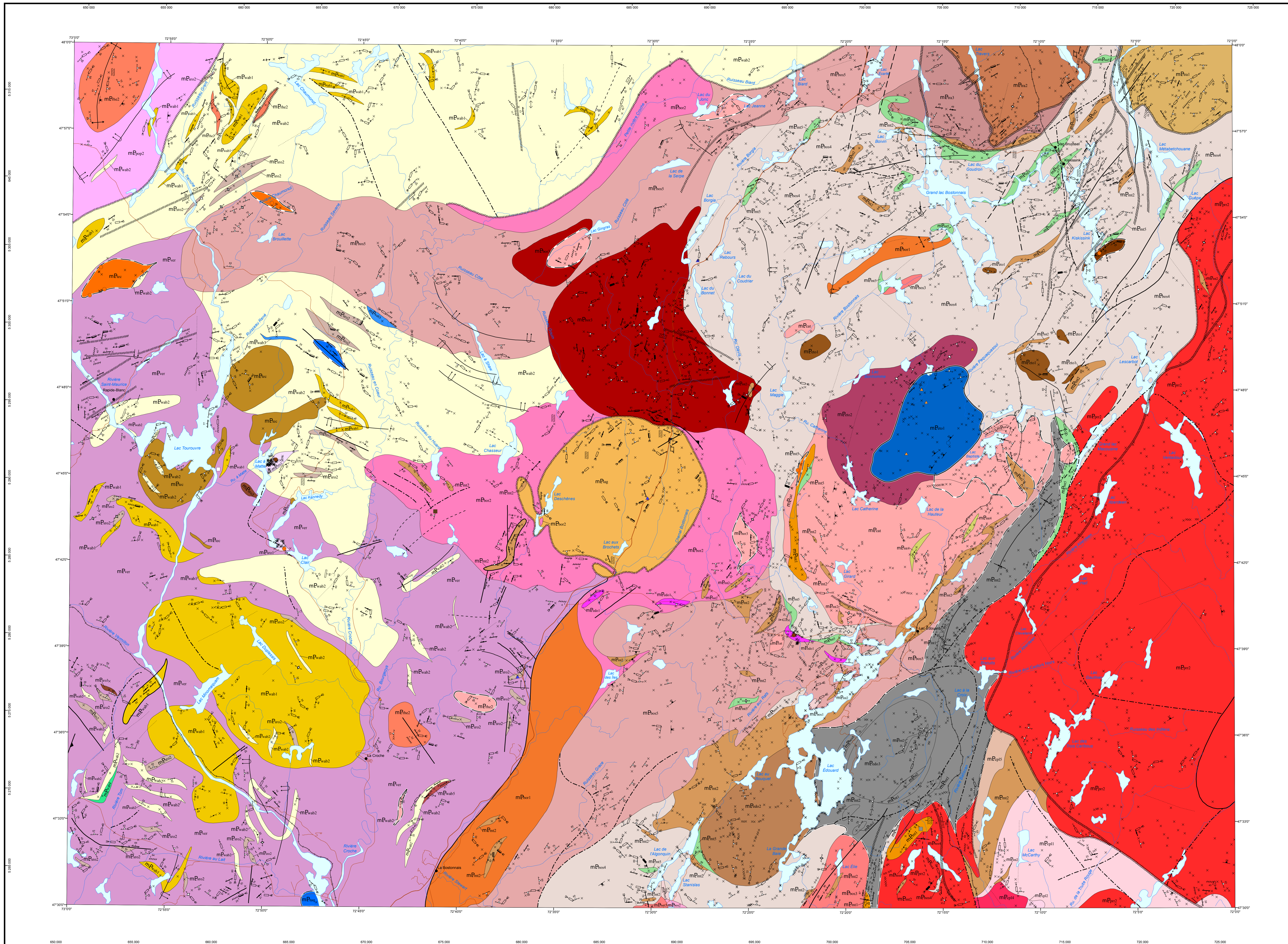


# Geology of the Borgia Lake Region, Grenville Province, North of La Tuque, Mauricie and Saguenay – Lac-Saint-Jean Regions, Quebec, Canada



### STRATIGRAPHIC LEGEND

**ALLOCTON**

**MESOPROTEROZOIC**

**Rhénus Intrusive Suite (1919 ± 2 Ma, David, 2017)**

- mE<sub>rh1</sub> Syntite, quartz + nepheline syenite, Fe-Ti oxide gabbroite; minor amounts of hypersthene syenite, biotite monzonite, syenogranite, monzogranite and magnetite

**Rivière-à-Pierre Suite (1555 ± 1 Ma, Nadeau et al., 1992)**

- mE<sub>rp1</sub> Porphyrocytic granite and monzonite, leucocratic monzonite; minor amounts of granodiorite, mangerite and granite

**Catherine Granite**

- mE<sub>ca1</sub> Syenogranite, granite, quartz monzonite, mangerite, quartz monzonite, locally porphyritic, granitic pegmatite dykes

**Roc Suite (1412 ± 1 Ma, Mouchal et al., 2015)**

- mE<sub>ro1</sub> Fe-Ti-P-oxide-syrite gabbroite; minor amounts of gabbro and leucogabbro
- mE<sub>ro2</sub> Foliated gabbroite and gabbro; minor amounts of Fe-Ti-P-oxide mafic rocks
- mE<sub>ro3</sub> Olivine websterite, pyroxenite, gabbroite, gabbro

**Borgia Suite (1072 ± 15.4 Ma, Konstantinos Pappasovos, personal communication)**

- mE<sub>bo1</sub> Syntite, hypersthene syenite, mangerite, syenogranite, chamoisite; minor amounts of granite and monzonite
- mE<sub>bo2</sub> Massive, medium to coarse-grained granite, mangerite, syenogranite; minor amounts of gabbroite, chamoisite and monzonite. All associated with a strong magnetic anomaly
- mE<sub>bo3</sub> Pinkish to brownish monzonite, locally K-feldspar-pargasite porphyritic, massive; mangerite, syenite, K-feldspar granite, syenogranite
- mE<sub>bo4</sub> Pinkish to brownish monzonite, locally K-feldspar-pargasite porphyritic, massive; mangerite, syenite, K-feldspar granite, syenogranite

**Travers Suite (1072 ± 28.4 Ma, Konstantinos Pappasovos, personal communication)**

- mE<sub>tr1</sub> Massive K-feldspar porphyritic granite, syenogranite, minor amounts of gabbroite, monzonite and quartz syenite; pargasite enclaves
- mE<sub>tr2</sub> Mangerite, syenite, hypersthene syenite; minor amounts of syenogranite and granite
- mE<sub>tr3</sub> Gabbroite, hypersthene diorite, mangerite; minor amounts of K-feldspar hypersthene granite

**Ebble Suite**

- mE<sub>eb1</sub> Granite (syenogranite) with or without orthopyroxene (chamoisite), hypersthene syenite and syenite; medium to coarse-grained, massive, locally augen; minor amounts of mangerite and pyroxenite
- mE<sub>eb2</sub> Coarse-grained black anorthosite, gabbroite, minor amounts of troctolite, orthopyroxene and pyroxenite

**Trenche Anorthosite**

- mE<sub>ta1</sub> Gabbroite, porphyritic anorthosite, foliated, granoblastic, leucocratic; minor amounts of mangerite; pargasite enclaves

**La Tuque Anorthosite**

- mE<sub>lt1</sub> White anorthosite, fine to medium-grained, locally granoblastic; minor amounts of gabbroite

**Langelier Anorthosite**

- mE<sub>la1</sub> White anorthosite, fine-grained, with high plagioclase recrystallization; minor amounts of gabbroite

**Edouard Gabbroite (11647 ± 3.8 Ma, David et al., 2016)**

- mE<sub>ed1</sub> Gabbroite, medium-grained, locally porphyritic hornblende porphyrocytic, 35-50% hypersthene augen-hornblende, accessory biotite, monzonitic, massive with occasional K-feldspar and weak magnetic banding; minor amounts of mangerite, magnetite, gabbro and diorite

**Wabash Complex (maximum age 1334 ± 42 Ma, Mouchal et al., 2015)**

- mE<sub>w1</sub> Silicate and oxide ion formation with chert banding, sulphide garnets, amphibole (muscovite) rock, quartzolite, quartzolite (felsic volcanic rock), fragmentary rock; minor amounts of biotite pargasite
- mE<sub>w2</sub> Garnet orthopyroxene + orthopyroxene amphibole, garnetic, quartzolite rock (felsic volcanic rock) + a siliceous garnet, ultramylonitic granite
- mE<sub>w3</sub> Calcitic to dolomitic matrix, minor amounts of pargasite, calcicite rocks and quartzite
- mE<sub>w4</sub> Ruddy to grey granite + garnet + sillimanite + pyrite + pyrochlore pargasite; minor amounts of quartzite, pyrite-chalcopyrite-garnet quartzite, wacke, granite and granitic gneiss
- mE<sub>w5</sub> Magnetized pargasite, sedimentary magnetite, granite

**Pope Plutonic Suite (1352 ± 6 Ma, Jean David, personal communication)**

- mE<sub>po1</sub> Granite, chamoisite, granitic gneiss, mangerite; highly magnetic; minor amounts of quartz monzonite, monzonite, anorthosite and K-feldspar granite

**Verillon Plutonic Suite (1371 ± 21 Ma, Jean David, personal communication)**

- mE<sub>ve1</sub> Chamoisite and granitic gneiss, minor amounts of andesite, granite, K-feldspar granite, quartz monzonite and gneiss

**Parc des Laurentides Complex (1381 ± 11, 1344 ± 2.3 Ma, David et al., 2009)**

- mE<sub>pl1</sub> Foliated quartz monzonite, medium-grained, usually porphyrocytic or augen, brownish, 10-20% biotite hornblende, cut by aplites dykes
- mE<sub>pl2</sub> Medium-grained granitic orthopyroxene, augen or stripe texture, pinkish grey, partly magnetic, 10-15% biotite + hornblende + garnet, with amphibole inclusions, aplites dykes and some pargasite screens
- mE<sub>pl3</sub> Fine-grained biotite-magnetite leucogranite, foliated, saccharoidal, with buff-coloured patina and pitted top surface; monzonite and gneiss
- mE<sub>pl4</sub> Hornblende biotite metagranitic gneiss, fine-grained

**La Bostonnais Complex (1400-1370 Ma, Nadeau and van Breemen, 1994; Corrigan, 1995)**

- mE<sub>bc1</sub> Granodiorite, gabbroite, quartz monzonite; minor amounts of diorite, gabbro, monzonite, and mangerite; all fine to medium-grained, massive to granitic and migmatitic
- mE<sub>bc2</sub> Gabbroite, gabbro and diorite + quartz, homogeneous, medium-grained, dark bluish grey, 30-40% hornblende-biotite + hypersthene relic + augen relic; a garnet + Fe-Ti oxides, foliated to massive; minor amounts of monzonite, monzogabbro, hypersthene monzonite and syenite
- mE<sub>bc3</sub> Gneiss and localite, homogeneous, medium to coarse-grained, light bluish grey, 10-20% hornblende-biotite, waxy massive, partly gneissic and migmatitic
- mE<sub>bc4</sub> Granodioritic and localite gneiss, 10-20% hornblende-biotite + garnet, light bluish grey, medium to coarse-grained, heterogeneous, migmatitic, local transposed and boudinaged metamorphic banding
- mE<sub>bc5</sub> mE<sub>bc4</sub> + fine-grained heterogeneous gneiss with numerous kippes and enclaves of pargasite and amphibole

**Montauban Group (1450 Ma, Nadeau and van Breemen, 1994)**

- mE<sub>mg1</sub> Granoblastic amphibolite (locally) basic, andesite, locally (all) fine to medium-grained, locally in boudins, a general porphyroblastic, rusty patina, trace Fe sulphide, generally homogeneous, strong local centimetric compositional banding (melt leaching), foliated, variable amounts of biotite pargasite, quartzolite gneiss and garnetite
- mE<sub>mg2</sub> Light grey quartzite, granoblastic, vitreous
- mE<sub>mg3</sub> Light grey mesocratic pargasite, fine to medium-grained, locally banded (textured scale), 10-20% hornblende-biotite, locally migmatitic
- mE<sub>mg4</sub> Ruddy pyritic pargasite, fine to medium-grained, siliceous, 10-20% biotite-muscovite-garnet-sillimanite, accessory pyrite-garnet, local melt leaching, variably migmatitic, some horizons of quartzite and amphibolite; in places overlain with aluminous pegmatites

### PROSPECTIVE ZONE FOR MINERAL EXPLORATION

- Copper
- Rare earth elements
- Iron
- Nickel
- Sillimanite
- Vanadium

### SHOWING AND DEPOSIT

**Metallic Substance**

- Copper, Nickel, Vanadium

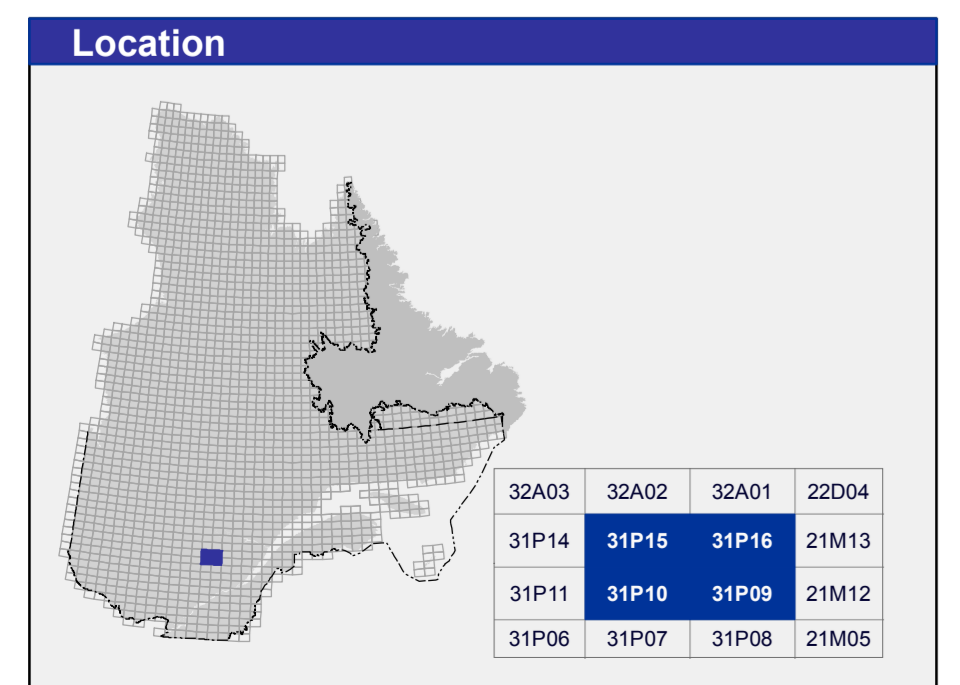
**Non-metallic Substance**

- Mica, Sillimanite, Other off-set substances

**Architectural stone**

**Industrial stone**

Symbols and abbreviations used on this map are described in publication DV 104-06 of the Ministère de l'Énergie et des Ressources naturelles.



Metadata	Sources	Organization	Realization
Geodetic reference frame: Ellipsoïde GRS 80	Data: Base de données topographiques et administratives (BOTA 250k)	Ministère de l'Énergie et des Ressources naturelles	Geology: Abdelhak Mouchal et Gabriel Côté (2017)
Geodetic reference system: NAD 83 compatible with the world geodetic system WGS 84			References: Laurin, A. F., Sharma, K. N. M. (1975); RG 161; Nadeau, J. et al. (1997); CG 3025M31909; Newton, W. D. N. (1984); DP 150; Frenault, S. (1982); CG 3025M31916; Rivard, J. (1978); DP 94
Cartographic projection: Universal Transverse Mercator (UTM), zone 18			Technical assistance: Julie Sauvageau
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Original latitude: 0'			Distribution: Ministère de l'Énergie et des Ressources naturelles, Direction de l'information géographique du Québec

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