GM 68420

TECHNICAL REPORT ON THE PORTAGE-DU-FORT DOLOMITE PROPERTY

Report to:

9248-7792 Quebec Inc.
and
9257-1256 Quebec Inc.

Technical Report on the Portage-du-Fort Dolomite Property, Southwestern Quebec. NTS 31F/10

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GLOSSARY

Units of Measure

centimetre	cm
degree	°
degrees Celsius	°C
greater than	>
hectare (10,000 m^2)	ha
kilogram	kg
kilometre	km
less than	<
less than or equal	≤
megawatt	MW
metre	m
metric tonne (1,000 kg)	tonne
millimetre	mm
percent	%
square metre	m^2

Abbreviations and Acronyms

COREM	Consortium de recherche appliquée en traitement et transformation des substances minérales *(Consortium of applied research for the processing and transformation of mineral substances)*
CRM	Centre de Recherche Minérale (now COREM)
ENE	East-northeast
GESTIM	Système de gestion des titres miniers
NNE	North-northeast
NNW	North-northwest
NTS	National Topographic System
MERQ	Ministère de l'Énergie et des Ressources du Québec (now MRNF)
MRNF	Ministère des Ressources Naturelles et de la Faune
SEDAR	System for Electronic Document Analysis and Retrieval
SIGEOM	Système d'Information GÉOMinière
WSW	West-southwest

Reference to quote:

WSP 2014. *Technical Report on the Portage-du-Fort Dolomite Property, Southwestern Quebec, NTS 31F/10,* Report prepared for 9248-7792 Quebec Inc. and 9257-1256 Quebec Inc. 62 p.

1.0 SUMMARY

In September 2013, 9248-7792 Quebec Inc. and 9257-1256 Quebec Inc. (both hereinafter referred to as "Quebec Co.") retained GENIVAR Inc., now WSP Canada Inc. ("WSP") since January 1, 2014, to prepare a Technical Report on the Portage-du-Fort Dolomite Property (the "Property") in compliance with National Instrument 43-101 ("NI 43-101") standards.

The Property is located some 75 km northwest of the city of Ottawa in the southwest corner of the Outaouais region of Quebec, Canada, in proximity to the Quebec-Ontario border. The property is situated just 1.5 km northeast of the village of Portage-du-Fort, which lies on the eastern shore of the Ottawa River.

Easily accessed via paved and secondary gravel roads, the property comprises two contiguous map-designated mineral claims, which form a rectangular block covering a total area of 120.39 ha. Claims that adjoin the property to the west were also applied for. Since the western edge of the latter claims cover part of the urban area of the village of Portage-du-Fort and Mining Restriction 29194, these adjoining claims have not been issued by the Ministère des Ressources Naturelles et de la Faune ("MRNF"), but will remain under application or pending.

Property and pending claims straddle the border of Litchfield and Clarendon Townships, located within the Pontiac Regional County Municipality. The property is situated within the area covered by National Topographic System ("NTS") map sheet 31F/10.

The Property lies within the Mesoproterozoic Central Metasedimentary Belt of the western Grenville Province, which extends southward from western Quebec to Ontario. The Property is largely underlain by marble units of the Portage-du-Fort Group and, to a lesser extent, by quartzite and grey gneiss units of the Bryson Group. Locally, white dolomitic marble units of the Portage-du-Fort Group display high purity: these contain few visible impurities, show high MgO content, and low SiO2 and Fe2O3 content.

The Portage-du-Fort area has a long history of dolomite production dating back to the 1860's, including production from abandoned historical quarries located within the pending claims. Initial mapping in 1977 and subsequent drilling in 1980 by geologists from the Ministère de l'Énergie et des Ressources du Québec ("MERQ") led to the discovery of high purity dolomitic marble located some 500 m southeast of these historical quarries.

Continued exploration and drilling led to the delineation of a dolomitic marble deposit at what is now referred to as Carrière Portage-du-Fort (Dolomex) or the Dolomex Quarry. A historical resource estimate is reported to indicate 22 million tonnes grading 30.30% CaO, 21.60% MgO, and 0.76% SiO2. If material containing up to 1.5% SiO2 is included, tonnage increases to 45 million tonnes. Iron content is low, on average < 0.15% Fe2O3T.

This resource estimate is historical in nature and does not meet the requirements for resource categorization as set out in NI 43-101. A Qualified Person has not done sufficient work to classify this historical estimate as current mineral resources or mineral reserves. WSP is not treating these historical estimates as current mineral resources or mineral reserves. These results should not be relied upon. However, these historical results provide an indication of the potential of the property area and are relevant to ongoing evaluation and exploration

Under various companies, the Dolomex Quarry operated from 1991 to 2004. Annual dolomite production ranged from about 25,000 tonnes in 1992 to attain close to 100,000 tonnes in 2002. In the early 1990's, production was mainly destined for glass manufacturing and to a lesser extent for agricultural purposes. By 2002, the operation produced various dolomite products used to manufacture plate glass, floor tiles, roofing powder, polishing powder, line powder, filtration sand, decorative stone and agricultural and horticultural fertilizers.

The Portage-du-Fort area and surrounding region show potential for additional resources of high purity dolomitic marble and merit further evaluation and exploration. Rock units with high purity dolomitic marble at the Dolomex Quarry deposit extend to the northeast in Quebec and to the west across the Ottawa River into Ontario.

An initial two-phase work program at an estimated cost of $213,000 is recommended in order to validate the potential of the Portage-du-Fort Dolomite Property and surrounding area. Phase II work will be dependent upon the results obtained from Phase I. This work should include:

- Regional geological compilation, review, additional claim staking, prospecting and geological mapping and evaluation of potential lateral extensions of similar units of high purity dolomitic marble in Quebec and to the west into Ontario;
- Review, compilation, and digitalization of mapping and historic drill data in anticipation of the confirmatory drilling necessary in order to establish a NI 43-101 compliant resource;
- A market study of current conditions and economics for dolomite marble and/or highly pure magnesian dolomite marble to determine potential industrial applications and worth of the Portage-du-Fort dolomite;
- A drilling program designed to outline a NI 43-101-compliant resource estimate of high purity dolomite.

Accordingly the following two-phase work program with estimated costs is recommended:

Phase I:

1. Review, compilation, digitalization of mapping and historic data: $11,500
2. Geological mapping, evaluation, additional claim staking: $10,000
3. Market study: $12,000

Subtotal Phase I: $33,500

Phase II:

1. 1,500m NQ-diameter core drilling (approx. 9 holes) @ $70.00/m: $105,000
2. Core handling, logging, splitting: $20,000
3. Geochemical major element analysis: 300 samples @ $65/sample: $19,500
4. NI 43-101 compliant resource estimate and report: $35,000

Subtotal Phase II: $179,500

Total Phases I & II: $213,000

2.0 INTRODUCTION

In September 2013, 9248-7792 Quebec Inc. and 9257-1256 Quebec Inc. (both hereinafter referred to as "Quebec Co.") retained GENIVAR Inc., now WSP Canada Inc. ("WSP") since January 1, 2014, to prepare a Technical Report on the Portage-du-Fort Dolomite Property (the "Property") in compliance with National Instrument 43-101 ("NI 43-101") standards.

The property comprises two map designated mineral claims covering a total area of 120.39 ha located 75 km northwest of the city of Ottawa in the southwest corner of the Outaouais region of Quebec, Canada. The southwest corner of the property is adjacent to the village of Portage-du-Fort. Located on the east

border of the Ottawa River, the village is situated within the Pontiac Regional County Municipality (MRC de Pontiac).

2.1.1 Terms of reference and purpose

This report was prepared at the request of the Quebec Co. for the purpose of providing a summary of the history, work, and resource potential of the Portage-du-Fort Dolomite Property.

2.1.2 Sources of information

WSP reviewed assessment and governmental reports on the property, and surrounding region, available in the public domain through the Quebec government's Ministère des Ressources Naturelles et de la Faune ("MRNF") and its geological and mineral deposit database SIGEOM website. Other sources include publications by the Geological Survey of Canada, newspapers, internet searches, and company filings on SEDAR.

2.1.3 Site visit

John D. Charlton of WSP personally inspected the Portage-du-Fort Dolomite Property on August 31, 2013.

2.1.4 Overview of carbonate rocks

In relation to industrial uses, a very useful and wide ranging overview of carbonate rocks, limestone and dolomite, is presented by Freas et al. (2006): includes overview on origin, classification, physical and chemical properties, production and uses. Other publications on regional limestone and dolomite resources and their uses include Bowen et al. (2006), Fischl (1992), and Kelly (1996).

The following overview of carbonate rocks is derived largely from or modified after Freas et al. (2006) and Fischl (1992).

Carbonate rocks are abundant sedimentary rocks that are quarried and mined the world over for a multitude of uses. They are the basic materials from which cement, lime, most building stone, and a significant amount of crushed stone are produced. Carbonate rocks, and their derived products, are used in a multitude of market applications including as aggregates, fluxes, glass raw material, refractories, fillers, reactive agents in sulfur-oxide removal, abrasives, and soil conditioners (Freas et al., 2006). Dolomite is also one source used in the production of magnesium products.

Limestone and dolomite are the principal carbonate rocks used by industry. These rocks show considerable variation in composition but, in general, limestone is composed mostly of the mineral calcite ($CaCO3$) and dolomite is composed mostly of the mineral dolomite ($CaMg(CO3)2$) (Freas et al., 2006).

Impurities in carbonate rocks, which vary considerably in type, amount and distribution, may have an important impact on the industrial usefulness of the constituent rock (Freas et al., 2006). Common impurities in limestone and dolomite include silicates, in the form of quartz ($SiO2$) as grains or chert, and various clay minerals (aluminosilicates). Metamorphosed carbonate rocks, including marbles and calc-silicate rocks, may contain a variety of metamorphic silicate minerals (Fischl 1992). Other impurities include organic matter and insoluble matter such as metal sulfides and oxides.

Because of variable mineralogy and content of impurities, carbonate rocks must be sampled and tested for an array of constituents, typically major elements, in order to determine their suitability for particular industrial applications (Fischl 1992). Silica ($SiO2$) and alumina ($Al2O3$) are useful in determining the amount of contamination by silicates. Iron ($Fe2O3$) content may indicate contamination by iron bearing minerals.

Carbonate rocks have been classified based on a number of criteria such as composition (constituents and mineralogy), texture, and origin. For industrial purposes that have special chemical requirements, classification of carbonate rocks based on chemical composition is more useful. One such chemical classification is presented in Table 1.

Table 1 Chemical classification of carbonate rocks. (Modified after Freas et al., 2006)

	CaCO3	CaCO3+MgCO3	MgCO3
theoretically pure limestone	*100%*		
ultra-high calcium limestone	> 97.5%		
high calcium limestone	> 95%		
high-purity carbonate rock		> 95%	
high-magnesium dolomite			> 43%
theoretically pure dolomite			*45.7%*
	CaO		**MgO**
theoretically pure limestone	*56.0%*		
ultra-high calcium limestone	> 54.6%		
high calcium limestone	> 53.2%		
high-magnesium dolomite			> 20.5%
theoretically pure dolomite			*21.8%*

3.0 RELIANCE ON OTHER EXPERTS

The authors of this report relied on publicly available information, as well as reports by geologists or other experts whose professional status may or may not be in accordance with the NI 43-101 definition of a Qualified Person ("QP"). Many of the reports predate NI 43-101 standards. The authors cannot guarantee the information contained in these reports adheres to current NI 43-101 standards.

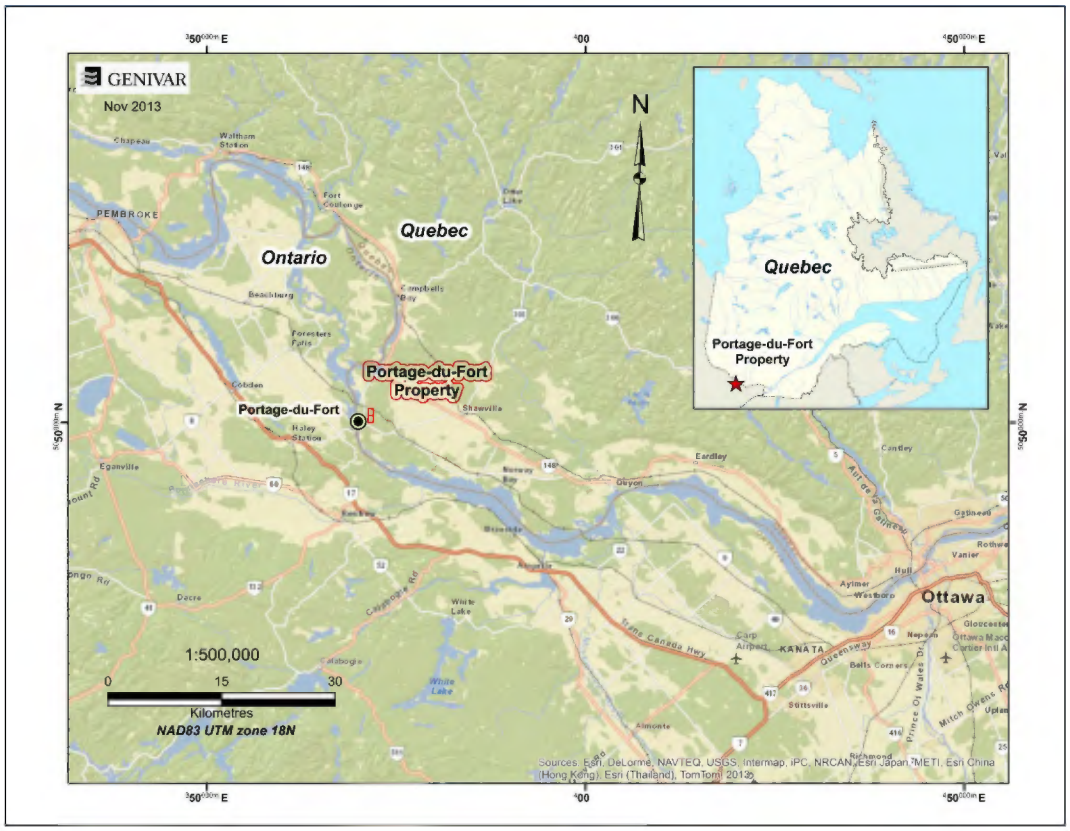
All references to mineral resources or reserves in this Technical Report are historical in nature and have not been independently verified by the authors of this report.

The authors have relied on information available to the public on the Quebec government's GESTIM website (Mining Title Management System) with respect to the ownership and tenure of property claims. The authors have not sought an independent legal opinion as to the ownership or tenure of the property claims.

4.0 PROPERTY DESCRIPTION AND LOCATION

The Portage-du-Fort Dolomite Property is located 75 km northwest of the city of Ottawa in the southwest corner of the Outaouais region of Quebec, Canada (Figure 1). The property is situated just 1.5 km northeast of the village of Portage-du-Fort, which lies on the eastern border of the Ottawa River (Figure 2).

Figure 1 Location of the Portage-du-Fort Property in southwestern Quebec.

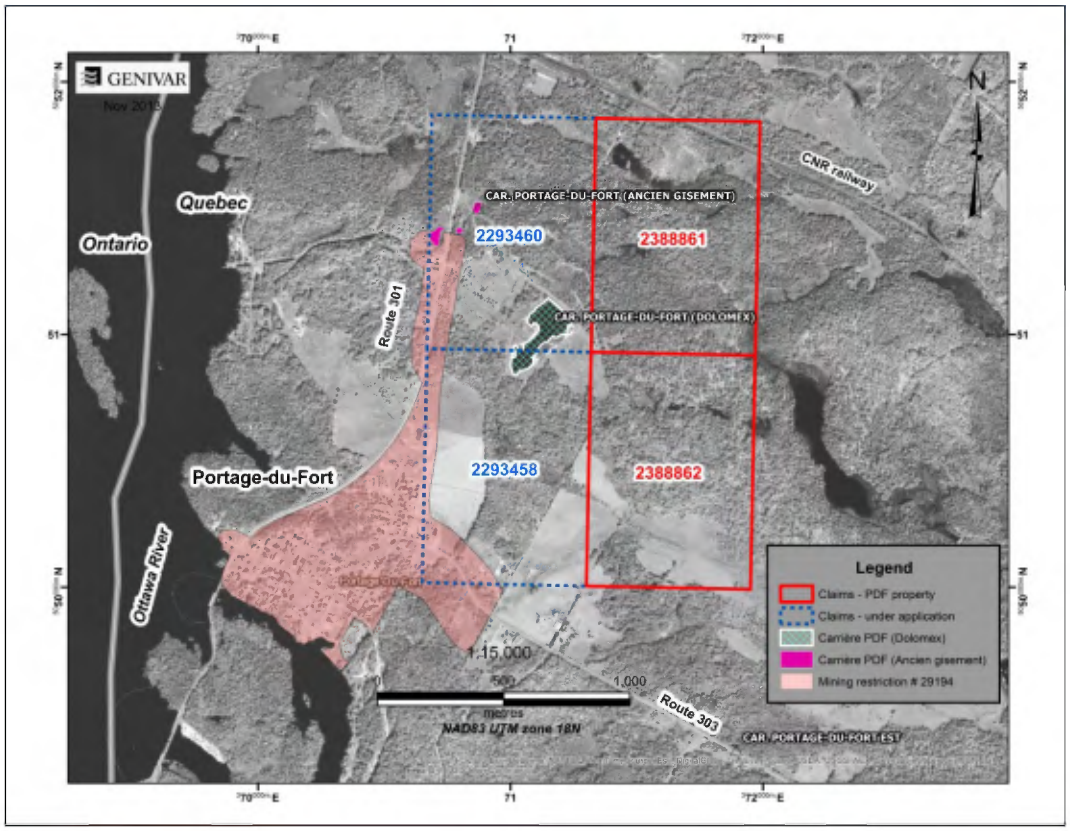


The property is situated within the area covered by National Topographic System (NTS) map sheet 31F/10.The centre of the property is approximately at latitude and longitude, 45.60° N, -76.65° W or UTM coordinates 371319 mE, 5050929 mN, NAD83, Zone 18N.

Located entirely within the limits of the Municipality of Portage-du-Fort, the property comprises two contiguous map designated mineral claims ("CDC claims"), which form a rectangular block covering a total area of 120.39 ha (Figure 2). Property claims straddle the border of Litchfield and Clarendon Townships, located within the Pontiac Regional County Municipality (MRC de Pontiac).

Figure 2 Claim map of the Portage-du-Fort Property

Claims outlined in red are active. Claims outlined in blue are under application (titles pending: see text). Pale-red filled-in area indicates Mining restriction number 29194. Historical quarries Carrière Portage-du-Fort (Dolomex), Carrière Portage-du-Fort (Ancien gisement), and Carrière Portage-du-Fort Est are also indicated.



4.1 Tenure Rights

The two claims comprising the Portage-du-Fort Dolomite Property are described in Table 2. Claims 2388861 and 2388862 are active and have an expiry date of August 7, 2015. Claim 2388861 is 100% owned by 9248-7792 Quebec Inc.; claim 2388862 is 40 % owned by 9257-1256 Quebec Inc. and 60 % owned by 9248-7792 Quebec Inc.

Table 2 Portage-du-Fort Property list of claims and claims under application.

NTS sheet	Title type	Title number	Title status	Issuing date of the tilte	Expiry date of the title	Title area (ha)	Required amount of excess work	Titleholder name, number and percentage of each ownership
31F10	CDC	2388861	Active	2013-08-08	2015-08-07	60.19	$1,200	9248-7792 Quebec Inc. (88009) 100 % (responsable)
31F10	CDC	2388862	Active	2013-08-08	2015-08-07	60.20	$1,200	9257-1256 Québec inc. (89033) 40 %; 9248-7792 Quebec Inc. (88009) 60 % (responsable)
Under application								
31F10		2293460				60.19		
31F10		2293458				60.20		

Titleholder 9248-7792 Quebec Inc. also applied for claims 2293458 and 2293460 ("pending claims"), which adjoin the property to the west (Figure 2). Since the western edge of these claims cover part of the urban area of the village of Portage-du-Fort and Mining restriction 29194, the pending claims have not been issued by the MRNF, but will remain under application. Mining restriction number 29194 prevents the issuance of and prohibits exploration within these claims. In accordance with Section 91 of proposed Bill 14, and until such time Bill 14 is settled, the MRNF will refrain from issuing claims requested within urbanization perimeters, but will keep the requests as received. Additional information on Mining restriction number 29194, Section 91 of Bill 14, and links to the current Quebec Mining Act, as well as links to proposed Bill 14 and proposed Bill 43, attempts to amend the Mining Act, are presented in Appendix I. Special conditions of Mining restriction number 29194 are presented below:

> *"Although Section 91 of Bill 14, an Act respecting the development of mineral resources in keeping with the in force, it will apply retroactively from the date the Bill was introduced, in accordance with Section 104. Therefore, the State must govern itself as though Section 91 is in force until the fate of the Bill is settled. Thus, the Minister will refrain from issuing claims requested within urbanization perimeters and areas dedicated to vacationing while keeping the requests received. Holders of claims lying within the perimeters covered by Section 91 of the Bill should comply with the requirements of this section in order to avoid being in a situation of non-compliance with the Act respecting the development of mineral resources in keeping with the principles of sustainable development when it come into force, thus exposing them to revocation of their claims." (MRNF: GESTIM - Mining Restriction number 29194)*

On December 5, 2013, the Quebec government tabled Bill 70, "An Act to Amend the Mining Act", in the Quebec National Assembly. This is a fourth attempt in four years to update the Quebec Mining Act (THE GAZETTE: December 6, 2013).

4.2 Royalties and Related Information

Quebec Co. advised WSP that the Portage-du-Fort Dolomite Property is owned as described in Subsection 4.1 - Tenure Rights. There are no additional entities involved in the ownership or in any future production from the property at this time.

4.3 Environmental Liabilities

WSP is unaware of any environmental liabilities associated with claims of the Portage-du-Fort Dolomite Property. However, WSP has not conducted a thorough inspection of these claims.

Abandoned quarries are situated within pending claims 2293458 and 2293460. The holder of these claims would be subject to measures under the Quebec Mining Act and Regulation respecting mineral substances other than petroleum, natural gas and brine. These measures may compel a claim holder to undertake actions or expenses to protect, rehabilitate, and restore both current and historical mining sites.

4.4 Permits

In Quebec, limestone, calcite and dolomite are considered surface mineral substances (SMS) (MRNF – The exploration and mining of surface mineral substances). At the exploration stage, the following applies to SMS:

> *"The exclusive right to explore for all mineral substances in Quebec, including surface mineral substances is covered by the claim. Nevertheless, this exclusive right does not include sand, gravel and other substances that occur as natural unconsolidated deposits." (MRNF – The exploration and mining of surface mineral substances)*
>
> - *"A claim is a mineral right that gives its holder a two-year exclusive right to explore a designated territory for any mineral substances that are part of the public domain with the exception of:*

- *petroleum, natural gas and brine;*
- *sand other than silica sand used for industrial purposes, gravel, common clay used in the manufacture of clay products, and other mineral substance found in its natural state as a loose deposit, as well as inert mine tailings used for construction purposes;*
- *on any part of land that is also subject to an exploration licence for surface mineral substances or an exclusive lease to mine surface mineral substances, every other surface mineral substance." (MRNF – Claims)*

The property is covered by claims in good standing. However, as indicated in Subsection 4.1, claims to the west of the property remain pending and exploration cannot be carried out on these claims until approval is received by the MRNF.

4.5 Other Relevant Factors

As described in Subsection 4.1 and in Appendix I, two claims adjoining the present property to the west are pending approval by the MRNF. Acquisition of these two claims is considered to be highly relevant to the potential for the eventual development of a dolomite resource on the present property.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Site Topography, Elevation, and Vegetation

The Portage-du-Fort Dolomite Property is located in the lowlands that border the Ottawa River. Property relief is low: elevation varies from about 99 m to 119 m.

Forested areas in the region include sugar maple, yellow birch, beech, red maple, basswood, white ash, white birch, red oak, trembling aspen as well as coniferous balsam fir, white spruce, and eastern white pine (RG 170).

5.2 Access

The northwestern and southwestern corners of the pending claims are crossed by Route 301 and Route 303 respectively. From these, secondary gravel and paved roads give easy access to the centre of the property (Figure 2).

On the Quebec side of the Ottawa River, the village of Portage-du-Fort is easily accessed by Routes 301 and 303: both routes connect to Highway 148, which gives easy access to the Gatineau-Ottawa area. From the Ontario side, the village is accessed by Renfrew Road 653, which connects to Highway 17, the Trans-Canada Highway (Figure 1).

By road network, Portage-du-Fort is about 100 km from the city of Gatineau and about 300 km from the city of Montreal.

5.3 Climate

Average temperatures in the area vary from a low of -12.40C in January to a high of 19.60C in July. Total monthly precipitation varies from a low of 58 mm in February to a high of 84 mm in July and August. Average snowfall is highest in December and January, 53 cm and 55 cm, respectively.

Roads in the area are normally open year round.

5.4 Infrastructure

Power and water are readily available in the area. Until 2004, a major dolomite quarry operated near the centre of the pending claims. The property is in close proximity to major roads and to the village of Portage-du-Fort (pop. 268).

The Chenaux Station, a 144 MW capacity hydroelectric power generation station, is located just 900 m southwest of Portage-du-Fort on the Ontario side of the Ottawa River.

In Quebec, nearby population centres include Bryson (pop. 641), 9 km NNE and Shawville (pop. 1,671), 12 km east. The town of Renfrew (pop. 8,218), 14 km SSE, is the closest major population centre on the Ontario side of the Ottawa River. These population centres are all easily accessed by major highways.

The Canadian National ("CN") Ottawa-Pembroke-North Bay railway crosses the northeastern corner of the property. The Ottawa Citizen newspaper reported that in early January of 2013, CN received permission to remove the roughly 110 km Beachburg Subdivision that connects Pembroke to Ottawa. CN has already removed the nearly 50 km stretch of rail, on the Ontario side, between Pembroke and Portage-du-Fort but has held off from stripping the remaining portion of the track (Ottawa Citizen: August 5, 2013 and August 13, 2013).

The Canadian Pacific railway linking Ottawa to Fort Coulonge used to pass some 15 km northeast of the property. In the late 1980's, the railway was converted to a cycling path.

On the Ontario side, 11 km WSW of the property, the Canadian Pacific railway linking Smith Falls to Mattawa was discontinued in 2010.

The property benefits from close proximity to the Pontiac Regional Industrial Park. In January 2010, SSPM Pontiac, L.P., an affiliate of Green Investment Group Inc., purchased the former Smurfit-Stone paper mill located on the eastern shore of the Ottawa River some 4.5 km NNW of Portage-du-Fort. The company specializes in acquiring abandoned or underutilized industrial or commercial sites that are well-positioned for redevelopment. On October 26, 2010, the Pontiac Regional County Municipality (MRC de Pontiac) declared the Green Investment Group site the Pontiac Regional Industrial Park.

6.0 HISTORY

The Portage-du-Fort area has a long history of marble quarries dating back as far as the 1860's.

> *"Near Portage-du-Fort are immense quarries of white marble." (Ottawa Citizen: Dec. 10, 1866)*

> *"A large marble stone quarry employing over 50 men is in full blast right in the village." (Ottawa Citizen: April 15, 1913)*

Historically, production has been directed towards the construction sector, but has included agricultural use as well.

One of the earliest geology maps of the area (Ells 1906) indicates the approximate location of two quarries in the vicinity of Portage-du-Fort. One quarry is located immediately southeast of Portage-du-Fort, the other is located some 3.5 km northwest of Portage-du-Fort (Figure 3). Location of these quarries is uncertain. Today these quarries are either filled or overgrown as these cannot be distinguished in satellite images. Little or no mention is made of these quarries in later reports and their history remains unclear.

Parks (1914) indicated the widespread occurrence of "crystalline limestone" in the vicinity of Portage-du-Fort and described the "more important localities" at which these were being worked.

> *"White and white and blue banded crystalline limestones are exposed over considerable areas in Pontiac county north of the Ottawa river in the vicinity of Portage du Fort." (Parks 1914)*

Parks (1914) indicated a “brownish dolomitic limestone”, which “weathers badly”, was quarried half a mile (~0.8 km) from Portage-du-Fort. It “resembles Beekmantown stone” but no outcrop of this formation is mapped in the vicinity.

Parks (1914) reported the Pontiac Marble and Lime Company controlled parts of lots 141 and 80 in the village of Portage-du-Fort where a quarry was opened in a belt of “pure white” marble “estimated to extend over 100 acres” (~40 ha) (Plate 1). The coarse grained marble is described as “pure white dolomite unmarred by any flaws except the occasional occurrence of minute yellowish specks…”. Stone from the quarry was used for “monument bases and in trimming buildings”. Some 150 yards (137 m) northeast of the quarry is a smaller quarry where stone was quarried for the parliament buildings in Ottawa.

Figure 3 **Map showing locations of quarries in the Portage-du-Fort area after Bellemare (MB 2000-01) (triangles) and approximate locations of older quarries from map by Ells (1906) (squares).**

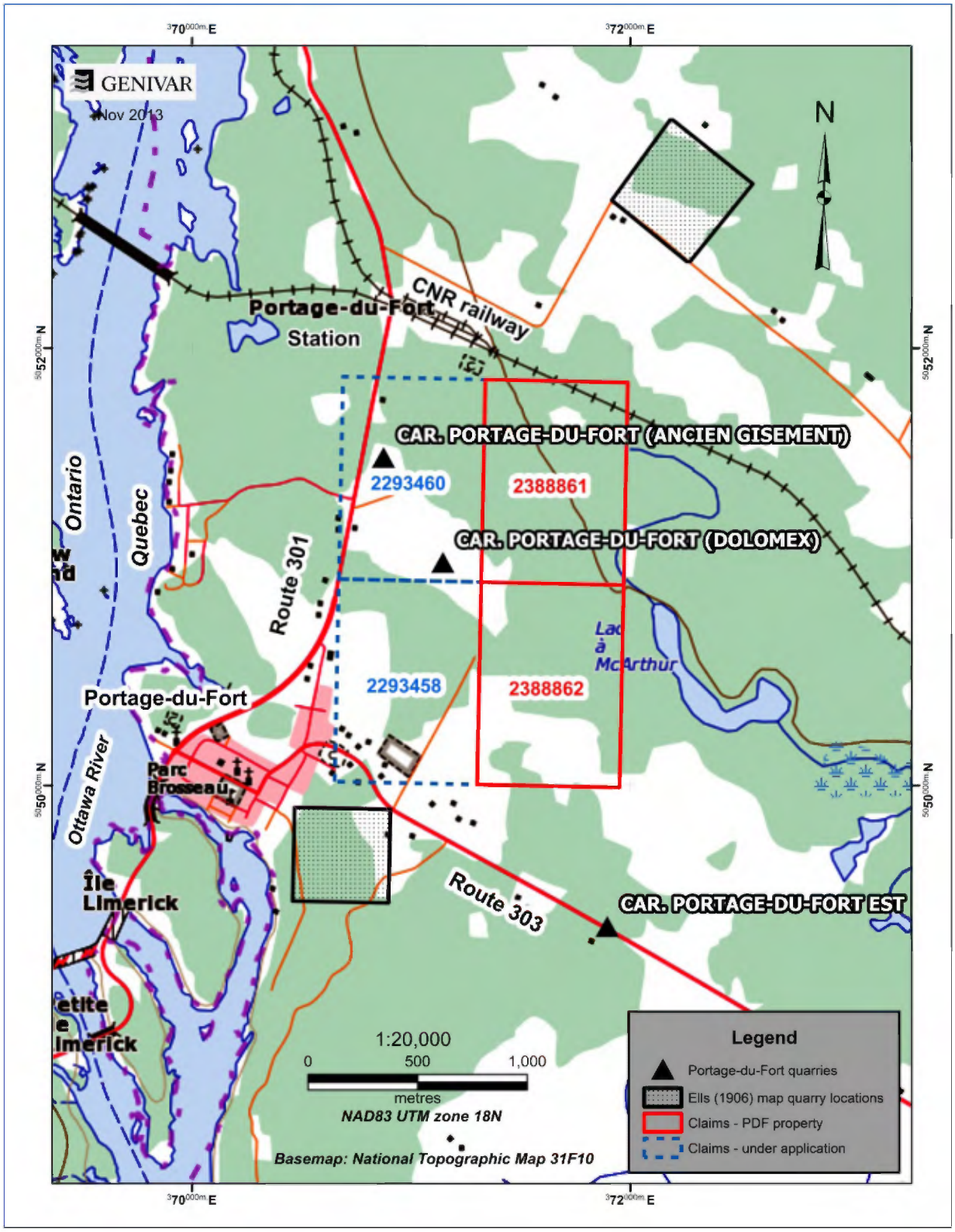


Plate 1 Quarry of the Pontiac Marble and Lime Company, Portage-du-Fort, Quebec. (Source: Parks (1914), page 197)

Bellemare (MB 2000-01) carried out field visits and compiled the history, previous work, use of extracted products, references and descriptions of quarries in the area surrounding Portage-du-Fort (Table 3). This information has also been indexed on the MRNF SIGEOM mineral deposit database under Deposits / Construction materials and industrial stones. Detailed descriptions from the mineral deposit database are presented in Appendix II: note that the information and descriptions date from field visits and reports prior to 2000 and have not been updated since. Summary descriptions of these quarries are presented in Table 3; locations are shown in Figure 3.

Carrière Portage-du-Fort Est

A very small, flooded quarry, referred to as Carrière Portage-du-Fort Est by Bellemare (MB 2000-01), is located some 2.4 km east of Portage-du-Fort, just off Route 303 (Figure 3). This quarry is situated some 640 m south of the southeast corner of the property block.

Carrière Portage-du-Fort (Ancien gisement)

Three small abandoned historical quarries are located on both sides of Route 301, about 1.60 km to 1.75 km north of Portage-du-Fort. These quarries, referred to by Bellemare (MB 2000-01) as Carrière Portage-du-Fort (Ancien gisement), are situated west of the property, within pending claim 2293460 (Figure 3).

Table 3 List of quarries in the vicinity of Portage-du-Fort, modified after Bellemare (MB 2000-01).

Quarry	Location	Size	Status
Carrière Portage-du-Fort Est	follow Route 303 some 2.4 km east of Portage-du-Fort from inters. of Rts 301 and 303; located 10 m north of Route 303	10 m x 10 m	abandoned: flooded
Carrière Portage-du-Fort (Ancien gisement)	follow Route 301 some 1.6 km to 1.75 km north of Portage-du-Fort from inters. of Rts 301 and 303; two quarries on the east side less than 75 m from road; one quarry on the west side, 35 m from road	east side - Quarry 1: 60 m x 30 m Quarry 2: 100 m x 25 m x 8 m deep west side - Quarry 3: 80 m x 35 m	abandoned east side: filled west side: flooded
Carrière Portage-du-Fort (Dolomex)	follow Route 301 some 1.48 km north of Portage-du-Fort from inters. of Rts 301 and 303; then head NE 190 m along rue Stoney Batter, then 300 m SE along the quarry trail	oriented NE 300 m long; 70 m to 140 m wide	abandoned: flooded

Bellemare (MB 2000-01) described these three quarries and Brun (ET 83-03) indicated their location on a 1: 50 000 geological map. Quarry 1, the main older quarry, can be accessed by heading north on Route 301, some 1.75 km from the intersection of Routes 301 and 303 at Portage-du-Fort. From this point, Quarry 1 is easily reached by walking 75 m east along the quarry trail. This quarry is 60 m long, 30 m wide and appears to have been filled in. Quarry 2 is located immediately southwest of Quarry 1. Bellemare (MB 2000-01) described Quarry 2 as 100 m long, 25 m wide and 8 m deep. However, Brun (ET 83-03) mapped this quarry as only 26 m by 26 m. Quarry 2 has also been completely filled in. To reach Quarry 3, head north along Route 301 some 1.6 km from the intersection of Routes 301 and 303 at Portage-du-Fort. Quarry 3 is located 35 m west of Route 301.This quarry is 80 m long, 35 m wide, and is completely flooded.

Discovered prior to 1863(?), there are at least three known producers from these historical quarries: Pontiac Lime and Marble Company, White Grit Company, and Canadian Dolomite Company (MB 2000-01). Production and years of operation by the various owners remains unclear.

Pontiac Lime and Marble Company opened a quarry in the Portage-du-Fort area in 1912 (Denis 1913) and operated from 1913 to 1923 (Sabina 2007). As remarked by Parks (1914), production was used for "monument bases and in trimming buildings".

The White Grit Company began operations in 1918 and became Canadian Dolomite Company under new ownership in 1944 (Ottawa Citizen: September 1, 1953). It was still in production when Katz wrote his report in 1969 (RP 578(A). The company produced five sizes of stone, from three-eighth of an inch to sand, for surfacing driveways, stucco dash, terrazzo, poultry grit, artificial stone, asphalt filler and magnesite floors (Ottawa Citizen: September 1, 1953, RP 578(A), RG 170). It is unclear when operations ceased.

Carrière Portage-du-Fort (Dolomex)

Some 500 m southeast of the latter historical quarries is located a larger, more recently abandoned quarry: Carrière Portage-du-Fort (Dolomex) or the Dolomex Quarry. This quarry is situated just west of the property and straddles the boundary between pending claims 2293458 and 2293460 (Figure 3).

The Dolomex Quarry can be accessed by heading north on Route 301, some 1.48 km from the intersection of Routes 301 and 303 at Portage-du-Fort. From this point, it can be reached by heading northeast 190 m along Stoney Batter Street, then heading 300 m southeast along the quarry trail.

Previous work and ownership of the Dolomex Quarry is detailed by Bellemare (MB 2000-01) and presented in Appendix II: a modified summary with updated information is shown in Table 4.

Regional mapping from 1977 to 1979 by geologists from the Ministère de l'Energie et des Ressources du Quebec ("MERQ") showed the Portage-du-Fort area had potential for additional dolomite resources. A lithogeochemical study of 396 surface samples (65% marbles, 5% pyroxenites, and 30% other rock types) led to the delineation of a large geochemical anomaly of high-purity dolomitic marbles. This anomaly, 1,000 m long and 900 m wide, basically straddles the Carrière Portage-du-Fort (Ancien gisement) to the northwest and what is now the Dolomex Quarry to the southeast (Figure 11). The delineation of this anomaly led to a drilling program in 1980 by the MERQ and discovery of the dolomite deposit at the Dolomex Quarry (ET 83-03).

In 1983, J.B Sommervail staked claims over the discovery by the MERQ (GM 52243).

From 1984 to 1989, J.B Sommervail and S. Lee, Explorations Aster Inc., and Ressources Canspar Inc. commissioned reports or conducted various work and a drill program to evaluate the potential for a magnesian dolomite deposit (Table 4; GM 41051, GM 42146, GM 43280, GM 43872, GM 47975, GM 47976, GM 52243, MB 2000-01).

In April of 1987, Exploration Aster Inc. ("Aster") commissioned the Government of Quebec's Centre de Recherche Minérale ("CRM") (now COREM) to carry out a characterization study of three surface marble samples from the company's property at Portage-du-Fort (GM 46322).

Later in 1987, Aster conducted detailed mapping in the Portage-du-Fort area in order to better define and target the high purity dolomitic marbles discovered by the MERQ and reported by Brun (ET 83-03) (GM 47975).

In early 1988, Aster completed a 20 hole, 4,617 m, drill program, PDF-88-01 to PDF-88-20, aimed at testing high purity dolomitic marbles in the areas of both the Carrière Portage-du-Fort (Ancien gisement) and Carrière Portage-du-Fort (Dolomex) (Figure 4) (GM 47975).

In October of 1988, the CRM completed a characterization study of dolomite mineralization from surface samples and a bulk sample derived from drill core (GM 47976).

Possibly also in 1988, Aster commissioned the CRM to undertake a resource calculation of the high purity dolomite mineralization at Portage-du-Fort (DV 90-01; GM 52243). The resource calculation report was apparently not published; it was not filed with the government for assessment work purposes. However, results were quoted in various other assessment and governmental reports. An initial potential tonnage of 18 million tonnes was reported in DV 89-01. Later, a resource tonnage of 22 million tonnes was reported in DV 90-01, DV 91-01, GM 52243, and DV 95-01. A resource grade of 30.30% CaO, 21.60% MgO, <0.8% SiO2, <0.3% Fe2O3 was reported in GM 52243 and DV 95-01.

In 1989, Explorations Aster Inc. became Ressources Canspar Inc. ("Canspar") (GM 52243).

By 1990, Canspar had intentions of bringing into production the newly discovered dolomite deposit. The company aimed for an annual production of 40,000 tonnes (DV 91-01).

In 1991, Dolobec Inc. ("Dolbec") started production at the Portage-du-Fort dolomite deposit (DV 92-01, MB 2000-01). Production of crushed ornamental rock was planned (DV 92-01).

In 1992, Dolobec entered into an agreement with Glaverbec to supply the company 25,000 tonnes of dolomite for glass manufacturing (DV 93-01).

In 1993, Dufresnoy (SEM) Inc. bought an interest in Dolobec. Annual production attained 30,000 tonnes and the dolomite produced was sold to Glaverbec for glass manufacturing (DV 94-01).

In 1994, Mazarin Mining Corporation Inc. ("Mazarin") became the principal shareholder of Dufresnoy (SEM) Inc. Annual production by Dolbec/Dufresnoy attained 35,000 tonnes and dolomite produced was sold to AFG Industries (formerly Glaverbec) for glass manufacturing and agricultural purposes (DV 95-01).

Table 4 Summary of previous work and operators in the area of the Carrière Portage-du-Fort (Dolomex) or Dolomex Quarry.

Year	Operator	Work	Source
1977-1978	MERQ	Mapping at 1:5000, rock sampling, lithogeochemical survey	ET 83-03; MB 2000-01
1980	MERQ	Outcrop stripping, drilling – 6 holes: 1,219 m	ET 83-03; MB 2000-01
1984	J.B Sommervail	Geological report	GM 41051
1985	J.B Sommervail	Technical report	GM 42146
1985	J.B Sommervail & S. Lee	Prospecting, magnetic survey	GM 43280
1986	J.B Sommervail & S. Lee	Economical potential study	GM 43872
1987	Exploration Aster Inc.	Centre de recherche minérale (CRM) - Characterization study of Portage-du-Fort dolomite samples	GM 46322
1987-1988	Exploration Aster Inc.	Mapping, trenching, rock sampling, excavation and drilling – 20 holes: 4,617 m	GM 47975; MB 2000-01
1988	Exploration Aster Inc.	Centre de recherche minérale (CRM) - Characterization study of the Portage-du-Fort dolomite deposit	GM 47976
1988	Exploration Aster Inc.	Centre de recherche minérale (CRM) - Resource calculation	? (reported in DV 90-01 and GM 52243)
1989	Ressources Canspar Inc.	Property evaluation	MB 2000-01
1991	Dolobec Inc.	Stripping, production start	MB 2000-01
1993	Ressources Canspar Inc.	Dolomite sampling and analytical results	GM 52243
1996	Dolomex Inc. (a division of Mazarin Mining Corporation Inc.)	Property and operation acquisition from Dolobec; Inauguration of the dolomite quarry by Dolomex Inc.	Mazarin press release Aug. 28, 1996
2003	Dolomex Inc. (a division of Sequoia Minerals Inc.)	Mazarin undergoes corporate reorganization and industrial minerals segment, including Dolomex, becomes a separate corporation - Sequoia Minerals Inc.	Mazarin Inc. 2004 Annual Report
2004	Cambior Inc.	Cambior acquires Sequoia, which includes the Dolomex plant and deposit	Cambior Inc. 2004 Annual Report
2004	Cambior Inc.	Dolomex plant closure	MRNF -Summary and highlights of the Québec mining 2004
2005	Cambior Inc.	Dismantling of the Dolomex plant and site restoration	

MERQ - Ministère de l'Energie et des Ressources

MRNF - Ministère des Ressources naturelles et de la Faune

In 1995, Dolobec (held 50% by Dufresnoy (SEM) Inc. and 50% by Ormico Exploration Inc.) continued with annual dolomite production of 32,000 tonnes for glass manufacturing and 3,000 tonnes for agricultural lime (DV 96-01).

In 1996, Dolomex Inc. ("Dolomex"), a division of Mazarin, bought the operation from Dolobec for $1.4 million. The operation comprised a crushing, fine screening and pelletizing plant (SEDAR: Mazarin- Aug 18, 1999, Annual information form).

By 2002, with approximately 30 employees and an annual production attaining 100,000 metric tonnes, Dolomex produced, processed and marketed, in North America, various dolomite products used to manufacture plate glass, floor tiles, roofing powder, polishing powder, line powder, filtration sand, decorative stone, and agricultural and horticultural fertilizers (SEDAR: Mazarin- April 23 2003, 2002 Annual Report).

In late December 2003, following a corporate reorganization, the metals and industrial minerals segment of Mazarin, including Dolomex, became a separate corporation under the name Sequoia Minerals Inc. ("Sequoia") (Northern Miner: January 12, 2004) (SEDAR: Sequoia 2003 Annual Report).

Released in May of 2004, Sequoia's Annual Information Form for year ended December 31, 2003 provides a concise description of the Dolomex operation including history, variety of products, annual production, and competitors: see excerpt in Appendix IV.

On July 2, 2004, Cambior Inc. ("Cambior") acquired Sequoia through a merger transaction (SEDAR: Cambior- 2004 Annual Report).

In October 2004, Cambior closed the Dolomex plant. Dismantling of the plant and site restoration was planned for completion by the summer of 2005 (MRNF: Summary and highlights of the Québec Mining Industry for 2004).

Marble: physical properties

Parks (1914, p.196-197) presented results of several physical tests performed on marble from the Pontiac Marble and Lime Company quarry. He concluded that this marble was heavy (specific gravity of 2.867), was durable, and was not appreciably affected by freezing and thawing.

Marble: surface sample composition

Brun (ET 83-03) presents geochemical analyses (Table 5) from three samples collected from the Carrière Portage-du-Fort (Ancien gisement). The analyses indicate these are high purity magnesian dolomitic marbles: high in magnesium (> 43% $MgCO_3$) content and very low in silica, iron and alumina.

The MERQ conducted a lithogeochemical study of surface samples collected during regional mapping of the Portage-du-Fort area from 1977 to 1979. Major element and selected trace element analyses of collected samples are presented in the report by Brun (ET 83-03).

The MERQ collected and sent for analysis over 396 surface samples, 65% of which were marble samples (ET 83-03). Results of major element analyses of these samples delineated a strong surface geochemical anomaly defined by very pure dolomitic marbles with an average value of 30.92% CaO, 21.04% MgO, and very low 0.61% SiO_2 (Table 6) (Figure 11) (ET 83-03).

Table 5 Geochemical analyses for samples from Carrière Portage-du-Fort (Ancien gisement). (Source: ET 83-03, p. 20)

Oxides	1	2	3
SiO_2	0.32	0.15	0.40
Fe_2O_3	0.12	0.26	0.10
Al_2O_3	0.12	0.02	0.01
$CaCO_3$	55.88	54.11	54.29
$MgCO_3$	43.92	45.56	45.56

Table 6 **Summary of major element, sulfur, and LOI analyses of surface marble samples that generated the geochemical anomaly delineated by the MERQ. *(*Source: ET 83-03, p. 17*)***

Oxides	Min. %	Max. %	Avg. %*
SiO2	0.30	1.20	0.61
Al2O3	0.02	0.25	0.08
MgO	20.30	21.40	21.04
CaO	30.00	33.00	30.92
Na2O	0.02	0.13	0.03
K2O	<0.01	0.05	0.02
P2O5	0.000	0.020	0.005
K2O	<0.01	0.04	0.02
Fe2O3	0.05	0.21	0.12
S	0.02	0.03	0.02
LOI	46.00	46.65	46.35
** weight percent, n=15*			

During detailed grid mapping by Aster in 1987 of high purity dolomitic marbles discovered by the MERQ, Aster collected and sent for analysis 37 rock samples. Analyses for major elements, LOI and whiteness are reported in GM 47975. Aster concluded the high purity H1B dolomitic bands with SiO2 <1% outcropping in both areas of Carrière Portage-du-Fort (Ancien gisement) and Carrière Portage-du-Fort (Dolomex) had widths in the order of 300 m in contrast to widths of 80-100 m reported by the MERQ. To test the tonnage of both zones they initially recommended a 16 hole, 3600 m drill program.

Drilling

Parks (1914) reported a drill hole bored in the floor of the quarry belonging to the Pontiac Marble and Lime Company showed "70 feet [21 m] of white stone followed by 5 feet [1.5 m] of blue banded stone".

In 1980, following the delineation of a large surface geochemical anomaly of very pure dolomitic marbles, the MERQ undertook a drill program to further test the anomaly at depth. Six holes, totalling 1218.8 m, were drilled forming a single, 975 m long, northwest trending panel (Figure 4). Holes were oriented at 3220, inclined at 450, planned to a depth of 200 m and separated by 182 m to 210 m. No coordinates are given for drill collar locations. A geology and drill collar location map, complete drill logs, and major element analyses for holes 2, 3, 5 and 6 are presented in report ET 83-03. A cross-section of holes 1 to 6 is presented in reports GM 43872 and GM 52243.

Table 7 **List of drill holes completed by the MERQ in the area of Portage-du-Fort (Source: ET 83-03) Note that for some holes, drill hole logs indicate an azimuth of 332^0. However the text and location maps show all holes have azimuth 322^0.**

Hole ID	Azimuth (deg.)	Inclination (deg.)	Depth (m)
1	332	-45	202.2
2	332	-45	201.2
3	322	-45	201.3
4	332	-45	204.2
5	322	-45	204.8
6	322	-45	205.1
		total	1218.8

Table 8 Summary of results for SiO2, CaO and MgO analyses for Holes 2, 3, 5 and 6 drilled by the MERQ. (Source: ET 83-03)

Hole ID	Depth (m)	Analyses	From (m)	To (m)	Interval (m)	avg. SiO2 %	avg. CaO %	avg. MgO %
1	202.2	none						
2	201.2	10.2 - 21.8 m	10.2	21.8	11.6	0.40	30.20	21.30
3	201.3	139.3 - 155.3 m	139.3	153.3	14.0	0.37	30.10	21.00
			153.3	155.3	2.0	1.38	29.85	21.05
4	204.2	none						
5	204.8	3 - 204.8 m	3.0	23.5	20.5	0.96	29.90	21.30
			68.3	112.0	43.7	1.00	30.06	21.52
6	205.1	1 - 205.1 m	57.4	65.6	8.2	0.39	30.40	21.60
			112.7	118.8	6.1	0.96	30.20	21.50
			149.5	161.7	12.2	0.95	29.40	21.20
			171.8	177.8	6.0	0.73	30.00	21.40
			187.9	193.9	6.0	0.52	29.50	21.30
avg. X % - average weight %								

The MERQ drill program targeted high purity magnesian dolomite marble observed at surface. Of six holes drilled, only holes 2, 3, 5 and 6 had sections of interest. A summary of results for SiO2, CaO and MgO analyses is shown in Table 8. Holes 5 and 6 show the best results with several wide dolomitic intervals with SiO2 ≤ 1% and MgO > 21%. The Dolomex Quarry is located southwest and along trend of the dolomitic sections in hole 5 (Figure 4).

Following detailed mapping, in early 1988 Aster conducted a 20 hole drill program: PDF-88-01 to PDF-88-20 (Figure 4, Table 9). Holes PDF-88-01 to 10 and PDF-88-15 to 20 targeted the Carrière Portage-du-Fort (Dolomex) or Dolomex Quarry area; holes PDF-88-11 to 14 targeted the Carrière Portage-du-Fort (Ancien gisement) area. A geology and drill hole location map, complete logs with analyses for MgO, CaO, SiO2, Fe2O3, Al2O3, and LOI are given in report GM 47975. Major element, sulfur, LOI analyses, as well as whiteness for samples from holes PDF-88-01 to 10 and PDF-88-15 to 20 are presented in GM 47976. A table listing mineralized dolomite sections, with < 1% SiO2, for selected drill holes is presented in MB 90-31.

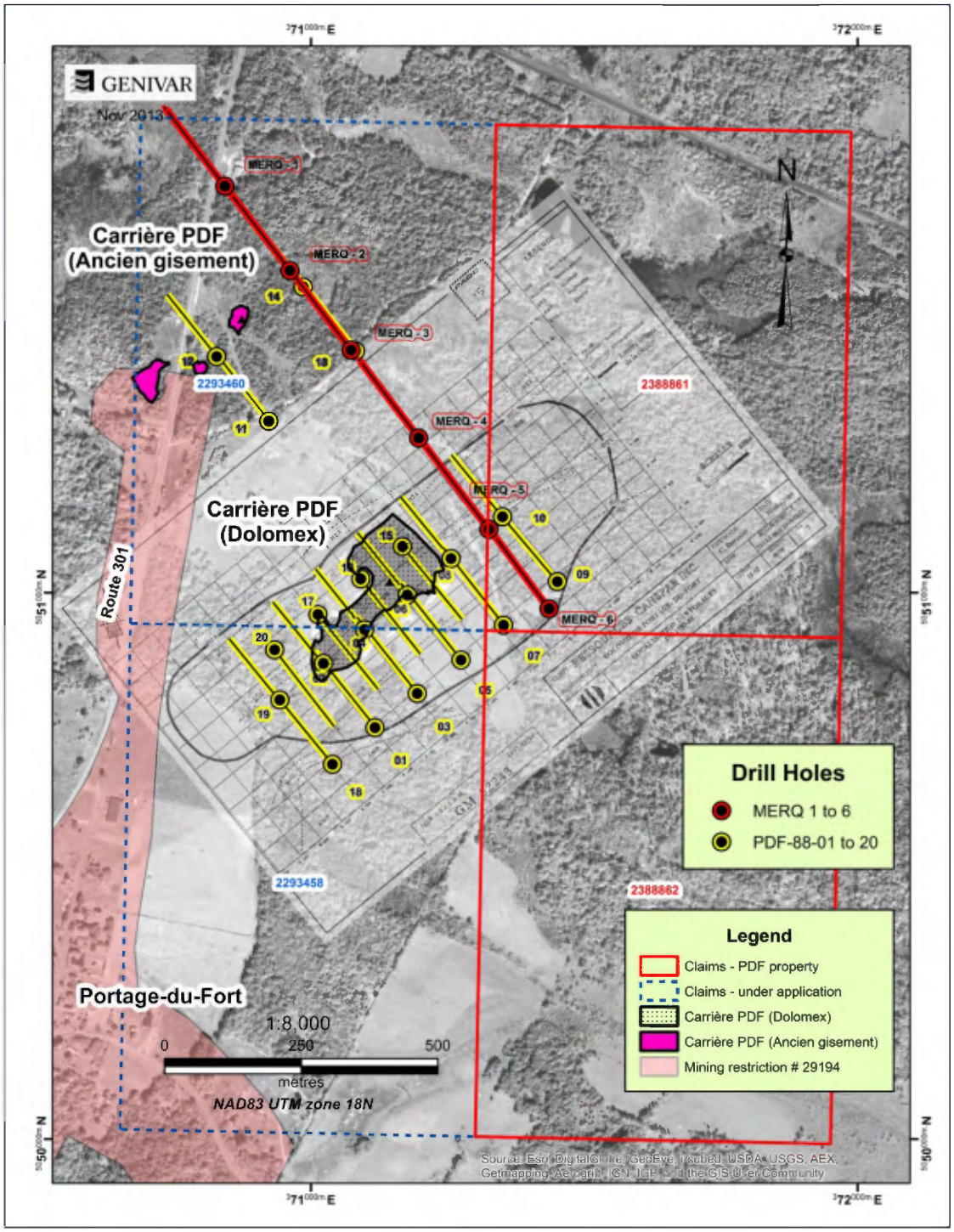
Results from the Aster drill program led to the delineation of a deposit and a resource estimate at the Carrière Portage-du-Fort (Dolomex) or Dolomex Quarry. However, the presentation, analysis and interpretation of these results, including grades, cross-sections, and delineation of mineralized zones, have not been published. Report GM 52234 presents the outline and design of the planned open pit (see Figure 4). Drill core was used in a characterization study of the dolomite deposit (GM 47976).

Table 9 List of drill holes completed by Exploration Aster Inc. in the area of Portage-du-Fort. (Source: GM 47975)

Hole ID	Line	Station	Azimuth (deg.)	Inclination (deg.)	Depth (m)
PDF-88-01	4+00 W	4+00 S	322	-45	252
PDF-88-02	4+00 W	2+50 S	322	-45	201
PDF-88-03	3+00 W	4+00 S	321	-45	252
PDF-88-04	3+00 W	2+50 S	322	-45	201
PDF-88-05	2+00 W	4+00 S	322	-45	246
PDF-88-06	2+00 W	2+50 S	321	-45	192
PDF-88-07	1+00 W	4+00 S	322	-45	252
PDF-88-08	1+00 W	2+50 S	324	-45	207
PDF-88-09	0+35 E	4+00 S	318	-45	252
PDF-88-10	0+37 E	2+50 S	320	-45	198
PDF-88-11	2+00 W	1+50 N	322	-42	252
PDF-88-12	2+00 W	3+00 N	322	-45	201
PDF-88-13	0+00	1+50 N	322	-45	252
PDF-88-14	0+00	3+00 N	322	-45	201
PDF-88-15	1+50 W	1+75 S	142	-45	252
PDF-88-16	2+50 W	1+75 S	142	-45	252
PDF-88-17	3+50 W	1+75 S	144	-45	252
PDF-88-18	5+00 W	4+00 S	326	-41	249
PDF-88-19	5+00 W	2+50 S	322	-45	201
PDF-88-20	4+50 W	1+75 S	142	-45	252
				Total	4617

Figure 4 **Drill hole location map over satellite image for MERQ holes 1 to 6 and Exploration Aster Inc. holes PDF-88-01 to 20.**

Basemap of planned open pit outline is from GM 52234. Portage-du-Fort property claims, claims under application ("pending"), and outlines of quarries Carrière Portage-du-Fort (Ancien gisement) and Carrière Portage-du-Fort (Dolomex) are also indicated. Drill hole locations are approximate.



Property studies

Several studies including market and metallurgical studies, a resource calculation, and a prefeasibility study were conducted in relation to the dolomite deposit at Portage-du-Fort (Table 10).

Table 10 List and summary highlights of studies in relation to the dolomite deposit at Portage-du-Fort.

Year	Operator/Company	Author	Report title	Highlights	Source
1986	J.B. Sommervail & S. Lee	C. Derosier	Study of the economic potential of a magnesian dolomite deposit at Portage du Fort	**Includes:** industry specifications for carbonate rocks **Conclusions:** property shows favorable environment for pure magnesian dolomite marbles, one of the best sources for magnesium; property shows good economic potential for magnesium and magnesian products; **Portage-du-Fort deposit is the northeast extension of and compares very favourably with the high-purity dolomite deposit at Haley, Ontario**	GM 43872
1987	Exploration Aster Inc.	Denis Cotnoir - Centre de recherche minérale (CRM)	Caracterisation d'un minerai de dolomie (*Characterization study of three Portage-du-Fort marble samples)*	**Includes:** preliminary purification tests; chemical and mineralogical analyses; exploratory flotation tests	GM 46322
1987		Denis Cotnoir - Centre de recherche minérale (CRM)	Etude sommaire de marche pour les carbonates de calcium/magnesium (*Summary market study for calcium/magnesium carbonate)*	**Includes:** a **study of the potential markets** for the Portage-du-Fort (PDF) dolomite **Conclusions:** there are several potential uses of the PDF dolomite but the **magnesium metal market** is of the highest interest	
1988		Denis Cotnoir - Centre de recherche minérale (CRM)	Caracterisation du gisement de dolomie de Portage-du-Fort (*Characterization study of the Portage-du-Fort dolomite deposit)*	**Includes:** characterization study used surface samples and a bulk sample derived from drill core; tests include grindability index; whiteness; neutralizing index; oil absorption; chemical and mineralogical analyses; micronization tests	GM 47976
1988		Denis Cotnoir - Centre de recherche minérale (CRM)	Optimisation de la flottation de la dolomie *(Dolomite flotation optimization study)*	**Includes:** results of thirty flotation tests on the drill core bulk sample	
1988		Silien Dessureaux - Centre de recherche minérale (CRM)	Purification du minerai dolomitique *(Purification of dolomite ore)*	**Includes:** results of purification tests to reduce SiO_2 below 0.5% and to obtain a final whiteness of 92.5%	
1988		Kilborn and Associates Ltd.	Prefeasibility study	*reported in GM 52234*	
1988		Kilborn and Associates Ltd.	Projet de dolomie de Portage-du-Fort: Test d'évaluation de la chaux et étude de marché *(Lime evaluation test and market study)*	*reported in GM 52234*	
1993	Ressources Canspar Inc.	C. Derosier	Rapport d'echantillonage et d'analyse sur la propriete de dolomie pure de Portage-du-Fort, Quebec *Report on sampling and analyses on the pure dolomite Portage-du-Fort property*	**Includes:** results from dolomite sampling and geostatical testing of levels of SiO_2 and Fe_2O_3 and an evaluation of the potential for the deposit to supply material to glass industry specifications	GM 52243

Market studies by Derosier (GM 43872) and Cotnoir (GM 46322) both point out the various uses, industry specifications, and potential markets for magnesian dolomite. Both studies emphasize the Portage-du-Fort high purity magnesian dolomitic marble has good economic potential for the magnesium metal and magnesian products industry.

In 1988, at the request of Aster, the Centre de Recherches Minérales (CRM) conducted a characterisation study on samples from the deposit at Portage-du-Fort (GM 47976). A drill core bulk sample consisting of twenty composites from selected high purity dolomitic marble (H1B) sections derived from eleven drill holes showed an average composition containing high MgO (21%), low SiO2 (0.83%), and low Fe2O3T (0.17%) (Table 11).

Table 11 Average composition of drill core bulk sample consisting of twenty composites of selected high purity dolomitic marble (H1B) sections derived from eleven drill holes. (Source: GM 47976)

Oxides	Weight%
SiO2	0.83
Al2O3	0.18
Fe2O3t	0.17
MgO	21.00
CaO	30.30
Na2O	0.28
K2O	0.12
TiO2	0.01
MnO	0.05
P2O5	0.01
SrO	0.03
LOI	46.80
Total	**99.78**
Whiteness	91.1

Results of a mineralogical study showed the deposit to be composed, in large part, of H1B dolomite. The other predominant mineralogical rock type was H1C. Results of other tests included grindability index (9.3 kW/t), brightness (83.6% to 91.0%), neutralizing value (105.0%) and oil absorption (13.0 to 16.0 cc/100g). Flotation tests were also conducted.

Derosier (GM 52243) reported that in November of 1988 Canspar commissioned Kilborn and Associates Ltd. to carry out a prefeasibility study followed by a study to evaluate the lime potential of the deposit. Neither study is available in the public domain. Results of the lime study indicate production of highly pure and reactive dolomitic lime as well as hydrated lime is possible (GM 52243).

In 1993, Derosier (GM 52243) conducted a geostatistical study of silica and iron oxide distribution at the Carrière Portage-du-Fort (Dolomex) dolomite deposit. In part, the study was an evaluation of the potential for the deposit to supply material under 0.22% Fe2O3 to Glaverbec, a glass manufacturer. Selecting zones under 0.22% Fe2O3, a total of 589 core samples from 13 drill holes averaged 0.14% Fe2O3 and 0.78% SiO2. The study concluded that a significant portion of the deposit has material under 0.22% Fe2O3, which is acceptable for glass manufacturing. Zones exceeding 0.22% Fe2O3 visibly showed weak hematization and could be selectively excluded.

Historical resource

Company and government reports state the results of a resource calculation undertaken by the CRM on the Carrière Portage-du-Fort (Dolomex) dolomite deposit. This resource calculation was apparently not published. The effective date of the resource calculation is not known, but reported results suggest the calculation was carried out in 1988.

Details on outline of mineralization, plans, cross-sections, grade distribution, deposit description and size, as well as parameters and criteria used for resource calculation of the dolomite deposit are not known:

little is available in the public domain. Derosier (GM 52243) presents maps of the planned open pit (grey outline in Figure 4).

The resource or reserve estimates quoted herein are historical in nature and do not meet the requirements for resource categorization as set out in the current NI 43-101. A Qualified Person has not done sufficient work to classify the historical estimate as current mineral resources or mineral reserves. WSP is not treating this historical estimate as current mineral resources or mineral reserves. These results should not be relied upon. These historical results, however, provide an indication of the potential of the property area and are relevant to ongoing evaluation and exploration.

An update on initial drilling by Aster was published in a press release in April of 1988:

- *"A band of high quality dolomite with a maximum of 1% silica impurities and a minimum whiteness of 88.5% (meeting the company's standards) has been uncovered by Aster Exploration (ME) at its Portage-du-Fort property in the Ottawa River area of Quebec. The company drilled more than 4,600 m during its exploration program at its wholly-owned property. The band, which was intersected by 14 drill holes spaced 50 m apart, varies in thickness from 100 m to 150 m and in depth from surface to 175 m. Its length has been confirmed at 500 m and the western extension remains open. Analysis of the core samples and calculation of reserves are under way." (Northern Miner: April 25, 1988)*

Several yearly Quebec government resident geologist reports on regional mineral activity gave brief updates on progress at Portage-du-Fort.

Report DV 89-01 indicated that a prefeasibility study confirmed a potential of 18 million tonnes, with less than 1% silica impurities and about 0.15% iron impurities.

The size of the deposit and resource is briefly mentioned in reports DV 90-01 and DV-91-01:

- *deposit described as over 1,100 m by 600 m*
- *"Le Centre de Recherches Minérales a évalué les réserves de dolomie à 22 millions de tonnes"*
- *The Centre de Recherches Minérales has evaluated reserves of 22 million tonnes of dolomite*

Additional details on the resource of the deposit are reported in DV 95-01:

- *"Les réserves sont évalues à 22 millions de tonnes et les teneurs sont comme suit: 30% CaO, 21% MgO, < 0,8% SiO2, and <0,3% Fe2O3. Une réserve supplémentaire de 25 millions de tonnes contient 0,8 - 1,5% SiO2."*
- *Reserves are evaluated at 22 million tonnes and grades are as follows: 30% CaO, 21% MgO, < 0.8% SiO2, and <0.3% Fe2O3. An additional reserve of 25 million tonnes contains 0.8% to 1.5% SiO2.*

In his 1993 report, Derosier (GM 52243) summarized the CRM resource estimate as follows:

- *"Les réserves ont été estimées par le Centre de Recherches Minérales du Québec à plus de 22 millions de tonnes, contenant 30,30% de CaO, 21,60% de MgO et 0,76% de silice, dans une aire de 800 m de long par 300 m de large. En incluant le matériel contenant environ 1,5% de silice, les réserves atteignent environ 45 millions de tonnes."*
- *Reserves were estimated by the Centre de Recherches Minérales du Québec at over 22 million tonnes, containing 30.30% CaO, 21.60% MgO and 0.76% silica, in an area 800 m long by 300 m wide. Including material containing about 1.5% silica, reserves amount to about 45 million tonnes.*

Derosier (GM 52243) also mentions that company work to date outlined 23.8 million tonnes with average 0.767% SiO2 and < 0.15% Fe2O3T in an area 800 m long by 300 m wide and about 120 m depth at its centre.

In 1999, Mazarin described the Dolomex Quarry deposit as follows:

- 22 million metric tonnes of extremely pure dolomite (99% CaMgCO3 [sic] with low levels of iron and silica) noted for its whiteness and crystalline appearance
- The waste/ore ratio of the deposit is 1.2:1 including three million tonnes of ore with a waste/ore ratio of 0.2:1 that can be open-pit mined and 15 million tonnes with a ratio of 0.4 or less (SEDAR: Mazarin- 1999 Annual information form)

In 2004, Sequoia described the resource at the Dolomex Quarry as follows:

- *"The Dolomex Division, located in Portage-du-Fort, Québec, 100 km west of Ottawa, owns a high-purity dolomite deposit with reserves estimated at more than 20 million tonnes…" (SEDAR: Sequoia 2003 Annual Report)*

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

7.1.1 Geological Setting: Central Metasedimentary Belt

The Portage-du-Fort Dolomite Property is located within the Mesoproterozoic Central Metasedimentary Belt ("CMB") of the western Grenville Province, which extends southward from western Quebec to Onatrio (Figure 5). Along its western boundary, the CMB structurally overlies Proterozoic and Archean granulite-facies gneiss of the Central Gneiss Belt.

In southwestern Quebec, the CMB comprises supracrustal rock assemblages of mostly upper amphibolite grade and early intrusive bodies that are divisible into distinctive NNE trending marble and quartzite domains, interpreted respectively as northern extensions of the Elzevir and Frontenac terranes of Ontario. Within each domain occurs domal structures or complexes of underlying granulite facies quartzofeldspathic gneiss (Corriveau and van Breemen, 2000; Figure 5).

The property appears to straddle the boundary between the Elzevir and Bancroft terranes of Ontario (Figure 5). However, because of uncertainty as to the extent and boundaries of the Elzevir and Bancroft terranes (Carr et al., 2000), it is unclear to which of these respective terranes the rock units of the property are affiliated with.

7.1.2 Regional Mapping

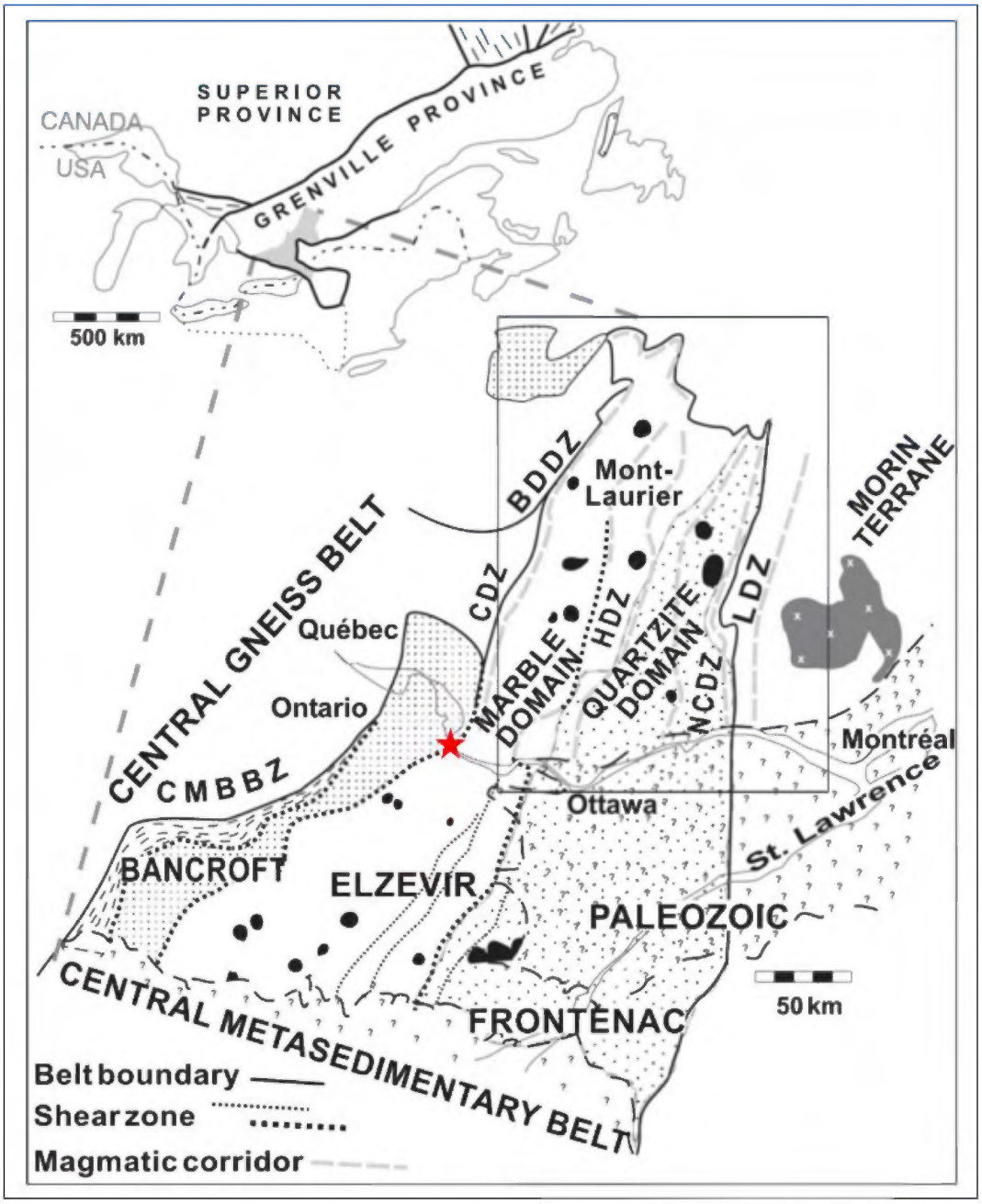
Early reconnaissance and geological mapping in the wider region surrounding the Portage-du-Fort area dates back to surveys by Logan (1847, 1863), Vennor (1878), Ells (1906), Ells et al. (1907), and Cirkel (1909) (RP 578(A)).

Regional to more detailed geological surveys were undertaken during the period 1944 to1979.The area north of Portage-du-Fort was mapped by Osborne (RG 018(A)) and Kretz (RP 338(A), RP 346(A), DP 476, DPV 514).

In 1953 and 1954, Sabourin (RG 110(A), RP 293(A), RP 307(A)) mapped areas east of Portage-du-Fort at a scale of 1:63 360.

Katz (RP 578(A), RG 170) mapped an area mostly located northwest of Portage-du-Fort at 1: 126 720 scale. Mapping included a small area over Portage-du-Fort.

Figure 5 **Approximate location of the Portage-du-Fort Property, red star, within the terranes and domains in the Central Metasedimentary Belt of the southwestern Grenville Province. Modified after Corriveau and van Breemen (2000).**



Baer et al. (1978) compiled available geological maps from Ontario and Quebec and published a 1 : 1 000 000 scale geology map that covers a large extent of the Ottawa River.

In 1978 and 1979, Brun (ET 83-03) mapped the Portage-du-Fort area in detail at 1:5 000 scale.

A generalized geology compilation map available from the SIGEOM database of the region surrounding Portage-du-Fort is presented in Figure 6.

Gauthier and Larivière (2006) conducted metallogenic and marble typology mapping in the general vicinity of the Portage-du-Fort property, from Bryson to Renfrew, on both the Ontario and Quebec sides of the Ottawa River (Figure 8 and Figure 9).

In one of the earliest maps of the region, Ells (1906) shows the area close to Portage-du-Fort to be largely underlain by Archean crystalline limestone and the wider regional geology dominated by Archean gneiss.

Katz (RP 578(A), RG 170) described the general regional geology as dominated by Grenville Group quartzofeldspathic gneisses, amphibolites, charnockitic biotite and hornblende gneisses, garnet gneisses and a metasedimentary formation with a characteristic Marble Formation. The Marble Formation is the principal lithology in the Portage-du-Fort area.

Detailed mapping of the Portage-du-Fort region by Brun (ET 83-03) covered an area encompassing about 3 km east of the Ottawa River and extending roughly 10 km north: the property is situated just below the centre of the mapped zone.

The geology of the region consists of Helikian age metasedimentary assemblages of the Bryson and Portage-du-Fort Groups, metamorphic and intrusive rocks; scarce Ordovician sedimentary rocks; and, widespread Pleistocene unconsolidated glacial-fluvial deposits. The stratigraphy of the region is presented in Figure 7.

Gauthier and Larivière (2006) show the area surrounding the property as dominated by marble (Figure 8), and in particular, by dolomitic marble (Figure 9). This marble unit extends westward into Ontario and eastward into Quebec.

The Bryson and Portage-du-Fort Groups underwent several phases of folding. Brun (ET 83-03) determined at least three dominant phases of folding: very tight NNE, open southeast, and ENE trending folds.

Figure 6 Generalized regional geology map of the Portage-du-Fort Property claims area. (Source: MRNF-SIGEOM database)

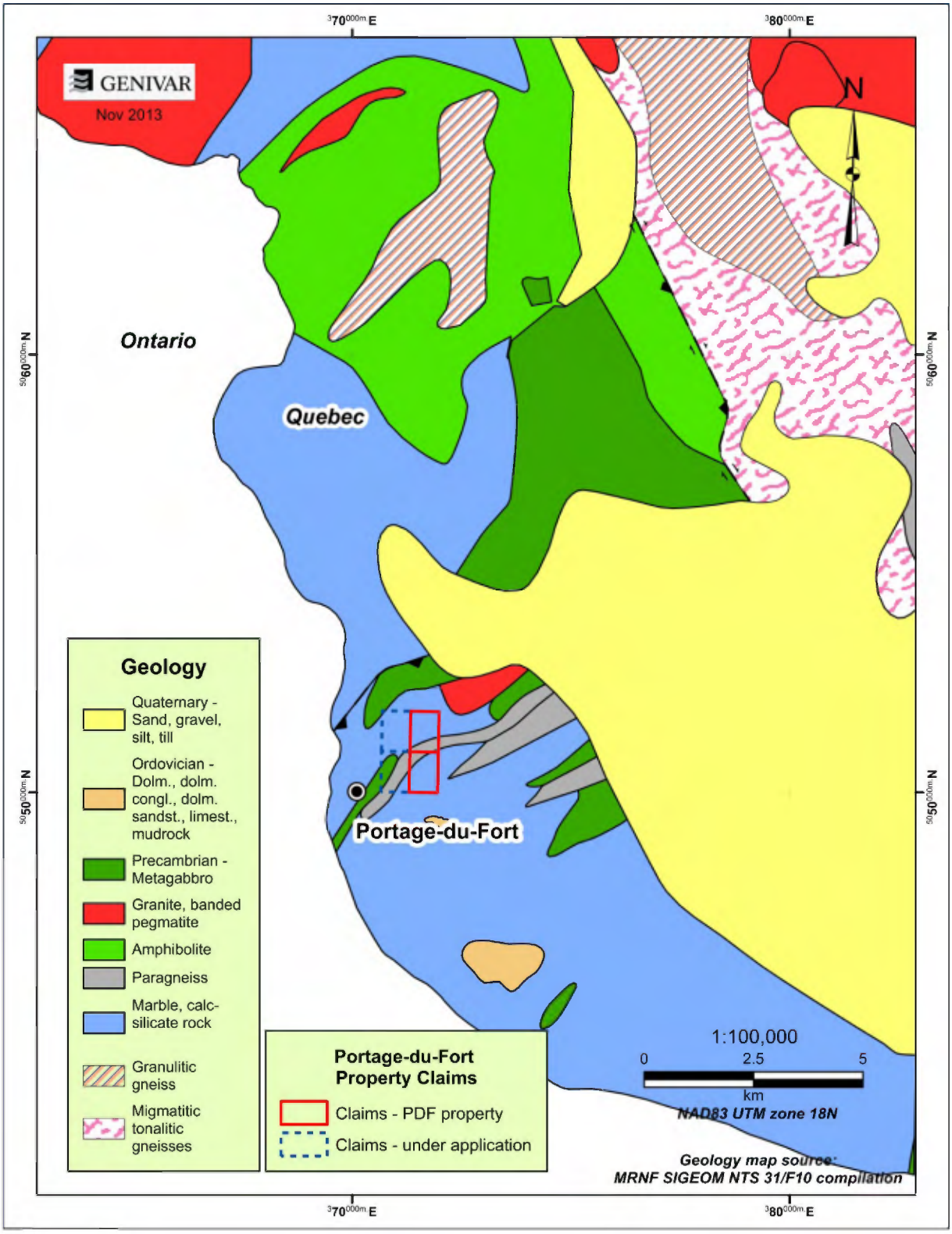


Figure 7 Stratigraphy of the Portage-du-Fort region, after Brun (ET 83-03).

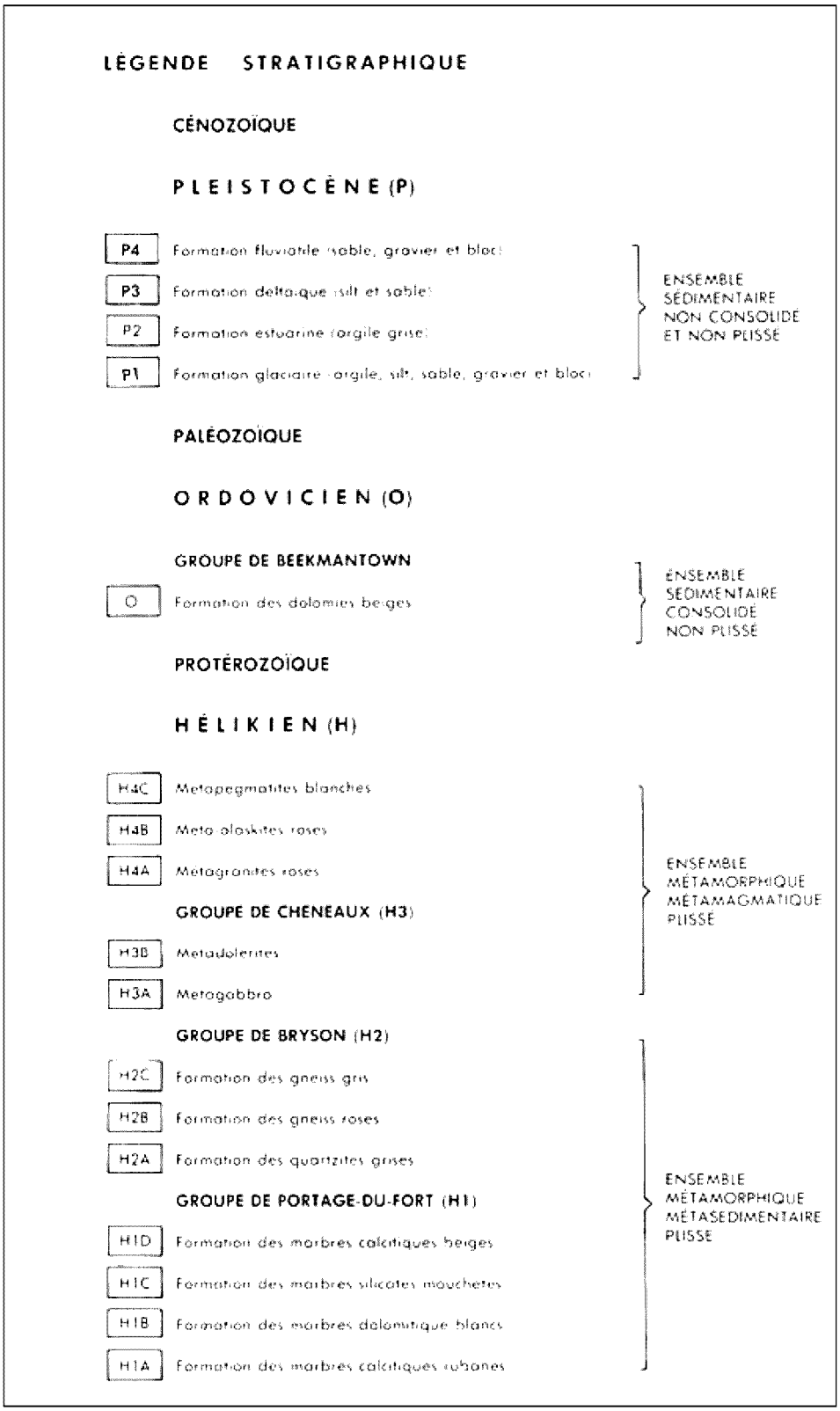


Figure 8 Geology map of the Bryson-Renfrew region. Modified after Gauthier and Larivière (2006).

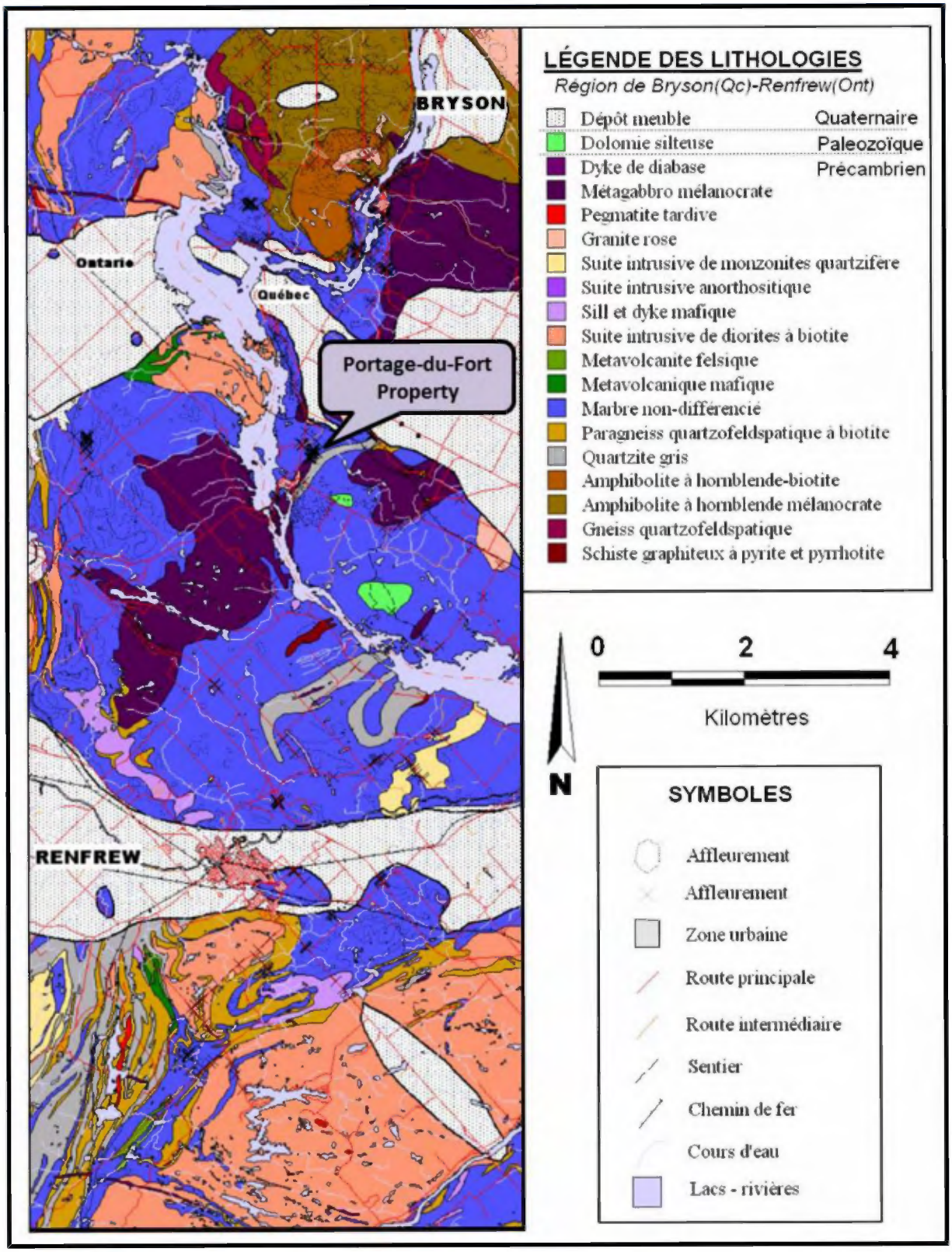
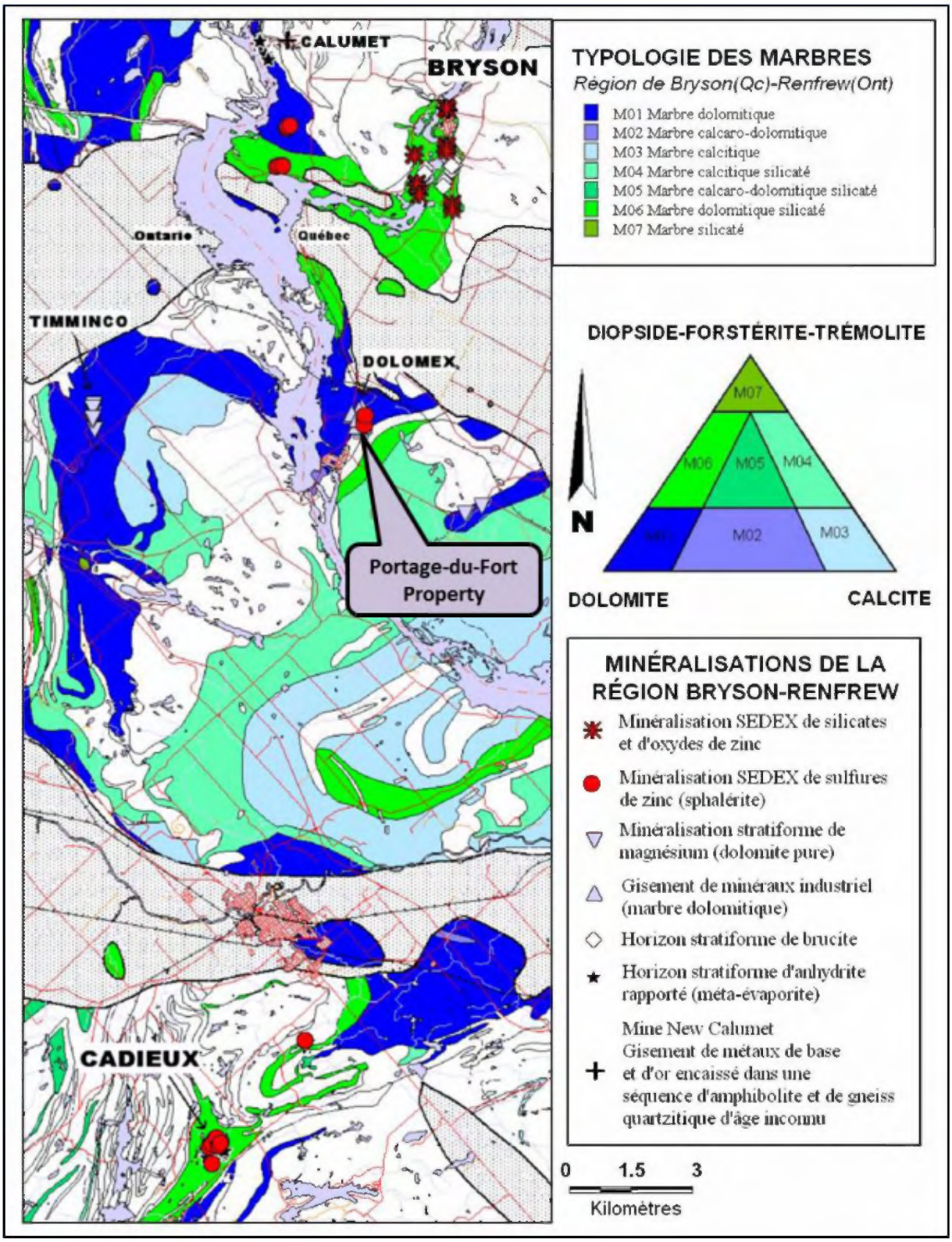


Figure 9 **Metallogenic map of the Bryson-Renfrew region with emphasis on marble typology (classification). Modified after Gauthier and Larivière (2006). Location of the Timminco Metals Limited high purity dolomite quarry is also indicated.**



The metasedimentary assemblages in the Portage-du-Fort region underwent upper-amphibolite (sillimanite-almandine-orthoclase) to hornblende granulite facies regional metamorphism. Locally, there is contact metamorphism close to intrusive units (RP 578(A), RG 170), ET 83-03).

7.2 Project Geology

The Portage-du-Fort Dolomite Property is mainly underlain by marble units of the Portage-du-Fort Group and to a lesser extent by quartzite and grey gneiss units of the Bryson Group (Table 12). The Portage-du-Fort Group units are described in reports ET 83-03 and GM 47975 and are briefly summarized below. Lithostratigraphy of the Portage-du-Fort Group and the Bryson Group is presented in Figure 10. A detailed geology map of the property is presented in Figure 11.

7.2.1 Portage-du-Fort Group

Banded calcitic marble (H1A)

This unit is represented by calcitic marble, dolomite bearing calcitic marble, and silicate bearing calcitic marble. These units are coarse grained, generally isogranular, and have a banded appearance, composed of thin alternating white and grey layers. On fresh surfaces, these marbles are white or grey and on weathering surfaces, grey.

White dolomitic marble (H1B)

This unit consists mainly of dolomitic marble, lesser calcite dolomitic marble, and silicate dolomitic marble. Dolomitic marble is homogeneous, medium grained, and generally isogranular. It is commonly dark grey on weathering surface and greyish white to pale beige on fresh surface (ET 83-03). Locally, this unit includes thin 1 m to 4 m wide impure lenses, where the dolomite is cut by multiple calcite-dolomite and graphite veins with irregular hematite alteration (GM 4795).

Spotted silicate marble (H1C)

This widespread and very heterogeneous unit consists largely of silicate marble (“marbres silicatés”), silicate calcitic marble, silicate dolomitic marble, and pyroxenite. These marbles are generally hetrogranular, show medium to coarse grained texture, and are characterized by lenticular concretions of diopside, serpentine, tremolite and quartz. Surface colour varies from greyish beige to greyish green. This unit includes lenses of fine grained pyroxenite.

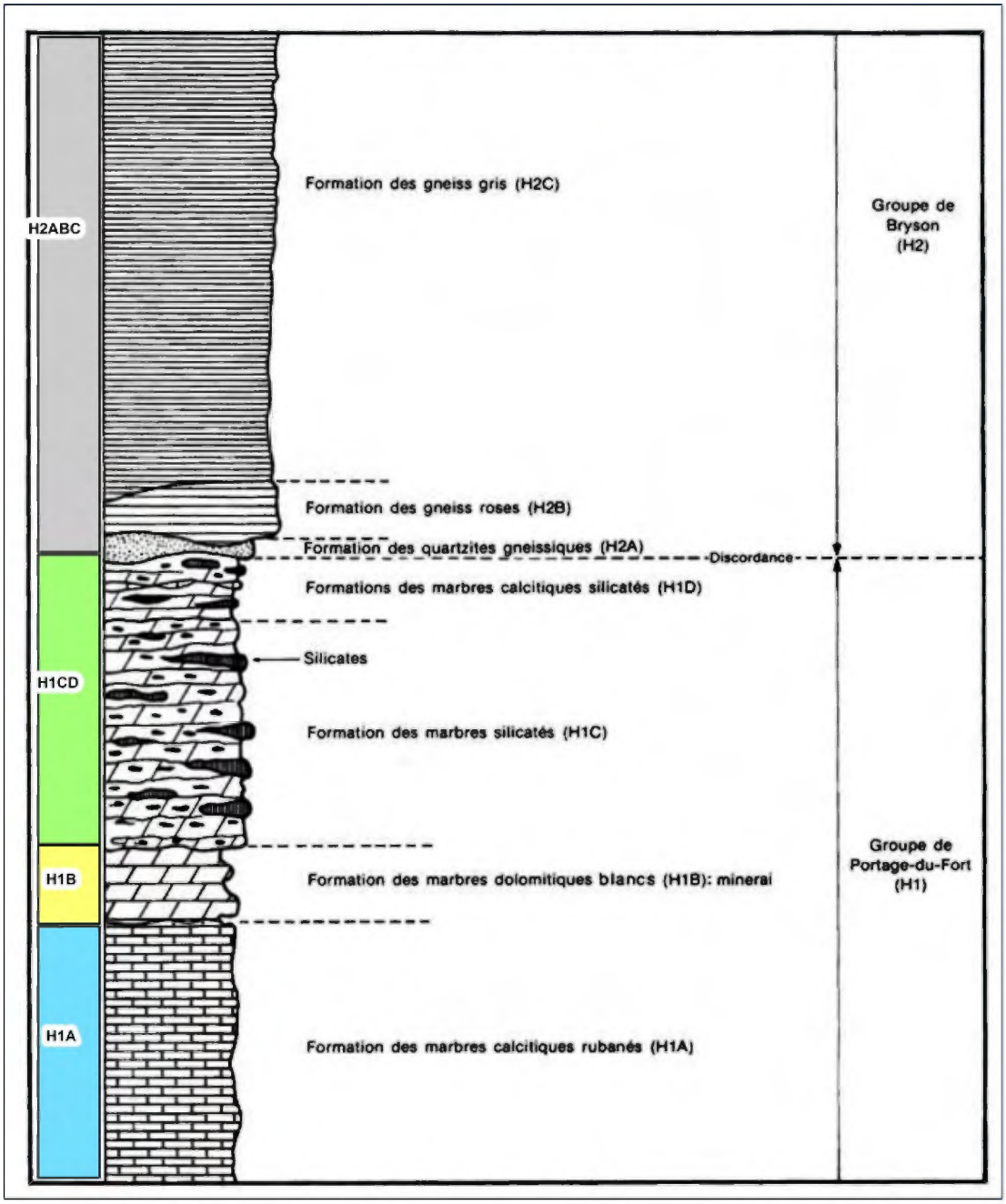
Beige calcitic marble (H1D)

This unit includes calcitic marble, dolomite calcitic marble, and silicate calcitic marble. Rocks are generally homogeneous, isogranular, and coarse grained. Fresh surfaces vary from pale pink to pale blue to pale beige. Weathering surfaces are dark grey.

Table 12 Description of Portage-du-Fort Group (H1) and Bryson Group (H2) units on the Portage-du-Fort Dolomite Property. (After geology map by Brun (ET 83-03)

H2C	**Grey gneiss**	pale grey gneiss grey gneiss dark grey gneiss amphibolite	homogeneous pale grey to dark grey fine grained generally isogranular
H2A	**Grey quartzite**	quartzite grey gneiss	homogeneous pale grey to bluish grey; rusty ws fine grained generally isogranular
H1D	**Beige calcitic marble**	calcitic marble dolomite calcitic marble silicate calcitic marble	homogeneous pale pink, pale blue, pale beige coarse grained generally isogranular
H1C	**Spotted silicate marble**	silicate marble silicate calcitic marble silicate dolomitic marble pyroxenite	heterogeneous greyish beige to greyish green medium to coarse grained heterogranular
H1B	**White dolomitic marble**	dolomitic marble calcite dolomitic marble silicate dolomitic marble	homogeneous greyish white to pale beige medium grained generally isogranular
H1A	**Banded calcitic marble**	calcitic marble dolomite calcitic marble silicate calcitic marble	homogeneous white or grey coarse grained generally isogranular banded appearance with thin alternating white and grey layers

Figure 10 Lithostratigraphy of the Bryson and Portage-du-Fort Groups, modified after Brun (ET 83-03). High purity dolomitic marble occurs within unit H1B.

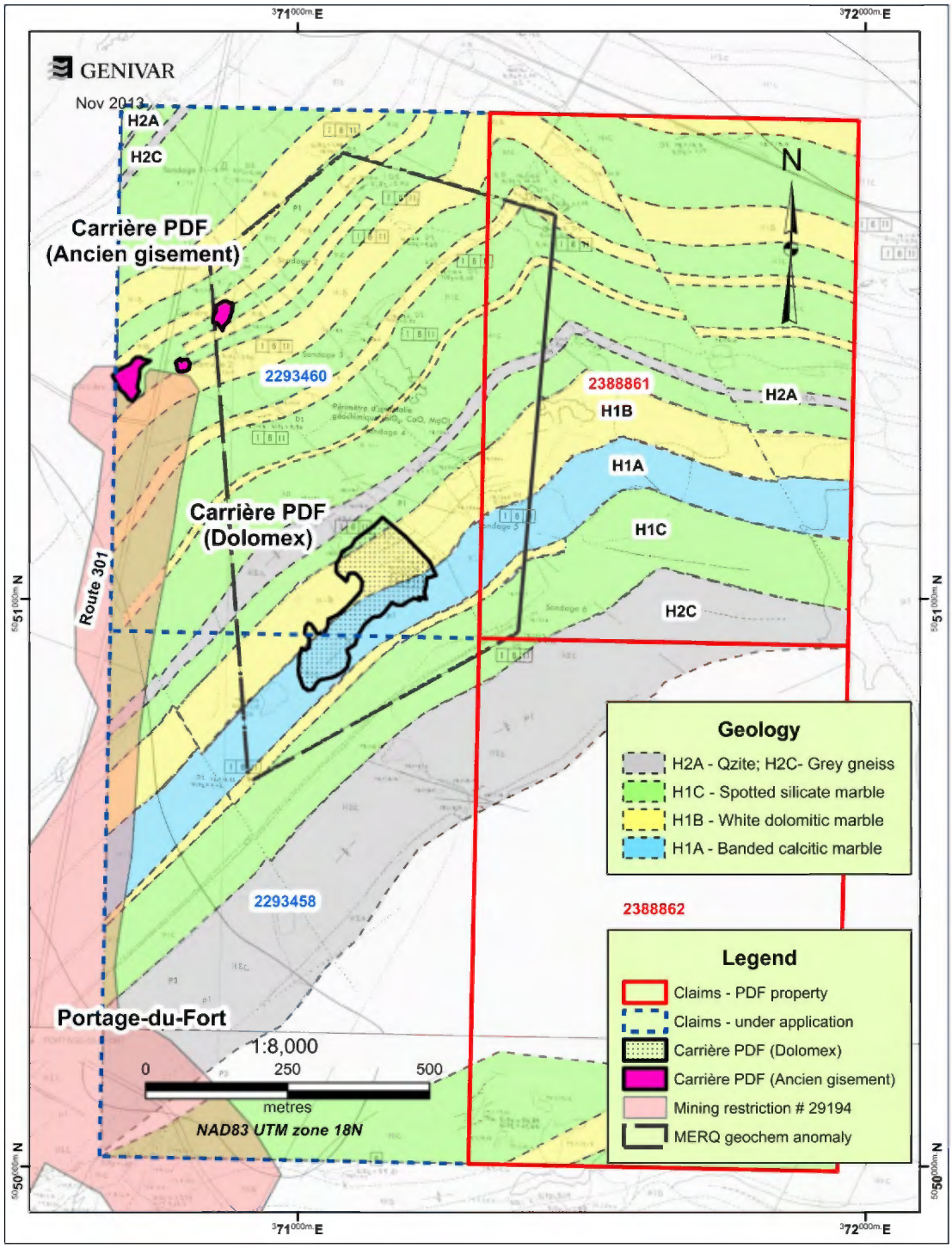


Detailed geology maps that cover the area of the property are included in reports ET 83-03, GM 47975, and GM 52234. The geology by Brun (ET 83-03) covers more of the property and has a more detailed structural interpretation (Figure 11).

The property is underlain by tightly folded (isoclinal) alternating units of predominantly dolomitic marble (H1B), silicate marble (H1C) and lesser calcitic marble (H1A), quartzite (H2A), and grey gneiss (H2C). Both quartzite (H2A), and grey gneiss (H2C) form the core of synforms. Tightly folded units trend mostly northeast and west to northwest; these are folded by later open southeast trending folds. Dips are steep and vary from 650 to 900 (GM 47975).

Figure 11 Geology map of the Portage-du-Fort Property modified after Brun (ET 83-03).

Portage-du-Fort Property claims, claims under application, and outlines of quarries Carrière Portage-du-Fort (Ancien gisement) and Carrière Portage-du-Fort (Dolomex), as well as MERQ geochemical anomaly are also indicated. Geology basemap from Brun (ET 83-03).



7.3 Mineralization

Mineralization on the Portage-du-Fort Dolomite Property consists of high purity magnesian dolomitic marble. Brun (ET 83-03), and subsequent authors, referred to the geological unit containing this type of marble as unit H1B.

The extent of mineralization is not well determined. What is considered mineralization is dependent on the compositional requirements of the industrial use of the dolomitic or high purity dolomitic marble. For industrial purposes, the determining factor is often low SiO2, high MgO, and low impurities.

In his 1984 report, upon review of analytical results to date of high purity dolomitic marble from the Portage-du-Fort area derived from then available regional surface samples and drill core samples from the MERQ drilling, Brun (ET 83-03) concluded the following:

> *"The grades obtained at surface and subsurface are interesting as these are high in MgO and very low in SiO2…after having reviewed all known dolomite and dolomitic marble deposits in Quebec, there is no doubt that the white dolomitic unit [H1B] at Portage-du-Fort is not only the purest currently available in the Province of Quebec but also constitutes a real magnesium ore (minerai)." (ET 83-03; translated from French)*

In 1988, a twenty hole drill program conducted by Aster targeted high purity dolomitic marble units (H1B) with SiO2 <1%. As indicated in the Section 6.0, a bulk sample of twenty drill core composites of dolomitic marble, unit H1B, derived from eleven drill holes, gave an average composition of 30.3% CaO, 21.0% MgO, 0.83% SiO2, and 0.37% Al2O3+Fe2O3t+TiO2+P2O5 (Table 11) (GM 47976).

8.0 DEPOSIT TYPES

The Carrière Portage-du-Fort (Dolomex) or Dolomex Quarry deposit is a metamorphosed dolomite deposit. A detailed model deposit description, British Columbia Mineral Deposit Profile R10, is presented in Appendix V. Portage-du-Fort is a type example of this type of deposit.

9.0 EXPLORATION

Quebec Co. has not conducted exploration on the property.

10.0 DRILLING

Quebec Co. has not conducted drilling on the property.

11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

Quebec Co. has not carried out sampling on the property.

12.0 DATA VERIFICATION

No data verification has been carried out.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

No current mineral processing and metallurgical testing has been completed on material from the property.

14.0 MINERAL RESOURCE ESTIMATES

No current mineral resource estimate has been completed.

23.0 ADJACENT PROPERTIES

Timminco Metals Inc. ("Timminco"), until its shutdown in 2008, operated a plant in Ontario, located 7.9 km west of the Portage-du-Fort Property The plant produced high-purity metal and alloyed magnesium for specialized markets (Figure 9).

Timminco used the Pidgeon process to extract magnesium from a very high purity dolomitic marble quarried at the plant site near Haley, Ontario. In 1988, Timminco produced about 6,000 tonnes of magnesium from about 45,000 tonnes of dolomite (LeBaron and MacKinnon 1990).

The dolomitic marble near the Timminco plant was initially quarried for building stone from 1900 to 1907. During the period 1907 to 1942, there was intermittent production of building stone aggregate. In 1942, Dominion Magnesium Limited commenced production of magnesium metal from dolomitic marble. Production was later carried out by Chromasco Limited, and finally by Timminco Metals, a division of Timminco Limited (LeBaron and MacKinnon 1990).

The deposit consists of a 75 m wide band of very pure, white, coarsely crystalline dolomitic marble. The marble contains less than 1% impurities. The ore zone has been mined in two quarries over a strike length of 700 m.

Table 13 Composition of a sample of high purity dolomitic marble from Quarry 2 at the Timminco Limited property (LeBaron and MacKinnon 1990).

Oxides	Weight%
SiO2	0.31
Al2O3	< 0.01
Fe2O3	0.05
MgO	21.2
CaO	30.8
LOI	47.1
Total	**99.5**

Acid insolubles	0.4
Brightness	91.5

24.0 OTHER RELEVANT DATA AND INFORMATION

There is no additional relevant data or information applicable to this report that is not already addressed in this report.

25.0 INTERPRETATIONS AND CONCLUSIONS

The Portage-du-Fort area is host to a large tonnage, high purity magnesian dolomitic marble deposit with previous production history.

A historical resource estimate of the dolomite deposit at Carrière Portage-du-Fort (Dolomex) or Dolomex Quarry is reported to indicate 22 million tonnes grading 30.30% CaO, 21.60% MgO, and 0.76% SiO2. If material containing up to 1.5% SiO2 is included, tonnage increases to 45 million tonnes. Iron content is low, on average < 0.15% Fe2O3T.

This resource estimate is historical in nature and does not meet the requirements for resource categorization as set out in NI 43-101. A Qualified Person has not done sufficient work to classify this historical estimate as current mineral resources or mineral reserves. WSP is not treating these historical estimates as current mineral resources or mineral reserves. These results should not be relied upon. However, these historical results provide an indication of the potential of the property area and are relevant to ongoing evaluation and exploration.

Under various companies, the Dolomex Quarry operated from 1991 to 2004. Annual dolomite production ranged from about 25,000 tonnes in 1992 to attain close to 100,000 tonnes in 2002. In the early 1990's production was mainly destined for glass manufacturing and to a lesser extent for agricultural purposes. By 2002, the operation produced various dolomite products used to manufacture plate glass, floor tiles, roofing powder, polishing powder, line powder, filtration sand, decorative stone, and agricultural and horticultural fertilizers.

The white, high purity dolomitic marble at Portage-du-Fort is one of the purest, if not the purest, currently available in the Province of Quebec. Previous marketing studies have indicated various potential industrial uses for this high purity dolomitic marble, but emphasized its potential use in the production of magnesium metal.

The Dolomex Quarry dolomitic marble deposit is located largely within pending claims 2293458 and 2293460, which adjoin the Portage-du-Fort Dolomite Property to the west. The western edge of these pending claims cover part of the urban area of the village of Portage-du-Fort and Mining restriction 29194, therefore the pending claims have not been issued by the MRNF, but will remain under application. Mining restriction number 29194 prevents the issuance of and prohibits exploration within these pending claims. In accordance with Section 91 of proposed Bill 14, and until such time Bill 14 is settled, the MRNF will refrain from issuing claims requested within urbanization perimeters, but will keep the requests as received. Access to the Dolomex Quarry dolomitic marble deposit remains to be determined.

Rock units containing the high purity dolomitic marble at the Dolomex Quarry deposit extend northeast into the Portage-du-Fort Property and further east of the Property. These rock units also extend west across the Ottawa River into Ontario. In Ontario, high purity dolomitic marble was quarried 7.9 km west of Portage-du-Fort. From 1942 to 2008, this marble was quarried for the production of high purity metal and alloyed magnesium for specialized markets.

The Portage-du-Fort area and surrounding region show potential for additional resources of high purity dolomitic marble and merit further evaluation and exploration.

26.0 RECOMMENDATIONS

A two-phase work program at a total estimated cost of $213,000 ($CDN) is recommended in order to validate the potential of the Portage-du-Fort Dolomite Property and surrounding area. Phase II work will be dependent upon the results obtained from Phase I work. This work should include:

- Regional geological compilation, review, additional claim staking, prospecting and geological mapping, and evaluation of potential lateral extensions of similar units of high purity dolomitic marble in Quebec and to the west into Ontario;
- Review, compilation, and digitalization of mapping and historic drill data in anticipation of the confirmatory drilling necessary in order to establish a NI 43-101 compliant resource;
- A market study of current conditions and economics for dolomite marble and/or highly pure magnesian dolomite marble to determine potential industrial applications and worth of the Portage-du-Fort dolomite;
- A drilling program designed to outline a NI 43-101-compliant resource estimate of high purity dolomite.

Accordingly the following two-phase work program with estimated costs is recommended:

Phase I:

1. Review, compilation, digitalization of mapping and historic data: $11,500
2. Geological mapping, evaluation, additional claim staking: $10,000
3. Market study: $12,000

Subtotal Phase I: $33,500

Phase II:

1. 1,500m NQ-diameter core drilling (approx. 9 holes) @ $70.00/m: $105,000
2. Core handling, logging, splitting: $20,000
3. Geochemical major element analysis: 300 samples @ $65/sample: $19,500
4. NI 43-101 compliant resource estimate and report: $35,000

Subtotal Phase II: $179,500

Total Phases I & II: $213,000

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DV 94-01 - RAPPORT DES GEOLOGUES RESIDENTS SUR L'ACTIVITE MINIERE REGIONALE. 1994, Par VERPAELST, P, DUSSAULT, C, MORIN, R, GLOBENSKY, Y, RIVE, M, DOYON, M, GAUDREAU, R. 188 pages. 4 microfiches.

DV 95-01 - RAPPORT DES GEOLOGUES RESIDENTS SUR L'ACTIVITE MINIERE REGIONALE EN 1994. 1995, Par GAUDREAU, R, GOUTIER, J, DUSSAULT, C, MORIN, R, GLOBENSKY, Y, RIVE, M, DOYON, M. 188 pages. 4 microfiches.

DV 96-01 - RAPPORT DES GEOLOGUES RESIDENTS SUR L'ACTIVITE MINIERE REGIONALE. 1996, Par GAUDREAU, R, DUSSAULT, C, MORIN, R, GLOBENSKY, Y, RIVE, M, DOYON, M, PERREAULT, S. 144 pages. 3 microfiches.

DV 97-01 - RAPPORT DES GEOLOGUES RESIDENTS SUR L'ACTIVITE MINIERE REGIONALE EN 1996.. 1997, Par LACROIX, S, DOYON, M, PERREAULT, S, NANTEL, S, GAUDREAU, R, DUSSAULT, C, MORIN, R. 102 pages. 2 microfiches.

ET 83-03 - GEOLOGIE DE LA REGION DE PORTAGE-DU-FORT. 1984, Par BRUN, J. 96 pages. 3 CARTES (ECHELLE 1/50 000), 10 FIGURES HORS-TEXTE / 7F. 5 microfiches.

MB 89-49 - SOMMAIRE DES PRINCIPAUX GITES DE DOLOMIE AU QUEBEC. 1989, Par JACOB, H L, PETRYK, A. 22 pages. 1 microfiche.

MB 90-31 - LES RESSOURCES EN MINERAUX DE MAGNESIUM ET LEUR UTILISATION AU QUEBEC. 1990, Par HEBERT, Y, PARE, C. 62 pages. 7 CARTES (ECHELLES: 5 X 1/50 000, 1 X 1/5 000, 1 X 1/555 555 APPR) ET 1 COUPE /1F. 2 microfiches.

MB 2000-01 - INVENTAIRE DES CARRIERES DE PIERRE, REGION DU SUD-OUEST DU QUEBEC (SNRC 31F, 31G, 31K, ET 31H/13). 2000, Par BELLEMARE, Y. 176 pages. 4 microfiches.

RG 018(A) - CALUMET ISLAND AREA, PONTIAC COUNTY. 1944, Par OSBORNE, F F. 35 pages. CARTE 549 (ECHELLE 1/31 680) ET CARTE 550 (ECHELLE 1/24 000). 1 microfiche.

RG 110(A) - BRISTOL - MASHAM AREA, PONTIAC AND GATINEAU COUNTIES. 1965, Par SABOURIN, R J E. 54 pages. CARTE 1495 (ECHELLE 1/63 360). 2 microfiches.

RG 170 - REGION PORTAGE-DU-FORT ET LAC SAINT-PATRICE. 1976, Par KATZ, M B. 122 pages. CARTE 1804 (ECHELLE 1/126 720). 4 microfiches.

RP 293(A) - PRELIMINARY REPORT ON ONSLOW - MASHAM AREA, PONTIAC AND GATINEAU COUNTIES. 1954, Par SABOURIN, R J E. 7 pages. CARTE 1034 (ECHELLE 1/63 360). 1 microfiche.

RP 307(A) - PRELIMINARY REPORT ON BRISTOL AREA, PONTIAC COUNTY. 1954, Par SABOURIN, R J E. 8 pages. CARTE 1066 (ECHELLE 1/63 360). 1 microfiche.

RP 338(A) - PRELIMINARY REPORT ON LITCHFIELD - HUDDERSFIELD AREA, PONTIAC ELECTORAL DISTRICT. 1957, Par KRETZ, R. 9 pages. CARTE 1165 (ECHELLE 1/63 360). 1 microfiche.

RP 346(A) - PRELIMINARY REPORT ON THORNE - LESLIE - CLAPHAM AREA, PONTIAC ELECTORAL DISTRICT. 1957, Par KRETZ, R. 8 pages. CARTE 1173 (ECHELLE 1/63 360). 1 microfiche.

RP 578(A) - PRELIMINARY REPORT, GEOLOGY OF SAINT-PATRICE LAKE AND PORTAGE-DU-FORT AREAS. 1969, Par KATZ, M B. 30 pages. CARTE 1693 (ECHELLE 1/126 720). 2 microfiches.

Websites

COREM

Consortium de recherche appliquée en traitement et transformation des substances minérales (Previously the CRM - Centre de recherche minérale)

http://www.corem.qc.ca/entreprise-eng

GESTIM

Ministère des Ressources Naturelles et de la Faune (MRNF) – Mines - GESTIM

https://gestim.mines.gouv.qc.ca/

Green Investment Group - Pontiac Regional Industrial Park – Portage-du-Fort

http://www.greeninvgroup.com/projects/project-portage-du-fort-quebec.html

OTTAWA CITIZEN

http://www.ottawacitizen.com/index.html

OUTAOUAIS TOURISM

Location map of Portage-du-Fort relative to Gatineau-Ottawa area

http://www.tourismeoutaouais.com/en-ca/services-touristiques/lieux-d-information-touristique/portage-du-fort-tourist-information-relay

MRNF

Ministère des Ressources Naturelles et de la Faune (MRNF) - Mines

http://www.mrn.gouv.qc.ca/english/mines/index.jsp

MRNF – Claims

Ministère des Ressources Naturelles et de la Faune (MRNF) - Mines

http://www.mrn.gouv.qc.ca/english/publications/online/mines/claim/index.asp

MRNF – The exploration and mining of surface mineral substances

Ministère des Ressources Naturelles et de la Faune (MRNF) - Mines

http://www.mrn.gouv.qc.ca/english/publications/online/mines/sms/index.asp

NORTHERN MINER

http://www.northernminer.com/

SEDAR

http://www.sedar.com/

SIGEOM

Ministère des Ressources Naturelles et de la Faune (MRNF) – Mines - SIGEOM

http://sigeom.mrn.gouv.qc.ca/

THE GAZETTE

http://www.montrealgazette.com/

28.0 CERTIFICATE OF QUALIFIED PERSON

28.1.1 John D. Charlton, P.Geo.

I, John D. Charlton, P. Geo., of Saint-Lazare, Québec do hereby certify:

- I am a Director, Geology and Mining with WSP Canada Inc. with a business address at 1600 boul. Rene-Lévesque, 16th Floor, Montréal, Québec H3H 1P9.
- This certificate applies to the technical report entitled Technical Report on the Portage-du-Fort Dolomite Property, Southwestern Quebec. NTS 31F/10 (the "Technical Report"): effective date December 9, 2013.
- I am a graduate of the University of Western Ontario (1973). I am a member in good standing of Order of Quebec Geologists (OGQ #0443). I have no previous experience with the type of deposit described in this Technical Report. I am a "Qualified Person" for the purposes of National Instrument 43-101 (the "Instrument").
- I personally inspected the Property on August 31, 2013.
- I am responsible for review and editing of the Technical Report.
- I am independent of 9248-7792 Quebec Inc. and 9257-1256 Quebec Inc. as defined by Section 1.5 of the Instrument.
- I have no prior involvement with the Property that is the subject of the Technical Report.
- I have read the Instrument and the sections of the Technical Report that I am responsible for have been prepared in compliance with the Instrument.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the sections of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 4th day of July, 2014 at Montréal, Québec.

John D. Charlton, P.Geo.

1442520

28.1.2 Mario Justino, M.Sc., P.Geo.

I, Mario Justino, M.Sc., P.Geo., of Montréal, Québec do hereby certify:

- I am an independent consultant with WSP Canada Inc. with a business address at 1600 boul. Rene-Lévesque, 16th Floor, Montréal, Québec H3H 1P9.
- This certificate applies to the technical report entitled Technical Report on the Portage-du-Fort Dolomite Property, Southwestern Quebec. NTS 31F/10 (the "Technical Report"): effective date December 9, 2013.
- I am a graduate of McGill University, B.Sc.(Hons.) in Geology (1982) and Acadia University, M.Sc. in Geology (1992). I am a member in good standing of l'Ordre des géologues du Québec (OGQ#1237). I have practiced my profession since 1982. I have participated in exploration programs for gold, base metals, uranium, and platinum group metals across Canada, in South America, and in Europe. However, I have no previous experience with the type of deposit described in this Technical Report. I am a "Qualified Person" for the purposes of National Instrument 43-101 (the "Instrument").
- I have not visited or carried out an inspection of the Property.
- I am responsible for all sections of the Technical Report.
- I am independent of 9248-7792 Quebec Inc. and 9257-1256 Quebec Inc. as defined by Section 1.5 of the Instrument.
- I have no prior involvement with the Property that is the subject of the Technical Report.
- As of the date of this certificate, to the best of my knowledge, information, and belief, the sections of the Technical Report that I am responsible for contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Signed and dated this 4th day of July, 2014 at Montréal, Québec.

Mario Justino, M.Sc. P.Geo.

1442520

APPENDICES

Appendix I

A: Mining Restriction 29194

Source: GESTIM database https://gestim.mines.gouv.qc.ca/

Number	Type of restriction	Name	Application Date	Mining Activities	Sand and Gravel Permitted
29194	Urban Area	Pontiac (840)	2011/05/12	Exploration prohibited	No

Special Conditions	Although Section 91 of Bill 14, an Act respecting the development of mineral resources in keeping with the in force, it will apply retroactively from the date the Bill was introduced, in accordance with Section 104. Therefore, the State must govern itself as though Section 91 is in force until the fate of the Bill is settled. Thus, the Minister will refrain from issuing claims requested within urbanization perimeters and areas dedicated to vacationing while keeping the requests received. Holders of claims lying within the perimeters covered by Section 91 of the Bill should comply with the requirements of this section in order to avoid being in a situation of non-compliance with the Act respecting the development of mineral resources in keeping with the principles of sustainable development when it come into force, thus exposing them to revocation of their claims.
Law	• **Projet de loi No 14** (Loi sur la mise en valeur des ressources minérales dans le respect des principes du développement durable)
Legal References	• **a. 91** (Cette loi est modifiée par l'insertion, après l'article 304.1, du suivant: « 304.2. Est soustrait au jalonnement, à la désignation sur carte, à la recherche minière ou à l'exploitation minière tout terrain compris à l'intérieur d'un périmètre d'urbanisation au sens de la Loi sur l'aménagement et l'urbanisme (chapitre A-19.1) et tout territoire affecté à la villégiature suivant un schéma d'aménagement et de développement ou un plan métropolitain d'aménagement et de développement adoptés en vertu de cette loi. Les titulaires de claims situés à l'intérieur d'un territoire ainsi soustrait doivent, pour exécuter des travaux, obtenir le consentement de la municipalité locale concernée. Les conséquences qu'entraîne l'impossibilité d'exécuter les travaux en raison du défaut d'obtenir une telle autorisation ne donnent lieu à aucune indemnité de la part de l'État. À la demande de la municipalité régionale de comté ou de la communauté métropolitaine concernée, le ministre peut mettre fin à une telle soustraction pour tout ou partie du territoire ou remplacer cette soustraction par une réserve à l'État et permettre l'exploration et l'exploitation de substances minérales qu'il détermine. Il tient compte, notamment, des éléments suivants: 1° les motifs formulés par la municipalité régionale de comté ou la communauté métropolitaine et toute autre préoccupation soulevée; 2° l'impact économique que l'activité représente pour le milieu; 3° l'incidence de l'activité sur les besoins en matière de développement. ».)

B: Bill 14 Section 91

http://www.assnat.qc.ca/Media/Process.aspx?MediaId=ANQ.Vigie.Bll.DocumentGenerique_46995en&process=Default&token=ZyMoxNwUn8ikQ+TRKYwPCjWrKwg+vIv9rjij7p3xLGTZDmLVSmJLoqe/vG7/YWzz

91. The Act is amended by inserting the following section after section 304.1:

"**304.2**. Any area within an urbanization perimeter within the meaning of the Act respecting land use planning and development (chapter A-19.1) and any area dedicated to vacationing under a land use planning and development plan or a metropolitan land use and development plan adopted under that Act is withdrawn from staking, map designation, mining exploration and mining operations.

In order to perform work, the holders of claims in an area that has been so withdrawn must obtain the consent of the local municipality concerned. No compensation is paid by the State for the consequences of an inability to perform work because of failure to obtain such an authorization.

At the request of a regional county municipality or the metropolitan community concerned, the Minister may terminate the withdrawal of all or part of the area or reserve the area to the State instead, allowing the mineral exploration and mining the Minister determines. The Minister takes account, in particular, of

(1) the reasons presented by the regional county municipality or the metropolitan community and any other concern raised;

(2) the economic impact of the activity on the community;

(3) the incidence of the activity on development needs."

C: Quebec Mining Act

Quebec's previous Liberal government attempted to amend the current Quebec Mining Act (R.S.Q., c. M-13.1) (the "Act") through Bill 79 introduced in December 2009 and Bill 14 introduced in May 2011 ("Bill 14"). Both bills died on the order paper.

On May 29, 2013, Bill 43, entitled the Mining Act ("Bill 43"), was introduced in the Quebec National Assembly by the Minister of Natural Resources, Martine Ouellet. Bill 43 represents the current provincial government's attempt to revise Quebec's mining regime while maintaining several provisions of the Act. (*Source: Martin R. Gagné - http://www.fasken.com/bill-43-quebec-mining-act/*)

On October 30, 2013, Bill 43 was defeated in the Quebec National Assembly.

On December 5, 2013, Bill 70, An Act to amend the Mining Act, was tabled in the Quebec National Assembly.

Current Quebec Mining Act (R.S.Q., c. M-13.1): http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/M_13_1/M13_1_A.html

Regulation respecting mineral substances other than petroleum, natural gas and brine http://www2.publicationsduquebec.gouv.qc.ca/documents/lr/M_13_1/M13_1R2_A.htm

Proposed Bill 14: http://www.assnat.qc.ca/en/travaux-parlementaires/projets-loi/projet-loi-14-39-2.html

Proposed Bill 43: http://www.assnat.qc.ca/en/travaux-parlementaires/projets-loi/projet-loi-43-40-1.html

Proposed Bill 70: http://www.assnat.qc.ca/en/travaux-parlementaires/projets-loi/projet-loi-70-40-1.html

Appendix II

Source: SIGEOM database **http://sigeom.mrn.gouv.qc.ca/**

See: Sigéom à la carte / Deposits / Construction materials and industrial stones

Note: *The information below on the quarries of Portage-du-Fort was originally compiled in report MB 2000-01 and dates from field visits prior to 2000.The Dolomex Quarry was closed in 2004.*

Construction materials and industrial stones
1 of 3

NTS map-sheet number :	31F10
Name of deposit or quarry :	CAR. PORTAGE-DU-FORT (DOLOMEX)
Commercial name given to architectural stone :	
Cogite number :	31F/10-0009
Deposit or quarry status :	Active quarry
Zone :	18
Easting :	371144
Northing :	5051020
Provenance :	Mining installation
Reference of localization :	CARRIÈRE
Comment - location :	Canton/seigneurie: LITCHFIELD, Rang(s): I, Lot(s): 30-31
Regional county municipality (RCM) :	Pontiac
Work history :	En 1969, M. R. N. Q. (M. B. KATZ) - Levé géologique. En 1970, C. G. C. (R. J. W. DOUGLAS) - Levé géologique. En 1977-1979, M. E. R. Q. - Levés géologiques détaillés, échantillonnage et levé lithogéochimique. En 1980, M. E. R. Q. - Décapage et 6 sondages (1 219 m). En 1982, EXPL. ASTER INC. - Sondages (1 200 m). En 1985, J. B. SOMMERVAIL et S. LEE - Prospection et levé géophysique (MAG). En 1987, EXPL. ASTER INC. - Cartographie et 15 sondages (2 500 m). En 1988, EXPL. ASTER INC. - Levé géologique, tranchées, levé géochimique (roches), 20 sondages (4 600 m) et excavation. En 1989, RES. CANSPAR INC. - Évaluation de la propriété. En 1991, DOLOBEC INC. - Décapage et mise en production. En 1996-2000, DOLOMEX INC. - Exploitation (DV-2001-01, pages 94 et 95, site 59). En 1999, M. R. N. Q. - Levé d'inventaire géologique (MB-2000-01, site 7).
Report number :	DV 2001-01, DV 88-01, DV 89-01, DV 90-01, ET 83-03, GM 07945, GM 16564, GM 41051, GM 42146, GM 43280, GM 43872, GM 46322, GM 47975, GM 47976, MB 2000-01, MB 89-49, MB 90-14, MB 90-31, RG 170, all
Extra-EXAMINE document :	Le Droit, Ottawa - Hull, 25 septembre 1991, page 29, Le Droit, Ottawa - Hull, 19 janvier 1992, page 24
Comment - use of extracted product :	Utilisée comme agrégats blancs ; produits granulés (agriculture, horticulture) ; poudres constituants pour la fabrication du verre plat, de briques décoratives et de bardeaux d'asphalte. La production de pierre concassée est également utilisée pour la fabrication de boulettes pour la chaux agricole et d'engrais pour terrain de golf.
Date of field trip :	19990708
Volume extracted :	100000
Comment - source access :	De l'intersection des routes 301 et 303, à Portage-du-Fort, on emprunte la route 301, en direction nord, sur 1,6 km. Pour

	atteindre la carrière, il faut parcourir 600 m, vers l'est, sur le chemin de la Mine.
Description of infrastructure : development projects	Ce gisement mesure 1 100 m de longueur et près de 600 m de largeur. Il est approximativement orienté NE-SO et son pendage est d'environ 80 degrés. La carrière possède deux gradins et l'exploitation se fait maintenant sur le gradin inférieur. La hauteur des parois du gradin inférieur varie de 7 m à 10 m et celle du gradin supérieur, de 1 m à 5 m. On pense exploiter la carrière jusqu'à 30 m de profondeur en couvrant une superficie de 54 000 m2 (180 m X 300 m).
Geological description :	Ce gisement est constitué de bancs ou de grandes lentilles de marbres dolomitiques, blancs, très purs, grossièrement cristallins (No 1), de 15 m à 100 m d'épaisseur, qui alternent avec des marbres dolomitiques calciques (No 2) et des marbres dolomitiques à silicates (diopside, trémolite, serpentine), de teinte gris clair à sombre. Leur aspect est généralement homogène et leur granulométrie varie de fine à grossière (1-6 mm). Les marbres dolomitiques ont été classés par J. Brun (ET-83-03) en trois catégories selon leur pureté. Ainsi, les marbres dolomitiques purs (No 1) et les marbres dolomitiques calciques (No 2) comportent respectivement entre 0-5 % SiO2, 18-24 % MgO et 26-33 % CaO; et 0-5 % SiO2, 12-18 % MgO et 33-40 % CaO. Les marbres dolomitiques à silicates ont entre 5-10 % SiO2, 12-24 % MgO et 26-40 % CaO.
Comment - noxious element :	Par endroits, des veines de calcite - dolomite - graphite injectent les marbres provoquant l'hématisation des épontes sur de courtes distances. Le marbre dolomitique à silicate ne peut être utilisé pour la production de granulat décoratif. On note aussi la présence d'un dyke boudiné de gabbro à grain fin, dans la partie sud-ouest de la carrière.
Comment - other information :	La partie sud-ouest de la carrière, où l'on retrouve un dyke boudiné et des niveaux de marbres dolomitiques à silicates, n'est plus exploitée.
Date of release :	19810901

Substance

Substance
Marble (crystalline limestone)

Product extracted

Extracted product
Crushed stone
Industrial stone

Use product extracted

Use of extracted product
High-purity limestone and dolomite
Ornamental aggregate
Powder (soil amendment, mineral filled)

NTS map-sheet number :	31F10
Name of deposit or quarry :	CAR. PORTAGE-DU-FORT (ANCIEN GISEMENT)
Commercial name given to architectural stone :	
Cogite number :	31F/10-0008
Deposit or quarry status :	Disused quarry
Zone :	18
Easting :	370873
Northing :	5051500
Provenance :	Mining installation
Reference of localization :	CARRIÈRE EST
Comment - location :	Canton/seigneurie: LITCHFIELD, Rang(s): I, Lot(s): 30-31
Regional county municipality (RCM) :	Papineau
Work history :	Avant 1863, INCONNU - Découverte du gisement. Au début du XXe siècle, PONTIAC MARBLE AND LIME LTD. - Exploitation d'une première carrière pour la production de pierre de construction et de pierre pour bases de monument (Parks, 1916, p. 215-219). Dans les années 1930, WHITE GRIT CO. - Exploitation des autres carrières pour la production d'agrégats blancs (Goudge, 1935, p. 146-149). En 1944-1953, CANADIAN DOLOMITE CO. - Production d'agrégats blancs (ET 83-03, p. 19-20; MB 90-14, p. 36). En 1978-1979, MERQ - Levé de cartographie géologique (ET 83-03). En 1999, M. R. N. Q. - Levé d'inventaire géologique (MB-2000-01, site 6).
Report number :	DP 184, ET 83-03, GM 01228, GM 07945, GM 16564, GM 41051, GM 42126, GM 43280, GM 43872, GM 46322, GM 47975, GM 47976, GM 48890, MB 2000-01, MB 89-49, MB 90-14, MB 90-31, RG 170, RP 578, all
Extra-EXAMINE document :	GOUDGE, M. F., 1935, Les calcaires du Canada. Gisements et caractéristiques. Partie III: Québec, Ministère des Mines, Canada, publication 758, p. 146-149, PARKS, B. A., 1916, Rapport sur les pierres de construction et d'ornement du Canada. Volume III: Province de Québec, Ministère des Mines, Canada, publication 389, p. 215-219
Comment - use of extracted product :	Utilisée comme granules pour la production de stuc et de terrazzo. Au début du XXe siècle, la pierre a été employée pour la confection de bases de monuments et pour l'ornementation d'édifices. Pour ces deux fins, elle semble très satisfaisantes. Un bon exemple de ce dernier emploi peut se voir à la résidence de M. G. E. Reid, à Portage-du-Fort, dans laquelle la pierre d'appareil est le marbre calcitique bleu exploité aux environs et les garnitures taillées dans le marbre dolomitique blanc. L'inscription sculptée sur le monument Lady Head érigé à Portage-du-Fort en 1850 est un bon témoin de la durabilité de la pierre blanche, puisque le lettrage ne semble pas avoir subi aucune détérioration quelconque. Une certaine quantité de pierre a été extraite pour les édifices du Parlement à Ottawa (Parks, 1916, p. 215-218).
Date of field trip :	19990708
Volume extracted :	51000
Comment - source access :	De l'intersection des routes 301 et 303, à Portage-du-Fort, on

	emprunte la route 301, en direction nord, sur 1,6 km. Pour atteindre la carrière principale, il faut parcourir 100 m à l'est, sur le chemin de la Mine.
Description of infrastructure : development projects	Du côté est de la route, il y a 3 carrières dont la carrière principale, complètement ennoyée, de 60 m de longueur sur 30 m de largeur ; la seconde, immédiatement au sud-ouest de la première, mesure 100 m de longueur, 25 m de largeur et environ 8 m de profondeur. Cette dernière est maintenant comblée par des rebuts de la carrière Dolomex. La troisième carrière est située au nord de la carrière principale. Du côté ouest de la route, on retrouve une carrière, mesurant 80 m de longueur sur 35 m de largeur, qui est aussi ennoyée.
Geological description :	La roche exploitée est un marbre dolomitique du Groupe de Portage-du-Fort, très blanc, à grains variant de moyen à grossier, généralement en lits épais mais irréguliers. Le marbre est très pur ; les seules impuretés visibles sont de minces paillettes de mica blanc, très disséminées, et de rares minéraux calcosilicatés. Dans la carrière du côté ouest de la route, on a observé de minces couches de calcaire brucitique, tandis que les lits supérieurs dans la carrière principale, du côté est, sont teintés de jaune pâle, par endroits. L'attitude des lits est de N030/70.
Comment - noxious element :	Le marbre dolomitique est de bonne qualité pour la fabrication de granules de construction (stuc, sol de mosaïque). Près de la surface du sol, l'épaisseur des lits ne semble pas assez importante pour justifier une remise en exploitation.
Comment - other information :	Les lits de marbre dolomitique pur couvrent une large superficie dans la région de Portage-du-Fort et les réserves possibles sont considérables. Les mêmes unités de marbre se prolongent aussi sur une distance considérable du côté ontarien, jusque dans la région de Haley où se trouvent les importants gisements de marbre dolomitique exploités par la Compagnie Chromasco pour la production de magnésium métal. La carrière principale sera éventuellement comblée avec les rebuts de la carrière Dolomex.
Date of release :	19801001

Substance

Substance
Marble (crystalline limestone)

Product extracted

Extracted product
Architectural stone
Crushed stone

Use product extracted

Use of extracted product
Dim. stone (cut,building,monu,tile,street edge)
Ornamental aggregate

Architectural stone color

Color
White

Construction materials and industrial stones
3 of 3

NTS map-sheet number :	31F10
Name of deposit or quarry :	CAR. PORTAGE-DU-FORT EST
Commercial name given to architectural stone :	
Cogite number :	
Deposit or quarry status :	Disused quarry
Zone :	18
Easting :	371894
Northing :	5049355
Provenance :	Mining installation
Reference of localization :	CARRIÈRE
Comment - location :	Canton/seigneurie: LITCHFIELD
Regional county municipality (RCM) :	Papineau
Work history :	En ? , INCONNU - Exploitation (RG-170, pages 68-69 ; ET-83-03, page 20).
Report number :	ET 83-03, RG 170, all
Extra-EXAMINE document :	Goudge, M. F., 1935 - Les calcaires du Canada gisements et caractéristiques. Partie III Québec. Ministère des Mines, Canada; Publication 758, p. 148-149, Parks, B. A., 1916 - Rapport sur les pierres de construction et d'ornement du Canada. Volume III Province de Québec. Ministère des Mines, Canada; Publication 389, p. 118-119
Comment - use of extracted product :	Des affleurements de dolomie impure ont été exploités pour la production de pierre de construction grossière (moellons) dans un secteur à l'est de Portage-du-Fort (Goudge, 1935, pp. 148-149).
Date of field trip :	19990709
Volume extracted :	
Comment - source access :	De l'intersection des routes 301 et 303, à Portage-du-Fort, on emprunte la route 303, vers l'est, sur 2,4 km. La carrière se trouve à 10 m au nord de la route.
Description of infrastructure development projects :	Carrière artisanale, exploitée en excavation, de 10 m par 10 m environ, possédant une profondeur indéterminée. Le plancher est maintenant recouvert d'eau.
Geological description :	La roche exploitée est une dolomie conglomératique, d'âge Paléozoïque, grise ou brun jaunâtre en surface fraîche et brunâtre en surface d'affleurement, contenant des galets de quartz.
Comment - noxious element :	Aucun élément nuisible pour la production de pierre à bâtir.
Comment - other information :	
Date of release :	19990709

Substance

Substance

Dolomite

Product extracted

Extracted product
Architectural stone

Use product extracted

Use of extracted product
Dim. stone (cut,building,monu,tile,street edge)

Architectural stone color

Color
Brown

Appendix III

Source: SIGEOM database http://sigeom.mrn.gouv.qc.ca/

See: Sigéom à la carte / Deposits / Nonmetallic deposit

Note: *The information below on the quarries of Portage-du-Fort was originally compiled in report MB 2000-01 and dates from field visits prior to 2000.The Dolomex Quarry was closed in 2004.*

Nonmetallic deposit

1 of 1

NTS map-sheet number :	31F10
Name nonmetallic deposit :	PORTAGE-DU-FORT
Cogite number :	31F/10-0009
Nonmetallic deposit condition :	Deposit with estimated tonnage
Minerals :	Dolomite
Township/seigneury :	LITCHFIELD
Zone :	18
Easting :	371377
Northing :	5051148
Reference of localization :	Point localisé: AIRE DES SONDAGES (?)
Comment - location :	Rang I ; Lots 30-31. District: MONTREAL. Gîte avec affleurement localisé à 90 km au NE de la ville de Hull et à 1,5 km au NW de la municipalité de Portage-du-Fort. Il se trouve du côté Est de la rivière des Outaouais, à environ 500 m au SW de l'ancien gisement de Portage-du-Fort.
Year discovery :	
Comment - discovery :	Historique: En 1969, M.B. KATZ (M.R.N.Q.) - Levé géologique. En 1970, R.J.W. DOUGLAS (C.G.C./G.S.C.) - Levé géologique. En 1977-1979, J. BRUN (M.E.R.Q.) - Levés géologiques détaillés, échantillonnage et levé géochimique (roches). En 1980, M.E.R.Q. - Décapage et 6 sondages (1 219 m). En 1982, EXPL. ASTER INC. - Sondages (1 200 m). En 1985, J.B. SOMMERVAIL et S. LEE - Prospection et levé géophysique (MAG). En 1987, EXPL. ASTER INC. - Cartographie et 15 sondages (2 500 m). En 1988, EXPL. ASTER INC. - Levé géologique, tranchées, levé géochimique (roches), 20 sondages (4 600 m) et excavation. En 1989, RES. CANSPAR INC. - Evaluation de la propriété. En 1991, DOLOBEC INC. - Décapage et mise en production.
Comment - production reserve :	Production: 30 000 t prévues en 1991. Réserves: 22 Mt de dolomie très pure (voir document MRNQ, DV-91-01, page 102). Usage: PRODUCTION DE MAGNÉSIUM MÉTAL; CHAUX; GRANULES BLANCS POUR LA BRIQUE, L'HORTICULTURE ET LA CONSTRUCTION (STUCCO, TERRAZZO); CHAUX AGRICOLE. Détenteur: DOLOBEC INC.
Comment - lithology :	Lithologies: A - MARBRE DOLOMITIQUE (sondages Nos. 1 & 2) ; B - MARBRE DOLOMITIQUE A SILICATES. Minéraux: DOLOMITE, CALCITE, TALC, DIOPSIDE, TREMOLITE, SERPENTINE, GRAPHITE, MICA. Le gîte est constitué de bancs ou de grandes lentilles de marbres dolomitiques blancs très purs grossièrement cristallins (sondage no 1), de 15 à 100 m d'épaisseur, qui alternent avec des marbres dolomitiques calciques (sondage no 2) et des marbres dolomitiques à silicates (diopside, trémolite, serpentine) de teinte gris clair à sombre. Leur aspect est généralement homogène et leur granulométrie varie de fine à grossière (1-6 mm).

Comment - morphology :	Ce gisement de dolomite, pauvre en silice et en fer, mesure mesure 1 100 m de longueur et près de 600 m de largeur. Il est approximativement orienté NE-SW mais son pendage est imprécis. Le gîte est constitué de bancs ou de grandes lentilles de marbres dolomitiques.
Comment - typology :	Genèse: 1er stade: Sédimentaire sédimentation de lits dolomitiques sur une plate-forme sédimentaire. plissement de l'ensemble sédimentaire carbonaté. 2e stade: Métamorphique métamorphisme de l'ensemble sédimentaire carbonaté et transformation de la dolomie en marbre dolomitique (dans les conditions du faciès amphibolite supérieur).
Comment - mineralization :	Teneur: 30,20 % CaO, 21,30 % MgO, 0,40 % SiO2 et 0,15 % Fe total (sondage no 2, document MERQ, GM-43872). Gisement de dolomite, pauvre en silice et en fer. Gîte en blancs de marbre dolomitiques très purs et grossièrement cristallins. Des veines mineurs de calcite, de dolomite et de graphite les injectent par endroits, provoquant l'hématitisation des épontes sur de courtes distances. Les marbres dolomitiques ont été classés par J. Brun en 1978-1980 en trois catégories selon leur pureté. Ainsi, les marbres dolomitiques purs (no 1) et les marbres dolomitiques calciques (no 2) comportent respectivement entre 0-5 % SiO2, 18-24 % MgO et 26-33 % CaO et 0-5 % SiO2, 12-18 % MgO et 33-40 % CaO. Les marbres dolomitiques à silicates ont entre 5-10 % SiO2, 12-24 % MgO et 26-40 % CaO. Composition minérale du marbre dolomitique du sondage no 1 analysé en 1978 à la suite du programme de géochimie détaillée. D'autres résultats géochimiques ont été obtenus à partir du programme de géochimie très détaillée et de sondages en 1980. J.B.78.7.18.11 J.B.78.7.18.22 J.B.78.7.20.5 J.B.78.7.20.9 . (%) (%) (%) (%) SiO2 0,50 0,40 0,40 0,50 Al2O3 0,07 0,03 0,05 0,08 MgO 20,30 20,30 21,00 20,50 CaO 31,30 33,00 32,50 32,50 Na2O 0,04 0,03 0,03 0,03 K2O 0,04 0,01 0,02 0,04 P2O5 0,003 0,02 0,002 0,006 S 0,02 0,02 0,02 0,02 Fe2O3T 0,08 0,05 0,10 0,12 Perte 46,65 46,00 46,30 46,30 au feu TOTAL 99,01 99,86 100,46 100,12 Le marbre dolomitique pur est jaunâtre en surface (par altération) mais devient très blanc en profondeur.
Date of release :	19910101
Report number :	DV 88-01, DV 89-01, DV 90-01, ET 83-03, GM 07945, GM 16564, GM 41051, GM 42146, GM 43280, GM 43872, GM 46322, GM 47975, GM 47976, MB 89-49, MB 90-14, MB 90-31, all

Lithological unit

Lithological rock type:
Distribution (morphology): Massive
Shape (morphology): Irregular tabular

Lithological unit - minerals

Minerals	Mineral qualifier
Dolomite	Slightly altered (<10%)
Calaverite	Slightly altered (<10%)

Lithological rock type:
Distribution (morphology):
Shape (morphology):

Lithological unit - minerals

Minerals	Mineral qualifier
Dolomite	Slightly altered (<10%)
Diopside	Slightly altered (<10%)
Tremolite	Slightly altered (<10%)

Nonmetallic deposit

1 of 1

NTS map-sheet number :	31F10
Name nonmetallic deposit :	CAR. PORTAGE-DU-FORT (ANCIEN GISEMENT)
Cogite number :	31F/10-0008
Nonmetallic deposit condition :	Closed mine
Minerals :	Dolomite
Township/seigneury :	LITCHFIELD
Zone :	18
Easting :	370827
Northing :	5051473
Reference of localization :	Point localisé: CARRIERE DU COTE EST DE LA ROUTE.
Comment - location :	Rang I ; Lots 30-31. District: MONTREAL. Gîte avec affleurement situé de part et d'autre de la route 301, à 1,5 km au NNW du village de Portage-du-Fort.
Year discovery :	1863
Comment - discovery :	Historique: Gîte avec affleurement découvert avant 1863 par (?) par géologie de surface. En (?), PONTIAC LIME & MARBLE LTD. - Exploitation d'une première carrière. En 1930(?), WHITE GRIT CO. - Exploitation des autres carrières. En 1944-58, CANADIAN DOLOMITE CO. - Production d'agrégats blancs.
Comment - production reserve :	Date de production 1920-1958; production (?). Usage: PRODUCTION DE MAGNÉSIUM MÉTAL ; FABRICATION DE CHAUX ; GRANULES DE CONSTRUCTION (STUCCO, TERRAZO). Détenteur: RES. CANSPAR INC. (1989). Du côté Est de la route il y a 2 carrières dont une (no 1), complètement noyée, de 60 m de longueur sur 30 m de largeur et l'autre (no 2), immédiatement au SW de la première, mesurant 100 m de longueur, 25 m de largeur et environ 8 m de profondeur. Du côté Ouest de la route, la seule carrière (no 3), mesurant 80 m de longueur sur 35 m de largeur, est aussi noyée. La formation de marbre à laquelle sont associés les niveaux de dolomite couvre de large étendue dans la région de Portage-du-Fort et les réserves sont considérables. Les mêmes formations de marbres se prolongent aussi sur une distance considérable du côté ontarien, jusque dans la région de Haley où se trouvent les importants gisements de dolomite exploités par CHROMASCO pour la production de magnésium métal.
Comment - lithology :	Lithologie: A - MARBRE DOLOMITIQUE. Minéral: DOLOMITE. La roche est une marbre dolomitique cristalline à grains grossiers, très blanche, à litage épais généralement, mais irrégulier.
Comment - morphology :	Le gîte consiste en des niveaux de marbre dolomie pure orientés NW30/70.
Comment - typology :	Genèse: Etablissement d'une plateforme marginale marine, sédimentation d'une unité stratigraphique de dolomie, lithification de cette unité par subsidence de la plateforme, plissement et métamorphisme des unités lors de l'orogénèse hélikienne/grenvillienne; érosion de cet ensemble métamorphique.
Comment - mineralization :	Teneur: 43.58 % dolomite (Un marbre dolomie très pure). Les seules impuretés visibles dans la roche sont de minces paillettes de mica blanc, très disséminées, et de rares minéraux calco-silicatés. Dans la carrière du côté Ouest de la route (no 3), on a observé de minces couches de

	calcaire brucitique, tandis que les lits supérieurs dans la carrière du côté Est sont teintés de jaune pâle par endroits. Analyses chimiques: 3 échantillons. SiO2 Fe2O3 Al2O3 Ca3(PO4)2 CaCO3 MgCO3 S 0,50 0,94 0,14 0,09 55,29 43,71 0,02 0,15 0,22 0,06 -- 57,14 43,12 -- 0,32 0,12 0,12 0,02 55,88 43,92 --
Date of release :	19800101
Report number :	DP 184, GM 01228, GM 07945, GM 16564, GM 41051, GM 42126, GM 43280, GM 43872, GM 46322, GM 47975, GM 47976, MB 89-49, MB 90-14, MB 90-31, RG 170, RP 578, all

Lithological unit

Lithological rock type:	
Distribution (morphology):	Massive
Shape (morphology):	Regular tabular

Lithological unit - minerals

Minerals	Mineral qualifier
Dolomite	Slightly altered (<10%)
Calaverite	Slightly altered (<10%)

Appendix IV

Source: Sequoia Minerals Inc., May 2004
Annual Information Form, for year ended Dec. 31, 2003
See: SEDAR - http://www.sedar.com/

DOLOMEX

Dolomex operates the dolomite deposit and facilities that were acquired from Dolobec Inc. on January 23, 1996 for the amount of $1,400,000. Because of the properties of its dolomite and the quality of its manufacturing processes, Dolomex is able to offer a variety of products to different markets in North America, particularly the construction industry, plate glass manufacturers, steel mills and the agricultural and horticultural fertilizer market. The company supplies about eighty customers.

The dolomite deposit is located in Portage-du-Fort, about 100 km west of Ottawa, near roads and a railway. It contains 20 million metric tonnes of extremely pure dolomite (99% Ca Mg CO3, with a low iron and silica content), and the whiteness and crystalline appearance of the rock make it a much sought after resource. The waste/ore ratio of the deposit is 1.2: 1, including 3 million tonnes of ore that can be worked open pit with a waste/ore ratio of 0.2: 1 and 15 million tonnes with a ratio of 0.4 or less.

Dolomex operates a crushing, fine screening and pelletizing plant. Initially, Dolomex limited its production to one product, the 0-2mm aggregates used in plate glass. However, the exceptional quantity and quality of the dolomite deposit prompted the company to develop other markets. To meet the specific needs of its new customers and to be able to manufacture new value-added products, such as magnesium granular fertilizers and fine powders, Dolomex has invested more than $9 million in its production infrastructure since 1995. This work has enabled the company to increase the flexibility of its operations and increase its production capacity for dolomitic products to more than 150,000 tonnes per year, while reducing production costs.

Dolomex sold 95,573 tonnes of dolomitic products in 2003. Sales reached 21,271 tonnes for the 3-month period ended March 31, 2004. In addition to its traditional markets for industrial powders, which continued to grow, Dolomex acquired new customers in the market for floor tiles, suspended ceiling tiles, paving block sand aggregates.

In the industrial powders market, dolomite mainly serves as feed stock and the products intended for this market sell at relatively low prices (under $35 per tonne). This means that the shipping cost is a major factor when choosing a supplier. The geographic location is therefore an important element in competition. For this type of product, the company's leading competitor is Omya Inc., which operates two calcium carbonate (CaCO3) quarries at St-Armand (Québec) and Perth (Ontario).

In the fertilizer market, "chemical" fertilizers are the competition, but for the "natural" fertilizers, there are fewer competitors because this is a specialized market, where product composition is important. Dolomex's leading competitor is Imerys, which operates a dolomite quarry in New York State and produces granular fertilizers.

Appendix V

Source: British Columbia Geological Survey

See: British Columbia Mineral Deposit Profiles -

http://www.empr.gov.bc.ca/Mining/Geoscience/MineralDepositProfiles/ListbyDepositGroup/Pages/RIndustrialRocks.aspx#R10

Dolomite
R10
by Z.D. Hora
Retired, British Columbia Geological Survey, Victoria, B.C., Canada

IDENTIFICATION
SYNONYMS: Dolostone, dolomitite, dolospar.

COMMODITIES (*BYPRODUCTS*): Dolomite (aggregate, filler). Sometimes dolomite may be a byproduct of quarrying limestone.

EXAMPLES (British Columbia (MINFILE #) - *Canada/International*): Crawford Creek (082FNE113), Pilot Point (082FNE075), Oro Viejo (082M 254), Rock Creek (082ESE200), / *Gunton, Stonewall, Stony Mountain (Manitoba), Guelph, Bruce Peninsula (Ontario), Portage-du-Fort, Havre-Saint-Pierre (Quebec), Kelly Cove (Nova Scotia), Addy, Keystone (Washington), St.Paul, Minneapolis (Minnesota), Thornton, Joliet, Kankakee (Illinois), York (Pennsylvania), Sussex and Somerset Co. (New Jersey) USA; United Kingdom; Italy; France.*

GEOLOGICAL CHARACTERISTICS

CAPSULE DESCRIPTION: A bedded or massive carbonate sedimentary rock that occurs as tabular bodies concordant with stratigraphy and beds up to tens of metres thick and zones controlled by faults and permeable zones. Dolomite contains more than 90% of the mineral dolomite and is usually a finely crystalline and slightly porous rock. Calcite is the most common other mineral.

TECTONIC SETTINGS: Dolomite is more common in Recent and Ancient continental shelf and subsiding marginal marine environment, however, economically attractive deposits also occur in island arc environments.

DEPOSITIONAL ENVIRONMENT/GEOLOGICAL SETTING: Dolomite is most common as a secondary replacement of marine sediments that were a slightly magnesian calcium carbonate that was frequently aragonite originally and later recrystallized into calcite. Circulating ground water (sea water, hypersaline brine, pore water) containing magnesium reacted with the calcium carbonate to produce dolomitic limestones and dolomites. Dolomite may also form as a primary sediment, but this is not very common.

AGE OF MINERALIZATION: Dolomite can be any age, but the ages of dolomitization for secondary deposits often are not well defined. Large scale regional dolomitization in western Canada has been linked to fluid circulation taking place during Devono-Mississippian and late Cretaceous-Tertiary periods. Generally these deposits are believed to be concurrent with large scale tectonic activity.

HOST/ASSOCIATED ROCK TYPES: Dolomites are often found within thicker sedimentary sequences with associated limestones, dolomitic limestones, argillites, sandstones and evaporates. In island arcs, dolomites often have a volcanic component, such as tuffaceous rocks, sills, submarine lavas, palagonite breccias and sometimes cherty layers and interbeds.

DEPOSIT FORM: Large tabular bodies concordant with stratification that may be up to several tens of metres thick and extend for hundreds to thousands of metres. There are also regional nonconformable

dolomitized zones, sometimes controlled by faults and by permeability of both the host and adjacent sedimentary units.

TEXTURE/STRUCTURE: Finely to medium grained, crystalline, sucrosic texture, sometimes retaining textures like fossils and laminations of original limestone. Solution-collapse breccias and replacement zones are usually a medium grained, white, granular texture.

ORE MINERALOGY [Principal and *subordinate*]: Dolomite / *quartz, brucite, calcite, chert, kaolinite, illite, sometimes bitumen.*

GANGUE MINERALOGY [Principal and *subordinate*]: Limestone and dolomitic limestone.

ALTERATION MINERALOGY: Dolomite is typically an alteration product. It may be accompanied by a variety of sulphides (pyrite, sphalerite, galena), Fe-Mn-Mg-Ca carbonates, chlorite, barite, gypsum or anhydrite and fluorspar. High temperature/low pressure metamorphism may result in converting dolomite into a mixture of periclase (Mg0) and calcite. Periclase in nature easily alters into brucite $Mg(OH)_2$.

WEATHERING: In outcrop dolomitic layers in limestone may have a positive relief because of their lower solubility. Common to see concentrations of iron in the rims of individual dolomite crystals which result in the brown-yellow colour of dolomite outcrops. Because of higher porosity, some secondary dolomites are more susceptible to physical weathering and outcrops have frequently sandy talus developments (because of the sugary texture).

ORE CONTROLS: Ore control reflects the mode and intensity of dolomitization. In some deposits a primary control is the chemical composition of the carbonate rock, in some others it is the upper and lower limits of the original limestone bed. For some deposits, the locations where fluid pathways along faults and permeable zones intersect reactive carbonate rocks are the control on the location of the replacement zones.

GENETIC MODEL:
A number of models for dolomitization have been suggested by the scientific community.

· Hypersaline water from a shelf lagoon percolated through the underlying sediment, transforming calcium carbonate into dolomite.

· Burial compaction resulting in expulsion of pore water containing Mg^{2+} from shales may react with adjacent limestones to form dolomite.

· Elevated topography of a mountain thrust belt provides the hydrodynamic potential for gravity-driven meteoric fluids which became enriched in soluble components, including Mg^{2+}, that react with calcium carbonate beds in the subsurface to form stratiform dolomite zones.

· Tectonic loading and compression during the buildup of orogenic thrust belts may cause the rapid expulsion of formation fluids into the foreland basins and bring the necessary Mg^{2+} to react with limestone deposits in the basin.

The two models listed below are currently the most popular explanation for most of global dolomites.

· Dolomitization can occur within the mixing zone of phreatic sea water with fresh groundwater. The Mg^{2+} ions for dolomitization are derived primarily from seawater. The delivery mechanism is the continual circulation of seawater induced by the flow of fresh groundwater.

· Deep convection circulation of basinal brines has been invoked for forming some regional subsurface dolomites. Deep crustal scale convection of meteoric ground waters to 10 kilometres depth appears to have been the dominant subsurface flow during Early Tertiary time in southeastern B.C. Thermal convection can support long-lived flow systems that are capable of cycling subsurface solutions many times through the rock mass. Alternately thermal convection can

occur in strata beneath the sea bed, the sea water-derived solutions would be continuously added to the system to provide an ongoing source of magnesium.

ASSOCIATED DEPOSIT TYPES: Mississippi Valley Type Pb, Zn (E12), barite "/Mining/Geoscience/MineralDepositProfiles/ListbyDepositGroup/Pages/ESedimentHosted.aspx" \l "e17") and fluorspar (E11) deposits, limestone (R09), accumulations of oil and natural gas, hydrogen sulphide.

COMMENTS: Most dolomite production is as quarried rock for use as aggregate which relies mainly on its physical properties.

EXPLORATION GUIDES

GEOCHEMICAL SIGNATURE: High magnesium in carbonate rock.

GEOPHYSICAL SIGNATURE: While karst features in dolomite are rather uncommon, resistivity and gravity could be used to outline karst affected areas.

OTHER EXPLORATION GUIDES: Sometimes yellow or brown colour of outcrops, sandy talus. Because of lower solubility, dolomite does not fizz with diluted hydrochloric acid.

ECONOMIC FACTORS

TYPICAL GRADE AND TONNAGE: Commercial dolomite must be very high purity carbonate rock, and almost stochiometric in composition (30.4% CaO and 21.9% MgO). Industry specifications are set for the calcined product – i.e. a dolomitic lime. Depending on the end use, the limits for impurities are usually between 0.1 and 4.5 % Fe_2O_3, SiO_2 between 0.5 and 1.0%, and Al_2O_3 between 0.3 and 0.8%.

ECONOMIC LIMITATIONS: Information on dolomite production is difficult to obtain. In mineral statistic data, dolomite is covered together with limestone, and individual uses are frequently confidential. It is estimated, that USA and Canada together produce 500,000 tonnes of calcined dolomite annually. The quantity of dolomite used as a granular or ground industrial product is not relatively small. Dolomite used for magnesium metal may be as much as one million tonnes annually, but is gradually being replaced by other sources, such as seawater. Some limestone operators produce dolomite and limestone from different beds as coproducts.

END USES: Refractory products, magnesium metal ore, dolomitic lime, glass, desulphurization of coal, iron and steel, smelter flux, variety of fillers, mineral wool, agriculture soil conditioner.

IMPORTANCE: As a source of magnesium to improve a fluidity of molten product, like in mineral wool, float glass, slag in metallurgical process very important. As agriculture soil conditioner the magnesium content improves the neutralizing power, and helps to retain the soil nutrients better than pure limestone. In many other end uses dolomite can be substituted by some other industrial minerals.