~290 m to ~325 m above sea level.

Water for drilling is readily available from small lakes, ponds and creeks located within the claim groups.

# 6.0 HISTORY

The following is a brief history of the Casa Berardi West Property claim groups as gathered from submitted assessment files from various companies since 1957. Each claim group will be addressed separately.

#### 6.1 HISTORY NOSEWORTHY CLAIM GROUP

1981: Dome Exploration completed a small grid of ground electromagnetic and magnetic survey which covers a portion of the northwest corner of the claim group (AFRI 32E12SW0048).

1982: Dome Exploration drilled 2 drill holes totaling 947 feet (288.6 m) in the extreme northwest corner of the claim group. These holes are not registered in MLAS but are shown in AFRI 32E12SW0045. Objectives of the drilling was to test EM conductors which were explained by graphitic sediment horizons. No significant assays were reported.

**1984:** Ameritex Resources Ltd completed 485 line-km of heli-borne magnetic and VLF-EM survey (Aerodat). (AFRI 32E12SW0019).

**1986:** Cogema Canada Limited completed airborne magnetic and VLF-EM survey (DIGHEM<sup>III</sup>) reconnaissance mapping and trenching accompanied by detailed mapping and sampling. The airborne survey appears to cover the present Noseworthy claim group covering 1,148 line-km (AFRI 32E12SW0016).

Reconnaissance mapping was completed in 1986 which covered a portion of the Noseworthy claim group. Several grab samples were taken with highlights of **110 ppb Au** in Sample JL-25-6. Samples and mapping results should be georeferenced for verification of location (AFRI 32E12SW0018).

Trenching locations appear off the claim group's boundary, but these should be georeferenced to substantiate. Highlights of the 5 trenched areas include Trench 1 returning a sample of 120 ppb Au, Trench 2 reporting up to 900 ppb Au and Trench 5 returning up to 110 ppb Au. The reports conclusions include "a major structural discontinuity transects the central part of the property in an east-west direction and that this discontinuity and the rocks south of it may be more likely to host significant Au mineralization" (AFRI 32E12SW0016).

1987: Cogema Canada Limited completed a reverse circulation drilling program in the area with some of the holes falling within the Noseworthy claim group. Drill holes and results should be georeferenced to determine those holes that fall within the current claim group boundary. They concluded "None of our samples can be described as strongly anomalous. No samples contained abundant delicate or irregular gold grains. Most of the high assays for gold are due to a single coarse gold grain which cannot be presumed to indicate nearby bedrock mineralization. Associated elements results (eg As, Cu, Zn, Sb) are low and do not correlate with the Au results. No oversized HMCs rich in metallic minerals were found. We have, however, discovered that two Wisconsinan tills (excluding Cochrane Till) are present on the property. The younger till was probably deposited close

to the ice front of a minor readvance during late Wisconsinan time. If true, this ice sheet would have been less thick and would have been less capable of significantly eroding the bedrock surface. Therefore, we could postulate that a mechanical dispersion train in this late till might be less evident than in some of the examples reviewed." (AFRI 32E12SW0014).

#### 6.2 HISTORY NEWMAN CLAIM GROUP

**1957:** Conwest Exploration Ltd completed a magnetometer survey over the northwest corner of the claim group (AFRI 42Ho8NWoo38). The report is difficult to read.

**1967:** Cannon Mines Ltd. completed ground magnetometer and horizontal loop electromagnetic survey over a portion of the Newman claim group (AFRI 42Ho8SWooo2).

**1967:** Tripoint Mines Ltd., completed ground magnetometer and horizontal loop electromagnetic survey over a portion of the Newman claim group (AFRI 42Ho8SWooo3).

**1967:** Kelly-K Mines Ltd., completed a ground magnetometer and EM survey AFRI 42Ho8SWooo4). Three diamond drill holes totaling 1,500 feet (457 m) were then on the Property targeting EM-conductors from the ground geophysical survey. Massive pyrite and pyrrhotite were encountered in hole 67-1 explaining the conductor, while holes 67-2 and 67-3 did not intersect material that would cause an EM conductor. Only 6 samples were taken from the drilling with no significant assays reported (AFRI 42Ho8SWooo6).

**1967:** Texas Gulf Sulphur Company drilled 2 diamond drill holes (AXT) totaling 595 feet (181.3 m). Graphite with sulphides and dacite with sulphides were intersected. No assays were reported (AFRI 42Ho8NE0058).

**1974:** Noranda Exploration Ltd. conducted ground magnetometer and HLEM survey over a portion of the Newman claim group (AFRI 42Ho8SE0011).

1976: Dome Exploration (Canada) Ltd. completed a ground magnetometer and HLEM survey over a portion of the current Newman claim group. "Two conductive zones were outlined in the geophysical surveys and both are associated with magnetic anomalies. The geological environment is believed favourable for sulphide mineralization and further investigation is recommended by diamond drilling" (AFRI 42Ho8SE0009).

1977: Dome Exploration Ltd., completed 2 diamond drill holes (101B-1D and 101B-2B) testing ground HEM anomalies. No significant assays were returned. Sulphides in a felsic tuff and graphitic horizon explained the conductors (AFRI 42Ho8SE0008).

**1984:** Grandad Resources Ltd completed 100 km of magnetic and 110 km of EM (MaxMINII) ground geophysical survey over a large portion of the central part of the

current claim group (AFRI 42Ho8SE0006). "The surveys identified a probable iron formation trending east-west along the south boundary of the property. Paralleling this horizon, approximately 100 metres to the north, is a conductive horizon. This horizon was tested by one drill hole, which intersected trace amounts of gold. Shorter, less continuous, conductive horizons, with paralleling or coincident magnetic associations, occur north of the main conductive trend" (AFRI 42Ho8SE0006).

1985: Grandad Resources Ltd completed an airborne magnetic and VLF-EM survey over a large portion of the eastern part of the current claim group. Their conclusions were: "A combined magnetic and VLF-EM survey has been done on the survey area at a data density of approximately 1.6 km. per mineral claim. The magnetic data has been used to modify and update the existing geology and has shown a number of new contacts and faults. A number of VLF-EM conductor axes were found of which some are believed to have potential sulphide origin and have been recommended for additional investigation". (AFRI 42Ho8NE0052).

1987: Glen Auden Resources completed airborne magnetic and VLF-EM survey over the northern portion of the property. Their conclusions were: "The magnetic data has been used to modify and update the existing geology and has shown a number of new contacts and faults. A number of VLF-EM conductor axes were found of which some are believed to have potential sulphide origins and have been recommended for additional investigation". (AFRI 42Ho8NE8075).

1987: Chesbar Resources Inc. ("Chesbar") completed 72 reverse circulation (RC) holes totaling 7,419.5 feet (2,261.4 m) across the Newman claim group (Figure 6.1) (AFRI 42Ho8NEoo48 and 42Ho8NEoo49). Highlights from the RC drilling program are found in Table 6.1.

**Figure 6.1** Location of the Chesbar Resources Ltd. reverse circulation drilling on the Newman claim group. Source OGS.



**Table 6.1** Reverse circulation drilling highlight results from Chesbar Resources, 1987. Source AFRI 42H08NE0048.

Chesbar	Chesbar Resources RC Drilling Program Highlighted Results								
Hole No.	Line No.	Station	ppb Au	Location Comments					
SRE-87-09	L24W	7+51S	820	1 sample above bedrock					
SRE-87-13	??	7+04S	1300	1 sample above bedrock					
SRE-87-26	L10E	5+03S	4500	3 samples above bedrock					
SRE-87-31	L21E	4+48S	2400	1 sample above bedrock					
SRE-87-53	L67E	6+69S	4900	4 samples above bedrock					
SRE-87-53	L67E	6+69S	1000	3 samples above bedrock					
SRE-87-57	L76E	7+02S	1500	2 samples above bedrock					
SRE-87-59	L80E	7+69S	377*	bedrock					
SRE-87-60	L82E	8+32S	170	1 sample above bedrock					
SRE-87-60	L82E	8+32S	38,000	3 samples above bedrock					
SRE-87-65	L92E	8+63S	2100	1 sample above bedrock					
SRE-87-70	L102E	8+50S	4500	1 sample above bedrock					
SRE-87-70	L102E	8+50S	810	2 samples above bedrock					

<sup>\* 0.011</sup> oz/ton converted to ppb from 34.28 g/t Au in 1 Troy ounce per short ton.

The RC program appeared to underpin the future exploration strategy and efforts of Chesbar Resources as several significant assays were reported from the drilling program.

Chesbar then completed 8 diamond drill holes totaling 4,980 feet (1,517.8 m). The program was designed to test the conductor north of the anomalous reverse circulation holes to test for a gold bearing horizon of mineralization and alteration. The most significant assay was obtained in a 3.0-foot sample (0.91 m) of kaolinite-chlorite schist

from DDH 87-03. It assayed **1,650 ppb Au.** Eighteen samples of this geological horizon were taken with only one sample returning anomalous results (AFRI 42Ho8NE0048).

1987: Chesbar Resources Ltd completed 142 km of magnetic and 124 km of EM (MaxMinII) ground geophysical survey over a portion of the central part of the current claim group (AFRI 42Ho8NEoo51). "The surveys identified two probable iron formation horizons (Zones E and F) trending east-west across the south portion of the property. Paralleling Zone 'E' at the east end, approximately 300 m to the north, is a magnetic-conductive horizon (Zones D and DD). Other shorter, less continuous, conductive horizons, with paralleling or coincident magnetic associations, occur north of the main conductive trend (A, B and C). Two of the conductive zones were tested previously in 1967 and 1976 in three diamond drill holes at the extreme east end of the property".

**1987:** Chesbar Resources Inc. completed 4 diamond drill holes totaling 1,678 feet (511.4 m) within the Newman claim group. A pyritic graphite zone returned 40 ppb Au over 5.8 feet (AFRI 42Ho8SEo304).

1988: Glen Auden Resources Ltd. drilled 3 diamond drill holes totaling 627 m. No assays are reported in AFRI 42Ho8NEoo45. Results of the drilling and discussion are found in 42Ho8NEoo44. All 3 holes were designed to test high magnetic signatures with coincident IP and EM anomalies. Hole TL88-1 returned 49 ppb Au over 1.0 m in a strongly silicified and carbonatized tuff with 1% fine pyrite. Hole TL88-2 reported 110 ppb Au, 90 ppb Au and 78 ppb Au over 1.0 m intervals. Pyritic graphitic argillite was responsible for the highest assays. The 78 ppb Au was taken from adjacent in a pyritic andesite tuff.

1989: Pilgrim Holdings Corporation completed an airborne magnetic and VLF-EM survey that covered the northwest corner of the property and the folded iron formation. Their conclusions were; "The magnetic data has been used to modify and update the existing geology and has shown a number of new contacts and faults. A number of VLF-EM conductor axes have been identified and are associated variously with overburden, structure and bedrock origins. Those coincident with or parallel to magnetic stratigraphy bear the greatest potential for stratabound bedrock origins and have been recommended for additional investigation. Exploration for gold of iron formation association is recommended along the iron formation horizons and along the cross structures". (AFRI 42Ho8NWoo29).

**1989:** Seal River Explorations Ltd. completed 5 diamond drill holes (89-MIK-1 through -5) totaling 762.61 m. No assays were reported (AFRI 42Ho8SE0002).

**2004:** Falconbridge Limited completed 105 line-km of airborne magnetic and electromagnetic (VTEM) over a portion of the current Newman claim group. The survey concentrated on the apparent fold and thickening of the iron formation. They concluded;

"The surveying defined several formational responses within the property area. Most of these are attributable to graphitic sediments and/or iron formation however two conductors at the northern and southern ends of the grid show marked increases in conductivity suggestive of possible increased concentrations of sulphide mineralization. A weak, diffuse magnetic anomaly is associated with the southernmost EM response however most other EM responses are attributable to high magnetic ultramafic and/or diabasic units. Diamond drilling to test the two high priority EM responses is recommended" (AFRI 20000001052).

**2005:** Falconbridge Limited returned in 2005 and completed 2 drill holes based on the results of the airborne. Only one of the two drill holes completed (NEWo2-o1) was drilled within the current Newman claim group. The hole "cored predominantly mafic volcanic flows with minor intercalated mafic tuffs and sediments. The conductor was explained by a 2.5m wide interval of iron-formation intersected between 84.5-87.om which carried up to 80% pyrite and pyrrhotite mineralization. The remainder of the unit consisted of fine-grained chert and tuffaceous material. The hole was completed to a depth of 173 m and no significant assays were reported from the hole with the highest value returning only 628ppm Zn" (AFRI 20000001472).

**2012:** Geotech Ltd completed a heli-borne VTEM and magnetic survey over a portion of the western part of the Newman claim group. The survey included the iron formation fold nose (AFRI 20000007350).

## 6.3 HISTORY HEPBURN CLAIM GROUP

**1987:** Canadian Nickel Company Ltd did a large regional airborne electromagnetic survey which covered a portion of the current Hepburn claim group.

1988: Seal River Exploration Ltd. completed a combined helicopter borne magnetic, electromagnetic and VLF survey over the western portion of the present Hepburn claim group. This was part of a 2-property survey completed by Seal River Exploration. Areodat concluded that "There is no question of the existence of bedrock conductors within the survey area. It is a matter of using all resources, including geophysics, drill information and the compilation of a pseudo-geological map. Reverse circulation drilling may render additional information, for some areas, that will lead to an exciting exploration program" (AFRI 32Eo3SWo3o9).

**1990:** Seal River Exploration Ltd. ("Seal River") completed ground magnetic and electromagnetic surveys over a portion of the current Hepburn claim group (AFRI 32E04SE0025).

1991: Seal River Exploration Ltd. completed induced polarization (IP) survey over a portion of the claim group. They concluded; "The La Reine River property warrants further exploration for gold. Extensive exploration has been carried out for base metals and gold in the felsic volcanics to the north but the tholeitic volcanics and the sediments to the south have not been explored" (AFRI 32E04SE0035).

1990-1991: Seal River Exploration Ltd. completed one diamond drill hole (PR-90-1) that investigated HLEM anomaly No. A-6. The hole intersected 3 bands of cherty garnetiferous, sulphide-magnetite iron formation over widths of 2-4 m in amphibolitic mafic volcanics. From 117.65 m a 1 m section assayed 396 ppb Au. From 147.58 m, a 0.91 m section assayed 240 ppb Au (AFRI 32E04SE0026). Seal River returned and drilled 3 more holes PR91-1 through PR91-3 totaling 306.93 m. Holes PR91-1 and PR91-3 were drilled on the current Hepburn claim group. Hole PR91-1 failed to intersect any significant assays. Hole PR91-3 was drilled on the same HLEM anomaly 300m to the east of hole PR90-1 and intersected similar bands of cherty garnetiferous, sulphide-magnetite iron formation over widths of 0.5-2.13 m in amphibolitic mafic volcanics. Highlights from this hole include 306 ppb Au over 0.91 m (AFRI 32E04SE9301).

1992: Seal River Exploration Ltd. completed induced polarization (IP) survey over a portion of the claim group that extended the 1991 grid. Belanger concluded; "Seal River property shows one definite conductive zone that is part of the same conductor of Zone 1 outlined two years before. Zone T3 is a zone of weak response that is probably the same zone of T3 outlined before. A low resistivity from line 44E to 50E probably caused by a fault or shear zone along the baseline see surface map of resistivity could be tested by drilling on line 44E and drill far enough to test Zone 1 at the same time" (AFRI 32E04SE0033).

**1992:** BHP Minerals Canada Ltd. completed line-cutting, geological mapping, humus sampling, MaxMin electromagnetic, magnetic and VLF surveys over several grids within several townships, some of which covered the current Hepburn claim group. Several conclusions were made, including (AFRI 32E04NE0001):

# Abbotsford Extension Grid

- The major structural feature of the property is a series of anticlines and synclines which plunge in a south-easterly direction.
- A significant felsic pile exists which occasionally contains coarse (up to 10cm) fragments of pyrite.
- The favourable horizon delineated during the 1991 exploration program on the Abbotsford main grid does extend onto the Abbotsford Extension.

 A number of interesting electromagnetic conductors were detected during ground surveys, the vast majority of which remain untested. Many of these conductors are high priority targets due to location within stratigraphy and or presence of anomalous humus geochemical response.

## Hepburn Grid

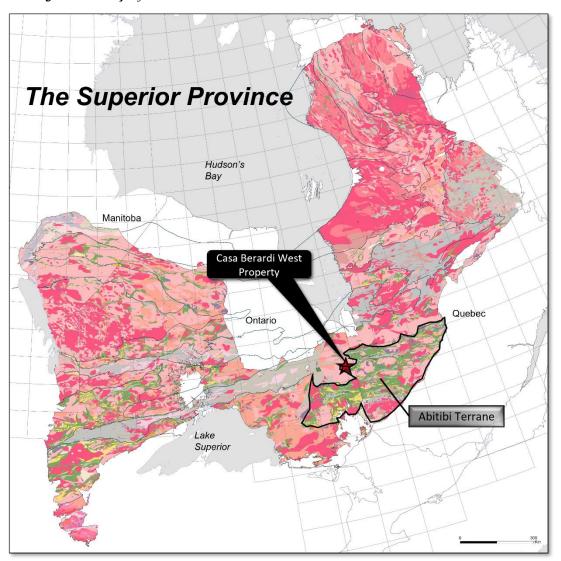
- A full suite of volcanic rocks exists on the Hepburn grid ranging from mafic through felsic, with some of the felsic rocks being pyroclastic in nature. In addition to these extrusive rocks, amphibolitic and QFP intrusive rocks (quartz feldspar porphyry) were located. It is very encouraging to see the felsic intrusive rocks as they may have acted as a heat source for VMS deposition.
- Structure is difficult to determine with the current data, partially due to the mafic intrusive, however it is assumed that a similar pattern of folding exists on this grid as on the Abbotsford, Abbotsford Extension and Adair Extensions.
- Several very interesting untested electromagnetic conductors were located on the Hepburn grid. A number of these anomalies require drill testing on the basis of conductance, humus and or basal till response, and stratigraphy.

# 7.0 GEOLOGICAL SETTING AND MINERALIZATION

## 7.1 REGIONAL GEOLOGY

The Casa Berardi West Property is located in the Abitibi Terrane of the Superior Province of Canada. The Superior Province which spans the provinces of Manitoba, Quebec and Ontario is the earth's largest Archean craton that accounts for roughly a quarter of the planet's exposed Archean crust and consists of linear, fault bounded subprovinces that are characterized by volcanic, sedimentary and plutonic rocks (William et al., 1991).

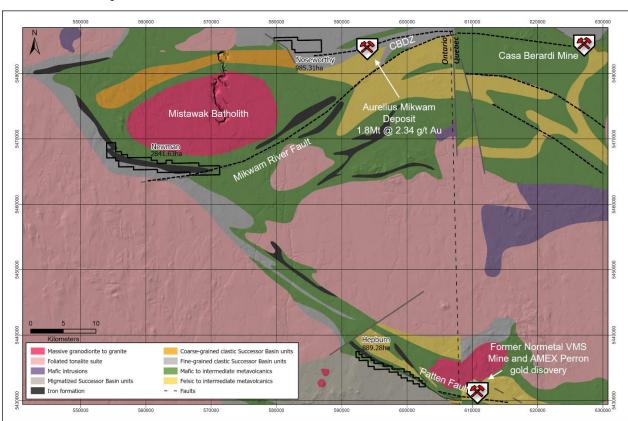
**Figure 7.1** Regional geological location of the Casa Berardi West Property. Source Geological Survey of Canada.



The Abitibi Terrane of eastern Canada represents the world's largest Neoarchean terrane of supracrustal rocks. Straddling the border between the provinces of Ontario and Quebec, the belt covers an area that is approximately 700 km from southeast to northwest and 350 km from north to south. The belt is comprised of several major east-trending successions of folded volcanic and sedimentary rocks, with intervening intrusions. The supracrustal rocks of the Abitibi Terrane are uniquely well preserved and have mostly been overprinted only at a low metamorphic grade, allowing the study of primary geological relationships (Monecke et al., 2017).

The Casa Berardi West Property is located within the Harricana-Turgeon greenstone belt (HTGB) of the Abitibi Terrane (Figure 7.2). The geology of the Harricana-Turgeon Belt in Quebec has been summarized by Lacroix et al. (1990) and the Ontario side of the belt has been mapped by Thomson (1937) and Johns (1982). The Harricana-Turgeon Belt consists of the granitic intrusions, surrounded by felsic to mafic metavolcanic rocks, metasedimentary rocks and minor mafic to ultramafic intrusions. The Mistawak Batholith is the largest of the granitic intrusions and is composed of quartz monzonite and granodiorite.

The metavolcanic and metasedimentary rocks have undergone low pressure, contact and regional metamorphism of greenschist- and lower amphibolite-facies circa 2.7-2.6 Ga.



**Figure 7.2**. Claim group location in the Harricana-Turgeon greenstone belt of the central west Abitibi Subprovince.

Structurally, the three separate claim groups of proximal to regional crustal scale deformation zones (Figure 7.2).

The Noseworthy group lies within or just north of the Casa Berardi deformation Zone (CBDZ), a major subvertical regional structure 4 to 6 km wide and 60 km long. The position of the CBDZ appears to be controlled by contrasts in regional competence (Pilote et al., 1990).

The main characteristics of the CBDZ, summarized by Pilote et al. 1990, are as follows: a generally high level of deformation, with bands of strongly deformed rock juxtaposed with lens that are only weakly deformed; the repetition of lithologies at all scales by asymmetric folds; the occurrence of numerous spaced shears of variable intensity; a foliation characterized by preferential orientation of phyllosilicates and flattened fragments and commonly exhibits a mylonitic aspect; the occurrence of ankerite rich bands; a stretching lineation (defined mainly by elongated fragments in brecciated units) which plunges from 700 to 800 toward the WSW.

The Newman claim group is proximal to the Mikwam River Fault, believed to be a splay from the CBDZ.

The Hepburn claim group is proximal to the Patten Fault, a northwest trending structure representing a possible splay from the Normetal deformation zone that hosts the newly discovered Perron gold deposit of Amex Exploration and associated with the former Normetal Cu-Zn-Ag-Au mine.

### 7.2 PROPERTY GEOLOGY

Information on the geology of the individual claim groups is vague and has largely been collected from assessment reports and diamond drill logs as outcrop exposure on all 3 claim groups is low.

### 7.2.1 Noseworthy Claim Group

The geology of the Noseworthy claim group is dominated by sediments of the Scapa Group. These consist of greywacke, siltstone, argillite, slate, mudstone cherty iron formation. The latter occurs on the northern boundary of the claim group. Minor mafic metavolcanics, conglomerate, paragneiss and migmatites comprise the other lithologies. Foliation appears to be near vertical and trending east-west. Minor late north-trending Matachewan diabase dykes (2.45 Ga) crosscut the regional east-west trend. Late northwest to westerly faults offset stratigraphy (Learn, 1986).

The Casa Berardi deformation zone, a major subvertical regional structure 4 to 6 km wide and 60 km long appears to be located along the southern boundary of the claim group.

### 7.2.2 Newman Claim Group

The Newman claim group is dominated by mafic volcanics overlain by metasediments. Underpinning the contact between the two stratigraphy's is an iron formation that is prominent along the length of the claim group. Lithologies strike approximately azimuth 120 degrees, dip to the north 70-80 degrees and young towards the north as determined by primary sedimentary features (Vero, 1987).

The volcanics vary compositionally from intermediate to mafic and are mainly fragmental in texture. These fragmental units range from fine tuffs to lapilli tuffs and agglomerates. The sediments consist of argillite and micaceous units, possibly a metamorphized sandstone (Vero, 1987).

The argillite is commonly graphitic within the sedimentary horizon and conductive, as outlined by several airborne and ground EM surveys. Erratic quartz veining is common, but the milky white quartz is devoid of mineralization. Mineralization within the

graphitic horizon can occur as blebs and disseminations of pyrite and pyrrhotite, less commonly massive, up to 15% by volume, aiding in its conductivity and magnetic signature.

Higher magnetic signatures in the western portion of the claim group are created by intercalated bands of chlorite and magnetite hosted within the sediments and hangingwall to a tuffaceous volcanic unit. The bands are generally sub-metre is width but can be locally 3 m wide. Sulphidation of magnetite by pyrrhotite and pyrite is common.

Disseminated pyrite and pyrrhotite are also hosted by dacite tuff units up to 25% (Vero, 1987). Felsic tuffs with 5-10% felsic fragments with local quartz eyes have also been intersected in drilling (Dome Exploration Ltd., 1977). This unit also hosted disseminated pyrite and quartz veins often associated with pyrrhotite stringers. Dome Exploration also reported fine stringers of sphalerite and quartz stringers with fine chalcopyrite.

### 7.2.3 Hepburn Claim Group

The geology of the Hepburn claim group is taken verbatim with minor changes from the Author from Diorio and Hill, 1993 geologists for BHP Minerals Canada through a large exploration campaign carried out in 1992.

A suite of volcanics ranging from mafic through felsic were found on the Hepburn grid. In addition to these rocks, outcrops both mafic and felsic intrusive rocks were located. The outcrop on the property forms a prominent ridge in north central portion of the property with the remainder of the grid being overburden covered. Rocks from the Hepburn grid show a strong affinity to calc-alkaline rocks ranging from rhyolite through basalt with subordinate amounts of tholeiitic rocks. The quartz feldspar porphyry dykes plot as calcalkaline rhyolites. The units are described as follows:

### Mafic Volcanics

The mafic volcanics are generally dark green in colour both on the fresh and weathered surface. The unit can occur as massive flows, amygdaloidal flows, and pillowed flows. The massive flows are generally fine grained and massive with occasional weak to moderate schistosity developed. Amygdaloidal phases of this unit contain up to 5% quartz filled vesicles up to 5 mm in size. These vesicles are often hollow in the centre. Pillowed mafic volcanics were rare. The pillows noted had slightly rusty selvages of 1.5 cm in width and pillow lengths of approximately 30 cm in the stretched dimension. Mineralogy of this unit is primarily amphiboles, plagioclase, and quartz with traces of chlorite, magnetite and pyrite.

#### Intermediate Volcanics

The intermediate volcanics appear tuffaceous in nature ranging from ash through lapilli/breccia in size. The ash material is generally medium green/grey in colour and often thinly laminated. The unit often contains cherty silicious horizons which fracture conchoidally. Ash material often contains traces of very fine-grained magnetite and hematite staining. Fragments, when present are generally angular to sub angular ranging from <1 cm to a maximum of 7 cm and slightly stretched parallel to schistosity/bedding. The fragments appear to be monolithic rhyodacite in composition occasionally with remnant bedding visible. These units were always matrix supported where observed with fragment content not exceeding 5%.

#### Felsic Volcanics

The felsic volcanics appear to be ash tuffs which are very fine grained-aphanitic, thinly laminated and weakly sericitized especially on bedding planes. They are generally buff white on weathered surface and medium to light grey on fresh surfaces.

### **Mafic Intrusive Rocks**

A prominent ridge of gabbro/amphibolite occupies the north central portion of the property which occurs as an irregular mass within the volcanic package. This unit is dark green in colour on both fresh and weathered surfaces with grain sizes ranging from fine to coarse. It is generally massive with only weak foliation of the hornblende grains locally. Mineralogically, this unit is composed primarily of hornblende with minor amounts of plagioclase, magnetite and trace pyrite. Small off shoots of this unit were noted within other lithologies on the property.

#### Felsic Intrusive Rocks

Minor quartz-feldspar porphyry dykes were also noted and appear to be semi-conformable to stratigraphy. The unit weathers buff pink with a green-grey-pinkish fresh surface. The ground mass is highly silicious with traces of chlorite, sericite (?), and pyrite. This matrix supports approximately 40% rounded quartz and plagioclase phenocrysts.

#### 7.3 PROPERTY MINERALIZATION AND ALTERATION

There are thirteen (13) documented and registered Ontario Geological Survey (OGS) Mineral Deposit Inventory (MDI) occurrences within the Newman claim group (Table 7.1). There are no registered MDI occurrences within the Noseworthy and Hepburn claim groups. The Author does recognize that there are numerous mineral occurrences (MDI) outside of the Noseworthy claim group along strike of stratigraphy.

 Table 7.1 OGS registered mineral occurrences within the Newman claim group.

Newman Claim Group	Occurred Name of Avenue	F 1 1 T 0 4	No other a LITEA	Bailan and Community of the
MDI Indentification Number	Occurrence Names and Year	Easting UTM	Northing UTM	Primary Commmodity
42H08SE00007	Chesbar - 1995	557408	5466479	Copper
	Great Grandad - 1995			
	Mikwam River - 1995			
42H08SE00013 42H08SE00012	Reverse Circultion Hole Sre 87-09 - 1995	557658	5466209	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
	Reverse Circulation Hole Sre 87-13 - 1995	558958	5466059	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
42H08SE00011	Reverse Circulation Hole Sre 87-26 - 1995	561548	5465769	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
42H08SE00010	Reverse Circulation Hole Sre 87-31 - 1995	562358	5465509	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
42H08SE00014	Dome - 1995	563708	5466239	Gold
	Project 101b - 1995			
42H08SE00009	Reverse Circulation Hole Sre 87-53 - 1995	567248	5465119	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
42H08SE00008 42H08SE00006	Reverse Circulation Hole Sre 87-57- 1995	568148	5465119	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
	Overburden Drill Hole #87-59 - 1995	568568	5465354	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
42H08SE00005	Overburden Drill Hole #87-60 - 1995	568848	5465099	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
42H08SE00004	Overburden Drill Hole #87-65 - 1995	569598	5465089	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
42H08SE00003	Overburden Drill Hole #87-70 - 1995	570658	5465089	Gold
	Mikwam - 1995			
	Chesbar - 1995			
	Grandad - 1995			
42H08SE00002	Chesbar - 1995	570488	5465329	Copper
	Great Grandad - 1995			
	Mikwam River - 1995			

Gold mineralization in MDI's tabled above are referenced from the reverse circulation drilling program completed by Chesbar Resources in 1987 on the Newman claim group. Several samples from 1-4 samples above bedrock reported gold values in heavy mineral concentrates between nil to 38,000 ppb Au. One bedrock chip sample assayed 377 ppb Au (Table 6.1).

Diamond drilling by Chesbar Resources also intersected gold in a kaolinite-chlorite schist through diamond drilling that assayed 1,650 ppb Au over 0.91 m on the Newman claim group.

Trenching outside of the Noseworthy claim group uncovered anomalous gold associated with an east-west trending shear that transected the area.

On the Hepburn claim group diamond drilling by Seal River Exploration intersected bands of cherty garnetiferous, sulphidized magnetite iron formation over widths of 2-4 m in amphibolitic mafic volcanics. The sulphidized iron formation returned anomalous gold up to 360 ppb over 1.0 m.

### Disseminated Sulphide Mineralization

The diamond drill logs from drilling programs conducted by Chesbar Resources and Dome Exploration on the Newman claim group also reported disseminated and stringer pyrite and pyrrhotite in a dacitic (tuffaceous) flow upwards of 5-10 m downhole. Sporadic sphalerite and disseminated chalcopyrite were also noted in the same units.

### 8.0 DEPOSIT TYPES

The structural and geological architecture of the Harricana-Turgeon greenstone belt and the Casa Berardi West Property is conducive to a variety of gold depositional environments similar in nature and significance to other gold-bearing deposits in Archean-aged greenstone belts hosted within the Abitibi Subprovince. These typically fall into the category of orogenic gold deposit types in brittle-ductile structurally related regimes. Quartz-carbonate vein gold systems analogous to those found at Casa Berardi (Quebec), Dome and Hollinger (Timmins, Ontario), Macassa (Kirkland Lake, Ontario) and Perron (Quebec) are all classified as orogenic gold deposits.

#### 8.1 QUARTZ-CARBONATE VEIN HOSTED SYSTEMS

The Casa Berardi mine owned and operated by Hecla Mining Company 40 km east of the Noseworthy claim group lies along the Casa Berardi deformation zone (CBDZ). The CBDZ is a crustal scale structural feature over 60 km long and 4-5 km wide along the southern boundary of the Noseworthy claim group.

The Casa-Berardi gold deposits are characterized by auriferous quartz veins and disseminated gold-rich sulphides along fractures. The deposits are contained within steeply dipping reverse shear zones, located near or within the major east west striking CBDZ shears. The economic auriferous mineralization occurs as quartz-dolomite-ankerite-pyrite-arsenopyrite banded veins hosted in shear zones, quartz-vein stockworks within highly silicified host rocks, and disseminated sulphides (arsenopyrite and pyrite) within schistose and fractured host rocks (quartz-filled fractures). Gold mineralization of the Casa-Berardi gold deposits is understood to be synchronous with the progressive development of late movement within the CBDZ. CO2 activity contributed greatly to the development of specific carbonate alteration facies and to the settling of gold mineralization (Pilote et al., 1990).

These mineralized assemblages generally occur in metavolcanic-pyroclastic units near the contact with metasedimentary rocks. The mineralized veins vary from a few centimetres to greater than 3 metres in thickness and may be several tens of meters in length. The banded texture exhibited by the veins and the incorporated host-rock fragments are likely the result of multiple breaching and fluid injection along the host contact during regional shearing. The lithologies hosting the mineralized veins are strongly carbonatized, silicified, chloritized and sericitized (Pilote et al., 1990).

The Perron gold deposit, recently discovered by AMEX Exploration Inc. is an exceptionally high-grade gold Archean orogenic quartz vein hosted system. The gold deposit is located 15 km southeast of the Hepburn claim group. The high-grade zone

(HGZ) is characterized by coarse visible gold disseminated in quartz veins and in association with sphalerite, locally reaching 5% of the modal composition of quartz veins (Gaboury et al., 2021).

The Perron gold deposits are hosted within Beaupré rhyolites of the Normetal volcanic complex (NVC). The felsic volcanics are characterized by aphanitic and essentially aphyric rhyolites which define a thick (>1 km) and relatively homogeneous sequence. Along the Beaupré rhyolite contact lies the Normetal deformation zone (NDZ), a regionally east-west to northeast steeply dipping fault developed along the Normetal mine volcano-sedimentary horizon.

The HGZ corresponds to massive, whitish to greyish quartz veins with traces of iron carbonates, green chlorite, and tourmaline. Visible gold grains occur associated with sphalerite, along chlorite ribbons and flakes and freely in quartz.

The HGZ is developed at the interface of a deformed mafic dyke, which acted as a planar anisotropy for shearing. Veins occur either along one side or the other or along both sides of the dyke and occasionally within the dyke, especially at depth. A fundamental observation is that the quartz veins were formed by dilatation within the shear zone (Gaboury et al., 2021).

#### 8.2 BANDED IRON FORMATION GOLD DEPOSITS

The Newman claim group hosts a banded iron formation. Banded iron formation hosted orogenic gold deposits of Canadian Archean greenstone belts include the Musselwhite gold mine, the Pickle Lake gold camp and the Geraldton-Beardmore gold camp.

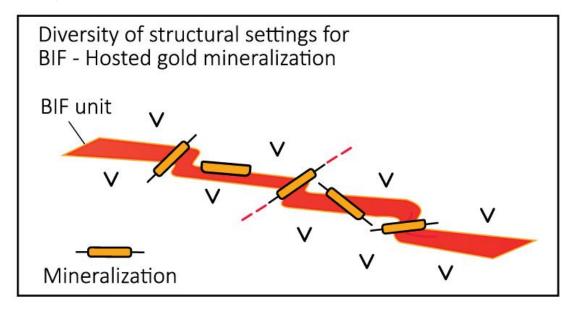
The discussion on banded iron formation hosted gold deposits is mostly taken from Kerswill (1993).

Important common features of BIF-hosted gold deposits include a strong association between native gold and iron sulfide minerals, the presence of gold-bearing quartz veins and/or shear zones, the occurrence of deposits in structurally complex terranes, and the lack of lead and zinc enrichment in the ores.

BIF-hosted gold is restricted to late structures (quartz veins and/or shear zones) and/or sheared sulfide BIF immediately adjacent to such structures. Mineralization is confined to discrete, commonly small, shoots separated by barren (gold- and sulfide-poor), typically oxide BIF (Figure 8.1). Mineralized rocks are generally less deformed than associated rocks. Iron-sulfide minerals are in many cases relatively undeformed and unmetamorphosed. Pyrite and/or sheared pyrrhotite have clearly replaced other pre-existing iron-rich minerals, notably magnetite (Figure 8.2). Arsenic-bearing minerals are

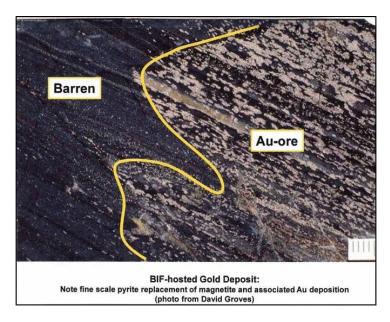
common, but not always present. If they are present, a strong positive correlation generally exists between gold and arsenic. Alteration is usually typical of that associated with "mesothermal vein" gold deposits.

**Figure 8.1**. Diverse structural setting for BIF-hosted gold mineralization (internal BIF study by Author).



Non-stratiform deposits contain sulfide-rich alteration zones immediately adjacent to late structures and are similar to orogenic vein-type gold deposits. Late quartz veins and/or shear zones are present in most known BIF-hosted gold deposits. The distributions of gold-bearing veins and sulfide-rich zones are commonly controlled by fold structures (Figure 8.2). Major faults ("breaks") of regional scale have been recognized near many non-stratiform deposits.

**Figure 8.2** Pyrite replacement (sulphidation) of magnetite and associated gold mineralization. Source Groves et al., 1998.



### 8.3 ADDITIONAL TYPES OF MINERALIZATION

Additional types of mineralization on the Property that should be considered is VMS style Zn-Cu deposits, namely bimodal felsic dominated type VMS or Kuroko type. They usually form in the ocean-continent arc or nascent arc rifting. The ore occurs as bulbous to tabular massive sulfides, pyrites as well as limited Cu-stringer zones. Kuroko, Skellefte, Sturgeon Lake, Buchans and Buttle Lake are all examples of bimodal felsic-dominated VMS deposits (Franklin et al., 2005, Yarmohammadi, 2006).

Orogenic BIF-hosted gold deposits, quartz vein hosted gold deposits and Kuroko-type VMS Zn-Cu deposits should be the focus of future exploration activities on the Property. The deposit models of this nature reveal the potential of the Property but is not necessarily indicative of the size and tenor of such deposits hosted on the Property.

# 9.0 EXPLORATION

Centurion has not performed any exploration work on the Property.

# 10.0 DRILLING

Centurion has not yet performed drilling on the Property. For a summary of drilling performed by previous operators on the property, see Section 6.0

### 11.0 SAMPLE PREPARATION, ANALYSIS and SECURITY

Centurion has not performed any lithological sampling on the Property.

The Author cannot comment on the sampling protocols from the various historical sampling programs. Quality Control and Assurance (QA/QC) protocols were not set forth with the National Instrument 43-101 until June 2001. The Author can only rely on the fact that the various geologists would have followed protocols under the ethical guidance and standard procedures of his/her professional designation. There is no reason to doubt the validity of these results in the express opinion of the Qualified Person for this Technical Report.

### 12.0 DATA VERIFICATION

Some of the exploration summary reports and technical reports for projects on the Property were prepared before the implementation of National Instrument 43- 101 in 2001 and Regulation 43-101 in 2005. The authors of such reports appear to have been qualified and the information prepared according to standards that were acceptable to the exploration community at the time. In some cases, however, the data is incomplete and do not fully meet the current requirements of Regulation 43- 101. The Author has no known reason to believe that any of the information used to prepare this report is invalid or contains misrepresentations.

#### 12.1 SITE VISIT

Additional data verification aspects were meant to include access to the property, the availability to observe outcrop exposures, observe structural features and or visual inspection and sampling of surface mineralization.

The Author visited the property on June  $6^{th}$ , 2022. Due to the remoteness of the claim groups, a helicopter was chartered from Expedition Helicopters based out of Cochrane, Ontario. The pilot was Mike Beatty. Accompanying the Author was Paul Rubinato. Total time in the air was 2 hours. Figure 12.1 displays the tracks of the flight path.

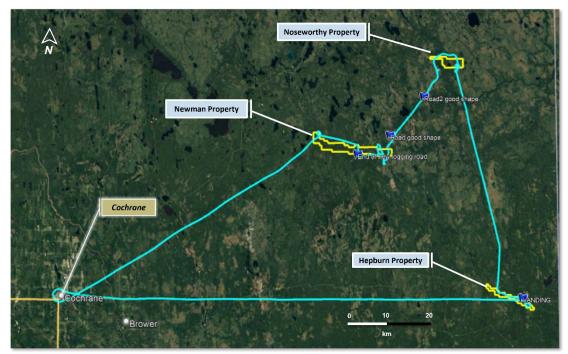
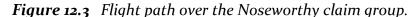


Figure 12.1 Regional flight path of site visit from Cochrane to the three claims groups.

As predicted, outcrop exposure was very low. Several landing spots on each claim group were investigated but deemed unsuitable due to space of area and height of vegetation (Figures 12.2, 12.3 and 12.4). Access points and condition of numerous logging roads were noted and found to be good. One landing was made in a swamp just north of the Hepburn claim group to provide further evidence of the site visit and attempted verification (Photo 12.1).



**Figure 12.2** Flight path over the Newman claim group.



pushed to southern

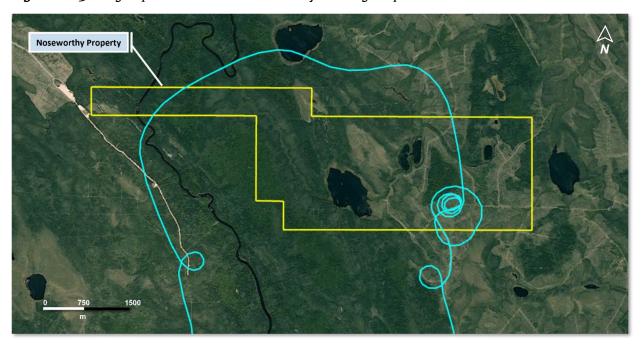
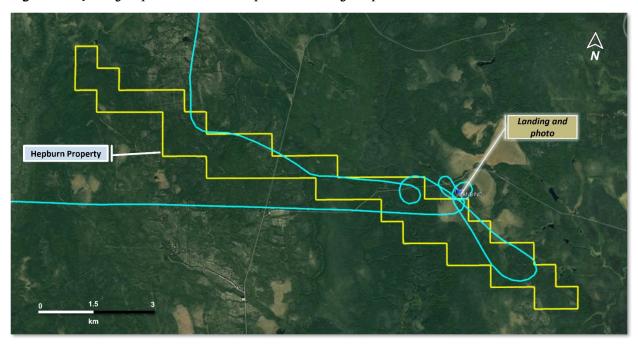


Figure 12.4 Flight path over the Hepburn claim group.



**Photo 12.1.** Author at landing site just north of Hepburn claim group in swamp.



# 13.0 MINERAL PROCESSING and METALLURGICAL TESTING

Centurion has not performed any mineral processing or metallurgical testing within the Property.

# 14.0 MINERAL RESOURCE ESTIMATES

Centurion has not performed any resource estimates on the Property.

# 15.0 ADJACENT PROPERTIES

It is the express opinion of the Author that the Property is currently in a greenfield exploration stage. There are no adjacent properties that have advanced beyond the status of the Property.

### 16.0. OTHER RELEVANT DATA AND INFORMATION

There is no additional data or information that the Author is aware of that would change his findings, interpretation, conclusions, and recommendations for the potential of the Casa Berardi West Property.

## 17.0 INTERPRETATION AND CONCLUSIONS

The Casa Berardi West Property lies in the Abitibi Subprovince. The Abitibi Subprovince is of outstanding economic importance as it contains some of the most important gold and base metal mining camps in Canada, with a total endowment of over 800 million metric tonnes (Mt) of polymetallic massive sulfide ore (Mercier-Langevin et al., 2011) contained in volcanogenic massive sulfide (VMS) deposits and over 4,500 tonnes of gold (Dubé and Gosselin, 2007) largely hosted by orogenic, Au-rich VMS, and intrusion-centered gold deposits.

The Casa Berardi West Property is located within the Harricana-Turgeon greenstone belt (HTGB) of the Abitibi Subprovince. The Harricana-Turgeon Belt consists of the granitic intrusions, surrounded by felsic to mafic metavolcanic rocks, metasedimentary rocks and minor mafic to ultramafic intrusions. The Mistawak Batholith is the largest of the granitic intrusions and is composed of quartz monzonite and granodiorite.

The metavolcanic and metasedimentary rocks have undergone low pressure, contact and regional metamorphism of greenschist- and lower amphibolite-facies circa 2.7-2.6 Ga.

Structurally, the three separate claim groups are proximal to regional crustal scale deformation zones. The Noseworthy group lies within or just north of the Casa Berardi deformation Zone (CBDZ), a major subvertical regional structure 4 to 6 km wide and 60 km long. The Newman claim group is proximal to the Mikwam River Fault, believed to be a splay from the CBDZ. The Hepburn claim group is proximal to the Patten Fault, a northwest trending structure representing a possible splay from the Normetal deformation zone.

The structural and geological architecture of the Casa Berardi West Property is conducive to a variety of gold depositional environments similar in nature and significance to other gold-bearing deposits in Archean-aged greenstone belts hosted within the Abitibi Subprovince. These typically fall into the category of orogenic gold deposit types in brittle-ductile structurally related regimes. Quartz-carbonate vein gold systems analogous to those found at Casa Berardi (Quebec), Dome and Hollinger (Timmins, Ontario), Macassa (Kirkland Lake, Ontario) and Perron (Quebec) are all classified as orogenic gold deposits.

Mineralization on the Property consists of:

- BIF hosted sulphides with indications of orogenic gold mineralization
- Shear-hosted gold mineralization
- Disseminated copper-bearing sulphide mineralization in tuffaceous rocks

The following salient features of the Casa Berardi West Property makes this a Property of high merit:

- 1) A greenstone belt hosting supracrustal Archean-aged rocks within the metal endowed western Abitibi Subprovince.
- 2) Numerous high-grade gold-in-till anomalies on the Newman claim group that have yet to be explained.
- 3) An underexplored orogenic BIF gold hosted deposit model common to Archean supracrustal rocks and gold mining camps in the Superior Province.
- 4) Limited modern-day systematic exploration and with either no or very limited drilling.
- 5) Structural components around a syn-volcanic felsic intrusive stock providing paths for hydrothermal metal-bearing fluids.
- 6) Orogenic gold deposits (Casa Berardi and the newly discovered Perron deposit TSXV:AMX) along strike of the Noseworthy and Hepburn claim groups respectively.

It is of the Author's opinion that the styles of mineralization currently present on the property be continued to be explored for as historical results and the overall geological environment is very favourable for continued success. The information provides an indication of the exploration potential of the Casa Berardi West but may not be representative of expected results.

### 18.0 RECOMMENDATIONS

The Casa Berardi West Property is an underexplored property that has proven thus far to yield important indications of orogenic gold mineralization. Applying modern day exploration techniques and up to date geological modeling based on similar model type deposits hosted within Archean greenstone belts like Harricana-Turgeon greenstone belt will potentially unlock clues for significant mineralization. For this, methodical, patient and diligent exploration is needed.

Compilation of all historical geological, geochemical and geophysical data into GIS referenced layers is the first and most important base of needed knowledge for methodical and diligent well-vectored exploration.

A high-resolution heliborne magnetic survey with 50 m line spacings should be flown over each claim group to aid in the structural and magnetic dynamics of the iron formations and aid in interpretation of geology. Follow-up structural interpretation to aid in vectoring those areas of the iron formation and host lithologies where folding and or shearing occurs will provide targets of merit for this orogenic gold deposit model. Ground-truthing the targets of high merit with mapping and sampling would follow in this Phase II Program.

A quaternary study of the Newman claim group and the gold-in-till anomalies should be studied by an expert with possible conclusions of a source for the gold grains and recommendations to locate that source.

Ground geophysical surveys of IP could also be used as a tool to further investigate those areas of potential from the mapping and sampling programs.

When the above is compiled, completed and interpreted and then applied to modern day orogenic gold model types, drilling should be performed on those targets with the highest merit and potential. A budget for a Phase I exploration program is estimated to cost \$138,105 followed by Phase II programs at an estimated cost of \$847,000 (Table 18.1). Phase II is not dependent on the results of Phase I as the GIS compilation and heli-borne magnetic surveys provide the minimum requirements for vectored exploration.

 Table 18.1
 Estimated budget for Phase I and II exploration expenditures.

Casa Berardi West Property Phase I and II Exploration Budgets								
Phase I	-							
Exploration Item	Units	Unit Amount	Unit Cost	Item Cost				
GIS Compilation and Interpretation	1	1	\$15,000	\$15,000				
High-resolution heliborne magnetic survey,	km	270	\$55	\$14,850				
Noseworthy claim group								
High-resolution heliborne magnetic survey, Newman	km	1,020	\$55	\$56,100				
claim group								
High-resolution heliborne magnetic survey, Hepburn	km	720	\$55	\$39,600				
claim group								
Sub-Total				\$125,550				
10% Contingency				\$12,555				
Total				\$138,105				
Phase II								
Exploration Item	Units	Unit Amount	Unit Cost	Item Cost				
Strucutral interpretation of heliborne magnetic survey,	1	1	\$10,000	\$10,000				
provide areas of merit for follow-up ground								
investigation								
Ground-truthing, sampling and mapping, geologist plus	days	14	\$2,500	\$35,000				
technician, assaying, gear and rentals								
Quaternary study of Newman claim group and	1	1	\$25,000	\$25,000				
Chesbar Resources gold-in-till results by an expert								
Chesbar Resources gold-in-till results by an expert Gound IP geophysical surveys over those areas	km	50	\$2,000	\$100,000				
	km	50	\$2,000	\$100,000				
Gound IP geophysical surveys over those areas	km metres	50 1,500	\$2,000 \$400	\$100,000				
Gound IP geophysical surveys over those areas determined by mapping/sampling results								
Gound IP geophysical surveys over those areas determined by mapping/sampling results Diamond drilling targets of highest merit, heli-								
Gound IP geophysical surveys over those areas determined by mapping/sampling results Diamond drilling targets of highest merit, helisupported				\$600,000				

Subsequent exploration programs beyond Phase II will depend upon the success and results of the first two phases of exploration.

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### 20.0 CERTIFICATE

### **CERTIFICATE OF QUALIFIED PERSON**

#### MICHAEL KILBOURNE, P.GEO.

I, Michael Kilbourne, P.Geo., of 20 Park View Avenue, Oro Station, Ontario, LoL 2Eo, do hereby certify that:

- 1) I am an independent consulting geologist.
- This certificate applies to the technical report titled "NI43-101 Independent Technical Report on the Casa Berardi West Properties for Centurion Minerals Ltd., Cochrane, Ontario", (the "Technical Report") with an effective date June 30, 2022 and revised date of August 26, 2022.
- I graduated with a degree of Bachelor of Science Honours, Geology from the University of Western Ontario in 1985.
- I am a Professional Geoscientist (P.Geo.) registered with the Professional Geoscientists of Ontario (PGO No. 1591) am registered with the Odres des Geologues du Quebec (OGQ, restrictive license No. 1971) am registered with Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (NAPEG No. L4959) and am a member of the Prospectors and Developers Association of Canada
- I have over 40 years of experience in the exploration and mining industry with various junior exploration and mining companies throughout North America. I have supervised and managed over 150,000 meters of diamond drilling, with over 85% of that drilling performed for gold exploration in Archean greenstone belts of the Superior Province throughout Ontario and Quebec. I was a production geologist at the Pamour Gold Mine in Timmins from 1991 to 1996 gaining invaluable experience in underground narrow vein, underground bulk and open pit gold mining. I have managed and been involved in various geological exploration programs for precious and base metals throughout Archean aged environments since 1980. I have held former executive positions with publicly traded junior resource companies.
- I have read the definition of "Qualified Person" set out in NI 43-101 and Form 43-101F1 and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of Regulation 43-101.

- I have read NI 43-101 and Form 43-101F1 and I am responsible for authoring Sections 1-20 of the Technical Report, which has been prepared in compliance with NI 43-101 and Form 43-101F1.
- 8) I have no prior involvement with the property that is the subject of this Technical Report.
- 9) I visited the Properties on June 6<sup>th</sup> 2022 for one day.
- I am independent of the Centurion Minerals Ltd. applying all of the tests in Section 1.5 of NI 43-101.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
- I, Michael Kilbourne, do hereby consent to the public filing of the technical report entitled "NI43-101 Independent Technical Report on the Casa Berardi West Properties for Centurion Minerals Ltd., Cochrane, Ontario" with an effective date June 30, 2022 and a revised date of August 26, 2022 (the "Technical Report") by Centurion Minerals Ltd. (the "Issuer"), with the TSX Venture Exchange under its applicable policies and I acknowledge that the Technical Report will become part of the Issuer's public record.

Dated at Oro Station, Ontario this 30<sup>th</sup> day of June 2022 and revised August 26, 2022.

**{SIGNED}** 

[Michael Kilbourne]

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Michael Kilbourne, P.Geo. (PGO # 1591)