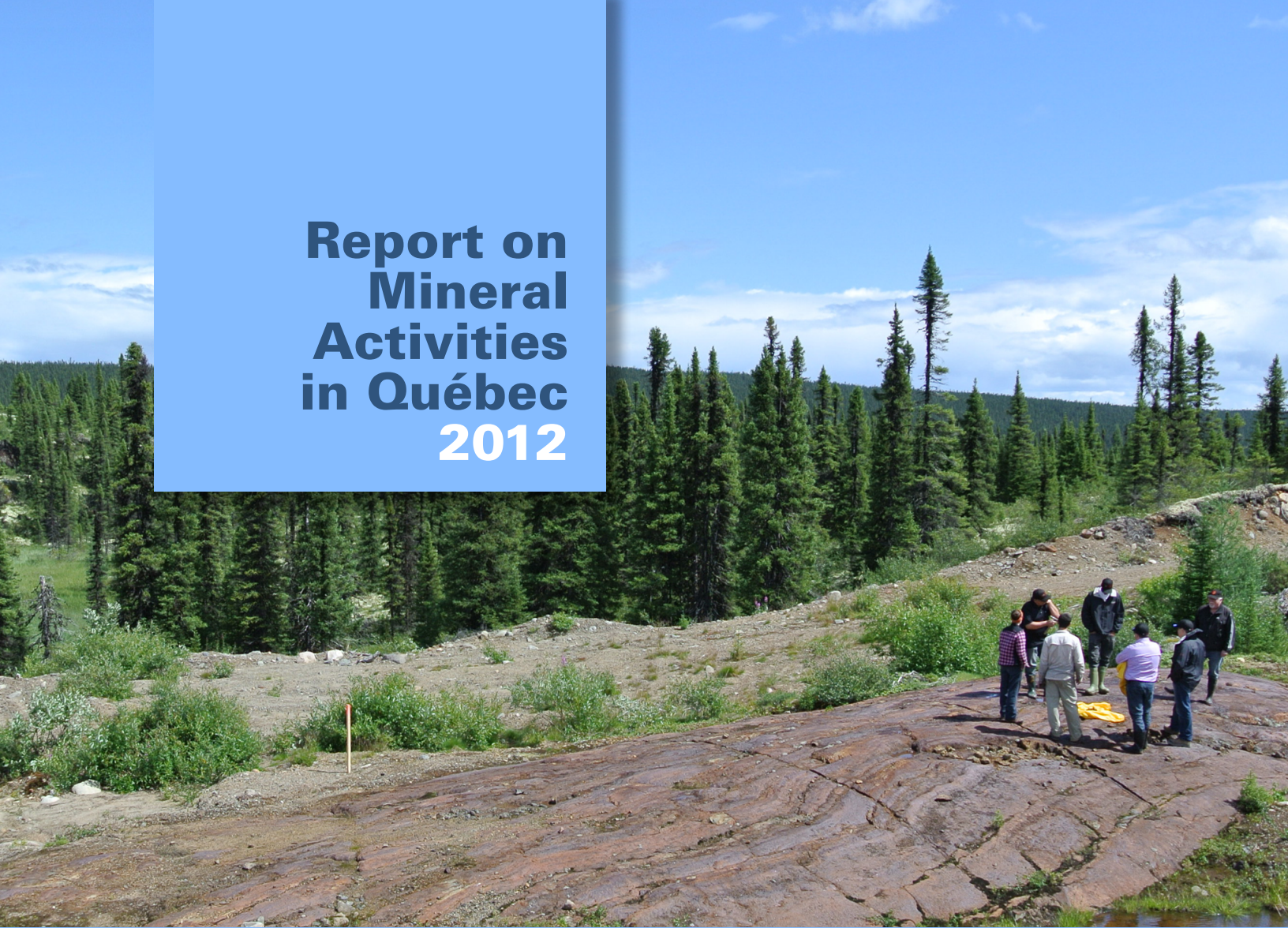


Report on Mineral Activities in Québec 2012



DV 2013-02



Report on Mineral Activities in Québec 2012

Disclaimer

The data compiled in this report comes from several sources, including questionnaires addressed to prospectors, to directors of regional First Nations and Inuit exploration funds, and to representatives of mining and exploration companies, as well as from their press releases. The accuracy and reliability of this information depend solely on these sources.

The authors disclaim all responsibility for reproducing any error originating from these sources.

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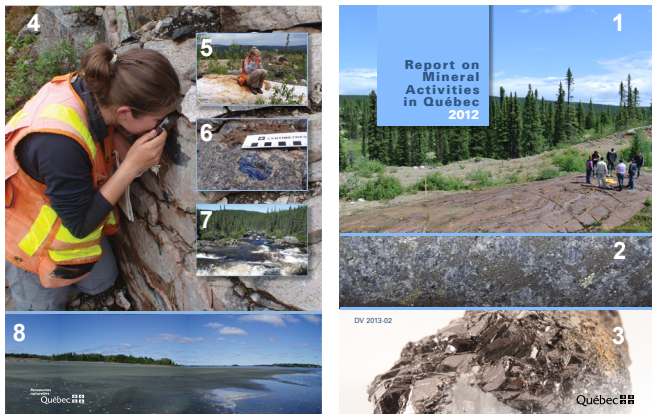
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Photos

- 1 - Visit of an outcrop with massive mineralization.
- 2 - Massive zone, large crystalline flake graphite, pyrite, pyrrhotite.
Photo from Focus Graphite and IOS Services géoscientifiques.
- 3 - Graphite sample. Photo MRN (Francis Fontaine).
- 4, 5 and 7 - 2012 summer field work. Photos MRN.
- 6 - Leuconorite-labradorite target showing iridescence. Photo MRN.
- 8 - Siscoe site park. Photo MRN.

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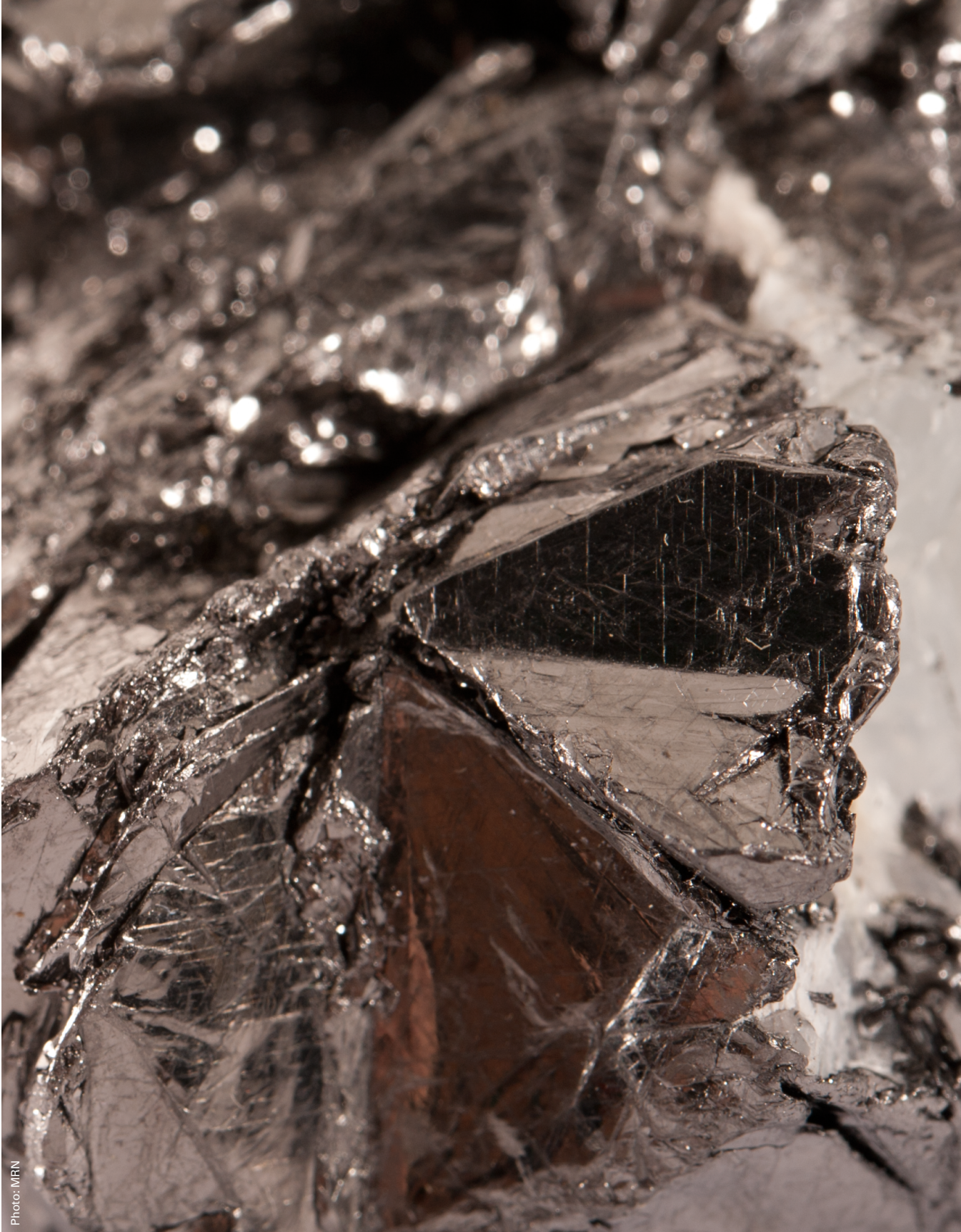


Photo: MRN



Photo: MFRN

CHAPTER 1

A source of pride for Quebecers

Québec is a respected leader in the mining sector, both in Canada and internationally. Innovations developed in Québec are adopted worldwide to improve processes or to enhance the safety of workers.

The mining sector in Québec has experienced sustained growth over the past several years and this growth has generated substantial social and economic benefits in all regions across the province. If demand for metals and minerals is maintained and the global economy remains stable, this growth may continue in the years to come. Jobs, mining taxes, economic benefits, research and development, establishment of a network of goods and services providers, all of these will be important contributions for Québec.

The year 2012 held great promise yet also raised concerns. In terms of mining investments and value of mineral shipments, all indicators are on the rise. In terms of environmental protection, relations with local communities and Aboriginal populations, and health and safety in the workplace, the mining sector continues to make great strides towards achieving sustainable development, in harmony and in keeping with the values of today's society.



Photo: MFRN

Highlights for 2012

The mining sector is a global industry and has been so for many years. All countries need mineral commodities to grow and most commodities are traded on global markets. Countries where industrialization and urbanization have been accelerating over the past few years (namely China, India, Russia, and Brazil) are now among the largest consumers of mineral resources.

Iron, steel, aluminium, zinc, copper, lead, and nickel support industrial sectors such as construction, infrastructure, and energy, whereas strategic metals are critical for the high-technology sector.

Economic setting – A changing world

From 2003 to 2011, metal markets were buoyed by the information technology industry and by developments in Asia. Prices for mineral commodities consistently increased during this time and mining projects appeared one after another in Québec and around the world. Prices for iron, silver, and copper even reached historic highs in the early part of 2011 (see Table 1.1.).

Prices for several metals began a downward trend in the second half of 2011, namely triggered by uncertainty about the stability of the global economy, tighter economic measures in China and a sluggish manufacturing sector. Prices for iron, nickel, rare earth elements, and graphite continued to decrease in 2012. Nevertheless, metal prices remained higher in 2012 compared to levels observed at the start of the new millennium.

The global mining sector appears to have entered a period of uncertainty

The needs of emerging countries should be sufficient to sustain growing demand for mineral resources in the coming years. Still, the global mining sector appears to have entered a period of uncertainty. Most mining companies saw their market capitalization and their financing drop considerably over the course of 2012, and many mining companies abandoned or postponed their mining projects, namely in Québec.

Table 1.1 - Average prices of certain metals in US\$

Prix moyens de certains métaux en \$ US								
	Gold¹ par once troy	Silver¹ per troy ounce	Platinum¹ per troy ounce	Aluminium² per tonne	Zinc² per pound	Nickel² per pound	Copper² per pound	Iron³ per tonne
Annual average								
2002	310	4.60	539	1350	0.36	3.07	0.71	12.68
2003	363	4.89	691	1431	0.41	4.37	0.81	13.82
2004	410	6.67	845	1716	0.48	6.27	1.30	16.39
2005	445	7.32	897	1898	0.63	6.69	1.67	28.11
2006	603	11.55	1142	2569	1.49	11.00	3.05	33.45
2007	695	13.38	1303	2638	1.47	16.88	3.23	36.63
2008	872	14.99	1574	2572	0.85	9.57	3.15	61.57
2009	972	14.67	1203	1664	0.75	6.65	2.34	79.99
2010	1225	20.19	1609	2173	0.98	9.89	3.42	146.72
2011	1572	35.12	1722	2398	1.00	10.30	4.00	167.8
2012	1669	31.15	1561	2007	0.88	7.95	3.61	128.77
Monthly average for 2012								
January	1656	30.77	1506	2144	0.90	8.99	3.65	140.35
February	1743	34.14	1658	2204	0.88	9.28	3.82	140.40
March	1674	32.95	1655	2183	0.92	8.48	3.84	144.73
April	1650	31.55	1685	2046	0.91	8.12	3.75	147.65
May	1586	28.67	1468	2000	0.88	7.72	3.59	136.27
June	1597	28.05	1448	1885	0.84	7.50	3.37	134.62
July	1594	27.43	1426	1874	0.84	7.33	3.44	127.94
August	1626	28.70	1452	1837	0.82	7.10	3.40	107.80
September	1744	33.61	1624	2053	0.91	7.81	3.66	99.47
October	1747	33.19	1640	1975	0.87	7.82	3.66	113.95
November	1721	32.77	1576	1943	0.86	7.39	3.49	120.35
December	1689	31.96	1591	1940	0.92	7.89	3.61	131.70

Sources:

1 - London Metal Exchange, average price at noon.

2 - London Metal Exchange, reference price.

3 - International Monetary Fund, iron ore imports into China at the Port of Tianjin (62% Fe CFR)

MINING TAXES

An important issue for Québec

Mining taxes constitute an important issue for Québec. The government must ensure that all Quebecers receive fair compensation for the mining of their collective mineral resources.

To do so, the government intends to hold a forum on mining royalties in the first few months of 2013, which will provide an opportunity to consult mining companies and interested parties in the general population on a revision of the mining tax regime. Following the consultation, the government will move quickly to announce exactly how the regime will be modified.

\$305M in mining taxes collected in 2010-2011
\$334M in 2011-2012

The Mining Act will also be subject to revision in 2013.



Photos: Focus Graphite and IOS Services géoscientifiques

A discussion table bringing together the mining industry and civil parties

An extensive public consultation on the future of the mining sector was carried out in all regions of Québec by a non-profit organization in 2012. Its conclusions prompted the mining industry to create a permanent discussion table to continue the dialogue with the population. This discussion table will enable representatives from special interests groups and members of the mining industry to maintain open lines of communication with a view to sustainable and harmonious mining development in Québec.

Photo: MRN

GEOSCIENCE WORK

Getting to know our territory

Each year, significant geoscience work is carried out by the Ministère des Ressources naturelles across the province, namely funded through mining taxes.

During the 2012-2013 fiscal year, more than \$13M will be invested in the acquisition of new geoscience knowledge which will notably be used to:

- Document Québec's mineral potential;
- Improving our knowledge of the territory will enable us to make better choices and to better manage our geological heritage;
- Stimulate mineral exploration in remote regions or in areas that are not readily accessible;
- Geoscience programs can sometimes lead to the identification of new exploration targets in underexplored areas. Target identification is the first step towards discovering a new mineral deposit;
- Support the Groundwater Knowledge Acquisition Program, in partnership with the *Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs*;
- Help communities in Nunavik adapt to the melting of permafrost;
- The town of Kuujuaq will benefit from an inventory of aggregate resources for use, among other things, under new constructions to ensure ground stability;
- Characterize sites likely to become outstanding geological sites;
- Under the Mining Act, outstanding geological sites are protected in light of their rare or vulnerable status.



Which minerals will we need tomorrow?¹

Mineral substances contained in rocks become ore when they are present in sufficient quantities to justify mining and when they have a certain value on global markets. This value of course depends on demand. Mica was once in high demand and its economic value justified mining operations. Today, mica resources are not developed nor mined as there is very little demand for mica. Similarly, the minerals we are mining today may very well be ignored by future generations, who may instead be interested in substances we are overlooking today. To each his own time, rocks, minerals, and markets!



Photos: M/RN

1 - Based on the work of professor and geologist Michel Gauthier

MINERAL EXPLORATION

Setting new records

In 2011, nearly 300 mining companies performed exploration or deposit appraisal work in most regions across Québec. These companies are based in Ontario (36%), Québec (30%), British Columbia (23%) and elsewhere in Canada or abroad (11%).

Precious metals – mostly gold – remain the most popular mineral commodities in Québec. However, in recent years, there has been growing interest for iron ore and a few mineral commodities that Québec does not yet produce or only in small quantities, among which lithium, rare earth elements and graphite. These so-called “strategic” metals are used to produce technological devices that form the basis of our modern economy: modes of transportation, communications tools, green technologies. Exploration projects in Québec are more important than ever, since very few mining operations are currently able to supply strategic metals to meet the needs of the high-technology industry.

Graphite, in high demand in the automotive and high-technology industries, has been the focus of new exploration projects in the Outaouais and Laurentides regions.

Expenditures by mining companies in Québec

In the early 2000s, annual exploration and deposit appraisal expenditures ranged between \$100M and \$300M. In 2011, expenditures reached a historic high of \$834M².

Exploration expenditures for lithium, rare earth elements, diamonds, graphite, and uranium have soared from \$5M in 2005 to \$110M in 2011.

In 2012, exploration and deposit appraisal expenditures are expected to be on the order of \$800M³, slightly less than in 2011. This decline, if confirmed, remains modest. However, over the next few months and indeed years, lower prices for certain metals may have an adverse impact on exploration expenditures.



Figure 1.1
Exploration and deposit appraisal expenditures in Québec from 2002 to 2012.

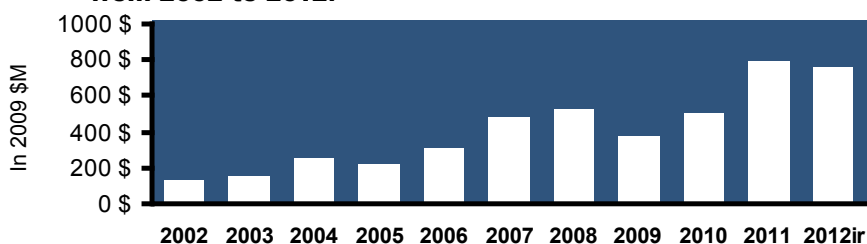
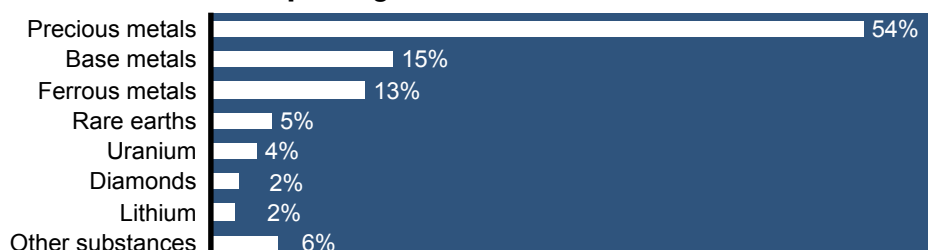


Figure 1.2
Distribution of exploration and deposit appraisal expenditures in Québec per targeted substance in 2011.



2 - See Table 4.1 for the distribution of expenditures per substance, and Table 4.2 for the distribution of expenditures per administrative region.

3 - According to revised spending intentions by mining companies compiled in the spring/summer of 2012.

MINERAL PRODUCTION

A diversified industry

Québec is one of the most important mining producers in Canada, and the country's most diversified producer, given the production of 17 different metals and 14 non-metallic minerals (stone, peat, rock salt, etc.) within its borders.

Iron, gold, nickel, stone (crushed, architectural, etc.), zinc, titanium dioxide, and cement are the main commodities produced in Québec in terms of value of shipments. The mining of surface mineral substances (sand, gravel, peat, etc.) is so widespread that all administrative regions in Québec are involved in one way or another in the mining sector.

The value of mineral shipments continues to increase

The economic value of minerals is relative since it follows fluctuations in global markets. With several metals reaching record prices in the first half of 2011, the value of mineral shipments in Québec reached a historic high of \$8.1B during the same year.

The value of shipments in Québec in 2011 was \$8.1B compared to \$7.1B in 2010.

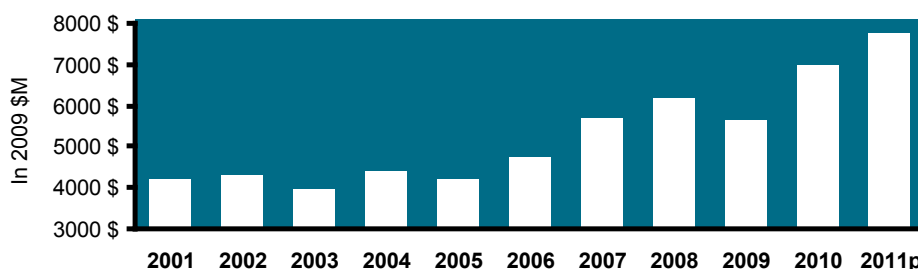
The increasing value of mineral shipments in Québec from 2010 to 2011 is attributable to rising prices for several metals, including iron, the most important mineral commodity produced in Québec in terms of tonnage and value: iron ore was worth US\$193/t⁴ in February 2011 compared to US\$128/t in December 2012.

Iron and gold shipments alone account for nearly two thirds of all mineral shipments in Québec.⁵

The value of mineral shipments may decrease with the declining price of several metals as observed in 2011 and 2012. Provisional data appear to indicate another increase however and the value of mineral shipments in 2012 may well exceed \$9B.



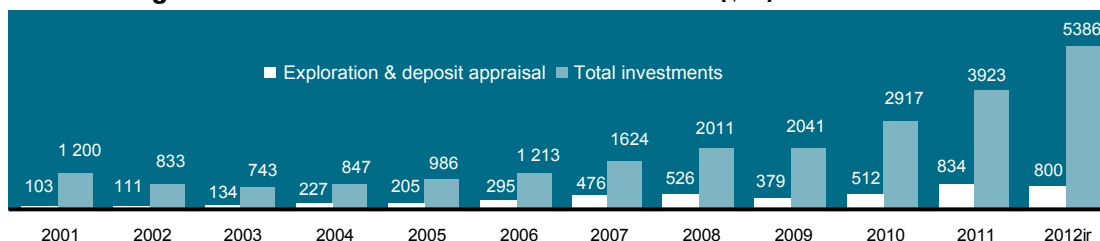
Figure 1.3
Value of mineral shipments in Québec from 2001 to 2011.



Nearly 4 billion dollars in mining investments in Québec

Along with exploration and deposit appraisal expenditures, the cost of mine development, for the construction of new mines or on existing mine sites, must be taken into account to determine the total value of mining investments in Québec on an annual basis. These investments are on an upward trend since 2003, and totalled just over \$3.9B in 2011. This amount appears to have increased again in 2012, reaching \$5.4B⁶.

Figure 1.4
Total mining investments in Québec from 2001 to 2012 (\$M).



4- Metal Bulletin Price Index, 62% Fe CFR China

5- See Table 6.2

6- According to revised spending intentions

MINE REHABILITATION

Environmentally sustainable mining development

Since March 9, 1995, anyone who conducts mining operations in Québec must submit, prior to the start of mining activities, a rehabilitation plan and a financial guarantee covering 70% of the cost of rehabilitation for tailings accumulation areas.

In 2012, \$79M were submitted in financial guarantees by mining operators, bringing the total amount of guarantees held by the State to \$196.8M.

The government of Québec intends to tighten the rules and increase the scope of the financial guarantee. Consequently, the required guarantee will cover 100% of the cost of rehabilitation for the entire mine site.

Prior to 1995, mining companies were not legally obligated to perform rehabilitation work. Some operators left behind a certain number of mine sites that have now become the responsibility of the State⁷.



The mining sector is going green

Today, the mining industry must go through numerous environmental studies and public consultations before they are able to mine an ore deposit and build a mine in Québec. It can take two years of studies and consultations before a mining company finally obtains a comprehensive certificate of authorization from the *Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs*. Moreover, the vast majority of mining companies seek to minimize the impacts of their projects on the environment and on neighbouring communities. Consequently, they will protect forested areas and watercourses near their mine sites, will attempt to reduce their greenhouse gas emissions, and will reuse or treat process water or mine water, etc.

Seventeen mining companies have decided of their own accord to take part in the BNQ 21000 initiative spearheaded by the government of Québec and aiming to help all companies in Québec to go green. Seventeen of the largest mining companies in Québec are working to integrate the principles of sustainable development into their business strategies and their management practices. These companies encompass 25 mine sites located in seven different administrative regions. The BNQ 21000 project enables these companies to combine their efforts, to develop a unified approach and to pursue a common goal: to position the mining sector as a leader in sustainable development.

7 - As at March 31, 2012, 698 sites were listed in the Québec government's inventory of environmental liabilities, for a total amount of \$891.6M.

ABORIGINAL COMMUNITIES

Partners in mining development in Québec

The population in the most important mining regions in Québec, in particular the Nord-du-Québec and Côte-Nord regions, includes numerous Aboriginal communities. On occasion, these communities are located near mine sites or within areas targeted by a development project.

The government of Québec and the mining industry are very attentive to the needs and expectations of Aboriginal communities concerned by mining development in Québec.

Firstly, the government of Québec signed, on March 30, 2012, an agreement-in-principle with the Council of the Abitibiwinni First Nation and the Council of the Anishnabe Nation of Lac Simon, to implement a consultation process for the development of mining projects. The final agreement is currently being negotiated and may serve as an example, eventually leading to new agreements with other Aboriginal communities.

Secondly, between 1995 and 2012, eleven partnership agreements⁸ were signed between mining companies and Aboriginal communities (Inuit, Innu, Cree, Naskapi, etc.). These agreements namely include provisions on the protection of heritage sites, environmental monitoring, guarantees for jobs and contracts for Aboriginals, in addition to financial compensation.

In 2012, agreements were signed between mining companies and the Innu community of Uashat Mak Mani-Utenam, the Cree Nation of Mistissini, the Grand Council of the Crees, the Cree Nation of Waswanipi, and the Cree Nation of Ouje-Bougoumou.



Aiming for harmonious development

In March 2012, a major mining company signed an Impacts and Benefits Agreement with the Cree Nation of Mistissini, the Grand Council of the Crees, and the Cree Regional Authority, regarding an important diamond project. The agreement provides the Crees with training and employment opportunities, as well as long-term financial benefits and ensures their values, interests and way of life will be taken into account. Other similar agreements were concluded between mining companies and Aboriginal communities in 2012, namely with the Cree Nation of Waswanipi, the Cree Nation of Ouje-Bougoumou, the Cree Nation of Eastmain, and Algonquin communities in Pikogan (Abitibiwinni) and Lac Simon (Anishnabe).



8 - See Table 8.1

Jobs and workforce

The mining sector is an important job provider in Québec and an employer of choice: the average annual salary in the mining sector is more than \$70 000⁹. The industry is also facing a severe shortage in manpower: it is anticipated that thousands of new direct jobs will be created by 2015.

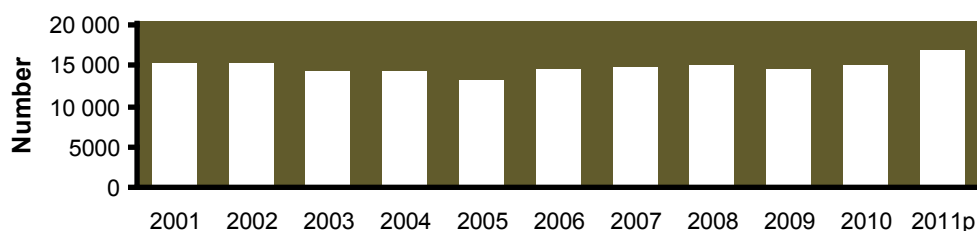
One of the reasons Québec has such an excellent reputation in the mining sector is the quality of its workforce.

The mining sector generates direct and indirect jobs. These jobs are distributed in all regions across Québec, but mostly in the three main mining regions: Abitibi-Témiscamingue, Côte-Nord, and Nord-du-Québec.

- In 2011, mineral extraction activities¹⁰ in Québec accounted for 11 940 jobs.
- Including primary processing activities, the mining sector accounted for 16 855 direct jobs, an 11% increase relative to the previous year.
- Taking into account all jobs created in exploration, mining, primary processing, and mine development, it is estimated that more than 47 000 direct and indirect jobs were generated by the mining sector in Québec in 2010 (see Table 6.6).

Figure 1.5

Number of direct jobs in the mining sector in Québec from 2001 to 2011.



Primary processing activities in Québec

Primary ore processing activities in Québec include refineries, smelters, and clay, lime, and cement plants. These activities are often based outside of mining regions, which helps spread the economic benefits of the mining sector across the entire province. In 2011, the primary processing industry accounted for 3838 direct jobs in twelve plants located mainly in the Montérégie, Abitibi-Témiscamingue, and Montréal regions. There are also in Québec several other primary processing plants that receive imported ores (aluminium smelter, bauxite processing plant, perlite production plant).



9 - Source : www.mrn.gouv.qc.ca/publications/mines/statistiques/etude-impact-economique-secteur-minier.pdf

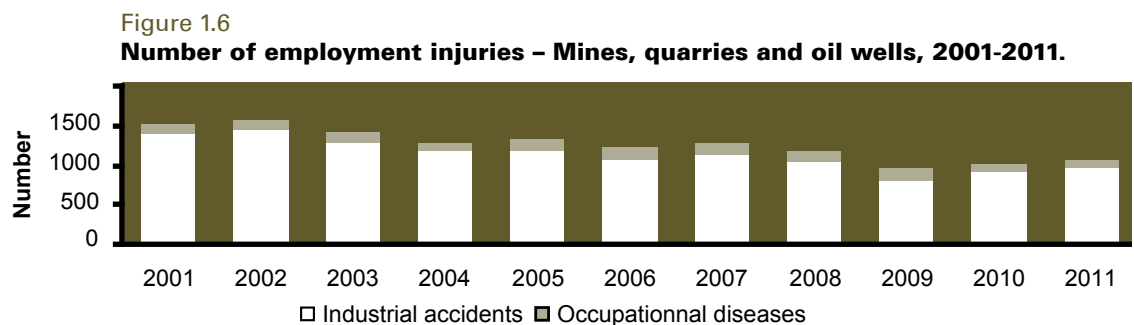
10 - Thanks to extraction activities relating to peat, sand and gravel, and crushed stone, all regions of Québec are involved in one way or another in the mining sector, including Montréal and Québec City.

Health and safety

The mining sector¹¹ accounts for about 1% of all employment injuries reported in Québec by the CSST each year. And the performance of the mining sector continues to improve year after year

Employment injuries in the mining sector have dropped by 30% from 2001 to 2011¹².

The most common types of accidents occurring in the mining sector are: collisions between vehicles, exposure to substances, excessive effort, being hit by an object, friction, vibration, and repetitive movements. Substantial efforts are continuously expended by governments and industry to minimize and diminish employment injuries.



Source of data: Service de la statistique, CSST, November 2012. The data are based on the year in which employment injuries are registered and confirmed, whether compensation is paid or not.

A prize for excellence in safety awarded to four companies in Québec

Each year, the Québec Mining Association awards the F.J. O'Connell Trophy (in honour of the dedicated promoter of safety in the workplace) to companies for their outstanding performance in mine safety. In 2012, the F.J. O'Connell Trophy was awarded to four companies established in the Abitibi-Témiscamingue, Estrie, and Nord-du-Québec regions. The recipients are: Xstrata Copper's Horne smelter, mining contractor J.S. Redpath, Graymont's Marbleton plant, and Goldcorp's Eleonore project.



Photo: Minalliance

¹¹ - Data on employment injuries include mineral extraction activities, as well as drilling of oil and gas wells. The latter represents a very small proportion of jobs related to mining activities.

¹² - These data do not include employment injuries related to exploration and deposit appraisal activities, nor to the primary processing of minerals.

MINING REGIME AND LAND ACCESS

*Dorra Djemal, Roch Gaudreau
and Jocelyne Lamothe*

2.1 Basic principles

The mining regime in Québec is based on the following principles:

- Access to the province's mineral resources is open on the largest possible expanse of land in the domain of the State in order to promote the discovery of rich metal and mineral deposits hidden in Québec's subsurface.
- Applicants are treated on an equal basis for mining title acquisition. The first to submit a compliant application obtains the exclusive right to search for all mineral substances in the domain of the State on the designated land parcel (claim).
- In the event of a discovery of mineable mineral substances, the claim holder has a reasonable assurance of obtaining the right to mine the discovered resource (lease). The lease application must comply with conditions stipulated in the Mining Act and applicable regulations.

The Mining Act is designed to promote prospecting, exploration, and mining of mineral substances, while taking into consideration other possible uses for the territory.

2.2 Mining titles

Mining rights, granted as mining titles, are real and immovable rights that may be the object of transactions. However, mining rights and land rights are unrelated. A mining right constitutes a property that is distinct from a surface property.

There are two types of mining titles for mineral substances in the domain of the State, other than petroleum, natural gas and brine: titles that authorize the search for mineral substances, known as "exploration rights", and titles that authorize the mining of mineral substances, known as "extraction rights".

Exploration rights

The claim gives the holder the exclusive right to explore for all mineral substances in the domain of the State within the confines of the claim. Map designation online via GESTIM Plus is the main mode of acquisition. Claims are valid for a term of two years and may be renewed.

Extraction rights

There are two types of extraction rights in Québec. Depending on the type of substance to be extracted, a mining lease or a lease to mine surface mineral substances may be issued.

a) The mining lease

A mining lease is required to mine any mineral substance other than surface mineral substances. The surface area covered by the lease may not exceed 100 hectares. The initial term of the lease is 20 years, and it may be renewed every 10 years for up to three terms.

To obtain a mining lease, the applicant must:

- Submit a report from an engineer or geologist describing the nature, extent, and probable value of the ore deposit;
- Pay the annual rent;

- Submit a survey plan;
- Obtain authorization from the surface landowner, if any;
- Submit a rehabilitation plan and a financial guarantee;
- Obtain a forest management permit, if warranted;
- Obtain a certificate of authorization from the *Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs*;
- Obtain authorization from the Minister of Natural Resources for the location of a processing plant and a tailings pond.

To renew a mining lease, the lease holder must have complied with the measures of the Mining Act and applicable regulations during the term of the lease and must, among other things, demonstrate that mining operations have taken place on the land covered by the mining lease for at least two of the last ten years of the term of the lease.

b) Leases and authorization to mine surface mineral substances

- The exclusive lease is issued for consolidated surface mineral substances, also for unconsolidated deposits when a guaranteed supply is required for an industrial activity or for the State to build public roads or other works. This authorization gives the lessee the exclusive right to mine, which comes with the environmental liability for the site.
- The non-exclusive lease is issued for unconsolidated deposits (sand, gravel, and common clay) to be used for construction purposes.
- The authorization to mine without a lease is issued for a one-time occurrence, when time constraints are critical.

2.3 Active mining titles

As at December 31, 2012, the number of active mining titles across Québec was 237 460, for a total surface area of 11 018 358 hectares, which represents a decrease, relative to 2011, of 4.68% in the number of active mining titles and of 3.88% in the total surface area covered by such titles (Figure 2.1).

The number of exploration titles has decreased relative to 2011 in most administrative regions of Québec, most notably in Estrie (55.7%), Chaudière-Appalaches (51.4%), Centre-du-Québec (61.2%), and Capitale-Nationale (22.1%) (Table 2.1).

A total of 43 843 new exploration titles were issued across Québec in 2012, covering a surface area of 2 217 420 hectares. This represents a decrease of 36.42% relative to the number of exploration titles issued in 2011, and a drop of 36.82% in the total surface area covered by such titles (Table 2.1).

The number of extraction titles (mining leases and leases to mine surface mineral substances) in Québec as at December 31, 2012 was 3240, an increase, relative to 2011, of 2.62% in the number of active extraction titles (Table 2.2).

2.4 The “GESTIM Plus” mining title management system

In Québec, mining title management is computerized and easily accessible on the Internet via the “GESTIM Plus” geomatics application. This system provides instant access to up-to-date data in the Register of Real and Immovable Mining Rights in Québec, and namely makes it possible to:

- Reduce the cost of acquiring and monitoring mining titles for mineral exploration stakeholders;
- Consult and download data from the public registry of mining titles by selecting the desired parameters;
- View mining title maps and download them free of charge in PDF format;
- Generate mining title maps tailored to your needs;
- File a map designation application or a claim renewal application;
- Pay the required fees electronically in a totally secure environment.

The Mines Sector is resolutely taking to the web by expanding its services offered through GESTIM Plus. Indeed, the only accepted means to submit a notice of map designation or a notice of staking, a claim renewal application, and a report of extraction and alienation of surface mineral substances, is online through the GESTIM Plus system. Accepted modes of payment when such forms are filed are by credit card or, in the case of “Privilège” members of GESTIM Plus, through the client’s MRN account.

Because the time of receipt for notices of map designation is used to establish the order in which the Registrar will process the notices, the time of receipt is based on the time of the GESTIM Plus server.

As for the documents required upon filing a notice of staking, these must be submitted to the Minister’s office within twenty days following the date of staking.

The online address of the GESTIM Plus system is: gestim.mines.gouv.qc.ca

NEW DEVELOPMENTS IN 2012

In order to continue modernizing and improving its services, the MRN has issued new directives relating to the renewal of non-exclusive leases to mine surface mineral substances.

As of November 20, 2012, renewal applications for non-exclusive leases to mine surface mineral substances may be filed through the GESTIM Plus system.

Note that these directives do not apply to holders of sand and gravel extraction titles for sites located on lands in the domain of the State in administrative regions where an agreement to delegate the management of sand and gravel mining is in effect.

www.mrn.gouv.qc.ca/english/mines/rights/rights-directives.jsp

2.5 Relations with Aboriginal communities

Over the last few decades, the Supreme Court of Canada has rendered many decisions about Aboriginal rights that emphasize the importance of balancing the interests of Aboriginal peoples and society in general. This search for balance aims to satisfy the fundamental objective of section 35 of the Constitution Act of 1982, which recognizes and affirms the “existing aboriginal and treaty rights of the aboriginal peoples of Canada”. In their pursuit of conciliation, the courts have insisted that governments respect the concept of the honour of the Crown in its relations with Aboriginal peoples and any obligations that may ensue.

Among the obligations that come with the honour of the Crown, as described by the Supreme Court in the Haida and Taku River decisions of 2004, is the obligation to consult Aboriginal communities and to accommodate them, if possible, when contemplating an action that could have a prejudicial effect on any rights such communities may claim and to which they may be entitled.

In accordance with decisions rendered by the Supreme Court of Canada, the MRN has complied with its obligation to consult and accommodate Aboriginal communities since 2006, particularly before issuing any extraction title such as a mining lease, an exclusive lease to mine surface mineral substances, a non-exclusive lease to mine surface mineral substances, or an authorization to mine without a lease. The Mines Sector is also involved in consultations for all major exploration work, including excavations that require displacing more than 10 000 m³ of unconsolidated deposits, bedrock stripping, removing or displacing 500 or more metric tonnes of mineral substances for geological or geochemical sampling purposes, and the dewatering of mine shafts and mine workings, as well as the sinking of access ramps, shafts or any other type of excavation.

Moreover, Aboriginal communities are expressing a greater desire to participate in development projects taking place on lands to which they claim rights and interests. As outlined in Québec's Mineral Strategy, the government is committed to promoting dialogue between mining companies and Aboriginal communities in the hopes that it will lead to agreements on the impacts and benefits of mining and mineral activities, thus gaining wider social acceptance for mining projects.

NEW DEVELOPMENTS IN 2012

Signing of an agreement between the Government of Québec and the Cree Nation

The Government of Québec and the Cree Nation signed, on July 24, 2012, the Agreement on Governance in the Eeyou Istchee James Bay Territory. This agreement is designed to give the Crees expanded powers over lands and resources. It calls for the creation of a new regional government to replace the Municipalité de Baie-James. The new government will consist of Crees and James Bay residents each having an equal number of votes. The regional government for Eeyou Istchee James Bay will have the same responsibilities, functions, and powers as local municipalities, regional county municipalities, regional conferences of elected officials, and regional commissions on natural resources and land.

Signing of an agreement-in-principle with the Lac Simon and Pikogan communities

On March 30, 2012, an agreement-in-principle was signed between the Council of the Abitibiwinni First Nation, the Council of the Anishnabe Nation of Lac Simon, and the Government of Québec.

The intent of this agreement-in-principle is to establish a global framework that will lead to an agreement on consultation and accommodation over mining projects within a territory that remains to be delineated, so as to avoid potential conflicts and to address, through discussions, concerns expressed by the Council of the Abitibiwinni First Nation and the Council of the Anishnabe Nation of Lac Simon, in a spirit of mutual respect and understanding.

2.6 Land protection

In order to accommodate other possible uses for the territory, the Minister may, pursuant to section 304 of the Mining Act, reserve to the State or instead withdraw from staking, map designation, mineral exploration or mining any land in the domain of the State containing mineral substances required for any purpose deemed to be in the public interest, namely to perform work such as:

- Mining, industrial, port, airport, or communications facilities;
- Development and use of water-power, power transmission lines, storage tanks or underground reservoirs;
- Creation of parks or ecological reserves;
- Classification as an outstanding forest ecosystem;
- Designation of a biological refuge.

The Minister may also, by order, delimit territories for non-exclusive purposes of recreation, tourism, or vegetation and wildlife conservation.

In addition, the Minister may, by order and subject to conditions he may set on lands reserved to the State, determine that certain specific mineral substances may, in accordance with the Mining Act, be the object of mineral exploration or mining.

The ministerial order comes into effect the day of its publication in the Gazette officielle du Québec or at any other later date that is stipulated.

Prior to an order, the Minister may temporarily suspend, for a period of 18 months, the right to stake and map-designate lands within the boundaries indicated on maps kept at the Registrar's office. This suspension comes into effect after a notice has been submitted to the Registrar's office, on the date indicated on the notice.

2.7 Restrictions on mineral exploration

As at December 31, 2012, lands subject to major restrictions, with a ban on mineral exploration, covered a total of 15.1 M hectares or 9.1% of Québec's surface area. Lands subject to a temporary suspension covered 13.6 M hectares or 8.14% of Québec's surface area. Lands subject to minor restrictions, where exploration is allowed under certain conditions, covered a surface area of 10.0 M hectares or 6.0% of Québec. A surface area of 1.6 M hectares, or 0.97% of Québec, is targeted by section 91 of Bill 14 (Figure 2.2).

Lands recognized as Protected Areas according to the International Union for Conservation of Nature cover 8.52% of Québec's territory and are included in the territory subject to restrictions on mineral exploration.

2.8 Delegation of sand and gravel management to MRCs

In the fall of 2008, the Cabinet authorized the Minister of Municipal Affairs and Regions and the Minister of Natural Resources and Wildlife to sign an agreement with the *Fédération québécoise des municipalités* (FQM) and the *Union des municipalités du Québec* (UMQ). One of the goals of the agreement was to delegate to regional county municipalities (*municipalités régionales de comté* - MRC) the management of sand and gravel mining on lands in the domain of the State. In June 2009, the Cabinet adopted an order-in-council to decentralize sand and gravel management.

Half (50%) of the collected royalties and rental fees for sand and gravel mining are retained by the delegate MRCs.

The powers and responsibilities vested to MRCs with regard to sand and gravel are:

- The granting, renewal, revocation, and registration in the Register of Real and Immovable Mining Rights, of authorizations to mine and leases to mine sand and gravel;
- The issuance of certificates of authorization pursuant to section 22 of the Environment Quality Act;
- The inspection and monitoring of mining operations for these substances;
- The collection of rental fees and royalties;
- The rehabilitation of sand and gravel pits.

The MRCs of regions that have agreed to take over the management of sand and gravel are as follows:

Bas-Saint-Laurent

- Kamouraska MRC
- La Matapédia MRC
- La Mitis MRC
- Les Basques MRC
- Matane MRC
- Rimouski-Neigette MRC
- Rivière-du-Loup MRC
- Témiscouata MRC

Saguenay-Lac-Saint-Jean

- City of Saguenay
- Lac-Saint-Jean-Est MRC
- Domaine-du-Roy MRC
- Maria-Chapdelaine MRC
- Fjord-du-Saguenay MRC

Capitale-Nationale

- Charlevoix MRC
- Charlevoix-Est MRC
- Côte-de-Beaupré MRC
- Portneuf MRC

Mauricie

- City of La Tuque
- Maskinongé MRC
- Mékinac MRC

Côte-Nord

- Caniapiscau MRC
- Haute-Côte-Nord MRC
- Manicouagan MRC
- Minganie MRC
- Sept-Rivières MRC

Lanaudière

- Matawinie MRC

Laurentides

- Laurentides MRC
- Antoine-Labelle MRC

(Figure 2.3).

In 2012, the number of leases and authorizations to mine sand and gravel across Québec's territory was 4708. These relate to 3538 sites where surface mineral substances are mined. Most of these titles are managed by the MRCs of delegate administrative regions. Only 2120 titles are still managed by the MRN. Collected royalties and rental fees for the latter amount to \$1.72M (Table 2.3).

2.9 Overhaul of the Mining Act

In December 2009, following the launch of Québec's Mineral Strategy, the Minister introduced Bill 79 to amend the Mining Act. This initial bill barely made it through the public consultation step.

Bill 14 replaces Bill 79. It presents most of the previously proposed changes to the Mining Act, as well as additional measures following the public consultations that were held with respect to Bill 79 in 2010.

Bill 14 could not be adopted before the end of session in Parliament and thus died on the order paper when elections were called. However, the overhaul of the Mining Act is still in process. The Minister of Natural Resources confirmed, at the opening of the Québec Mines 2012 convention, her intent to introduce a new bill over the coming months.

2.10 Mining taxation

Mining taxation in Québec is distinct from that in other Canadian provinces and territories, namely with regard to tax incentives designed to stimulate mineral exploration as well as the development of new mines. The main tax incentives available to the mining sector are:

Québec's flow-through share regime, which allows individual investors to claim deductions reaching up to 150% of their investment cost; www.mrn.gouv.qc.ca/english/mines/fiscal/fiscal-incentives-shares.jsp

The refundable tax credit for resources, introduced in 2001, which grants companies a refund reaching up to 38.75% of eligible exploration expenditures incurred in Québec; www.mrn.gouv.qc.ca/english/mines/fiscal/fiscal-incentives-resources.jsp

The credit on duties refundable for losses, a unique measure in Canada, introduced in 1985, which allows mining operators to receive a refund for the tax value of certain exploration, deposit appraisal, and mine development investments prior to production. This credit gives rise to a refund equivalent to 16%, since January 1, 2012.

www.mrn.gouv.qc.ca/english/mines/fiscal/fiscal-regime-losses.jsp

2.11 Mining Tax Act

Québec's Mineral Strategy, announced on June 29, 2009, called for a careful examination of the mining duties regime, to ensure Québec receives its fair share of returns on the mining of its mineral resources, while taking into account the competitiveness of companies and the need to maximize benefits.

Since that time, the mining duties regime has been studied in detail and the government has proposed a major revision to adapt it to the new reality of the mining sector. The Mining Tax Act, which brought into force the provisions outlined in the reform, was sanctioned on June 6, 2011.

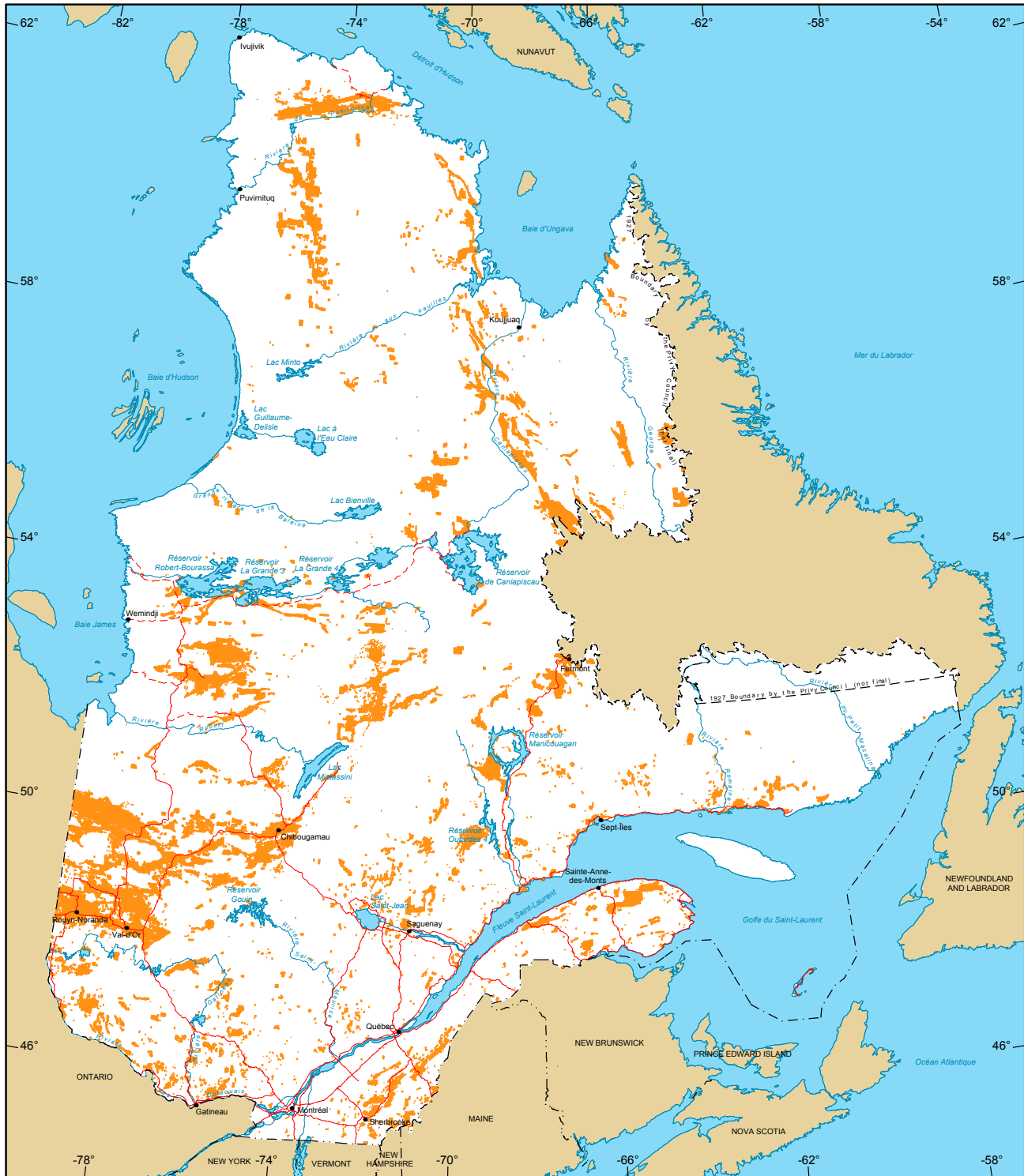
www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/l_0_4/10_4_A.html

The revised regime is characterized by:

- A "mine-by-mine" approach: this approach applies to fiscal years beginning after March 30, 2010 for mine operators, and stipulates that losses relating to one mine may not be used to reduce profits at another mine;
- The concept of eligible operator;
- A gradually increasing mining duties rate;
- A new rate for the credit on duties refundable for losses;
- Changes and additions to the following allowances:
 - Additional allowance for a mine located in Northern Québec;
 - Depreciation allowance;
 - Exploration allowance;
 - Allowance for mineral deposit evaluation and mine development before production;
 - Allowance for mineral deposit evaluation and mine development after production;
 - Processing allowance;
 - New rules for work financed by flow-through shares, for which certain expenses are excluded;
 - Rules applicable in the case of gemstones;
 - The continuance of environmental trusts.

www.mrn.gouv.qc.ca/mines/fiscalite/fiscalite-regime.jsp

Figure 2.1 - Mining titles in Québec.



Active mining titles
On December 31st, 2012
Number : 237 460
Area : 11 018 358 ha

Metadata
Coordinate System
Conic Conformal Lambert with
two standard parallels
(46° and 60°)

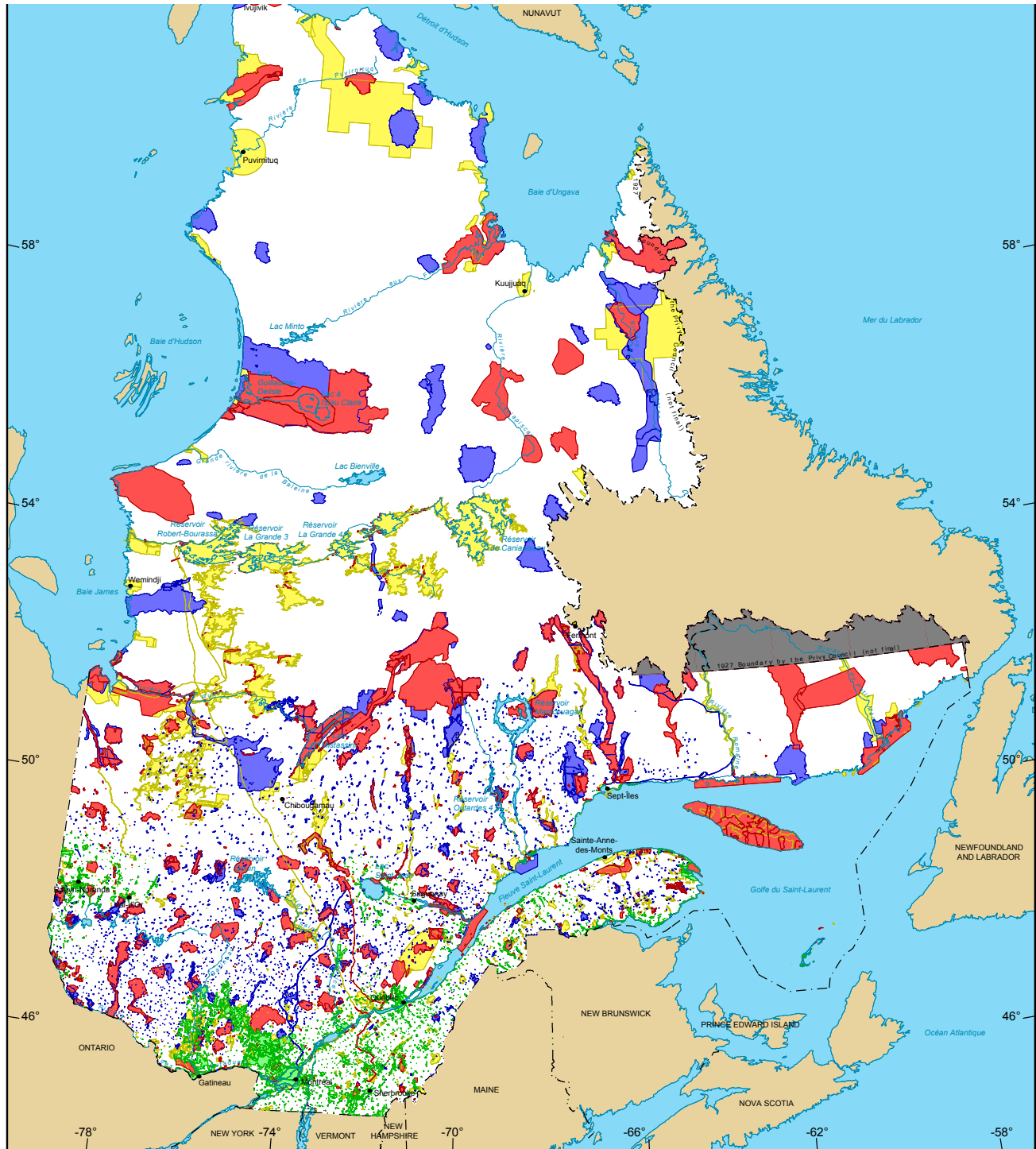
1/10 000 000
0 200 km

Sources
Mining data, MRN, 2013
Cartographic Reference, MRN, 2011
(BDGA 1M, BDGA 5M)

Realisation
Ministère des Ressources naturelles
Direction des titres miniers et des systèmes
Note : This document has no legal value.

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Figure 2.2 - Restriction on mineral exploration in Québec.



Mining restrictions

- Major Exploration prohibited
15 143 917 ha
- Perimeter as defined by section 91 of Bill 14
1 626 490 ha
- Major Land suspended temporarily
13 584 867 ha
- Major Withdrawal from staking, Order in Council
2 897 400 ha
- Minor Exploration under specific conditions
10 044 694 ha

Metadata

Coordinate System
Conic Conformal Lambert with two standard parallels (46° and 60°)

Sources
Mining data, MRN, 2013
Cartographic Reference, MRN, 2011 (BDGA 1M, BDGA 5M)

Note : The areas calculated represent the sum of the surface area of each individual mining restriction. The calculation does not take in consideration the possible overlapping of some areas.

Realisation

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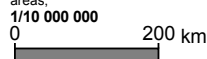


Figure 2.3 - Delegation of sand and gravel mining management.



Administrative regions delegatee of the management of sand and gravel on the land of the State

- Delegates on December 31st, 2012
- 01- Bas-Saint-Laurent
- 02- Saguenay-Lac-Saint-Jean
- 03- Capitale-Nationale
- 04- Mauricie
- 09- Côte-Nord
- 14- Lanaudière
- 15- Laurentides

Metadata

Coordinate System
Conic Conformal Lambert with two standard parallels (46° and 60°)

1/10 000 000



Sources

Cartographic Reference, MRN, 2013 (BDGA 1M, BDGA 5M)

Realisation

Ministère des Ressources naturelles
Direction des titres miniers et des systèmes
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Table 2.1- Distribution of mining exploration titles per administrative region in Québec. Active and suspended exploration titles as at December 31, 2012.

	Administrative region	Number of titles (CL,CDC,CLD, PRF)		Variation (%) in 2012		Surface area (ha)			Variation (%) in 2012			Number of titles issued (CL,CDC,CLD,PRF)			Surface area (ha) of titles issued															
		2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012											
		1	Bas-Saint-Laurent	1224	1219	1999	64.0	61 106	109 385	79.01	574	334	1 381	28 533	18 150	78 078	2	Saguenay-Lac-Saint-Jean	6604	7903	7817	(1.1)	348 078	424 453	(0.49)	2 008	3 600	1 828	109 974	198 983
3	Capitale-Nationale	1508	1122	874	(22.1)	82 217	60 455	(23.79)	283	450	231	15 503	23 462	12 124	4	Mauricie	1829	1842	1380	(25.1)	99 405	99 556	(24.43)	626	788	332	33 994	42 490	18 433	
5	Estrie	6658	6666	2952	(55.7)	389 377	389 410	(56.06)	5 387	482	531	316 997	26 896	30 476	6	Montréal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	Outaouais	2666	3976	5666	42.5	152 885	228 450	43.90	1 814	1 663	2 472	104 961	95 748	144 821	8	Abitibi-Témiscamingue	34 149	38 855	37 685	(3.0)	1 326 609	1 560 149	(3.18)	9 033	8 612	5 673	435 846	415 187	281 391	
9	Côte-Nord	20 802	22 790	22 148	(2.8)	1 055 200	1 136 375	(2.73)	7 026	6 675	4 903	366 269	345 689	257 114	10	Nord-du-Québec	138 555	148 649	142 588	(4.1)	6 056 504	6 685 991	(2.22)	34 756	36 788	22 764	1 677 760	1 815 685	1 089 951	
11	Gaspésie-Îles-de-la-Madeleine	3567	4491	5078	13.1	168 265	230 511	15.24	865	2 157	1 574	46 408	114 902	84 850	12	Chaudière-Appalaches	6246	6763	3285	(51.4)	331 987	163 495	(54.76)	4 937	786	730	274 641	42 762	36 276	
13	Laval	-	-	-	-	-	-	-	-	-	-	-	-	-	14	Lanaudière	435	453	288	(36.4)	24 822	25 947	(35.61)	310	92	98	17 858	5 151	5 774	
15	Laurentides	1903	2505	2923	16.7	106 448	140 314	17.29	786	869	1 329	45 762	49 847	76 452	16	Montréal	357	339	157	(53.7)	20 528	19 233	(54.42)	232	39	33	13 814	2 176	1 903	
17	Centre-du-Québec	1022	1013	393	(61.2)	60 518	59 929	(61.31)	807	75	166	47 885	4 152	9 910	Total*	226 383	247 477	234 220	(5.4)	10 227 981	11 461 044	(4.63)	63 285	68 954	43 843	3 194 896	3 509 840	2 217 420		

*Titles that overlap more than one administrative region are compiled in each of the regions.

Consequently, the sum of titles per area does not equal the total number of titles.

Updates: When this file is updated, the number of mining titles for previous years may be adjusted as a result of decisions from the Minister, court judgments, or any other correction of the Register of real and immovable mining rights of Québec.

These statistics are taken from the ODM Register as at January 8, 2013.

Acronyms

CDC: map-designated claim obtained after November 22, 2000

CL: staked claim

CLD: map-designated claim obtained prior to November 22, 2000

PRF: seabed exploration licence

TABLE 2.2 - Distribution of mining extraction titles per administrative region in Québec.

	Administrative region	Nombre de titres			
		CM,BM, BEF,BEP	BEX	ASB	BNE
1	Bas-Saint-Laurent	1	10	3	85
2	Saguenay–Lac-Saint-Jean	5	37	2	287
3	Capitale-Nationale	4	22	0	61
4	Mauricie	3	8	2	155
5	Estrie	3	0	0	11
6	Montréal	0	0	0	0
7	Outaouais	3	1	0	95
8	Abitibi-Témiscamingue	141	39	2	638
9	Côte-Nord	44	144	16	507
10	Nord-du-Québec	76	113	48	357
11	Gaspésie-Îles-de-la-Madeleine	11	20	7	29
12	Chaudière-Appalaches	8	2	0	16
13	Laval	0	0	0	0
14	Lanaudière	3	10	0	75
15	Laurentides	11	15	0	104
16	Montérégie	1	0	0	0
17	Centre-du-Québec	0	0	0	1
	Total*	318	421	80	2,421

*Titles that overlap more than one administrative region are compiled in each of the regions.

Consequently, the sum of titles per region does not equal the total number of titles.

Updates: When this file is updated, the number of mining titles for previous years may be adjusted as a result of decisions from the Minister, court judgments, or any other correction of the Register of real and immovable mining rights of Québec.

These statistics are taken from the ODM Register as at January 8, 2013.

Acronyms

ASB: authorization to mine without a lease

BEF: seabed mining lease

BEP: special mining lease

BEX: exclusive lease to mine surface mineral substances

BM: mining lease

BNE: non-exclusive lease to mine surface mineral substances

CM: mining concession

TABLE 2.3 - Distribution of active mining titles for the management of sand and gravel mining.

From January 1 to December 31, 2012			
Administrative region	Number of active leases for the period (BNE / BEX)	Number of active authorizations for the period (ASB)	Number of extraction sites for SMS
Capitale-Nationale *	112	9	68
Mauricie *	422	2	393
Estrie	18	0	12
Outaouais	238	2	207
Abitibi-Témiscamingue	1,011	47	635
Côte-Nord *	920	47	692
Nord-du-Québec	628	49	563
Gaspésie-Îles-de-la-Madeleine	39	50	50
Chaudière-Appalaches	26	2	26
Montérégie	0	0	0
Saguenay-Lac-Saint-Jean *	644	6	558
Bas-Saint-Laurent *	92	11	79
Lanaudière *	132	1	83
Laurentides *	198	2	172

* : delegate administrative regions responsible for the management of sand and gravel

Acronyms:

ASB: authorization to mine without a lease

BEX: exclusive lease to mine surface mineral substances

BNE: non-exclusive lease to mine surface mineral substances

SMS: surface mineral substances

CHAPTER 3

GEO-SCIENCE WORK IN QUÉBEC IN 2012-2013

Patrice Roy, Charles Maurice and Abdelali Moukhsil

The *Bureau de l'exploration géologique du Québec* (BEGQ) is responsible for the acquisition and processing of geoscience knowledge from across the province. Its goal is to disseminate data and knowledge in order to promote the mineral potential of all regions of Québec, with a view to sustainable development. In 2012-2013, the BEGQ will complete 26 projects across Québec.

Through the mining heritage component of the Natural Resources Fund, financed with mining royalties, more than \$13M were invested in geoscience work. An additional amount of \$300 000, obtained pursuant to an agreement with the MDDEFP, was used to perform Quaternary deposit mapping in municipalized regions targeted under the Groundwater Knowledge Acquisition Program.

The 23 new geoscience knowledge acquisition projects include six bedrock geological mapping surveys, one drilling project, four geophysical surveys, two geochemistry projects, and seven Quaternary surveys (Figure 1). In addition, two mineral potential studies and two 3D modelling projects were carried out. Finally,

several outstanding geological sites were visited to complete their characterization within the broader objective of preserving Québec's geological heritage.

3.1 Geological surveys

The six geological surveys are part of an extensive geoscience knowledge acquisition program that was developed to stimulate exploration in Northern Québec and in mining regions.

The Churchill – Lac Saffray project (No. 1), a reconnaissance survey at a scale of 1:250 000 in the Churchill Province, is in its second year. In 2012-2013, the survey focused on an area located southeast of Kuujuaq, covering the eastern part of NTS sheet 24F and NTS sheet 24G.

The two geological surveys at 1:50 000 scale carried out in the James Bay area represent the eastward and southward extensions of areas mapped over the past three years near reservoirs La Grande 3 and 4. The James Bay – La Grande 4 project (No. 2) consists of a survey in the La Grande Subprovince, specifically covering the eastward extension of volcano-sedimentary units in the Lac Guyer and Lac de la Corvette area. The James Bay – Lac Kamusaawach project (No. 3) covers the boundary zone between the La Grande Subprovince to the north and the Opinaca Subprovince to the south.

The Grenville – Outardes project (No. 4) is a mapping survey, at a scale of 1:50 000, in paragneiss, quartzite, and amphibolite units encircling the Manicouagan Reservoir in the Grenville Province. It is the southwest continuation of the geological survey carried out in the Lac du Milieu area last year.

A geological survey at 1:20 000 scale completed west of Chapais (No. 5) helped improve our geological understanding of the area and better document the potential for gold and volcanogenic massive sulphides outside of historic mining camps

in Chapais and Chibougamau. This project will also define the extension of one of the earliest volcanic units in the Abitibi (Chrissie Formation) and refine its stratigraphy.

The multidisciplinary Malartic project (No. 6) covered the northeast quadrant of NTS sheet 32D01 at a scale of 1:20 000. The results of this project will firstly bridge the gap between mapping efforts in the western part of the Malartic Group and work carried out in the Val-d'Or Formation further east, and secondly, lead to a better characterization of gold and nickel occurrences in the area. This project is carried out in collaboration with the Geological Survey of Canada, the Canadian Mining Innovation Council, and several mining companies.

3.2 Drilling project

The Rivière Bell project (No. 7) consists of a five-year drilling campaign covering the area between Lebel-sur-Quévillon and Normétal, which is characterized by a thick clay cover. This project aims to improve our geological knowledge of Quaternary deposits and of the underlying bedrock in an area where traditional exploration methods are ineffective.

3.3 Geophysical surveys

The Lac Romanet project (No. 8) completes the airborne magnetic and spectrometry coverage of the New Québec Orogen. It is the second and final phase of a multi-year project undertaken to provide coverage equivalent to what has been achieved in recent years in the area east of James Bay.

The Rivière à la Baleine project (No. 9) consists of a magnetic and spectrometry survey covering the central Churchill Province. The results will be used to support geological mapping planned in this region.

The North Ungava Orogen project (No. 10) consists of an airborne magnetic and spectrometry survey covering the northern part of the Ungava Peninsula. This survey will be completed in 2013-2014 and will be used to support future reconnaissance mapping.

Finally, the Fermont West project (No. 11) covers the area west of Fermont and north of the Manicouagan Reservoir. This airborne magnetic survey focuses on an area with significant potential for iron formations.

3.4 Geochemical surveys

Project No. 12 consists of a lake sediment sampling program in the southwest Grenville Province, north of urban areas along the Ottawa and Saint Lawrence rivers. The Kipawa area (Project No. 12a) will be the focus of a more detailed survey to document geochemical signatures in this area known for its rare earth potential.

Project No. 13 involves the reanalysis, by ICP-MS, in the same laboratory and using the same analytical method, of archived sediment samples collected in 1997. This work completes the project to upgrade the entire lake sediment geochemistry database for the province.

3.5 Quaternary surveys

In parallel with the Churchill – Lac Saffray geological mapping project (No. 1), an ambitious project to map Quaternary deposits and sample surficial deposits (No. 1a) was launched this year in NTS sheet 24G.

Further south, four Quaternary mapping projects (nos. 14, 15, 16 and 17) at a scale of 1:50 000 targeted the Charlevoix, Nicolet – St-François, Outaouais, and Chaudière regions. These projects are intended to support the MDDEFP's Groundwater Knowledge Acquisition Program in

Southern Québec. Project No. 14 is a collaborative effort involving the BEGQ, *Université Laval* and *Université du Québec à Chicoutimi*. Projects No. 15 and No. 16 are carried out by the *Université du Québec à Montréal*, whereas Project No. 17 is carried out by *Université Laval*.

In addition, an aggregate inventory project took place in the Mégantic area (No. 18).

Finally, the town of Kuujuaq will benefit from an inventory of aggregate resources (Project No. 19). This work was carried out in response to a request by the *Ministère des Affaires municipales, des Régions et de l'Occupation du territoire* (MAMROT) to assess the availability of new sources of aggregate material for communities in Nunavik, to meet the pressing needs in this region in light of the melting permafrost.

3.6 Mineral potential studies and 3D modelling

A study of the potential for orogenic gold deposits was conducted in the North Domain of the Ungava Orogen (Project No. 20).

Project No. 21 is a pilot project aimed at targeting gossan-type alteration zones using high-resolution satellite imagery.

Project No. 22 is another pilot project, the objective of which is to assess the Quaternary cover and bedrock topography in the Abitibi Subprovince. This study was carried out using existing drilling data, Gocad 3D modelling software, and statistical processing to assess the depth to bedrock and the potential presence of supergene mineralization.

Finally, a bedrock characterization and 3D modelling project focussing on the geology of the Îles-de-la-Madeleine (No. 23) is carried out in collaboration with the MDDEFP, *École Polytechnique* in Montréal and *Université Laval*, to document the impact of climate change on aquifer replenishment.

3.7 Preservation of geological heritage

In the summer of 2012, a new knowledge acquisition project was initiated, to better characterize geological sites selected to become outstanding geological sites. Several geological sites were visited over the field season.

3.8 Publications

In 2012, the SIGÉOM-Examine database was enriched with 1093 new documents from various sources, including 68 geological compilation maps and 564 aeromagnetic and spectrometry maps at various scales. In the mineral exploration record holdings, 551 statutory work reports were added, 59 internal documents, and 58 reports donated by mining companies.

During the year, the MRN published two geological reports, five preliminary reports, and one specific study, all of which are also available in the database, along with their accompanying geological maps. Among these, three preliminary reports were translated into English. Finally, among the new documents added to SIGÉOM-Examine, there are 6 promotional documents, 10 public outreach documents, 253 documents in the peat series, and one mineral potential assessment.

Figure 3.2 shows areas covered by new maps or new data sets: geological synthesis maps (2) and accompanying reports, geological compilation maps, and regional geophysical surveys (aeromagnetic, spectrometry, or both). Areas where new lake sediment geochemistry data is available are also indicated.

Figure 3.1 - Geoscientific projects in 2012-2013.

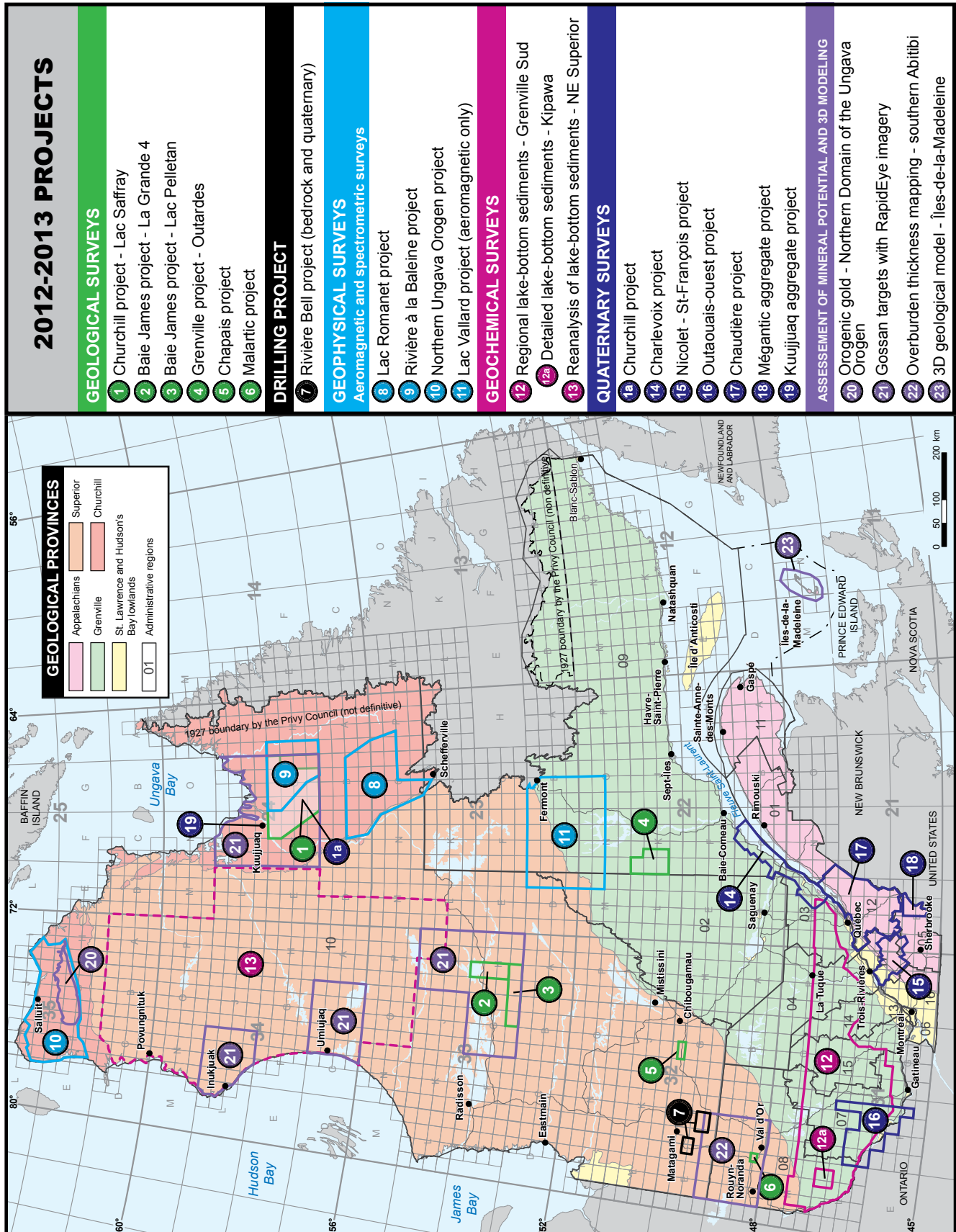
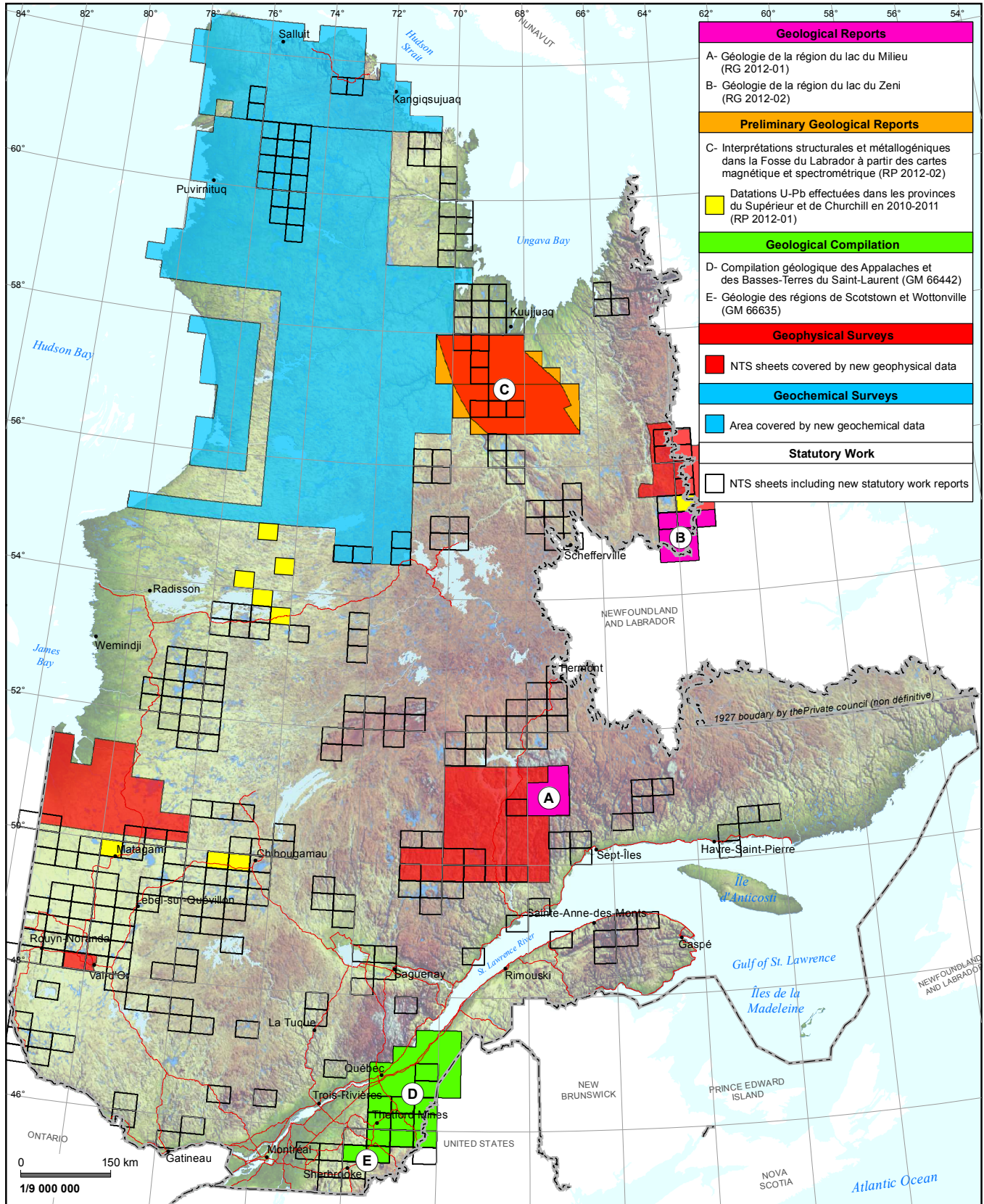


Figure 3.2 - New geoscientific publications in 2012.



CHAPTER 4

MINERAL EXPLORATION

4.1 Introduction

Martin Labrecque

Targeted commodities

In 2011¹, nearly 300 mining companies reported exploration or deposit appraisal work in Québec as project operator. Expenditures totalled \$834M, of which \$347M was for major companies, \$461M for junior companies, and \$26M for public corporations. The head offices of these companies are located in Ontario (36%), Québec (30%) and British Columbia (23%), and the rest are based elsewhere in Canada or abroad (11%).

As in every year, exploration and deposit appraisal work is largely focused on precious metals (\$448M, 54%) and base metals (\$125M, 13%). Nevertheless, the last few years has seen a resurgence in the interest for iron ore, and a growing interest for some substances that Québec does not yet produce or only in small quantities. This is true for lithium, rare earth elements, diamonds, graphite and uranium, which collec-

tively accounted for \$110M of work expenditures in 2011, compared to a total of less than \$5M in 2005.

The applications for these “strategic” substances are growing and diversifying, particularly in the high-technology and green technology sectors, such as uses for hybrid and electric cars, wind turbines, and high-performance rechargeable batteries.

In 2012, revised spending intentions for exploration and deposit appraisal activities, as recorded in spring/summer 2012, are down slightly to \$800M. This reduction is negligible given that 2011 marked a historical high representing a 63% increase over the already high total for 2010 (\$512M). Recall that in the early 2000s, the spending level was much lower, between \$100M and \$300M. Nevertheless, metal prices and mining company market capitalizations have dropped significantly since the summer of 2012, which may have had a negative effect on the intensity of exploration work during the second half of 2012.

Exploration and deposit appraisal expenditures by region

In 2011, most of the \$834M in exploration and deposit appraisal expenditures was divided between three administrative regions where most mining activities have historically taken place: Nord-du-Québec (\$438M, 52%), Abitibi-Témiscamingue (\$286M, 34%), and Côte-Nord (\$68M, 8%).

Jobs in the mineral exploration sector

Some information on the number of jobs related to mineral exploration activities is not compiled as part of the mining statistics program of the *Institut de la statistique du Québec* due to the complexity of gathering reliable and representative data. However, as part of a study on the economic benefits of mining activities published in 2012, the firms Deloitte and E&B Data estimate that mineral exploration activity in

Québec created 3050 direct jobs and about as many indirect jobs in 2010². The majority of the direct jobs are in resource regions, although a large part of the indirect jobs are in the metropolitan regions of Montréal and the city of Québec (equipment suppliers, accounting services, legal services, geophysics, etc.)

4.2 Mineral exploration highlights

James Moorhead, Pierre Doucet, Louis Madore and Abdelali Kharis

This section summarizes the main exploration projects in Québec that have experienced notable progress in terms of:

- a new resource calculation;
- the discovery of a new mineralized zone;
- a mineralized drill intersection along the extension of a known zone.

Details of these exploration projects are presented in tables 4.3, 4.4 and 4.5.

Aluminum

In August 2012, **Orbite Aluminae** obtained a mining lease for its Grande-Vallée property located 32 km northeast of Murdochville. The lease allows the company to mine a surface area of 90 hectares containing some 70 million tonnes of aluminous clay. In addition to the Grande-Vallée property, the company is continuing its exploration of a large land area in the Bas-Saint-Laurent region where activities will include diamond drilling and a geophysical survey.

Copper and Zinc

East of Senneterre, **Cartier Resources** drilled holes on its Cadillac Extension property along the lateral and depth extensions of the polymetallic Langlade (Zn-Cu-Ag-Au) deposit.

1 - Based on data compiled by the *Institut de la statistique du Québec* as part of its mining statistics program
2 - fr.ebdata.com/wp-content/uploads/2012/04/EB_Data-Etude-miniére-260912-1.pdf.

In the Barraute area, a drill program intended to increase resources and reserves on the Abcourt-Barvue (Zn-Ag) (**Abcourt Mines**) property intersected Zn-Ag mineralization in the western part of the property.

In the Chibougamau region, **Cogitore Resources** announced that drill hole SC-72 intersected, at a distance of 50 metres from the 34 Zinc Zone, massive and net-textured sulphides. This zone is stratigraphically related to the West lens.

South of Chibougamau, **Nuinsco Resources** has completed a resource estimate on the Corner Bay (Cu, Au, Ag) deposit, which consists of two distinct mineralized veins (V1 and V2).

Beaufield Resources has completed a resource estimate for the polymetallic Tortigny (Cu-Zn-Ag-Au) deposit on the Troilus JV property located north of Chibougamau.

Western Troy Capital Resources has commenced a feasibility study and a natural and human environmental impact study on its Macleod Lake (Cu-Ag) project, located north of Chibougamau, with a view to mining it by open pit in the future. Drill holes encountered intervals of Cu-Ag mineralization.

South of Matagami, the tandem of **Donner Metals** and **Xstrata Canada Corporation (Zinc)** started construction of the Bracemac-McLeod (Zn-Cu-Ag-Au) mine on July 9, 2010. Ramp excavation reached the Bracemac Main and Bracemac KT zones and is continuing towards the McLeod Zone. A drill program up-dip from the McLeod Zone led to the discovery of a new Zn-Cu-Ag-Au mineralization.

Since 2009, **NQ Exploration** has completed 10,000 metres of drilling on the Carheil property to the west of Matagami. The drilling revealed Ag-Zn mineralization (the Ag1 Zone) associated with a horizon of silicified rhyolite. The first resource estimate began in early September 2012.

The Gonzague-Langlois mine (**Nyrstar**) near Lebel-sur-Quévillon closed in November 2008. Development work on two access ramps in zones 3,

4 and 97, as well as definition and exploration drilling, were carried out in 2010-2011. In 2012, development work continued and the commercial production threshold was attained in July 2012.

Northeast of the Caniapiscou Reservoir, drilling by **Virginia Mines** revealed a new lens of massive sulphides (lens 257: Zn-Cu-Ag-Au). It represents the ninth lens discovered on the Coulon project.

Partners **Corvus Gold** and **Les Ressources Tectonic** carried out exploration work on the Gerfaut project in the Cap Smith Belt, to the south of Salluit. Selected samples, enriched in gold, silver and copper, were collected from outcrops over a distance of 11 km.

Diamonds

In 2012, **Stornoway Diamond Corporation** obtained a mining lease from the MRN and a certificate of authorization from the MDDEFP for the Renard project north of Lac Mistassini. A bulk sample of 5,147 t was extracted from the Renard 65 pipe and sent to the dense media separation facility.

Rare earth elements

In the Témiscamingue region, **Matamec Explorations** announced during the first quarter of 2012 the positive results of a preliminary economic assessment for its Zeus project. The company also announced the signing of a joint venture agreement with Toyotsu Rare Earth Canada to finance the project's feasibility study. Results are expected in the second quarter of 2013. In September, the partners announced that ore concentration and hydrometallurgical tests to generate bulk rare earth precipitates have been completed. In December, the partners announced that 195 drill holes totalling 16,158 metres had been drilled on the deposit since May 2012. The work also led to the discovery of new showings, including Certitude Nord, Makwa and Pakwa.

A first resource estimate for the Montviel project of **GéoMégA Resources**, located north of Lebel-sur-Quévillon, was completed in 2011. In 2012, drilling improved the definition of the Montviel main zone. The crescent-shaped core of the zone is enriched in rare earths and niobium. In addition, a heavy rare earth-enriched zone (the TRL-S Zone) has also been discovered.

Quest Rare Minerals has completed a resource estimate for the B Zone of the Strange Lake project in the Labrador Trough.

In May 2012, **Commerce Resources** announced the positive results of a preliminary economic assessment for the Eldor project located 130 km south of Kuujuuaq.

IAMGOLD carried out rare earth exploration in an area next to its Niobec niobium mine in Saint-Honoré, in the Saguenay region. This work defined inferred resources of total rare earth oxides (TREO).

Iron

Iron continued to be an important exploration focus in Québec. Iron projects were mainly concentrated in the geological units of the Labrador Trough in the Côte-Nord and Nord-du-Québec regions.

Champion Iron Mines Limited (formerly **Champion Minerals**) performed a resource estimate on the Oil Can deposit of the Fire Lake North property located 60 km southwest of Fermont.

In September, **Labec Century Iron Ore** (a subsidiary of **Century Iron Mines Corporation**) and **Champion Iron Mines Limited** announced the results of a resource estimate for the Hayot Lake deposit, located within the Attikamagan project 22 km north of Schefferville.

Century Iron Mines Corporation and its partner **WISCO International** completed a new resource estimate for the Full Moon deposit on the Rainy Lake property, which is located about 87 km north of Schefferville.

From May to mid-October 2012, the joint venture of **Adriana Resources** and **WISCO International** completed a drilling program on their Lac Otelnuk project located 170 km north of Schefferville. A new resource estimate is planned following the completion of these drill holes, and a feasibility study should commence before the end of the year.

Oceanic Iron Ore Corporation performed a resource estimate for the Hopes Advance project near the Inuit community of Aupaluk.

In November 2012, **Beaufield Resources** announced the results of drilling on six different areas of its Schefferville project located 20 km northwest of the municipality of the same name.

In the James Bay region, **Augyva Mining Resources** and **Century Iron Mines Corporation** updated the resource estimate for the Duncan Lake project.

Iron-Titanium-Vanadium

On the North Shore, **Nevado Resources Corporation** completed a new resource estimate for the Farrell-Taylor deposit on the La Blache project.

In April, **Fancamp Exploration** completed a resource estimate for the Magpie 2 deposit on its Magpie property. A third drilling program was planned and hydrometallurgical tests were carried out over the course of the year. The company also completed a drilling program on its Lac Lamêlée property.

In May, the company **Argex Titanium** (formerly **Argex Mining**) undertook preliminary metallurgical testing at the pilot plant scale on ore from the Lac Brûlé project. An airborne magnetic and EM survey was completed in February and March 2012.

Randsburg International Gold announced the results of iron, titanium, and phosphate analyses for selected samples from the Nathalie property located about 45 km north of Baie-Comeau.

Graphite

Graphite exploration is growing in the Grenville Province. There are no less than 45 exploration projects currently underway for this commodity. Most of the projects consist of claim acquisition and preliminary work to guide the next steps in exploration. These activities are mainly unfolding in the Outaouais, Laurentides and Côte-Nord administrative regions.

Elsewhere, **Focus Graphite** announced the positive results of a preliminary economic assessment on its Lac Knife project located 35 km south of Fermont.

Lithium

The highlight of 2012 in terms of lithium was the start of development at the Québec Lithium (**Canada Lithium Corporation**) mine complex near the village of Lacorne in the Abitibi. Various studies and several resource estimates have been published or undertaken on lithium exploration projects in the province, mainly in the James Bay region.

Canada Lithium Corporation announced a new resource estimate for its Québec Lithium project in early December 2011. Pre-stripping work on the deposit, waste stripping, and the construction of the first phase of the waste management facility have begun. In November, the company announced the signing of an agreement with Tewoo-ERDC (Tianjin Products and Energy Resources Development Co) regarding the sale of part of the lithium carbonate production for a period of 5 years. Commissioning of the spodumene processing plant was announced on December 20, 2012. Commercial production from the Québec Lithium deposit is scheduled for the first quarter of 2013.

A drilling program has identified spodumene pegmatites and traced them over a lateral distance of 1.8 km on the Vallée Lithium project (**Jourdan Resources**), located 2 km east of the Québec Lithium deposit.

Glen Eagle Resources carried out a resource estimate on the Authier Lithium property in the Abitibi follow-

ing its 2010-2012 drilling programs. A preliminary economic assessment is currently underway.

In 2011, **Critical Element Corporation** published the results of a new independent resource estimation for its Rose (Ta-Li) project. In 2012, a feasibility study and an environmental impact study commenced.

After completing the first resource estimate for the Whabouchi (Li-Be) project located in the James Bay region, **Nemaska Lithium** announced the start of an environmental, social and economic impact study with the aim of mining the deposit via open pit in the future.

After completing a new resource estimate in 2011, **Perilya** and **SOQUEM** have undertaken a mineralogical, metallurgical and environmental study with a view to a future open pit mine on the Moblan Lithium project north of Chibougamau.

Monarques Resources carried out sampling, drilling and stripping work to test the potential extensions of a spodumene pegmatite (Dyke No. 5) in the James Bay region.

Molybdenum

South of the village of Lacorne, in the Abitibi, a drilling program by **Romios Gold Resources** targeted an area centered on the former La Corne Molybdenite mine and led to the discovery of molybdenum, bismuth and silver mineralization over wide intervals.

Nickel, copper, cobalt and platinum group elements (PGE)

West of Lebel-sur-Quévillon, on the Laflamme property, **Midland Exploration** and **North American Palladium** obtained a mineralized drill section near a new nickel, copper and PGE zone discovered in 2011.

On the Grasset property, west of Matagami, along the Detour-Sunday Lake deformation zone, **Balmoral Resources** intersected a new Ni-Cu-PGE zone in an ultramafic intrusion.

A new Ni-Cu-Pt-Pd-Au showing (the Trent showing) was discovered by **Monarques Resources** in a pyroxenite on the Caumont property in the James Bay region.

Niobium

At the Niobec mine, located in Saint-Honoré, Saguenay, **IAMGOLD** carried out work to determine the extent of the mineralization for its expansion project. In late December 2011, the probable reserves of niobium increased by 616% to reach 1.7 billion kilograms of Nb₂O₅. A multi-year diamond drilling program aims to convert all the inferred resources into measured and indicated resources by 2015.

Gold

The 2012 year was marked by the closure of three gold mines: the Francoeur mine of **Richmont Mines**, the Sleeping Giant mine of **North American Palladium**, and the Lamaque mine complex of **White Tiger Gold**, located in the Abitibi-Témiscamingue region and in the Nord-du-Québec region. Fourteen new resource estimates were published for advanced exploration projects. The majority of these were for projects in the southern part of the Abitibi, near the Cadillac Tectonic Zone, and three were for projects in the Lebel-sur-Quévillon area in the Nord-du-Québec region. Drill holes intersected mineralized zones and their extensions on many of the exploration projects.

Mine closures

In 2012, three gold mines closed in Québec.

At the Sleeping Giant mine of **North American Palladium**, north of Amos, initial drill holes in the three lower levels of the mine yielded good results; however subsequent holes could not confirm the grades over a sufficient longitudinal distance, thereby reducing the mineable tonnage. Consequently, on January 17 of this year, the company announced the closure of the mine.

In August 2012, **Richmont Mines** commenced production at its Francoeur mine, west of Rouyn-Noranda. In November, the company announced the closure of the mine and the dismantling of the facilities, mentioning, among other things, a significant reduction in reserves and the lack of a qualified workforce.

In Val-d'Or, **White Tiger Gold** restarted commercial production at its Lamaque mine complex in February 2012. Production remained below the target of 2,000 t/d and the extracted ore graded around 2.5 g/t Au, well below the grade of the mine reserves. Following these difficulties, the mine ceased operations on May 25, 2012.

Exploration in active gold mines

Richmont Mines began construction of a ramp at the Beaufor mine in November 2011. The aim is to reach the W Zone near the mine and at shallow depth. Development work in this zone is advancing.

At the Lac Herbin mine of **QMX Gold Corporation** (formerly **Alexis Mining Corporation**), drilling and development work are continuing in the Bonanza, FL, LH and S1 zones.

At the Kiena mine complex (**Wesdome Gold Mines**), surface and underground exploration drilling intersected the Martin, VC, S-50 and Dubuisson zones. Two drill holes cut the new Dubuisson North Zone, which is found 190 metres northeast of the Dubuisson Zone.

A reserve and resource estimate for the Canadian Malartic and South Barnat deposits (**Osisko Mining Corporation**) was published in 2011. Commercial production commenced on May 19, 2011, and the official opening of the mine took place on May 30, 2011. Production was optimized in 2012. The 500,000th ounce of gold was produced on October 9, 2012.

The results of drilling programs by **Aurizon Mines** led to a significant increase in reserves and resources for the 118, 123, 160 and South West

zones at the Casa Berardi mine located west of Matagami.

Gold projects in development or under construction

For safety reasons, **Agnico-Eagle Mines** announced on October 19, 2011 the suspension of mining operations and gold production at the Goldex mine, located near Val-d'Or, for an indefinite length of time. A positive preliminary economic assessment for developing the M and E zones was published in July. Work is underway, with the aim of starting up operations in 2014 with a production of 5,100 t/d at an average grade of 1.5 g/t Au and an expected life-of-mine of 4 years.

In April, **IAMGOLD Corporation** published a new resource estimate for the Westwood project as well as some of the operating parameters for mining the deposit. The start of production is scheduled for early 2013 and the expected life-of-mine is 19 years.

Near Desmaraisville, at the Bachelor Lake mine, **Metanor Resources** finished processing a bulk sample of 5,429 t from the Main and B zones. The company also continued with development work and definition drilling with the aim of starting up production.

In 2011, a new resource estimate was carried out by **North American Palladium** on the Vezza gold deposit located south of Matagami. In 2012, a bulk sample of 15,000 t was processed at the mill of the Sleeping Giant mine. The start of commercial production is scheduled for early 2013.

In the James Bay region, the sinking of the Gaumont exploration shaft at the Éléonore mine of **Goldcorp (Les Mines Opinaca)** is now complete. The excavation of an exploration ramp is progressing and definition drilling of mineralized lenses is underway.

Gold exploration projects with new resource estimates

Partners **Aurizon Mines** and **Typhoon Exploration** have announced a new resource estimate for the Fayolle deposit located 25 km northeast of Rouyn-Noranda. The preliminary economic assessment should be completed by the end of 2012.

Vantex Resources has completed a new resource estimate for the Galloway-Pitchvein deposit on the Galloway project located about 30 km west of Rouyn-Noranda.

At Duparquet, **Clifton Star Resources** announced the results of a new resource estimate for its Duparquet project comprising the three sub-projects of Beattie, Donchester and Duquesne. A preliminary economic assessment on the project should be completed in early 2013.

In September, **Gold Bullion Development** announced it had granted a service contract for a preliminary feasibility study on its Granada project located several kilometres south of Rouyn-Noranda. In November, the company published the results of a new gold resource estimate.

Near the former Lucien Béliveau gold mine (Pascal-Colombière project), **Adventure Gold** completed a new resource estimate for the New Béliveau, North and Highway zones, as well as drilling on the Béliveau West, Béliveau South, 2, Isabella, Highway and Loraine zones.

Blue Note Mining carried out drilling to increase the existing mineral resources westward and eastward on its Croinor project. A prefeasibility study update and a new resource estimate have been completed.

The Gouldie and Charlie gold zones are located south of and close to the currently mined Canadian Malartic deposit. **Osisko Mining Corporation** and **Abitibi Royalties** announced the results of a new reserve and resource estimate.

Osisko Mining Corporation and **Abitibi Royalties** announced a new resource estimate for the west part of the Jeffrey Zone.

On the Marban Block project, **NioGold Mining Corporation** and **Aurizon Mines** are preparing a new resource estimate for the Marban deposit in addition to carrying out drilling in the vicinity of the Marban deposit and in the zone between the Marban and Nolartic deposits.

East of Lebel-sur-Quévillon, **BonTerra Resources** has completed a first inferred resource estimate for its Eastern Extension project.

On its Windfall Lake property, east of Lebel-sur-Quévillon, **Eagle Hill Exploration Corporation** announced that an update of the mineral resource estimate dated November 2011 had been completed for the Main, F17 and F51 zones. Drill holes intersected the Caribou, Caribou South, 27 and Mink zones.

On the Comtois project, located north-northwest of Lebel-sur-Quévillon, **Maudore Minerals** updated its resource estimate for the Osbell deposit (Osborne and Bell zones) for which the last estimate dated back to 2010.

On the Douay Gold project, located south of Matagami, **Aurvista Gold Corporation** completed a new resource estimate with a focus on mineralized zones amenable to open pit mining, notably the 10, 20, 531, Central, Douay West, North West, Porphyry and Main zones.

In the James Bay region, on the Clearwater project, **Eastmain Resources** completed a new resource estimate that incorporated the results of drilling carried out since the last estimate dated April 26, 2011.

The company **Golden Hope** obtained a resource estimate for the Bellechasse-Timmins gold deposit located 5 km south-east of Saint-Magloire (Chaudière-Appalaches region). Additional drilling will be necessary to improve the three-dimensional delimitation of the high-grade zones.

Gold exploration projects

Abitibi-Témiscamingue region (08)

Rouyn-Noranda area

During the course of 2012, **Richmont Mines** continued exploring its Wasamac project. In November, the company mentioned in a press release that technical studies on the project are underway but that exploration and development work has been suspended for an indefinite period.

Aurizon Mines unveiled the positive results of a feasibility study on its Joanna project located 20 km east of Rouyn-Noranda. Nevertheless, the company decided to delay the development of the project and continue its exploration drilling further west, on the Héva deposit. In December, the company announced results of the work carried out in 2012 on the Heva, Heva East and Hosco West zones.

At the former Elder mine, located west of Rouyn-Noranda, the company **Abcourt Mines** is continuing with the restoration of underground infrastructures and has also received a positive preliminary economic assessment for the project.

Yorbeau Resources has completed a drilling program on the Lake Gamble Block on its Rouyn property, which is situated on the Cadillac Tectonic Zone, several kilometres south of Rouyn-Noranda.

Val-d'Or area

In 2011, **Adventure Gold** and **Mazorro Resources** evaluated the inferred resources of the Lapaska Central Zone. In 2012, drill holes intersected the Lapaska Central and West zones.

As part of the South Bay project of **Thregold Resources**, drill holes intersected the Main North Zone discovered by prospecting in 2011.

Drilling by **Galahad Metals**, near drifts of the former Regcourt mine, intersected gold-bearing quartz-

tourmaline veins near the surface and at depth along the extensions of veins associated with shear zones that had been encountered in drill holes in 2011.

At the former Louvicourt Goldfields gold mine on the Simkar property of **Eloro Resources**, a drilling program was carried out to test the depth extensions of the East Shear, 600 and South zones.

In 2011, **Integra Gold Corporation** completed a resource estimate on the Lamaque property for the No. 4, Forestel, Parallel and Triangle zones. Drilling continued on the same zones in 2012.

Near the former Akasaba gold-copper mine, drilling by **Alexandria Minerals Corporation** was used to prepare a first resource estimate. In addition, a new gold-silver-copper zone (the West Zone) was discovered in holes drilled to the west, along the extension of the same horizon as the Akasaba deposit.

On the Courville property, **Pershimco Resources** drilled two holes that intersected gold mineralization on the Esteville Block.

The holes drilled by **Corporation Exploration Îledor** near the old Tiblemont Consolidated shaft encountered several gold-bearing veins.

Malartic area

On the Malartic Block project, drill holes carried out by **NioGold Mining Corporation** encountered gold mineralization in the Ludovick Shear Zone as well as in the sedimentary rocks of the Cadillac Group.

Other areas

North of Amos, **Threegold Resources** and **Bowmore Exploration** undertook a drilling program in 2012 on the Standard Gold property. Drill holes intersected gold mineralization over wide intervals.

A drilling program (**Pacific North West Capital Corporation, Next Gen Metals** and **Alto Ventures**) encountered gold mineralization in the area near the DAC deposit and the Darla Zone. Located near the

town of Despinassy, the DAC deposit was the subject of a resource estimate completed in 2011.

Nord-du-Québec region (10)

Northern part of the Abitibi Subprovince

Near the town of Normétal, on the Perron property, **Amex Exploration** intersected gold mineralization over a wide interval in felsic volcanic rocks.

Viking Gold Exploration encountered several gold-bearing drill intersections in the Toussaint Main and Toussaint East zones of the Verneuil property located near Lebel-sur-Quévillon.

North of Lebel-sur-Quévillon, on the Benoist property, **Cartier Resources** intersected in drill hole a wide gold-bearing interval while drilling along the extension of the Pusticamica deposit.

West of Matagami, **Excellon Resources** intersected gold mineralization in drill holes along the extension of the B14 Zone.

Midland Exploration and **Osisko Mining Corporation** made the drilling discovery of a new gold zone on the Casault property, located west of Matagami, along the eastern extension of the Sunday Lake deformation zone.

On the Martinière property, west of Matagami, **Balmoral Resources** completed drill holes along the extensions of several gold zones (Martinière East, Martinière West, Main, Bug Lake, Footwall and Hangingwall).

Southwest of Chibougamau, **Toma Gold Corporation** continued drilling gold zones on the Monster Lake corridor.

Northwest of Chibougamau, following the results of trenching and sampling in 2011, **Northern Superior Resources** carried out a drilling program on the Croteau Est property. Several gold-bearing intervals were encountered in drill holes.

James Bay area

Several drill hole intersections confirmed the lateral and depth extensions of the A, B and C zones of the Eastmain deposit (**Eastmain Resources**).

Virginia Mines intersected several gold-bearing intervals in the area of the Hopes, Jedi and Jedi Extension showings on the Lac Pau property located north of the Caniapiscou Reservoir. The most interesting results were obtained in the Jedi area.

A new showing, Lac de la Chlorite, was discovered by **Monarques Resources** on the Lemare property.

Bedrock and soil sampling work, carried out during the summer by **Dios Exploration** and **Osisko Mining Corporation**, led to the discovery of five new gold showings on the AU33 West property.

Golden Valley Mines and **Sirios Resources** encountered gold-bearing intervals in drill hole at the Cheechoo project.

On the Anatacau-Wabamisk property, the Mustang gold vein was the subject of stripping, mapping and channeling work by **Virginia Mines**.

The holes drilled by **Virginia Mines** on the La Grande Sud property encountered gold-bearing intervals along the depth extension of the mineralized envelope of Zone 32.

Phosphate

In the fall of 2011, the company **Ariane Resources** carried out new diamond drilling on its phosphate and titanium Lac à Paul project located about 200 km north of the city of Saguenay. The work extended the phosphate and titanium mineralization of the Paul Zone by another 1.3 km compared to the last resource estimate. The prefeasibility study establishes a production scenario of 3 Mt/yr of phosphate concentrate.

Uranium

In the Otish sedimentary basin, a new resource estimate for the Matoush project of **Strateco Resources** has increased indicated resources by 58%. Drill holes intersected the extensions of mineralized lenses MT-22A and MT-34A, discovered in 2010 and 2011.

The company **Abitex Resources** completed a mineral resource estimate for the Lavoie deposit. This deposit is located in the Otish sedimentary basin at the north end of the Saguenay–Lac-Saint-Jean administrative region.

4.3 Nord-du-Québec (region 10)

James Moorhead, Pierre Doucet, Abdelali Kharis, Suzanne Côté, Denis Lesage and Manon Dufour

This section presents an overview of all the exploration work carried out in the Nord-du-Québec region. Table 4.3 provides the descriptions of mineral exploration and deposit appraisal projects in the Superior and Churchill provinces that were the subject of work programs in 2012. The locations of these projects are shown on figures 4.1, 4.2 and 4.3.

As at December 31, 2012, there were 142 588 active mineral exploration titles in the Nord-du-Québec region, compared to 148 649 active titles as at December 31, 2011, for a decrease of 4.1% (Table 2.1). In 2012, the Nord-du-Québec titles represented 60.9% of all exploration titles granted in Québec. There were 209 exploration projects in this region in 2012, which represents a slight reduction (11%) compared to the 229 projects in 2011.

In 2012, there were five metal mines in the Nord-du-Québec region. Two are gold mines:

- Casa Berardi, **Aurizon Mines**;
- Sleeping Giant, **North American Palladium** (closed in January 2012);
- and three are polymetallic mines:
- Perseverance (Zn-Cu-Ag-Au), **Xstrata Zinc Canada**;

- Raglan (Cu-Ni-Co- PGE), **Xstrata Nickel Canada**;
- Langlois (Zn-Cu-Ag-Au), **Nyrstar Canada Corporation** (the mine reached commercial production in July 2012).

Several advanced exploration projects continued with their deposit appraisal work:

- Bracemac-McLeod (Zn-Cu-Ag-Au), **Xstrata Zinc Canada**;
- Éléonore (Au), **Les Mines Opinaca (Goldcorp)**;
- Nunavik Nickel (Cu-Ni-Co- PGE), **Jien Canada Mining**;
- Veza (Au), **North American Palladium**;
- Bachelor Lake (Au), **Metanor Resources**.

There were thirteen new resource estimates for the following advanced exploration projects:

- Windfall Lake (Au), **Eagle Hill Exploration Corporation**;
- Comtois (Au), **Maudore Minerals**;
- Douay (Au), **Aurvista Gold Corporation**;
- Clearwater (Au), **Eastmain Resources**;
- Corner Bay (Cu, Au, Ag), **Nuinsco Resources**;
- Tortigny (Cu-Zn-Ag-Au), **Beaufield Resources**;
- Duncan Lake (Fe), **Century Iron Mines Corporation**;
- Matoush (U), **Strateco Resources**;
- Hopes Advance (Fe), **Oceanic Iron Ore**;
- Eldor (REE), **Commerce Resources Corporation**;
- Attikamagan (Fe), **Century Iron Mines Corporation** and **Champion Iron Mines Limited**;
- Rainy Lake (Fe), **Century Iron Mines Corporation** and **WISCO International**;
- Strange Lake (REE), **Quest Rare Minerals**.

Superior Province

In the Nord-du-Québec region, the Superior Province extends across the entire region and much of Nunavik. The seven geological subprovinces in the region are, from north to south: Bienville, La Grande, Eastmain, Opinaca, Nemiscau, Opatoca, and Abitibi. The territory of Nunavik, north of the 55th parallel, is covered

by nine geological subprovinces in whole or in part: Bienville, La Grande, Ashuanipi, Tikkerutuk, Lac Minto, Qalluviartuk, Goudalie, Utsalik and Douglas Harbour. Comprising volcano-plutonic and sedimentary assemblages, the subprovinces of the Superior Province are transected by a series of shear zones trending E-W to WNW-ESE and NE-SW. Volcanic assemblages are metamorphosed to the greenschist facies in the centre, grading to upper amphibolite near their margins. These assemblages are intruded by a number of granitic intrusions assigned to various plutonic suites (Moukhsil *et al.*, 2003). The metamorphic grade in sedimentary assemblages ranges from amphibolite to granulite facies.

In the southern part of the region, in the Abitibi Subprovince, the Matagami, Chapais and Chibougamau mining camps continued to attract exploration companies in the search for base and precious metals, as did the known major deformation corridors, including the Urban-Barry Volcanic Belt. Elsewhere, in the Lebel-sur-Quévillon–Desmaraisville area, exploration projects were largely focused on the search for gold with a growing interest in rare earth elements in the Grevet and Montviel townships. In the Near North, most fieldwork and surface activities were carried out around the Opinaca Reservoir and in the Nemaska, Monts Otish and La Grande Belt areas. Finally, the Far North experienced a significant increase in the amount of exploration work for iron, copper and nickel in the Labrador Trough.

Churchill Province

The Churchill Province lies in the north and northeast part of Nunavik. It mainly consists of Paleoproterozoic rocks of the New Québec (Labrador Trough), Torngat, and Ungava (Cape Smith Belt) orogens and their respective hinterland (the Core Zone, largely composed of Archean rocks) (James *et al.*, 1996; Wardle *et al.*, 2002).

New Québec Orogen

Also referred to as the Labrador Trough, or simply “the Trough”, the New Québec Orogen ranges in age from 2.17 to 1.79 Ga and forms a fold and thrust belt along the margin of the Superior Province. The Trough is composed of rocks belonging to two volcano-sedimentary cycles and a third cycle of metasedimentary rocks (Clark and Wares, 2006). The main commodities of interest in the New Québec Orogen are iron, copper, nickel, platinum group elements (PGE), gold and zinc.

Torngat Orogen and Core Zone

The Paleoproterozoic Torngat Orogen is bounded to the east by Archean rocks of the Nain Province and to the west by Archean and Paleoproterozoic rocks of the Core Zone. This orogen is divided into lithotectonic domains and complexes separated by ductile shear zones.

Located in the southeast part of the Churchill geological province, the Core Zone (formerly known as the Rae Province) lies between the Labrador Trough hinterland and the Torngat Orogen foreland. It is largely composed of Archean gneisses with bands of Paleoproterozoic supra-crustal rocks. These rocks were subsequently deformed and metamorphosed during the Paleoproterozoic. The Core Zone is divided into a series of lithotectonic domains separated by wide deformation zones (Wardle *et al.*, 2002). The main commodities of interest in the Torngat Orogen and the Core Zone are uranium, diamonds, copper, and rare earth elements (REE).

Ungava Orogen

The Ungava Orogen (Ungava Trough or Cape Smith Belt) consists of a Paleoproterozoic volcano-sedimentary belt that stretches some 370 km along an ENE-WSW axis. The region is divided into four main tectonic units: a) the autochthonous Archean basement of the Superior Province; b) the allochthonous accretionary belt or Ungava Trough; c) the Paleoproterozoic Narsajuaq Terrane; and d)

the parautochthonous Archean basement (Lamothe, 1994). The Ungava Trough continues to attract much attention from exploration companies searching for nickel, copper, cobalt, and platinum group elements (PGE), in addition to the expansion of the Raglan mine and the development of the Nunavik Nickel mining project.

Exploration outlook

Within the Nord-du-Québec region, the Abitibi Subprovince between the 49th and 50th parallels is renowned for its rich endowment in precious metal (Au-Ag) and polymetallic ore deposits (Cu-Zn-Au-Ag and Cu-Au) that gave rise to the Chapais, Chibougamau and Matagami mining camps. However, recent mapping work in the Chapais-Chibougamau area by the *Bureau exploration géologique du Québec* (MRN) tends to demonstrate the emergence of a promising corridor for orogenic gold exploration in the northern part of the Abitibi Subprovince, near the southern limit of the Opatica Subprovince. This corridor extends about 350 km from west (Detour East, Ontario) to east (Lac France-Faribault-Croteau corridor, Chibougamau), and appears to be associated with known gold showings and a distinct magnetic lineament.

In the region, recent mapping by the MRN in the Opinaca and La Grande subprovinces, combined with new airborne geophysical coverage in the central part of the territory, have defined new gold, polymetallic, diamond, and uranium targets.

In 2012, several companies carried out major exploration work for iron, copper, nickel, platinum group elements (PGE), and rare earth elements (REE) in the Labrador Trough along the Schefferville-Kuujuaq axis. Among other findings, this work led to the confirmation of major iron resources, particularly for the projects:

- Rainy Lake (or Full Moon), **Century Iron Mines Corporation** and **WISCO International**;
- Attikamagan, Hayot Lake deposit, **Century Iron Mines Corporation**;
- Hopes Advance, **Oceanic Iron Ore Corporation**.

In September, **Oceanic Iron Ore Corporation** announced the results of a prefeasibility study on its Hopes Advance Project. In May, **Commerce Resources Corporation** published the positive results of a preliminary economic assessment for its Eldor rare earths project.

4.4 Abitibi-Témiscamingue (region 08)

Pierre Doucet, James Moorhead, Denis Lesage and Suzanne Côté

The Abitibi-Témiscamingue administrative region is located in western Québec and comprises three major geological assemblages, which are, from north to south, the Abitibi and Pontiac subprovinces (Superior Province) and the Grenville Province.

The Abitibi and Pontiac subprovinces occupy the southern part of the Superior Province in Québec. The Abitibi Subprovince is the largest, one of the most studied, and among the richest, Archean greenstone belts in the world. It comprises granitoid intrusions and volcano-sedimentary belts broadly trending E-W (Figure 4.4), ranging in age from 2.75 to 2.67 Ga. The Abitibi Belt is transected by several E-W or NW-SE-trending, generally reverse faults, as well as sinistral NE-trending and dextral SE-trending faults.

The Pontiac Subprovince is separated from the Abitibi Subprovince by the Cadillac Tectonic Zone, a structure that hosts many gold deposits. The Pontiac Subprovince comprises granitoid intrusions and orthogneisses in its central part, along with detrital sedimentary rocks and paragneisses with a few volcanic sequences. The latter form ultramafic, mafic and felsic assemblages in the southwest part of the subprovince. A few thin bands of mafic to ultramafic volcanic rocks are also present along its northern edge.

The Grenville Province is separated from the Pontiac and Abitibi subprovinces by the Grenville Front,

a NE-trending tectonic zone characterized by a steep metamorphic gradient toward the SE. The Grenville is composed of Archean and Proterozoic orthogneisses, intrusive rocks, metasedimentary rocks and migmatites.

The Abitibi Subprovince is renowned for the great number and richness of its precious metal (Au-Ag) and polymetallic mines (Cu-Zn-Au-Ag and Cu-Au). A few metal deposits, architectural stone quarries, and industrial mineral deposits (lime, quartz, kyanite, mica, garnet) are also exploited in the Pontiac Subprovince. Mining and exploration have made this territory one of the most important mining regions in Québec for close to a century.

Table 4.4 provides a description of exploration and deposit appraisal projects in the Abitibi and Pontiac subprovinces and in the western Grenville Province. Figures 4.4, 4.5 and 4.6 show the locations of these projects.

In 2012, there were nine mines in the Abitibi-Témiscamingue region, including one polymetallic mine (LaRonde [Au-Zn-Cu-Ag-Pb], **Mines Agnico-Eagle**) and eight gold mines:

- Kiena (Au-Ag), **Wesdome Gold Mines**;
- Lac Herbin (Au-Ag), **Alexis Minerals Corporation**;
- Beaufor (Au-Ag), **Richmont Mines**;
- Lamaque (Au-Ag), **White Tiger Gold** (closed in May 2012);
- Mouska (Au-Cu-Ag), **IAMGOLD Corporation**;
- Canadian Malartic (Au-Ag), **Osisko Mining Corporation**;
- Lapa (Au-Ag), **Agnico-Eagle Mines**;
- Francoeur (Au-Ag), **Richmont Mines** (closed in November 2012).

Several major exploration projects took place at these mines or in close proximity.

The deposit appraisal work continued at three advanced exploration projects:

- Québec Lithium (Li), **Canada Lithium Corporation**;

- Westwood (Au), **IAMGOLD Corporation**;
- Goldex (Au), **Agnico-Eagle Mines**.

As at December 31, 2012, there were 37 685 active exploration titles in the Abitibi-Témiscamingue region, representing a slight decrease of 3.0% relative to 2011 (Table 2.1). In 2012, the number of exploration projects stood at 152, compared to 186 in 2011, for a reduction of 22.4%. The majority of the projects targeted gold mineralization along major tectonic breaks, such as the Porcupine-Destor Fault and the Cadillac Fault. Eighteen new resource estimates were performed for the following advanced exploration or deposit appraisal projects:

- Goldex mine (Au), M and E zones (in development), **Agnico-Eagle Mines**;
- Pascalis project (Au), **Adventure Gold**;
- Croinor project (Au), **Blue Note Mining**;
- Gouldie Zone and Charlie Zone (Au), **Osisko Mining Corporation**;
- Jeffrey Zone (Au), **Abitibi Royalties and Osisko Mining Corporation**;
- Marban Block project (Au), **NioGold Mining Corporation and Aurizon Mines**;
- Authier Lithium (Li), **Glen Eagle Resources**;
- Akasaba (Au), **Alexandria Minerals Corporation**;
- Eastern Extension (Au), **BonTerra Resources**;
- Magusi River (Cu-Zn-Ag-Au), **Mag Copper**;
- Granada (Au), **Gold Bullion Development**;
- Westwood (Au), **IAMGOLD Corporation**;
- Elder (Au), **Abcourt Mines**;
- Tagami (Au), **Abcourt Mines**;
- Duparquet (Au), **Clifton Star Resources**;
- Francoeur mine (Au), **Richmont Mines**;
- Fayolle (Au), **Typhoon Exploration and Aurizon Mines**;
- Galloway (Au), **Vantex Resources**.

Work on known lithium deposits and showings in the Preissac-La Corne area continued throughout 2012, along with construction work carried out on the Québec Lithium deposit by Canada Lithium Corporation.

4.5 Regions of Québec outside Abitibi-Témiscamingue and Nord-du-Québec

Louis Madore, Pierre Doucet, Steve Ouellet and Denis Lesage

Geology

This section of the report deals with all the administrative regions of Québec except Nord-du-Québec (10) and Abitibi-Témiscamingue (08), which were dealt with in sections 4.3 and 4.4 respectively. Most of these regions are underlain by three geological provinces: the Grenville, the Appalachians, and the St. Lawrence Platform (Figure 4.7).

The Outaouais (07), Laurentides (15), Mauricie (04), Saguenay-Lac-Saint-Jean (02) and Côte-Nord (09) administrative regions, as well as parts of the Lanaudière (14) and Capitale-Nationale (03) regions, are primarily located within the Grenville Province (Figure 4.7). This geological province is composed of Archean and Proterozoic orthogneisses, intrusive rocks, metasedimentary rocks, and migmatites that were affected by a series of magmatic and tectonic events, starting with the Labradorian orogeny (1710-1600 Ma) and ending with the Grenvillian orogeny (1090-980 Ma).

The Estrie (05), Bas-Saint-Laurent (01) and Gaspésie-Îles-de-la-Madeleine (11) administrative regions, as well as part of the Montérégie (16), Chaudière-Appalaches (12) and Centre-du-Québec (17) regions, are primarily located within the Appalachian Province (Figure 4.7). This geological province is composed of Phanerozoic sedimentary, volcanic, and intrusive rocks that were emplaced and deformed during the Taconian (460-440 Ma), Acadian (410-380 Ma) and Alleghanian (320-220 Ma) orogenies, although the effects of the latter are mostly concentrated in the east-central and southeast United States.

Finally, the Montréal (06) and Laval (13) administrative regions, as well as parts of the Centre-du-Québec (17), Lanaudière (14), Mauricie (04) and Capitale-Nationale (03) regions, belong to the St. Lawrence Platform (Figure 4.7). This geological province is composed of undeformed limestone and sandstone deposited during Cambrian (544-500 Ma) and Ordovician time (500-440 Ma).

In 2012, exploration work was carried out in most of these administrative regions. No mineral exploration activities were documented for the Lanaudière (14), Laval (13), Montréal (06), Montérégie (16) and Centre-du-Québec (17) regions.

The exploration activities carried out in the search for metals, industrial minerals and industrial stone are described in Table 4.5, and their locations are shown in Figure 4.7. Oil & gas exploration, which is quite active in the St. Lawrence Platform and Appalachian geological provinces, is not discussed in this report

EXPLORATION WORK IN THE GRENVILLE PROVINCE

Outaouais (07)

The Outaouais administrative region experienced a considerable increase (43%) in the number of claims compared to 2011. This increase reflects the emergence of new graphite exploration projects. A rise in graphite consumption in the automotive, steel and high technology industries has stimulated interest for this mineral. The companies **Standard Graphite, Solo International, Soldi Ventures, Atocha Resources, Rock Tech Lithium, Galaxy Graphite, Velocity Minerals, Focus Graphite, Bravura Ventures** and **Cavan Ventures** all began exploring for graphite in this region. Other exploration work by **Solo International, REEX Exploration** and **Cavan Ventures** focused on rare earth elements.

Laurentides (15)

In the Laurentides administrative region, the majority of exploration projects targeted graphite. The projects were carried out by **Lomiko Metals, Canada Rare Earths, Standard Graphite, Uragold Bay, Terra Firma Resources, WestCan Uranium, Velocity Minerals, Focus Graphite, Bravura Ventures, Cavan Ventures** and **Strike Graphite**. On other fronts, the company **Berkwood Resources** carried out copper and nickel exploration on its Peter Lake Copper project located 90 km north of Mont-Laurier. And 75 km north of Mont-Laurier, the company **Goldstar Minerals** acquired claims for the Brokaby project, which has a favourable environment for skarn-type tungsten mineralization.

From 2011 to 2012, the number of claims in the Laurentides region increased by 17%. This increase is largely due to the emergence of new graphite exploration projects.

Mauricie (04)

In the Mauricie administrative region, **Globex Mining Enterprises** carried out exploration work on two phlogopite (mica) projects in the area of the Lac Letondal mica mine, about 14 km northwest of the small town of Casey. Approximately 90 km west of La Tuque, exploration work by **Canada Rare Earths** focused on an alkaline granite associated with REE geochemical anomalies. And 20 km north-east of Saint-Alexis-des-Monts, **Focus Graphite** acquired claims on the Lac au Sorcier project, which hosts the Dugre graphite deposit discovered in 1919.

From 2011 to 2012, the number of claims in the Mauricie region dropped by 25%.

Capitale-Nationale (03)

In the Capitale-Nationale administrative region, architectural stone projects continue to be worked in the RCM of Portneuf. These projects do not appear in Table 4.5 because their locations are not precisely known.

The company **Gold Dynamics** carried out diamond drilling on the Lac Sainte-Anne project to investigate precious metals in an area to the south of the former Montauban mine.

From 2011 to 2012, the number of claims in the Capitale-Nationale region dropped by 22%.

Saguenay-Lac-Saint-Jean (02)

In the Saguenay-Lac-Saint-Jean administrative region, work continued on several exploration projects for industrial and strategic minerals. Phosphorous, niobium, tantalum, and rare earth elements were the main substances of interest. From 2011 to 2012, the number of claims in the region remained stable, with only a slight reduction of 1%.

North of Lac Saint-Jean, **Arianne Resources** continued with its deposit appraisal work on the phosphorous and titanium Lac à Paul deposit. The companies **Jourdan Resources** and **Glen Eagle Resources** explored for phosphorous. Also north of Lac Saint-Jean, **MDN** is proceeding with deposit appraisal work at its tantalum and niobium Crevier deposit.

In the municipality of Saint-Honoré, **IAMGOLD** continues its work to determine the extent of mineralization for its expansion project at the Niobec niobium mine. The company also carried out exploration work for rare earth elements around the mine. In the same area, **Dios Exploration** explored for niobium and rare earth elements in the Shipshaw Carbonatite Complex and the Falardeau Alkaline Complex.

A former iron and titanium deposit in the Saint-Charles area, on the north shore of the Saguenay River, was reassessed by **Micrex Development** for its titanium, phosphorous and vanadium potential.

About 30 km south of Chibougamau, the companies **Cartier Resources** and **Priority Uranium** carried out exploration work for gold and copper on their respective Dollier and Joe Mann East projects.

In 2012, **Khalkos Exploration** acquired claims on the Poissons Blancs project which hosts the McNickel nickel, copper and cobalt deposit. The project is located 45 km north of the municipality of Dolbeau in Lac-Saint-Jean.

At the northern extremity of the region, about 170 km north of Lac Manouane, the company **Abitex Resources** completed a preliminary economic assessment on its Lavoie uranium project.

Côte-Nord (09)

In the Côte-Nord administrative region, the number of claims decreased by 3% compared to 2011 (Table 2.1). In 2012, exploration focused on iron in the Fermont region, on iron-titanium-vanadium to the northwest of Baie-Comeau, and on graphite in the Manicouagan Reservoir area and north of Sept-Îles. Four companies announced new resource estimates for their projects: **Nevado Resources** (La Blache project), **Argex Titanium** (La Blache project), **Champion Iron Mines** (Fermont project, Moire Lake deposit) and **Fancamp Exploration** (Magpie project) (Table 4.5). In addition, **Focus Graphite** announced the positive results of the preliminary economic assessment on its Lac Knife graphite project.

EXPLORATION WORK IN THE APPALACHIAN GEOLOGICAL PROVINCE

Estrie (05)

From 2011 to 2012, the number of claims in the Estrie administrative region dropped significantly by 56%. Exploration projects still underway in the region focus mainly on gold, but copper and zinc are also substances of interest. **Bowmore Exploration**, **Fancamp Exploration**, **J.A.G. Mines** and **Uragold Bay Resources** have carried out their work during the year.

Chaudière-Appalaches (12)

From 2011 to 2012, the number of claims in the Chaudière-Appalaches administrative region dropped significantly by 51%. Exploration projects still underway in the region continue to focus on gold, particularly in the Appalachian sedimentary rocks along the Baie Verte-Brompton Line. Gold-bearing paleoplacers were also targeted. The companies **Fancamp Exploration**, **Golden Hope Mines** and **Uragold Bay Resources** carried out their work during the year. In 2012, **Golden Hope Mines** proceeded with a resource estimate for its Bellechasse-Timmins gold project in the Saint-Magloire area.

Bas-Saint-Laurent (01)

In the Bas-Saint-Laurent administrative region, there was a 64% increase in the number of claims compared to 2011. This increase is largely due to the acquisition of new claims by **Orbite Aluminae**. The titles are located 5 km from the St. Lawrence River, between Rimouski and Matane. The company intends to carry out exploration work to establish new aluminous clay resources. Elsewhere in the region, new potential slate resources are present.

Gaspésie- Îles-de-la-Madeleine (11)

In the Gaspésie-Îles-de-la-Madeleine administrative region, the number of claims increased by 13% compared to 2011. All the exploration projects in the region are situated on the Gaspé Peninsula.

In August 2012, **Orbite Aluminae** obtained a mining lease for the Grande-Vallée project located 32 km northeast of Murdochville. This mining lease allows the company to mine aluminous clay to supply its alumina pilot plant in Cap-Chat. The company also continued exploring for aluminous clay and rare earths in the Grande-Vallée project area. The companies **Canasia Industries**, **Habanero Resources**, **Manicouagan**

Minerals and **Brookemont Capital**, also carried out exploration work for aluminous clay and rare earths around the Grande-Vallée project held by **Orbite Aluminae**.

Société en commandite **Gisement McInnis** is developing its Port-Daniel cement plant project. The company has now acquired the property and is preparing the site, access road and maritime terminal. It has also initiated engineering work. Elsewhere, **Ressources Pélican** carried out exploration work on the Lefrançois limestone deposit located 15 km northeast of Murdochville. In June 2012, following this exploration work, the company obtained an exclusive lease to mine surface substances, allowing it to excavate the deposit.

The company **Xstrata Canada** still holds its mining titles on the Mont Porphyre copper deposit located near the former Murdochville mine. The company **Gespeg Copper Resources** is carrying out exploration work for copper, silver and molybdenite on its Vortex project. This project lies just south of the Gaspésie provincial park, about 30 km west of Murdochville.

In 2012, **Western Troy Capital Resources** commenced exploration work for vanadium and selenium mineralization, as well as for Mississippi Valley-type lead, zinc and silver mineralization. This work is taking place near the town of Percé, west of the Bridgeville marsh.

Fancamp Exploration is carrying out gold exploration work about 20 km north of the municipality of Pointe-à-la-Croix.

Figure 4.1 - Exploration projects in the Nord-du-Québec, Nunavik territory, in 2012.

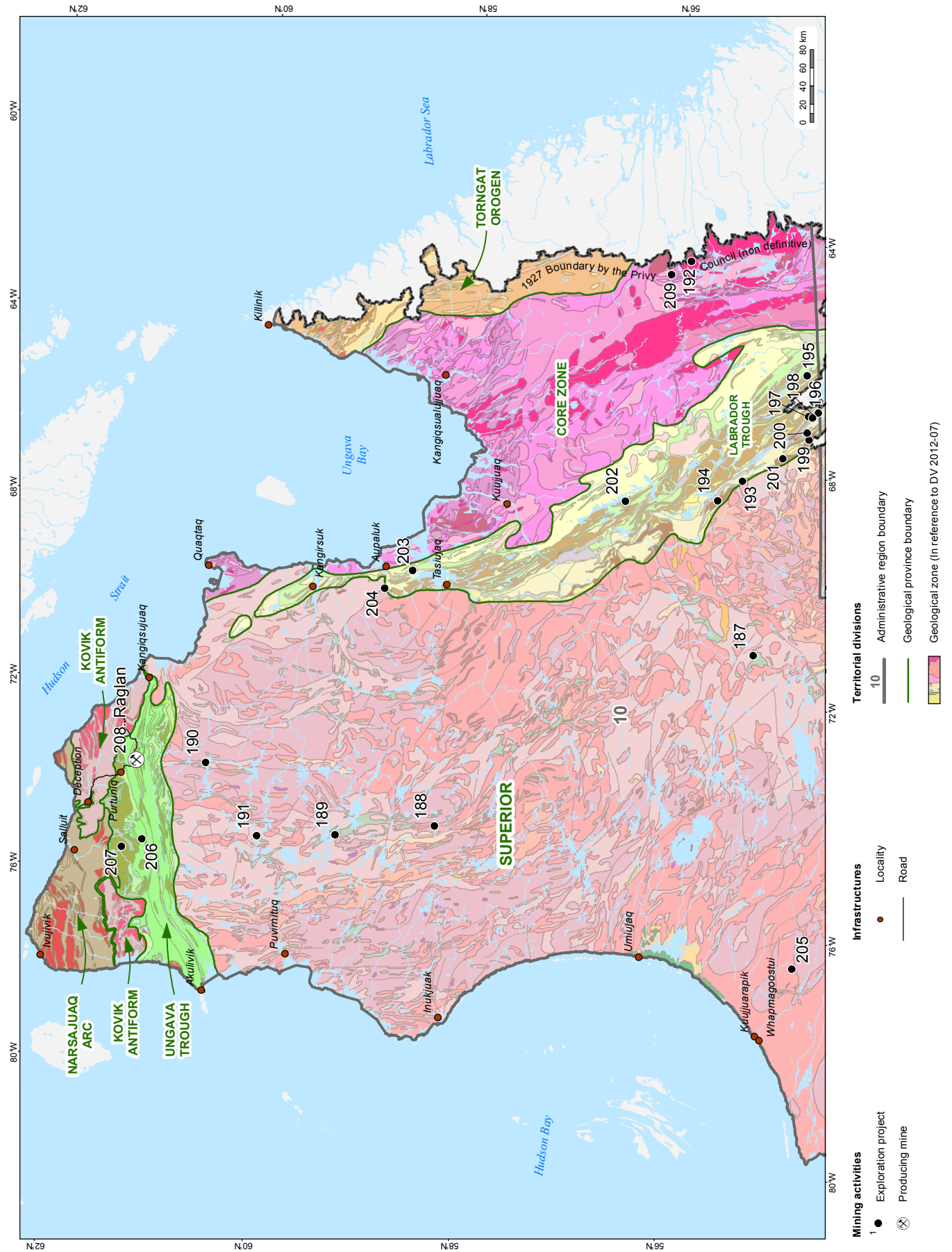


Figure 4.2 - Exploration projects in the Nord-du-Québec, Baie-James territory, in 2012.

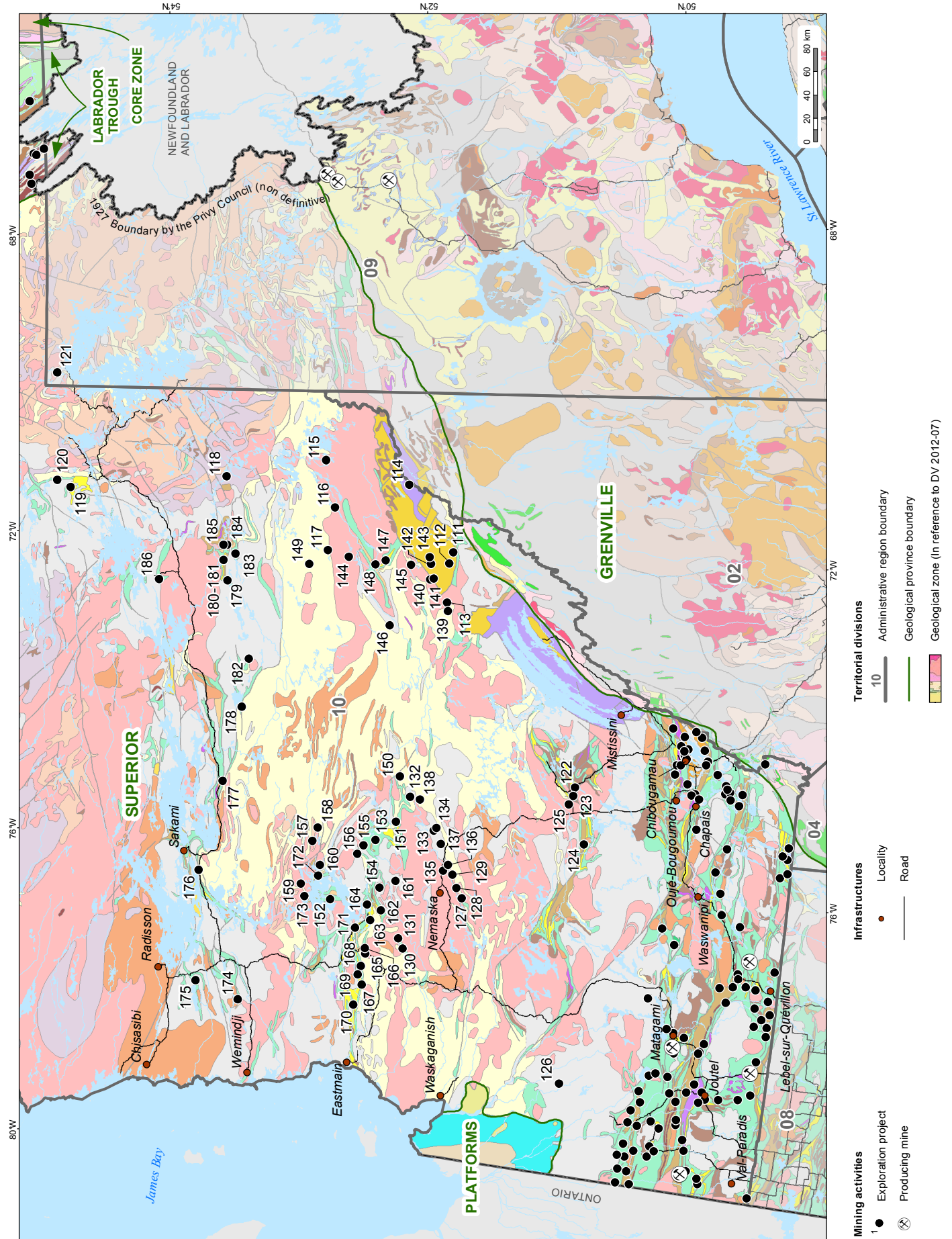


Figure 4.3 - Exploration projects in the Nord-du-Québec, Matagami-Chibougamau sector, in 2012.

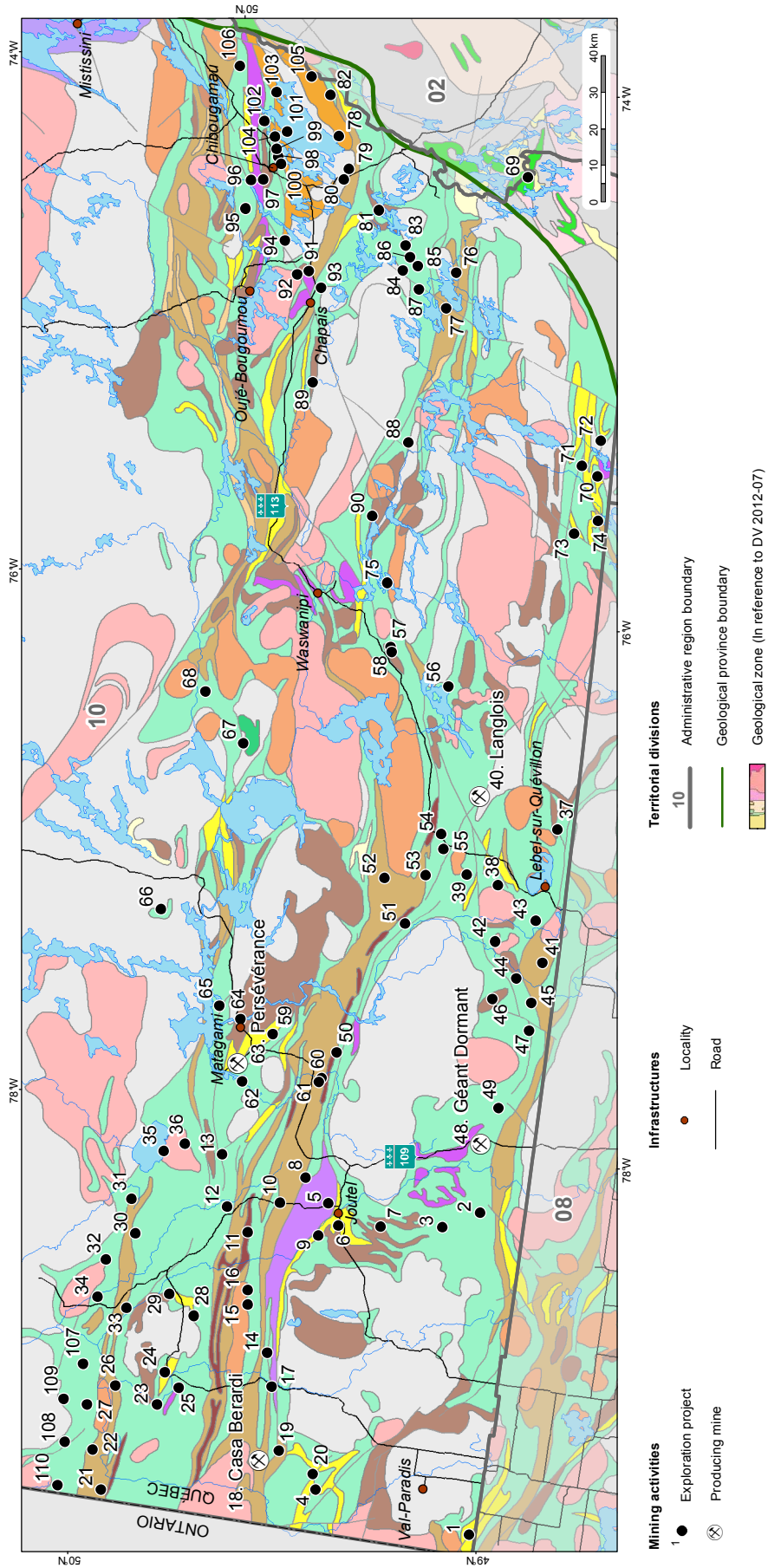


Figure 4.4 - Exploration projects in Abitibi-Témiscamingue in 2012.

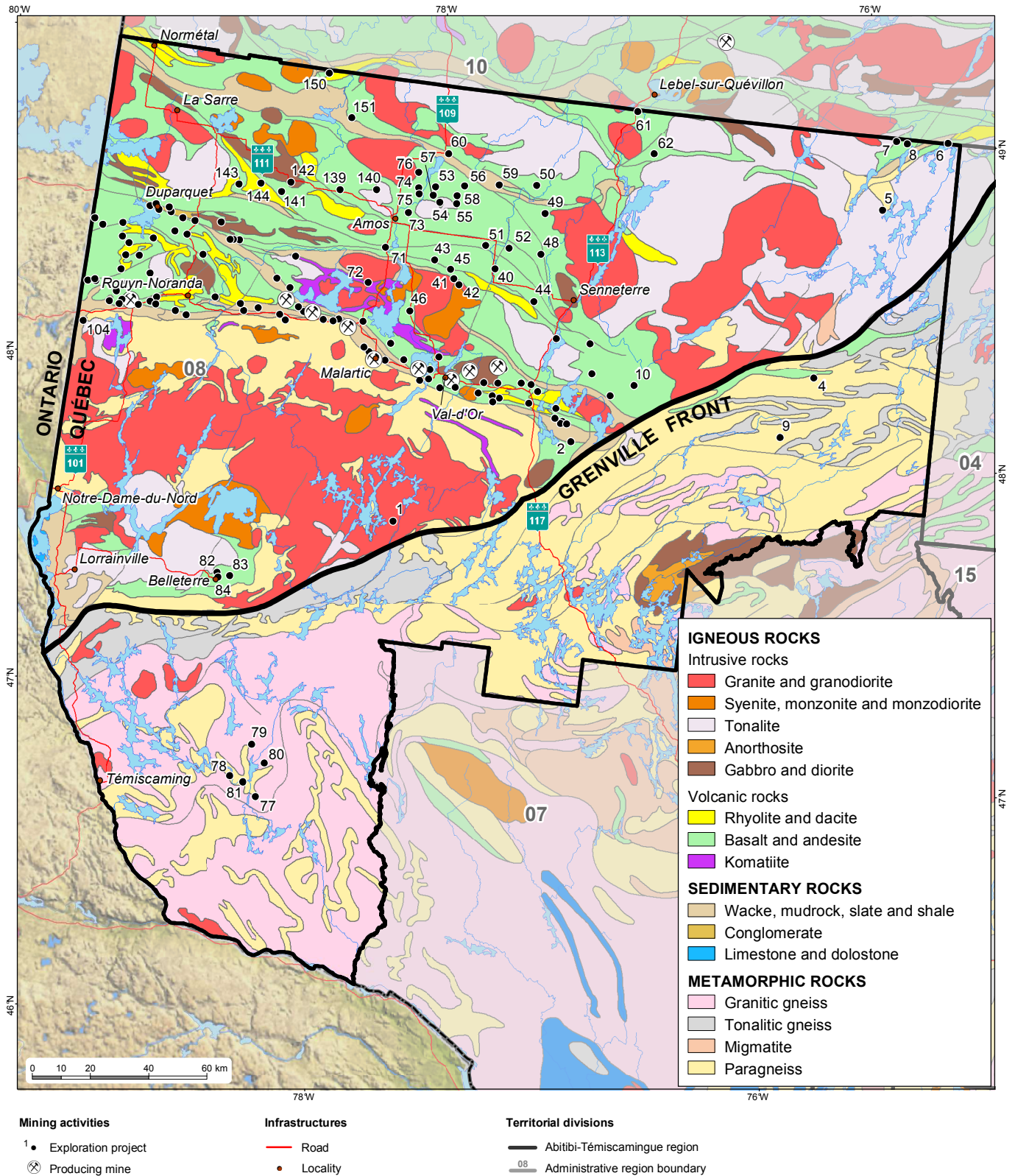


Figure 4.5 - Exploration projects in Abitibi-Témiscamingue, Rouyn-Noranda-Cadillac sector, in 2012.

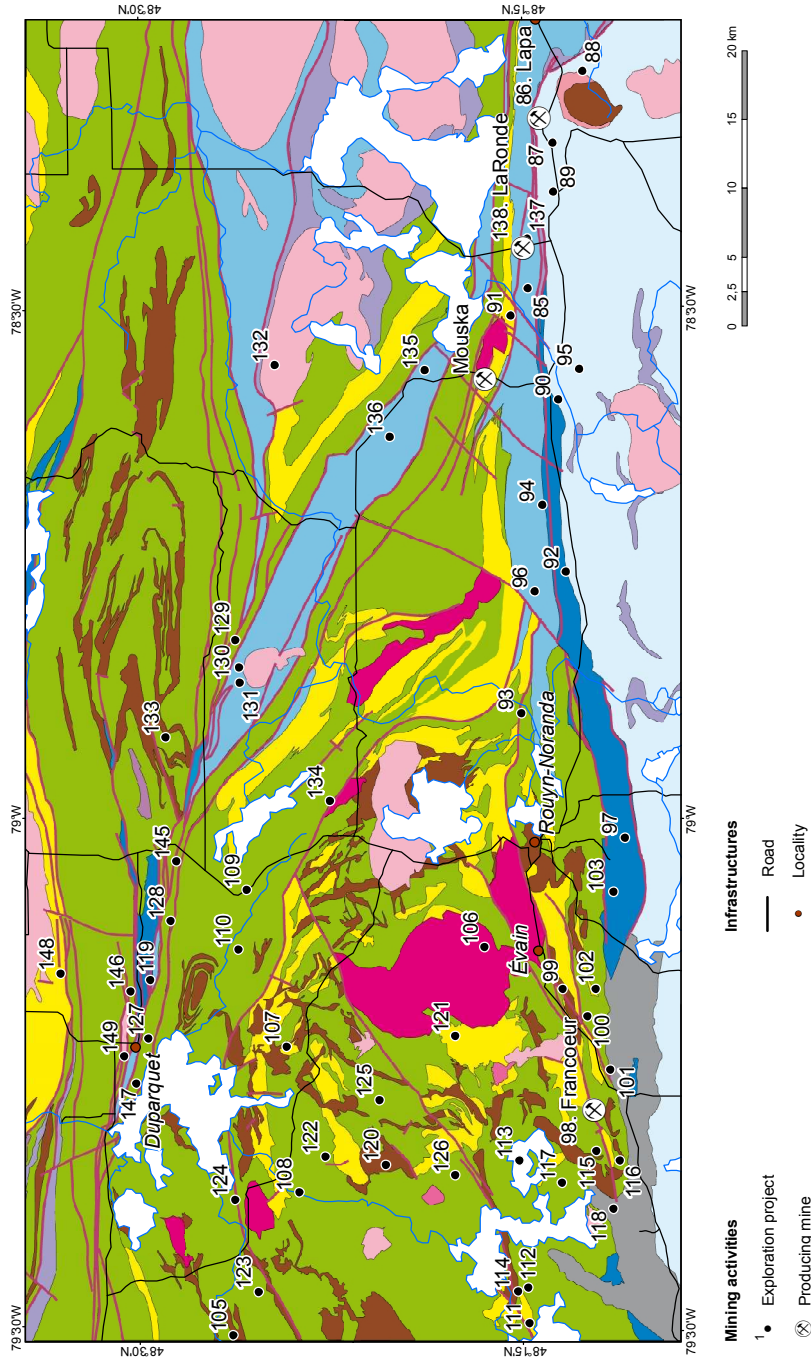


Figure 4.6 - Exploration projects in Abitibi-Témiscamingue, Malartic-Val-d'Or sector, in 2012.

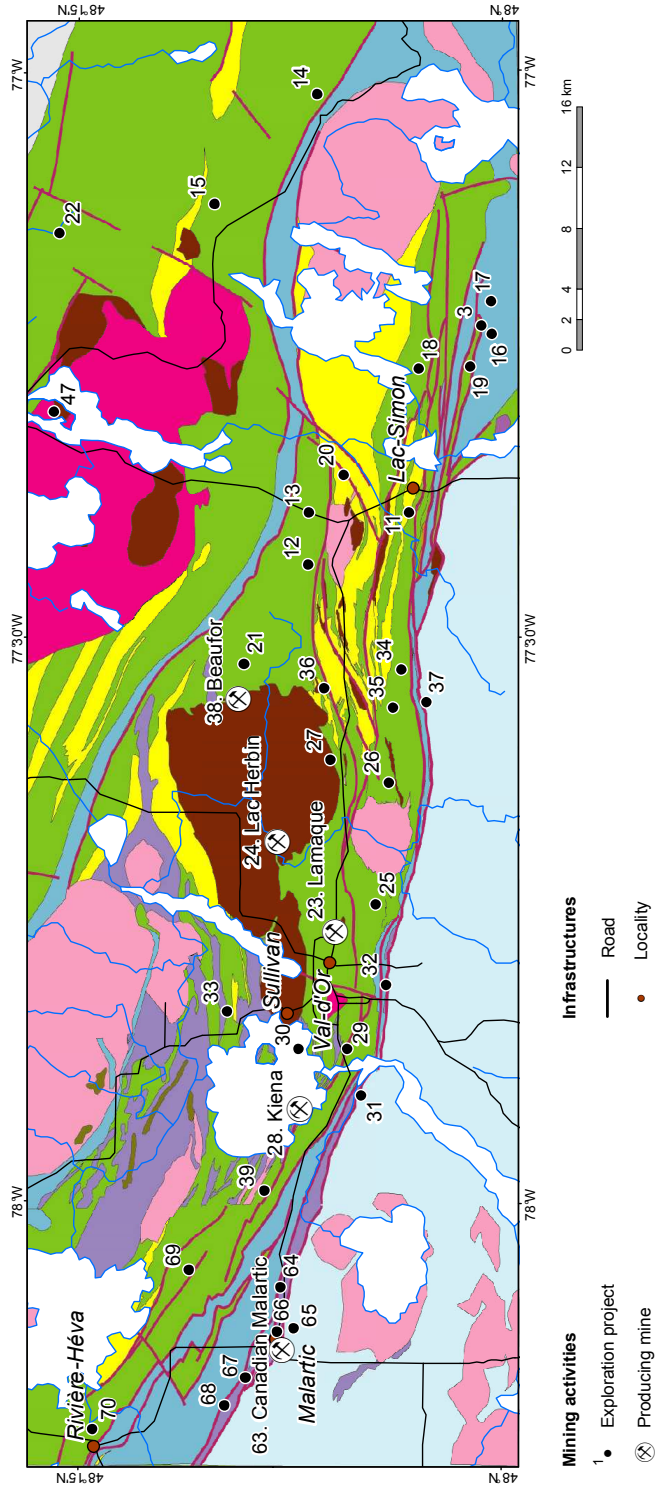


Figure 4.7 - Exploration projects in Québec's administrative regions except Abitibi-Témiscamingue and Nord-du-Québec, in 2012.

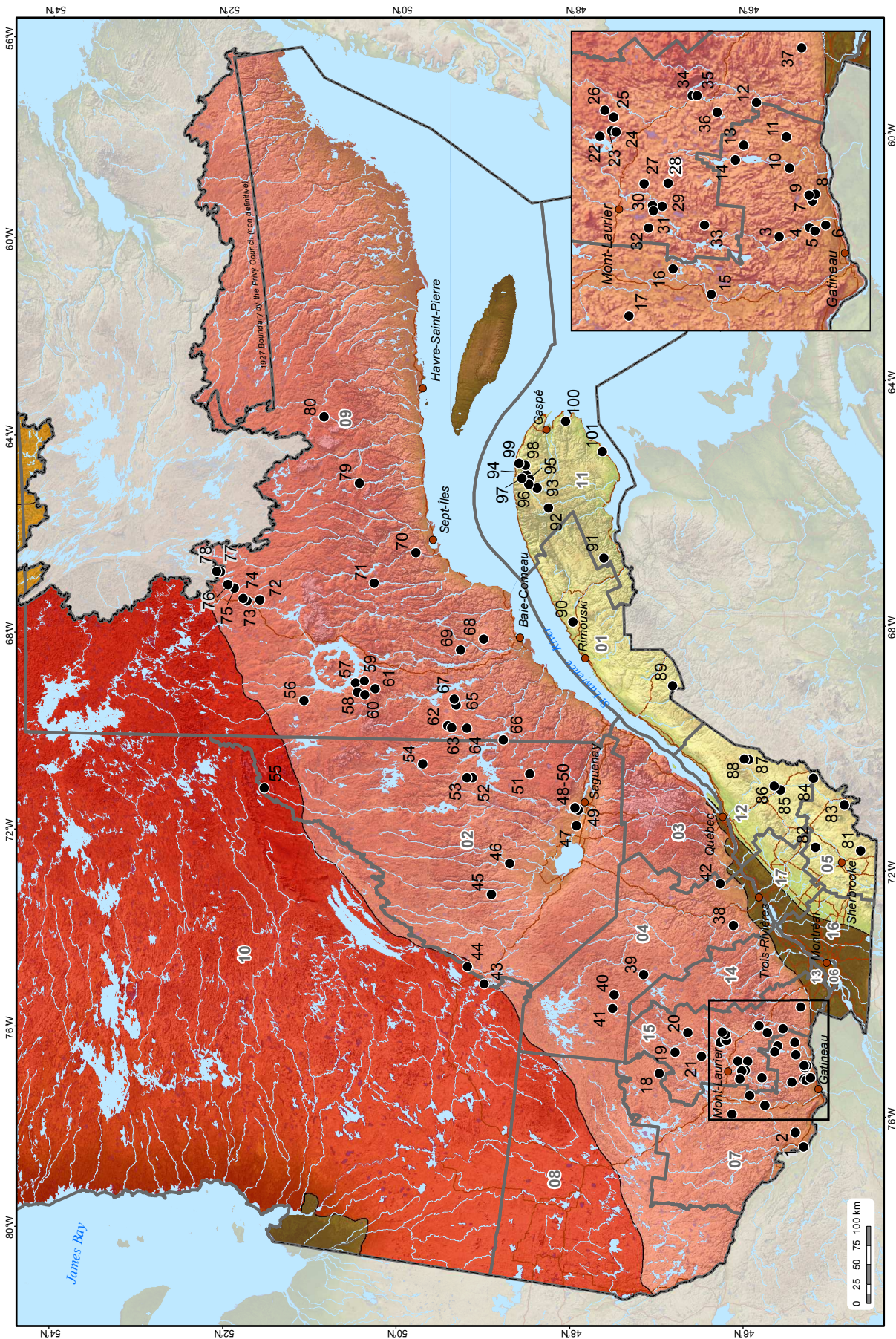


TABLE 4.1 - Exploration and deposit appraisal expenditures in \$M for Québec.

Substances	2005	2006	2007	2008	2009	2010	2011
Precious metals	116	145	226	263	231	277	448
Base metals	53	71	118	122	59	87	125
Diamonds	23	29	27	13	10	14	19
Ferrous metals	1	22	29	24	15	32	106
Uranium	4	22	71	87	48	41	31
Lithium	-	-	-	0.2	6.4	20	16.3
Rare earth elements	-	-	-	1.3	2.8	16.4	42.0
Other substances	8	6	5	15	7	24	47
Total	205	295	476	526	379	512	834

Source: Institut de la statistique du Québec

TABLE 4.2 - Distribution of exploration and mining development expenditures by administrative region.

Administrative region		Expenditures for 2010 (in \$M)	Expenditures for 2011 (in \$M)	% of total expenditures for 2011
01	Bas-Saint-Laurent	c	-	-
02	Saguenay-Lac-Saint-Jean	5.7	19.8	2.4%
03	Capitale-Nationale	0.02	-	-
04	Mauricie	0.3	1.5	0.2%
05	Estrie	2.9	2.4	0.3%
06	Montréal	-	-	-
07	Outaouais	0.9	0.9	0.1%
08	Abitibi-Témiscamingue	181.7	286.0	34.3%
09	Côte-Nord	45.4	68.3	8.2%
10	Nord-du-Québec	261.3	437.5	52.5%
11	Gaspésie-Îles-de-la-Madeleine	7.0	10.6	1.3%
12	Chaudière-Appalaches	5.4	5.5	0.7%
13	Laval	-	-	-
14	Lanaudière	c	0.2	-
15	Laurentides	0.5	1.0	0.1%
16	Montérégie	c	c	-
17	Centre-du-Québec	c	c	-
	Total	511.6	833.9	100%

Source: Institut de la statistique du Québec
c: confidential data

TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
NORTHERN PART OF THE ABITIBI SUBPROVINCE, MATAGAMI-CHIBOUGAMAU SECTOR (Figure 4.3)						
1	32D13, 14, 32E03, 04	Perron, Desméloizes	Amex Exploration	Perron	Base Metals	D (4:x)
	Project description: A horizon of felsic volcanics, altered to sericite, chlorite and silica, and mineralized by pyrite, sphalerite and chalcopryrite, was intersected in drill hole PE-11-04. An interval graded 0.41 g/t Au over 112.3 m, including a zone of 5.9 m at 2.4 g/t Au.					
2	32E01	Mazarin, Maizarets, Glandelet, Celoron	Maudore Minerals	Mazarin-Glandelet	Au	D (5:1038), GpEm(A)
3	32E01, 02, 08	Carqueville, Mazarin, Maizarets, Celoron, Dalet	Maudore Minerals	Dalet	Au	GpEm(A), Pr, S, TE,
4	32E06	Dieppe, Collet, Laberge	Bold Ventures	Lac Agisko	Base Metals	G, GpEm(A), GpMa(A), Pr, TE
5	32E08	Joutel	Belmont Resources	Joutel	Base Metals	TE
6	32E08	Joutel	Globex Mining Enterprises	Joutel Copper Mine	Base Metals	TE
7	32E08	Poirier, Dalet	Bold Ventures	Joutel	Base Metals	G, GpEm(A), GpMa(A), Pr, TE
8	32E08, 09	Douay, Joutel	Aurvista Gold Corporation / Société d'exploration minière Vior	Douay, Douay-Ouest, Douay-Est, Bloc Joutel	Au	B (x:x), D (89:33 845), RRE, TE
	Project description: For the Douay Gold project, a new resource estimate, focusing on mining by open pit, was completed for 8 mineralized zones: 10, 20, 531, Central, Douay West, North West, Porphyry and Main. Using a cut-off grade of 0.3 g/t Au, indicated resources are 2 689 000 t at 2.76 g/t Au (238 433 ounces) and inferred resources are 114 652 000 t at 0.75 g/t Au (2 754 554 ounces). Drill hole DO-11-70 intersected 1.42 g/t Au over 57.0 m along the eastern extension of the Porphyry Zone.					
9	32E08, 09, 10	Joutel, Valrennes, Douay	Visible Gold Mines / Agnico-Eagle Mines	Joutel	Base Metals	D (9:3360), GpEl(G)
10	32E09	Joutel, Douay, Desmazues, Aloigny	Midland Exploration	Jouvex	Au	TE
11	32E09, 10	Montgolfier, Aloigny, Orvilliers, Puiseaux	Barlow Mine	Iron Hills	Fe	D (x:9255)
12	32E09, 16	Joutel, Aloigny, Bapst, Ste-Hélène	Midland Exploration	Valmond	Au	GpMa(A), TE
13	32E09, 16	La Gauchetière	Donner Metals / Xstrata Zinc Corporation Canada	Camp ouest (includes PD1, CAV)	Zn - Base Metals	D (3:x), GpEm(A)
	Project description: In 2011, measured and indicated resources of 1.737 Mt at 4.55% Zn, 1.16% Cu and 19.88 g/t Ag were established between depths of 25 and 515 m for the PD1 deposit. In 2012, drill hole PD-12-44 intersected altered volcanics stratigraphically below the deposit.					
14	32E10	Estrées, Estrades, Orvilliers	Cogitore Resources	Estrades	Base Metals	D (1:400), TE
15	32E10	Orvilliers	Belmont Resources	Angle	Base Metals	TE
16	32E10	Orvilliers, Montgolfier	Bold Ventures	Lac Blondel	Base Metals	G, GpEm(A), GpMa(A), Pr, TE
17	32E10, 11	Estrées	Cogitore Resources	Caribou	Base Metals	D (2:1165), G, GpEm(B), Gs(r), TE
18	32E11	<i>Casa Berardi</i>	<i>Aurizon Mines</i>	<i>Casa Berardi Mine</i>	<i>Au</i>	<i>D (77:88 000), RRE</i>
	Project description: Based on drilling results, the reserves and/or resources were increased for the 118, 123, 160 and South-West zones.					
19	32E11	Casa Berardi	Antoro Resources	Golden Knight	Base Metals	G, TE

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
20	32E11	Casa Berardi, Collet, Laberge	Cava Resources / Explorers Alliance Corporation	Casa Berardi North	Au	D (5:728)
Project description: A drilling program tested the targets generated by an airborne VTEM geophysical survey flown in 2011. A new gold zone, the Conductor 1410 Zone, was intersected by drill hole CAS-12-05 (1.5 m at 6.11 g/t Au).						
21	32E13, 14	Massicotte	Adventure Gold	Massicotte	Au	GpMa(G), TE
22	32E13, 14, 32L03, L04	Massicotte, Manthet, Martigny, La Peltrie	Balmoral Resources	Detour East (Massicotte-Gygnac)	Au - Base Metals	D (8:2654)
Project description: The drilling program identified several shear zones. The best gold grade was 3.06 g/t Au over 0.60 m in drill hole DTE-12-08.						
23	32E14	Carheil, Brouillan	Cogitore Resources	Selbaie West	Base Metals	D (7:2380), G, GpEm(B), Gs(r), TE
24	32E14, 15	Brouillan	SOQUEM	Wagasic	Base Metals	D (17:5140)
25	32E14, 15	Brouillan, Carheil	Exploration NQ	Carheil	Base Metals	RRE, TE
Project description: Since 2009, 10 000 m of drilling has been completed on the property. The drill holes revealed silver mineralization (Ag1 Zone) associated with a horizon of silicified rhyolite. Mineralization occurs as pyrite, brownish sphalerite and traces of galena. A first resource estimate was started in September 2012.						
26	32E14, 15	La Peltrie, Lanouillier, Massicotte	Adventure Gold	Casgrain	Au	G, GpEl(G), GpMa(G), TE
27	32E14, 15, 32L02, 03	Martigny, La Peltrie, Lanouillier	Midland Exploration / Osisko Mining Corporation	Casault, Casault-West, Casault-South	Au	D (19:4562), GpEm(A), TE
Project description: A new gold zone was discovered along the Sunday Lake Fault Zone. It is located at the contact between granodiorite and mafic volcanics, and is characterized by 10 to 15% disseminated pyrite in a structure strongly altered to quartz-sericite-calcite. Drill hole CAS-12-07 intersected 10.4 g/t Au over 1.45 m.						
28	32E15	Beschefer	Excellon Resources	Beschefer	Base Metals	D (33:8867), GpEl(B)
Project description: Drill holes intersected the B14 Zone, consisting of altered and sheared volcanic rocks with local concentrations of quartz veins and pyrite enrichment. The best results included 13.07 g/t Au over 8.75 m (hole BE12-014).						
29	32E15	Beschefer	Adventure Gold	Sicotte	Au	GpEl(G), TE
30	32E15, 16	Fénelon, Subercase	Adventure Gold	Nantel	Au	G, GpEl(G), GpMa(G), TE
31	32E15, 16, 32L01, 02	Grasset, Du Tast, Subercase, Fénelon	Balmoral Resources	Grasset	Au	D (x:2703), Gs(sl)
Project description: Drill hole GR-12-09 intersected a mineralized ultramafic intrusion near the Sunday Lake Fault Zone. The mineralization is composed of disseminated pyrrhotite and pentlandite, with grades of 0.51% Ni, 0.09% Cu, 0.15 g/t Pt, 0.33 g/t Pd and 0.02 g/t Au over 9.17 m. The other holes intersected gold mineralization, such as 27 m at 0.17 g/t Au in drill hole GR-12-06.						
32	32E15, 32L02	Fénelon, Caumont, Jérémie, Gaudet	Balmoral Resources	Fenelon	Au	TE
33	32E15, 32L02	Gaudet, Lanouillier, Fénelon	Adventure Gold	Gaudet	Au	TE
34	32E15, 32L02	Jérémie, Gaudet, La Martinière	Balmoral Resources	Harri	Au	Gs(sl)
35	32E16	Grasset, Subercase	Xmet	Grasset	Au	GpEl(G)
36	32E16, 32F13	Subercase, Ste-Hélène, Grasset, La Gauchetière	Bold Ventures	Lac Grasset	Base Metals	G, GpEm(A), GpMa (A), Pr, TE
37	32F02	Verneuil	Viking Gold Exploration / Golden Tag Resources	Verneuil	Au	D (29:5500)
Project description: In 2011, the company carried out trenching and channelling work on the Toussaint, Benoist and JD showings. A drilling program, completed in winter 2012, intersected several gold-bearing intervals, such as 33.245 g/t Au over 3.0 m (hole VP-11-11) in the Toussaint Main Zone and 8.7 g/t Au over 3.0 m (hole VP-11-18) in the Toussaint East Zone.						

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
38	32F02, 03	Franquet, Quévillon	Maudore Minerals	North Shore	Au	G, Gs(h), GpEl(G), GpMa(A)
39	32F02, 06, 07	Franquet, Grevet	Adventure Gold	Florence	Au	Gs(r), GpMa(G), Pr, S
40	32F02, 07	<i>Grevet</i>	<i>Nyrstar</i>	<i>Langlois Mine</i>	<i>Zn-Cu-Ag</i>	<i>D (x:x)</i>
	Project description: The mine closed in November 2008. In 2010-2011, the company carried out development work on two access ramps in the 3, 4 and 97 zones, as well as definition drilling and exploration work. In 2012, the development work continued.					
41	32F03	Comtois	Maudore Minerals	Pakodji	Au	D (3:468)
42	32F03	Comptois, Fraser, Quévillon, Cramolet	Maudore Minerals	Comtois (Osbell, Greer)	Au	D (141:53 768), GpEl(G), GpEm(A), GpMa(A), MT, RRE, TE
	Project description: In 2012, an update of the 2010 resource estimate was completed for the Osbell deposit (Osborne and Bell zones). The upper part of the deposit, mineable by open pit, contains indicated resources of 8 447 900 t at 2.0 g/t Au (544 251 ounces) and inferred resources of 4 997 000 t at 2.7 g/t Au (428 030 ounces), using a cut-off grade of 0.5 g/t Au. The part of the deposit that is amenable to underground mining contains indicated resources of 16 000 t at 4.0 g/t Au (2 048 ounces) and inferred resources of 3 118 800 t at 8.3 g/t Au (830 959 ounces), using a cut-off grade of 2.5 g/t Au.					
43	32F03	Comtois, Quévillon	Maudore Minerals	Bell	Au-Zn-Cu	D (3:587), GpEl
44	32F03	Comtois, Themines	Maudore Minerals	Comtois SW	Au	D (4:798)
45	32F03	Themines, Hurault	Maudore Minerals	Bernetz	Au-Zn-Cu	D (1:192), GpEl
46	32F03, 04	Cramolet, Comptois, Themines, Fraser, Fonteneau, Barrin	Midland Exploration / North American Palladium	Laflamme	Au-VMS (PGE)	D (8:2072), GpEl(G), GpEm(B,G)
	Project description: Drill hole LA-12-13 intersected a mineralized zone grading 0.19% Ni, 0.18% Cu, 0.12 g/t Pt and 0.15 g/t Pd over 5.2 m. Other holes tested IP geophysical anomalies. Drill hole LA-12-19 intersected strongly epidotized volcanics, including an interval of 0.14 g/t Au over 7.8 m.					
47	32F03, 04	Fonteneau, Themines	Maudore Minerals	Fonteneau-Themines	Au	D (1:132), GpEl(G)
48	32F04	Chaste, Glanlelet	North American Palladium	Sleeping Giant Mine	Au-Ag	Mine closure January 17.
	Project description: The first gold pour took place on October 6, 2009. Underground operations increased progressively until the start of commercial production on January 1, 2010. In 2011, the production shaft was deepened by another 200 m and the development work on three new levels started up. The initial drill holes on the lower levels of the mine yielded good results. However, subsequent drilling did not confirm the grades over a sufficient longitudinal distance, thereby reducing the mineable tonnage. Consequently, the company announced the closure of the mine on January 17, 2012.					
49	32F04	Fonteneau, Chaste, Glanlelet, Soissons	Maudore Minerals	Sleeping Giant	Au	D (2:360), GpEl(G)
50	32F05, 12	Noyon	Balmoral Resources	Northway-Noyon	Au	TE
51	32F06	Bruneau	Adventure Gold	Bruneau-Sinclair	Au	GpMa(G)
52	32F06, 07	Berthiaume, Desjardins	Belmont Resources	Berthiaume	Base Metals	GpEl(G), Pr, TE
53	32F06, 07	Desjardins	Les Explorations Carat	Cameron Nord	Au	Gp, Pr
54	32F07	Currie, Desjardins	Active Growth Capital	Currie-Madelaide	Cu-Au	D (x:x), S, T, TE
55	32F07	Desjardins, Currie	Carat Explorations	Cameron South	Au	Gp, Pr
56	32F08	Benoist, Duplessis	Cartier Resources / Murgor Resources	Benoist	Au	D (3:2466), GpEm(B), TE
	Project description: A drilling program targeting the Pusticamica gold deposit at a depth of 450-600 m has commenced. Drill hole PU-12-01 intersected 24.5 g/t Au over 3.0 m within a mineralized zone grading 0.9 g/t Au over 134 m.					

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾ .						
No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
57	32F08, 09	Le Sueur	Metanor Resources	Bachelor Lake Complex	Au	B (6,07: 5429), D (31:12 088), GpEI(G), T
<p>Project description: The Main and B zones were drilled between levels 14 and 15. Among the best intersections was 17.24 g/t Au over 5.64 m in the Main Zone (hole 15-005). Bulk sampling (5429 t) of the two zone graded 6.07 g/t Au, and 1033 ounces were extracted. At 850 metres west of the Bachelor Lake mine, surface drill holes intersected the Hewfran A West zone (8.41 g/t Au over 1.21 m, hole B11-151). This zone is accessible by a drift from level 6 in the Bachelor mine.</p>						
58	32F08, 09	Le Sueur	Metanor Resources	Hewfran, MJL-Hansen	Au	GpEI(G), T
59	32F12	Galinée	Donner Metals / Xstrata Zinc Corporation Canada	South Flank (includes Bracemac-McLeod)	Base Metals	D (x:35 000), GpEm(A)
<p>Project description: The construction of the Bracemac-McLeod mine commenced on July 9, 2010. According to the feasibility study, the proven and probable reserves are 3.73 Mt at 9.60% Zn, 1.26% Cu, 28.25 g/t Ag and 0.43 g/t Au. Mining will take 4 years, with a production rate of 2500 t/d. The inferred resources of the McLeod Deep Zone were calculated at 2.47 Mt at 9.21% Zn, 1.22% Cu, 39.81 g/t Ag and 1.12 g/t Au. As of October 31, 2012, ramp excavation had reached the Bracemac Main and Bracemac KT zones and was continuing towards the McLeod Zone. A drilling program updip of the McLeod Zone led to the discovery of new copper mineralization grading 0.14% Zn, 2.83% Cu, 13.09 g/t Ag and 0.13 g/t Au over 19.35 m in drill hole MCL-12-16. In the area of the Galinée 14 showing, located 6.5 km south of the Bracemac-McLeod mine, drill hole GAL14-12-08 intersected the Key Tuffite and a thick sequence of chlorite-talc alteration (1.16% Zn, 0.19% Cu, 3.5 g/t Ag and 0.01 g/t Au over 2.0 m).</p>						
60	32F12	Veza, Noyon	North American Palladium / Agnico-Eagle Mines	Veza Gold Mine	Au-Ag	B (15 000:x), D (6:2179)
<p>Project description: In 2011, a new resource estimate over the Veza deposit established measured and indicated resources as 1.714 Mt at 5.8 g/t Au (320 900 ounces) and inferred resources as 0.633 Mt at 5 g/t Au (102 100 ounces). The cut-off grade is 3.0 g/t Au. In May 2012, a bulk sample of 15 000 t was processed at the Sleeping Giant mill. Commercial production is scheduled to begin in early 2013. The mine is expected to have a 9-year life.</p>						
61	32F12	Veza, Noyon	Société d'exploration minière Vior	Veza, Noyard	Au	Gs(sl,t)
62	32F12, 13	Cavalier, Daniel	Donner Metals / Xstrata Zinc Corporation Canada	Camp Central (DJV, West New Hosco and Rivière Allard)	Zn - Base Metals	D (6:x), GpEm(A)
<p>Project description: A drilling program west of the former New Hosco mine revealed a larger hydrothermal alteration zone than expected. Results include 4.46% Zn, 3.27% Cu, 29.8 g/t Ag and 0.14 g/t Au over 6.2 m (hole NH-11-05).</p>						
63	32F12, 13	Daniel	Xstrata Canada Corporation	Perseverance Mine	Zn-Cu-Au-Ag	D (x:x)
64	32F12, 13	Isle-Dieu	Xstrata Zinc Corporation Canada / Donner Metals	North Flank (Radiore, Lac Garon and Bell Channel)	Zn - Base Metals	D (7:x), GpEm(A)
<p>Project description: In the DJV area, north of the Perseverance mine, drill hole DJV-11-88 intersected 1.74% Zn over 5.0 m. Drill hole GL-11-19 intersected massive and semi-massive sulphides with grades of 5.21% Zn and 0.27% Cu over 3.15 m.</p>						
65	32F13	Isle-Dieu	Exploration Lounor	Matagami	Au	TE
66	32F14, 32K03	Livaudière	Xmet	Livaudière	Au-Cu	GpEm(G)
67	32F15, 16	Montviel, Urfé	Geomega Resources / Corporation minière Niogold	Montviel	RRE-Nb	D (70:34 065), MT, PEA, RRE
<p>Project description: In 2011, a resource estimate concluded that the Montviel carbonatite contains indicated resources of 183.9 Mt at 1.45% total rare earth oxides (TREO), including 0.24% Nd₂O₃, 0.0072% Y₂O₃ and 0.12% Nb₂O₅, and inferred resources of 66.7 Mt at 1.46% TREO, including 0.24% Nd₂O₃, 0.0078% Y₂O₃ and 0.14% Nb₂O₅. A second phase of drilling improved the definition of the Montviel Main Zone, which has rare earth and niobium enriched crescent-shaped core. The best results included 2.2% TREO (including 0.33% Nd₂O₃) and 0.33% Nb₂O₅ over 367.5 m (hole MVL-12-55). Moreover, a heavy rare earth-enriched zone (the TRLS Zone) was discovered, for which the width at surface is estimated to be 45 m.</p>						
68	32F16	Monseignat	Atocha Resources	Trésor Nord	RRE	GpEm(G), GpMa(G), Gs(v), TE
69	32G01, 08	Robert	Gimus Resources	Bouchard	Base Metals	G, GpEm(A), GpMa(A), Pr, S, TE,

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
70	32G03	Lacroix	Revolver Resources	Lucky South	Au	Pr, S, TE
71	32G03	Belmont, Lacroix	Revolver Resources	Lucky North	Au	Pr, S, TE
72	32G03	Buteux	Hinterland Metals	Fecteau	Au	D (8:1248), S, T
Project description: A drilling program targeting geophysical resistivity anomalies was completed. Gold mineralization was intersected in carbonate or sericite alteration zones (0.31 g/t au over 5.0 m, hole LF12-04).						
73	32G04	Urban	Eagle Hill Exploration Corporation / Murgor Resources / Cliffs Natural Resources / Noront Resources	Windfall Lake	Au	D (154:42 999), GpEI(S), Gs(t), RRE, S, T, TE
Project description: An update of the November 2011 mineral resource estimate concluded that indicated resources total 1 665 000 t at 10.05 g/t Au (538 000 ounces) (Main Zone) and inferred resources amount to 2 906 000 t at 8.76 g/t Au (Main, F17, F51 zones). The drill holes intersected the Caribou, Caribou South, 27, Mink gold zones. Drill hole EAG-12-320 cut 5.5 g/t Au at a depth of 630 m in Zone 27.						
74	32G04	Urban	Amseco Exploration / Beaufield Resources	Rouleau Lake	Au	D (x:4000)
75	32G05, 12	Lespérance, Gand	Northern Superior Resources / Matamec Explorations	Wachigabau	Au	Pr, TE
76	32G07	Hazeur	Vanstar Mining Resources	Nelligan	Au	D (13:1954), TE
Project description: The drilling program verified the lateral and depth extensions of the B Zone on the Nelligan showing. The best results included 1.08 g/t Au over 7.5 m in hole NE12-08.						
77	32G07	Hazeur	Les Explorations Carat	Hazeur	Au	Gp, Pr
78	32G09	Lemoine	Nuinsco Resources	Corner Bay (CBay)	Cu-Ag-Au	D (x:1500), GpEI(G), Pr, RRE
Project description: A resource estimate was completed for the Corner Bay deposit comprising two distinct mineralized veins (V1 and V2). Measured and indicated resources are 825 000 t at 3.42% Cu, 0.32 g/t Au and 3.71 g/t Ag. Inferred resources are 734 000 t at 3.33% Cu, 0.28 g/t Au and 11.56 g/t Ag.						
79	32G09	Queylus	Copper One	Queylus	Au-Cu	D (x:4000), GpEI(G), GpEm, GpMa
80	32G09	Queylus	Les Explorations Carat / J. St-Pierre	Que	Au	Gp, Pr
81	32G09, 10	Fancamp, Queylus, La Dauversière, Hauy	Tawsho Mining	Chevrier	Au	D (3:x), RRE, TE
82	32G09, 16, 32H13	Lemoine, Rinfret	Cogitore Resources	Lemoine	Base Metals	D (7:685), GpEm(B), Gs(r)
83	32G10	Fancamp, Rale	Murgor Resources / Vanstar Mining Resources	Fancamp	Au	TE
Project description: Five trenches were excavated on the Fancamp deformation zone. Mineralization consists of quartz-carbonate veins. The best channel grades include 10.4 g/t Au over 4.3 m in the West structure.						
84	32G10	Rale	TomaGold Corporation	Monster Lake Gold	Au	B (x:x), D (16:2420), G, MT, TE
Project description: Drill hole M-12-60 aimed to demonstrate the continuity of Zone 52 at depth and to confirm the extension of the Annie Zone to the north, both of which occur in the gold-bearing Monster Lake trend. A gold zone consists of a black quartz vein with pyrite-pyrotite-chalcopyrite-visible gold is hosted in the core of a sheared and silicified lapilli tuff. Grades are 237.6 g/t Au over 5.7 m. A program of mineralogical characterization and metallurgical testing is underway.						
85	32G10	Rale	Northcore Resources / Vanstar Mining Resources	Little Monster	Au	D (x:2000)

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TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
86	32G10	Rale	Amseco Exploration / Vantex Resources	Cookie Monster	Au	D (x:1500)
87	32G10	Rale	Northcore Resources	Lac Irène	Au	TE
88	32G11	Guercheville	SOQUEM / Cartier Resources	Fenton	Au	D (12:3013), TE
89	32G11, 14	Anville, Daubrée, Dolomieu	Geomega Resources	Oriana	W, Au (RRE)	D (x:363), S
90	32G12	La Ronde, La Roncière	Active Growth Capital	Wachigabau	Cu-Au	D (x:x)G, Pr, S, T, TE
91	32G15	Lévy	Pro Minerals	Lac Laura	Au-Cu-Ag	D (4:x), S, T
Project description: A stripping, sampling, channelling, and drilling program revealed three new Au-Ag-Cu mineralized zones (North, Central and South). Drill hole LLN-11-02 was planned to intersect the extension of the 2S and 2N shear zones in the Central mineralized zone. The best grades include 6.6 g/t Au, 1.0 g/t Ag and 0.13% Cu over 0.39 m.						
92	32G15	Lévy	2736-1179 Québec	Saw Mill	Cu-Zn-Au	D (33:5460), S, T
93	32G15	Lévy	2736-1179 Québec	Indian Lake	Base Metals	D (14:3355), S, T
94	32G15	Scott, Lévy	Cogitore Resources	Scott Lake	Base Metals	D (30:11 946), GpEm(B,G), Gs(r)
Project description: In 2011, an estimate of inferred resources, including eight lenses and two stringer zones, concluded that there are 5.447 Mt at 1.2% Cu, 4.6% Zn, 0.2 g/t Au and 34 g/t Ag. In 2012, drill hole SC-72 intersected, at a distance of 50 m from the 34 Zinc Zone, massive and stringer sulphides with grades of 2.5% Cu, 8.7% Zn, 0.7 g/t Au and 100 g/t Ag over 47.3 m. This zone is stratigraphically related to the West lens.						
95	32G15, 16	Barlow, McKenzie	Northern Superior Resources / GL Geosciences / M. Bouchard	Croteau East	Au	D (36:10 716), TE
Project description: Following the results of the 2011 trenching and sampling program, a drilling program was initiated. Among the best results: 8.16 g/t Au over 19.55 m in the Marco Zone (hole CRO12-10), within an altered and mineralized corridor containing three other gold zones.						
96	32G16	McKenzie	SOQUEM / MDN	McGold (MOP II)	Au-Cu	D (12:3061)
Project description: Following the results of the 2010 holes, another drilling program was carried out in 2011 to verify the westward extension of the gold mineralization. The results indicate that the porphyritic tonalite hosting the mineralization thins out to the west. Among the best results: 1.1 g/t Au over 18.0 m (hole 1206-11-44).						
97	32G16	McKenzie	Globex Mining Enterprises	Berrigan	Zn-Au-Ag-Pb	GpEI(G), RRE
98	32G16	McKenzie	Chibougamau Independent Mines / Globex Mining Enterprises	Québec-Chibougamau	Base Metals	GpEI(G), RRE
99	32G16	McKenzie	Chibougamau Independent Mines / Globex Mining Enterprises	Copper Cliff Extension	Base Metals	GpEI(G), RRE
100	32G16	McKenzie, Obalski	Chibougamau Independent Mines / Globex Mining Enterprises	Kokko Creek Mine	Base Metals	GpEI(G), RRE
101	32G16	McKenzie, Roy, Lemoine, Obalski	Chibougamau Independent Mines / Globex Mining Enterprises	Lac Chibougamau, S-3, Tommy	Base Metals	GpEI(G), RRE
102	32G16	Roy	Chibougamau Independent Mines / Globex Mining Enterprises	Grandroy	Base Metals	GpEI(G), RRE
103	32G16	Roy	2736-1179 Québec	Lac Taché	Base Metals	S (45:9237)
104	32G16	Roy, McKenzie, Lemoine, Obalski	Chibougamau Independent Mines / Globex Mining Enterprises	Bateman Bay Mine	Base Metals	GpEI(G), RRE
105	32G16, 32H13	Rinfret	PacificOre Mining Corporation / Prestige Mining Corporation	Lac Doré	Fe-V-Ti	FS, G, GpMa(G), Pr, S, T, TE
106	32G16, 32H13, 32I04, 32J01	McCorkill	Typhoon Exploration	Monexco-McCorkill	Au-Cu-Zn	D (7:x)
Project description: A drilling program tested the extensions of mineralization below the 1 and VG strippings exposing gold-bearing quartz veins. The veins are generally hosted within a granodiorite intrusion and, to a lesser extent, in basalts and gabbros. The best grade is 4.55 g/t Au over 1 m (hole MO-11-005).						

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TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
107	32L02, 03	La Martinière, Lanouillier, Martigny	Balmoral Resources	Martiniere (East, West)	Au	D (x:20 707), TE
<p>Project description: In the Martinière East Zone, drill hole MDE-12-25 intersected 44.9 m at 0.97 g/t Au and 2.51 g/t Ag. At the Martinière West Zone, drill hole MDW-12-62 intersected 8.08 g/t Au over 7.95 m (Main Zone). Drill holes also cut gold grades on other zones (ex.: the Bug Lake, Footwall and Hangingwall zones).</p>						
108	32L03	Manthet, Martigny	Adventure Gold	Martigny	Au	G, GpEI(G), GpMa(G), TE
109	32L03	Martigny	Balmoral Resources	East Doight	Au	Gs(sl)
110	32L03, 04	Manthet	Adventure Gold	Manthet	Au	G, GpEI(G), GpMa(G), TE
BAIE-JAMES TERRITORY (figure 4.2)						
111	22M13, 32P16		Cameco Corporation / AREVA Resources Canada	Camie River	U	D (8:1700)
112	22M13, 32P16		Cameco Corporation	Otish South	U	D (12:3500)
113	22M13, 32P10, 15, 16, 33A01		Dios Exploration	Hotish	U-REE	Pg, T
114	23D03		Abitex Resources	Epsilon	U-Au	TE
115	23D10, 15		Dios Exploration	Carbon 14	Nb-REE	G, Pr
116	23D11, 12, 14		Dios Exploration	14 Karats	Au-Diamond	G, Gs(t), Pr
117	23D12, 13, 33A10, 15, 16, 33H01		Dios Exploration	33 Carats	Diamond	G, Gs(sl,t), Pr
118	23E11		Trionex Recherches minérales	Puisseaux	Au-Ag-Cu	S
119	23L11, 14		Virginia Mines	Coulon	Cu-Zn-Ag	D (27:18 055)
<p>Project description: In the northeast part of Lens 43, a drilling program revealed a new lens of massive sulphides (Lens 257), representing the 9th lens discovered on the Coulon project. Drill hole CN-12-257 intersected 11.06% Zn, 1.87% Cu, 26.45 g/t Ag and 0.16 g/t Au over 11.0 m.</p>						
120	23L11, 14, 23M03		Everton Resources	Coulon	Cu-Zn-Au-Ag	D (x:13 000)
121	23K13, 23L16, 23N04		Virginia Mines / IAMGOLD Corporation	Lac Pau	Au-Cu	D (X:3000), G, GpMa(G), Pr,
<p>Project description: Drilling tested the areas of the Hopes, Jedi and Jedi Extension showings as well as several other geo-physical and geological targets along the Lac Pau gold corridor. The most interesting results are from the Jedi area. Hole PAU-12-058 intersected a wide zone of alteration and disseminated sulphides that assayed 1.74 g/t Au over 31.5 m in the core of a wider interval of 0.97 g/t Au over 69 m.</p>						
122	32J09, 10, 11 15, 16, 32O01		Beaufield Resources	Troilus JV	Cu-Zn-Au-Ag-Li	D (25:4261), GpEI(G), GpEm(A), MT, Pr, RRE
<p>Project description: A resource estimate for the polymetallic Tortigny deposit used 123 holes for a total of 31 942 m. In 2010-11, Beaufield Resources drilled 64 holes for a total of 16 819 m. For the upper part of the deposit amenable to open pit mining, measured and indicated resources are 275 000 t at 3.56% Zn, 1.13% Cu, 37.29 g/t Ag and 0.22 g/t Au. For the lower part of the deposit which would be mined underground, measured and indicated resources are 570 000 t at 4.64% Zn, 2.43% Cu, 63.97 g/t Ag and 0.47 g/t Au. The Tortigny deposit consists of a deformed massive sulphide lens (Cu-Zn-Ag-Au) hosted in siltstones and argillites, bordered by basalts.</p>						

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TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
123	32J10		Perilya / SOQUEM	Moblan	Li-feldspar	ES, Min, MT, PEA (2011)
	Project description: A drilling program completed in 2010 (99 holes for a total of 13 379 m) allowed for a new resource calculation. Using a cut-off grade of 0.60% Li ₂ O, the Moblan West deposit contains measured resources of 4.719 Mt at 1.63% Li ₂ O, indicated resources of 6.752 Mt at 1.33% Li ₂ O and inferred resources of 2.780 Mt at 1.22% Li ₂ O. The global resource amounts to 14.25 Mt at 1.41% Li ₂ O. In 2012, the joint venture launched a mineralogical, metallurgical and environmental study with a view to mining the Moblan lithium project by open pit.					
124	32J11		Nemaska Lithium	Simarc	Li (spodumene)	D (72:3415), G, S, MT,T
	Project description: In order to test the potential extensions of the known spodumene pegmatite (Dyke #5), sampling, drilling and stripping work was carried out. Two channels were cut on the newly identified west extension. Channel SIR-12-R14 yielded 1.87% Li ₂ O over 4.5 m. Another spodumene pegmatite dyke was discovered, 500 m to the west of Dyke #5. The best drill results of 1.53% Li ₂ O over 32.2 m, including 2.56% Li ₂ O over 6 m, came from drill hole SIR-12-17.					
125	32J14, 15, 32O02		Habanero Resources	Lezai Gold	Cu-Zn-Au-Ag	Gs(h), Gs(r), Pr, S
126	32L09		M.G. Drapeau / Somdra	Suzane	Au	Gp
127	32N07, 08, 09		Monarques Resources	Caumont	Cu-Ni-PGE-Au-Ag	D (x:x), Pr, S, TE
	Project description: A grab sample of pyroxenite assayed 0.83% Cu, 1.52% Ni, 1.67 g/t Pd, 0.12 g/t Pt and 1.84 g/t Ag (new Tent showing). These new Cu and Au grades were obtained from a felsic vein hosted in sheared pyroxenite. Among the best results: grab sample L943431 yielded 4.29% Cu, 4.34 g/t Au, 16.7 g/t Ag and 1.74 g/t Pd.					
128	32 N09		Monarques Resources	Dumulon	Cu-Zn-Ag	G, Pr
129	32N09, 32O12		Monarques Resources	Valiquette	Cu-Ni-PGE	D (9:1800),T
130	32N14, 15		Khalkos Exploration	Pontax-Lithium	Li-Be	S,T
131	32N14, 15, 16, 33C01, 02		Sirios Resources / Dios Exploration	Pontax	Au-Ag-Cu-Zn-Pb-Diamond	S,T
132	32O11, 33B03		Monarques Resources	Amiral	Cu-Ni-Zn-Au	G, Pr
133	32O11, 12, 14		Monarques Resources	Nisk	Cu-Ni-Co-PGE	D (x:x),T
134	32O11, 12, 14		Monarques Resources	Lemare	Cu-Ni-PGE-Au-Li	D (2:x), G, Gs(h), Gs(sl), Pg, S,T
	Project description: A new gold showing (the Lac de la Chlorite showing: grab sample of 1.6 g/t Au) was discovered 2 km west of the Lac de la Sillimanite showing. It represents a strongly silicified and chloritized shear zone in metavolcanics. Stripping at the Lac de la Sillimanite showing revealed strongly folded, silicified and mineralized (pyrite, chalcopyrite and arsenopyrite) metasedimentary rocks. A total of 145 grab and channel samples were collected over the two showings. Among them, 48 samples had grades of >0.1 g/t Au and 12 of these had grades exceeding 1 g/t Au. A geochemical survey was also carried out over the two gold showings, identifying additional potential targets for gold mineralization. A spodumene pegmatite dyke was discovered, measuring 5 to 14 m thick and at least 200 m long at surface. Among the best channel sample results: 1.18% Li ₂ O over 14.2 m (LEM(Li)-12-R5).					
135	32O12		Nemaska Lithium	Wabouchi	Li-Rb-Be	ES, MT, PEA
	Project description: A preliminary economic assessment established proven reserves of 10.197 Mt at 1.53% Li ₂ O and probable reserves of 9.442 Mt at 1.45% Li ₂ O, at a cut-off grade of 0.4% Li ₂ O. An environmental, social and economic impact study is underway to assess the impacts of an open pit mine at the Whabouchi project.					
136	32O12		Monarques Resources	Duval	Cu-Ni-Co-PGE-Au	D (14:2800), G
	Project description: Monarques Resources conducted a drilling program to identify the lateral and depth continuity of a surface showing. The showing was stripped and channel sampled in the summer of 2010.					
137	32O14		Monarques Resources	Arques	REE-Nb-Ta	D (14:2800), S
	Project description: A drilling program was carried out in the winter of 2012 to continue exploring the new alkaline intrusion identified the previous winter through drilling (hole RUP-11-05 returned 1.50% total rare earth oxides over 1.0 m).					

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TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
138	32O14,15		Monarques Resources	Bourier	Cu-Zn-Pb-Ag-Au	D (x:x), G, Pr, T
	Project description: Drilling intercepted a highly magnetic SEDEX-type Zn-Ag massive sulphide zone hosted in clastic sediments. The zone was traced in drill holes over a distance of 5 km. Hole BOU-11-09 returned 1% Zn over 1.0 m. A channel yielded 1.4 g/t Ag over 3.0 m.					
139	32P07, 10, 14, 15, 16		Majescor Resources / Superior Diamonds / Strateco Resources	Mistassini	U	Pg, S
140	32P16		Strateco Resources	Eclat	U	D (x:x)
141	32P16, 33A01		Ditem Explorations	Otish Uranium	U	D (x:x)
142	32P16, 33A01		Strateco Resources	Matoush	U	B (x:x), D (x:14 947), RRE
	Project description: Strateco Resources announced the results of drilling carried out in 2012 with the objective of better defining the mineralized lenses, MT-22A and MT-34A, discovered in 2010 and 2011. The best result was obtained in hole MT-12-012 with 2.62% U ₃ O ₈ over 15 m, including 5.71% U ₃ O ₈ over 6.6 m. Following the 12 000 m drilling program, a new resource estimate increased the indicated resources by 58%. The indicated resources are now 453 000 t at 0.779% U ₃ O ₈ and the inferred resources are 2.041 Mt at 0.428% U ₃ O ₈ .					
143	32P16, 33A01		Strateco Resources	Matoush Extension	U	D (x:1000)
144	32P16, 33A08, 09		Terrax Management	Plan Nord	Au	Pr
145	33A01		Ditem Explorations	Lac Henri	REE	D (x:x)
	Project description: Grades of up to 1.99% total rare earth oxides were obtained in channel samples measuring 0.5 to 1 metre long, and up to 0.29% total rare earth oxides for grab samples from a feldspar-quartz pegmatite containing thorium- and thorium-uranium-bearing minerals.					
146	33A02		Western Troy Capital Resources	Macleod Lake	Cu-Mo-Ag-Au	D (3:402), ES, FS
	Project description: The company is carrying out a feasibility study and an environmental and social impact study on the project with a view to mining the deposit by open pit. Results of drilling in 2011 were published: drill hole 228 returned 2.14% Cu and 21.32 g/t Ag over 3 m, including 5.93% Cu and 50.6 g/t Ag over 1 m.					
147	33A07, 08		Eastmain Resources	Eastmain Mine	Au-Ag-Cu	D (x:x), Gp(A,G), TE
	Project description: Several drill intersections confirmed the lateral and depth extensions of the A, B and C zones defining the mine's gold deposit. Drill hole EM-11-52 intersected 5.78 g/t Au, 4.24 g/t Ag and 0.27% Cu over 6.5 m in the A Zone. Drill hole EM-11-65 intersected 9.1 g/t Au, 3.93 g/t Ag and 0.22% Cu over 3.0 m in the B Zone.					
148	33A08		Dios Exploration	33 Carats South	Au	G, Gs(sl), Gp, Pr
149	33A16		Stornoway Diamond Corporation	Renard	Diamond	B (5,147:x), PEA
	Project description: In 2011, the company completed a feasibility study and an environmental and social impact study on the Renard diamond project. In 2012, the company was granted a mining lease from the MRN and a global certificate of authorization from the MDDEFP for the Renard project, and an agreement was reached with the Québec government for the financing of a road to the mine. In addition, a bulk sample of 5147 t was extracted from the Renard 65 pipe and sent to the dense media separation plant.					
150	33B02		Monarques Resources	Rosebay	Cu-Zn-Au	G, Pg
151	33B02, 03, 04		Goldcorp / Azimut Exploration	Wabamisk	Au-Ag-Cu-Zn-Pb-Mo	Pg, S, T
152	33B02, 03, 06, 33C08, 09, 10		Midland Exploration	Baie James Éléonore	Au	Pr

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TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
153	33B04, 05		Eastmain Resources	Clearwater	Au	D (107:4157), G, Gp, GpMa(A), Pr, S, T
<p>Project description: A new resource estimate was completed, integrating 28 523 m of drilling since the last estimate dated April 26, 2011. For the upper part of the Clearwater deposit, mineable by open pit, the measured and indicated resources total 4.168 Mt at 4.32 g/t Au (579 000 ounces) and the inferred resources amount to 2.4 Mt at 2.5 g/t Au (192 000 ounces). The cut-off grade is 0.5 g/t Au. For the lower part of the deposit, which would be mined underground, the measured and indicated resources total 703 000 t at 6.29 g/t Au (142 000 ounces) and the inferred resources are 4.031 Mt at 7.2 g/t Au (929 000 ounces). The cut-off grade is 2.5 g/t Au.</p>						
154	33B04, 33C01		Dios Exploration / Osisko Mining Corporation	AU33 West	Au	G, Gs(sl), Pr, S, T
<p>Project description: Rock and soil sampling work carried out in the summer of 2012 led to the discovery of at least 5 new gold showings in a felsic (tonalite-granodiorite) intrusive complex. The mineralization consists of 1 to 5% pyrite as disseminations and fracture fillings, associated with potassic alteration or silicification. The best results come from Trench T7 on the Heberto showing, where a channel sample assayed 5.0 g/t Au over 5.25 m.</p>						
155	33B05		Dios Exploration	Le Caron	Au	Gs(t), Pr
156	33B05, 33C08		Dios Exploration	Shadow	Au-Diamond	Gs(sl), Pr
<p>Project description: A humus geochemistry survey was conducted up-ice of a gold-bearing glacial dispersal train. The survey defined 12 geochemical anomalies for gold-arsenic-copper. The humus samples yielded values up to 45.7 ppb Au, 2700 ppb As and 402 000 ppb Cu.</p>						
157	33B12		Virginia Mines / Aurizon Mines	Éléonore East	Au-Cu	Gs, Pr, T
158	33B12, 13, 33C16		Golden Valley Mines / Sirios Resources	Cheechoo	Au	D (8:950), GpEl(G), GpEm(G), Pr
<p>Project description: All holes intersected a felsic (tonalite) intrusion, silicified and weakly mineralized with finely disseminated sulphides (pyrrhotite, arsenopyrite). Hole #1 yielded an interval of 0.645 g/t Au over 12.4 m and hole #2 encountered 0.72 g/t Au over 39.5 m.</p>						
159	33B12, 13, 33C09		Aurizon Mines / Azimut Exploration	Opinaca	Au	Gs(sl,t), GpEm(A), GpMa(A), S
160	33B12, 33C09		Goldcorp (Les Mines Opinaca)	Éléonore	Au	PEA(2011)
<p>Project description: The sinking of the Gaumond shaft is complete. The excavation of an exploration ramp is advancing and had reached 2 km long by October 25, 2012. Definition drilling of the mineralized lenses continues.</p>						
161	33C01		Critical Elements Corporation	Rose	Li-Ta	B (x:x), ES, FS, MT, TE
<p>Project description: In 2011, a new resource estimate was published. The Rose deposit contains indicated resources of 26.5 Mt at 0.98% Li₂O and 163 ppm Ta₂O₅ and inferred resources of 10.7 Mt at 0.86% Li₂O and 145 ppm Ta₂O₅. In 2012, the company initiated a feasibility study and an environmental impact study on the Rose (Ta-Li) mine project.</p>						
162	33C01, 02		Arianne Resources / Virginia Mines	Opinaca	Au-Cu-Zn	G, Gs(t), Pr, TE
163	33C01, 02, 07		Virginia Mines	Anatacau / Wabamisk	Au	G, Gs(t), Pr, S, T
<p>Project description: The Mustang gold-bearing vein was stripped, mapped and channel sampled. The best values included 23.28 g/t over 4.6 m in channel R6 on Trench TR045-049. Other centimetre- to decimetre-scale gold-bearing quartz veins were discovered just beyond the main stripping zone, and the samples obtained returned grades ranging from 1.6 to 27.6 g/t Au. The channel samples yielded results ranging from very low to 6.73 g/t Au over 2 m.</p>						
164	33C01, 02, 07, 08		Eastmain Resources	Reservoir	Cu-Au-Ag	G, Gs(r,sl), Pr
165	33C02, 03, 06, 07		RockTech Lithium	Kapiwak	Li-REE	G, Pr, S, T
166	33C03		J.P. Frigon	Lithium	Li-Au	GpMa(G)

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TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
167	33C03, 04		Typhoon Exploration	Nordair	Au-Cu	G, Pr
168	33C03, 06		Virginia Mines	Assini	Au	Gs, Pr, T
169	33C03, 06		Les Explorations Carat	Eastmain	Au	Gs(r), Pr, S
170	33C04, 05		Dios Exploration	Solo	Au	TE
171	33C07, 02		Virginia Mines	Sarcelles	Au	Gs, Pr, T
172	33C09		Beaufield Resources	Opinaca	Au	GpMa(A)
173	33C09, 10		Virginia Mines	Éléonore régional	Au	Gs, Pr, T
174	33F04		Eastmain Resources / Honeybadger Exploration	Radisson	Au	D(x:x), Pg, S, T
175	33F05, 12		Augyva Mining Resources / Century Iron Mines Corporation	Duncan Lake	Fe	D (x:x), ES, PEA, RRE,
	Project description: Since the last resource estimate in 2010, another 125 holes were drilled for a total of 44 007 m, which were used to produce an updated resource estimate for the Duncan Lake project. Using a cut-off grade of 16% Fe, the measured and indicated resources total 1050 Mt at 24.4% Fe and the inferred resources are 563 Mt at 24.7% Fe.					
176	33F09, 10		Virginia Mines	La Grande Sud	Au	D (5:3000)
	Project description: The holes tested the depth extension of the mineralized envelope of Zone 32. The envelope is characterized by strong silica and sericite alteration accompanied by weak concentrations of disseminated pyrite and chalcopyrite in the core of a tonalitic intrusion. The mineralized intervals include 1.93 g/t Au over 37 m in hole LGS-12-224.					
177	33G05, 06, 07, 11		Virginia Mines	Poste Lemoyne Extension	Au	D (15:1500), G, Pr
178	33G08, 33H05		Virginia Mines / Goldcorp	Corvet Est	Au	Pg
179	33G11, 33H 07, 08, 09, 10		Midland Exploration / Agnico-Eagle Mines	Lasalle / Lasalle A,B, C (Baie James Or)	Au-Ag-Cu-Zn- Pb-Ni	D (x:x), Gp, Gs, Pr
180	33H01, 08, 09		Virginia Mines	Escale-Trieste	Au	D (x:x), T
181	33H01, 08, 09		Virginia Mines	Trieste	Zn-Au	Pg, T
182	33H05, 06		Sirios Resources	Hipo	Au	G, Pr
183	33H08, 09		Virginia Mines	Nichicun	Au	D (X:3000), Gp, Pr, T
184	33H09		3098-7994 Québec / Somdra	Lac Duhesme	Au-Cu-Ag-Li	Gp, S
185	33H09		Trionex Recherches minérales	Sihawé	Au-Ag-Cu	S
186	33I02		Golden Tag Resources / Sirios Resources	Aquilon Main	Au	B (x:x)
FAR NORTH (figure 4.1)						
187	23M09, 10, 11		Virginia Mines / KGHM International	Gayot Lake	Cu-Ni-PGE	D (20:4263)
	Project description: The company drilled the Nancy and Gagnon showings. Hole GA-12-085 cut 14 m at 0.74% Ni, 0.12% Cu and 0.66 g/t Pd + Pt, including an interval of 8 m at 1.04% Ni, 0.18% Cu and 0.97 g/t Pd + Pt.					
188	34O01, 02, 34J09, 10, 15, 16		Azimet Exploration	NCG (Nunavik Copper Gold)	Cu-Au-Ag	Pr, S
	Project description: In May, the company published the results of its work in 2011. Twenty-one grab samples returned between 1.0 and 26.1 g/t Au, another 36 samples yielded values from 1.0 to 33.8 g/t Ag, and 21 samples returned between 0.1 and 0.66% Cu.					

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
189	34O07, 09, 10, 14, 15		Azimut Exploration / Aurizon Mines	Rex South	Cu-Au-Ag-W-Zn-Mo	Pr, S
	Project description: On the Augossan Zone, drill hole RS-11-28 cut a section of 6.1 m at 1.28 g/t Au, 8.41 g/t Ag, 0.12% Cu, 165 ppm Be and 118 ppm Sn. On the Copperton Zone, a grab sample (L253563) returned 3.86 g/t Au, 56.9 g/t Ag and 7.37% Cu.					
190	35A13, 35H04		Azimuth Exploration	Nantais	Au-Ag-Cu	Pr, S
	Project description: In April, the company announced the results of the work it carried out in 2011. A grab sample collected from outcrop assayed 16.7 g/t Au, 19.5 g/t Ag and 0.32% Cu (sample L253160). In 2012, 128 grab samples were collected and sample J351726 returned 15.15 g/t Au, 31.30 g/t Ag and 0.86% Cu.					
191	35B02, 03, 04, 05, 06, 07, 10, 11, 12, 13, 14, 35C09, 35O14, 15		Azimut Exploration	Rex	Cu-Au-Ag-W-Zn-Mo	Pr, S
LABRADOR TROUGH (figure 4.1)						
192	13L13, 13M12, 13, 14D04, 05, 24A01, 08		Midland Explorations	Ytterby	REE	D (7:1535), Gs(t), Pr
193	23N16, 23O09, 12, 13		New Millennium Iron Corporation / Tata Steel Minerals Canada	Ritchie Lake Taconite	Fe	RRE, FS
	Project description: A resource estimate was completed and the results announced in April 2012. The taconite deposit contains indicated resources of 3.330 Gt at 30.3% FeT and inferred resources of 1.437 Gt at 30.9% FeT. The last assays results for drill holes completed in 2011 were also announced in April. Drill hole 11LR1040D cut a section of 87.0 m at 33.01% FeT.					
194	23N16, 24C01, 02		Adriana Resources / WISCO International Resources Development & Investment	Otelnuke Lake	Fe	RRE, D (174:19 100), B, MT, ES, FS
	Project description: The company initiated an environmental and social impact and feasibility study on the Lac Otelnuke iron project in late 2012. In June, the company had published an updated mineral resource. Measured and indicated resources are 11.35 Gt at a grade of 28.9% FeT and inferred resources are 12.39 Gt at 30.4% FeT, calculated at a cut-off grade of 18% DTWR - Davis Tube Weight Recovery. Between May and October 2012, 174 drill holes totalling 19 100 m were completed.					
195	23O01		Rockland Minerals Corporation	Blue Lake	Cu-Ni-Pt-Pd	D (16:1558)
	Project description: Rockland Minerals published the preliminary results of 6 holes drilled on the Blue Lake project. Drill hole 903-12-003 returned 1.2% Cu, 0.46% Ni, 0.61 g/t Pd and 0.17 g/t Pt over 11 m.					
196	23O02		New Millennium Iron Corporation	Lac Thérèse	Fe	D (1:102)
197	23O02		New Millennium Iron Corporation	Lac Keough	Fe	D (1:102)
198	23O02, 23J15		Century Iron Mines Corporation / Champion Iron Mines / Labec Century Iron Ore	Attikamagen	Fe	RRE, B (30), MT, Rcd (74:7 807)
	Project description: In September, the partners published an inferred resource estimate totalling 1.723 billion tonnes at an average grade of 31.25% FeT for the Lac Hayot deposit, calculated at a cut-off grade of 20% FeT.					
199	23O03		New Millennium Iron Corporation	KeMag	Fe	RRE, D (24:3315)
200	23O03		Beaufield Resources	Schefferville	Au-Zn-Fe	TE, D (22:2 141)
	Project description: In November, the company announced the results of 22 drill holes completed over the course of the year, targeting 6 different areas, including the extensions of known deposits and gravimetric anomalies. Drill hole SC-12-16 intersected an interval of 147 m grading 34.24% Fe.					

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TABLE 4.3 - Exploration projects in the Baie-James and Nunavik regions in 2012 ⁽¹⁾ .						
No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
201	23O03, 05, 06		Century Iron Mines Corporation / WISCO International Resources Development & Investment	Sunny Lake (Rainy Lake and Le fer Lake Blocks)	Fe	MT, RRE, D (106:20 772)
Project description: The partners published preliminary resource estimates for the Rainy Lake or Full Moon deposit. Indicated resources are 7.26 Gt at 30.18% total iron and inferred resources are 8.69 Gt at 29.86% total iron, calculated at a cut-off grade of 20% total iron. Hole RL-12-0804 cut a section of 230.4 m at 29.82% FeT. A preliminary economic assessment should begin in early 2013.						
202	24C15, 16, 24F01		Commerce Resources Corporation	Eldor	REE-Ta-Nb-U-F	ES, PEA, RRE, FS, D (x:x), MT, B (30:x)
Project description: In March, the company published a new resource estimate. Measured resources total 1.59 Mt at 1.77% TREO, indicated resources amount to 27.67 Mt at 1.90% TREO and inferred resources are estimated at 219.8 Mt at 1.88% TREO, calculated at a cut-off grade of 1.25% TREO. The company also announced the positive results of a preliminary economic assessment for the project. Lastly, metallurgical testwork was carried out over the course of the year.						
203	24K13, 24N04, 05		Nickel North Exploration Corporation	Hawk Ridge	Ni-Cu-PGE	D (7:1055), G
Project description: In December, the company announced the results of drill holes completed over the Hopes Advance Main, Gamma and Gabbro zones. Drill hole HR-2012-01 intersected an interval of 35.6 m at 0.52% Cu, 0.22% Ni, 0.01% Co and 0.39 g/t PGE+Au and a section of 2.78 m at 2.19% Cu, 1.15% Ni, 0.05% Co and 1.02 g/t PGE + Au.						
204	24M01,08, 24N05		Oceanic Iron Ore Corporation	Hopes Advance	Fe	TE, PFS, S, G, D (5:120), GpMa(A,G), Gs(r)
Project description: The company completed a new resource estimate. Measured and indicated resources in the open pit are 1.268 billion tonnes at 32.3% Fe and inferred resources are 193 403 million tonnes at 32.9% Fe, calculated at a cut-off grade of 25% Fe. The company announced in September the results of the prefeasibility study on the Hopes Advance project. It presented an initial production scenario of 10 Mt starting in 2017 and a life of mine of 31 years. In addition, field work targeting the extensions of known zones produced many samples grading more than 25% Fe.						
205	33N02,01, 33K16		Niocan	Great Whale Iron	Fe	GpEm(A), GpMa(A)
206	35G11		Corvus Gold	Gerfaut	Au-Cu	S, Pr
Project description: The company discovered several Cu and Au mineralized zones that can be traced for a distance of 11 km. The exploration work carried out in 2012 distinguished two types of mineralization: the first corresponds to Cu-Au mineralization associated with a porphyry system. The second type is gold-bearing and associated with shear zones. The best results included sample RK127620 with grades of 0.1 g/t Au, 13 g/t Ag and 3.8% Cu.						
207	35G14, 11, 12		Khalkos Exploration	Nanuq	Au-Cu	S, Pr
Project description: During field work, 169 samples were collected from quartz-carbonate-sulphide veins. Sample #1 returned 35 g/t Au, 39 g/t Ag and 0.1% Cu.						
UNGAVA TROUGH (figure 4.1)						
208	35G09, 35H11, 12		Xstrata Canada Corporation - Xstrata Nickel Canada Division	Raglan Mine	Ni-Cu-Co-PGE	D (187:65 193), GpEm(B), GpEm(G)
TORNGAT OROGEN AND CORE ZONE (figure 4.1)						
209	24A08		Quest Rare Minerals	Strange Lake	REE-Y-Zr-Nb-La	PEA, RRE, MT
Project description: Quest published an updated mineral resource for the B Zone using a cut-off grade of 0.5% TREO. Indicated resources are 278.1 Mt grading 0.93% TREO, 1.92% ZrO ₂ , 0.18% Nb ₂ O ₅ and 0.05% HfO ₂ , and inferred resources total 214.4 Mt grading 0.85% TREO, 1.71% ZrO ₂ , 0.14% Nb ₂ O ₅ and 0.05% HfO ₂ . The company is proceeding with metallurgical tests over the course of the year.						

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TABLE 4.4 - Exploration projects in the Abitibi-Témiscamingue administrative region in 2012
(see figures 4.4,4.5 and 4.6)⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
Eastern part of region 08: Val-d'Or - Amos area						
1	31N12	Le Barroys	Diamond Frank Exploration	Commandant	Base metals, PGE	D(2:1594), GpEm(G), GpMa(G)
Project description: Prospecting work following a till sampling program led to the discovery of an outcrop of mineralized amphibolite for which the best grades were 0.7% Cu, 4.8 g/t Ag and 55 ppb Pd. Two drill holes mainly intersected strongly sheared diorite and greywacke units, cut by several intrusions of pyroxenite, gabbro and tonalite. Some centimetre-scale pyritic zones, with less than 1% chalcopyrite and pyrrhotite, were encountered. The best assays for the Ni-Cr-bearing sections were 1515 ppm Ni and 1440 ppm Cr. The best assays for the Ag-Zn-bearing horizons were 2.6 g/t Ag and 2890 ppm Zn.						
2	31N14	Villebon	P.-P. Perron	Guégen	Au-Cu	G, Rsi, Te
3	31N14, 32C03	Vauquelin	Richmont Mines	Simon (East and West)	Au	G, TE
4	32B04, 05, 32C01	Baudin, Bongard, Bourgmont, Trevet, Vasson	Cartier Resources	Cadillac Extension	(Cu-Zn-Ag-Au)-Bi	D (4:2666), GpEl(G), GpEm(B), GpMa(G), MT, RRE, TE
Project description: In 2011, a stripping and channelling program on the site of the Langlade polymetallic (Zn-Cu-Ag-Au) deposit revealed disseminated and massive sulphides over a surface area of 4000 m ² . The 2012 drilling program targeted the lateral and depth extensions of the mineralization. Drill hole LAN-11-02 intersected 0.6% Cu, 0.9% Zn, 30 g/t Ag and 0.2 g/t Au over 37.7 m, including some higher grade horizons: 2.8% Cu, 7.5% Zn, 97 g/t Ag and 0.7 g/t Au over 0.7 m.						
5	32B13	Souart	Revolver Resources	Macho	Au	TE
6	32B13, 32G04	Bailly, Barry	BonTerra Resources	Eastern Extension	Au	D (10:5917), Pr, RRE, S, TE
Project description: Following 12 543 m of drilling in 2011, BonTerra Resources completed a first resource estimate for the Eastern Extension property. Using a cut-off grade of 1.0 g/t Au, inferred resources amount to 4 337 000 t at 3.53 g/t Au (492 000 ounces). The mineralization consists of smokey quartz veins and sulphides (pyrite, pyrrhotite and chalcopyrite) injected in altered rocks (silica, carbonate, chlorite, tourmaline and sericite).						
7	32B13, 32G04	Barry, Souart	Metanor Resources / Oracle Mining Corporation	Barry-Souart	Au	GpEl(G)
8	32B13, 32G04	Barry, Urban	Metanor Resources	Barry Mine	Au	PEA
9	32C01	Pétain, Esperey	Les Investissements Pierre et Mica	Lac Néron 002	REE, Industrial minerals, Au, Ni, Cr, Ag	S, T
10	32C02	Tavernier	Exploration Aurtois	Stella	Au	D (23:6954), RRE, TE
Project description: In 2011, the company carried out stripping, mapping and drilling work on the Stella property. The drill holes aimed to validate and confirm the depth of the Main Zone of the former Lacomme mine containing historical resources of 179 369 t at 6.8 g/t Au. Results include 6.53 g/t Au over 1.15 m for drill hole STE06-11. The holes intersected mainly basalts, mafic tuffs and gabbros. Gold mineralization is hosted by sheared and silicified zones containing carbonates and albite, with variable amounts of pyrite and pyrrhotite and more rarely chalcopyrite, crosscut by veins of quartz +/- tourmaline.						
11	32C03	Louvicourt	Alexandria Minerals Corporation	Sleepy	Au	D (4:1000), G, Gs(h)
12	32C03	Louvicourt	Richmont Mines	Monique	Au	B (5000:x), D (13:4023), TE
Project description: Geotechnical, geomechanical, and hydrogeological studies were completed as part of the open pit mine study. Zones G and J contain indicated resources of 728 164 t at 2.35 g/t Au (55 112 ounces gold). A high-grade cap of 26 g/t Au was used. Mineralization occurs as a stockwork of quartz-carbonate-tourmaline veins in altered rocks carrying disseminated sulphides.						

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TABLE 4.4 - Exploration projects in the Abitibi-Témiscamingue administrative region in 2012
(see figures 4.4,4.5 and 4.6)⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
13	32C03	Louvicourt	Upper Canyon Minerals Corporation	Brosnor	Au	D (5:4400)
14	32C03	Pershing	Blue Note Mining / Critical Elements Corporation	Croinor 1	Au	PFS, RRE
<p>Project description: The objective of the 2011 drilling program was to increase the existing mineral resources eastward and westward. Among the best results: 7.03 g/t Au over 0.9 m (hole CR-11-379) in the east and 9.62 g/t Au over 2.5 m in the west. The updated prefeasibility study, which integrated the 2010 and 2011 drilling results, has been completed. Measured and indicated resources total 583 285 t at 6.64 g/t Au (124 503 ounces gold) and inferred resources amount to 105 876 t at 7.13 g/t Au (24 287 ounces gold). Mineralization occurs in 23 distinct zones consisting of quartz veins and their altered and pyritized wall rocks in a diorite sill.</p>						
15	32C03	Tavernier, Tiblemont	Globex Mining Enterprises	Tavernier	Au	G, S, T, TE
16	32C03	Vauquelin	Plato Gold Corporation / Globex Mining Enterprises	Nordeau West	Au	TE
17	32C03	Vauquelin	Plato Gold Corporation / Globex Mining Enterprises	Nordeau	Au	TE
18	32C03	Vauquelin	Threegold Resources / P.T. Coyle	South Bay	Au	D (18:1819), TE
<p>Project description: A drilling program was carried out to verify the extent of the main zone (North Zone). In 2011, a series of gold-mineralized outcrops, with maximum grades of 5.9 g/t Au, were discovered by prospecting about 250 m east of the North Zone. The best results include 1.01 g/t Au over 8.3 m (hole SB-11-01). Mineralization consists of strongly sheared, silicified and sericitized intermediate to felsic intrusives cut by folded quartz-pyrite veins.</p>						
19	32C03	Vauquelin	Richmont Mines	Chimo	Au	G, TE
20	32C03	Vauquelin, Louvicourt	Galahad Metals	Regcourt	Au	D (5:1572)
<p>Project description: In 2012, drill holes targeted near-surface, subhorizontal tension veins as well as the depth extension of veins associated with shear zones that were intersected by drilling in 2011. Mineralization consists of gold-bearing quartz-tourmaline veins associated with shear zones within a granodiorite dyke near drifts of the former Regcourt mine. The best results include 5.28 g/t Au over 3.0 m (hole RG12-02) and 11.08 g/t Au over 2.0 m (hole RG12-04).</p>						
21	32C03, 04	Pascalis, Louvicourt	Adventure Gold	Pascalis-Colombière	Au	D (37:12 343), RRE
<p>Project description: A drilling program near the former Lucien Béliveau gold mine led to the discovery of an ENE-trending network of gold-bearing structures dipping about 30 degrees to the south. The mineralization consists of disseminated pyrite in quartz-tourmaline veins cutting strongly altered rocks. Best results include 2.3 g/t Au over 51.1 m for drill hole PC-12-56. A new resource estimate is underway.</p>						
22	32C03, 06	Tiblemont, Tavernier	Adventure Gold	Mégiscane-Tavernier	Au	GpEI(G)
23	32C04	<i>Bourlamaque</i>	<i>White Tiger Gold / Century Mining Corporation</i>	<i>Lamaque Complex</i>	<i>Au</i>	<i>TE</i>
<p>Project description: Underground work at Lamaque was suspended on July 2, 2008 but started up again in January 2010. The first gold pour was on May 3, 2010. Production is from three distinct zones: Lamaque Flats, Bédard Dyke and North Wall. Definition drilling focused on the Lamaque Flats, North Wall and Sigma West zones. Proven and probable reserves are estimated to be 3.16 Mt at 4.41 g/t Au (448 000 ounces gold). However, production has been below the target rate of 2 000 t/d and the grade of the mined ore has been about 2.5 g/t Au, well below the grade of the mine reserves. Due to these problems, the mine ceased operations on May 25, 2012. The mineralization at Lamaque consists of shallow-dipping gold-bearing quartz veins ranging from 5 to 90 cm thick.</p>						
24	32C04	<i>Bourlamaque</i>	<i>QMX Gold Corporation</i>	<i>Lac Herbin Mine</i>	<i>Au</i>	<i>D (66:8190), MT(1806:6,37)</i>
<p>Project description: At the Lac Herbin mine of QMX Gold Corporation (formerly Alexis Minerals Corporation), drilling and development work continues in the Bonanza, FL, LH and S1 zones. Among the best results is drill hole LH03-316 (7.63 g/t Au over 10.5 m) in the Bonanza Zone, and drill hole AMAR-226 (25.9 g/t Au over 1.5 m) in the FL Zone.</p>						

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TABLE 4.4 - Exploration projects in the Abitibi-Témiscamingue administrative region in 2012 (see figures 4.4,4.5 and 4.6) ⁽¹⁾ .						
No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
25	32C04	Bourlamaque	Integra Gold Corporation	Lamaque	Au	D (45:35 000), G, MT, RRE
<p>Project description: In 2011, following a major drilling program, a new resource estimate was completed for the Plug No. 4, Forestel, Parallel and Triangle zones. The inferred resources now amount to 2.34 Mt at 6.91 g/t Au (518 643 ounces gold) and indicated resources total 0.8 Mt at 6.33 g/t Au (162 962 ounces gold). In 2012, a 30 000 metre drilling program commenced on these zones with the goal of increasing the resources. Best results include: 20.15 g/t Au over 5.0 m in Vein No. 6 (hole V6-12-12A), 31.41 g/t Au over 4.0 m in Plug No. 4 (hole P4-12-04), and 4.71 g/t Au over 10.0 m in the Triangle Zone (hole TN-12-06).</p>						
26	32C04	Bourlamaque	QMX Gold Corporation	Annamaque	Au	Gp(A)
27	32C04	Bourlamaque	Richmont Mines	Louvem 117	Au	D (3:900)
28	32C04	Dubuisson	Wesdome Gold Mines	Kiena Complex	Au	D (73:24 272), G
<p>Project description: Surface and underground exploration drilling intersected the Martin, VC, S-50 and Dubuisson zones. Two drill holes intersected the new Dubuisson North Zone, located about 190 m northeast of the Dubuisson Zone. Mineralized intervals include 16.75 g/t Au over 12.5 m in drill hole U-5941. Mineralization in the Dubuisson Zone occurs as stockworks of pyrite veins and disseminations in albitized diorite intrusions at the contact with feldspar-phyric dykes. A drilling program is targeting the depth extension of the S-50 Zone, at 300 m below the deepest level in the mine (1000 m). Drill hole U-5965B intersected 3.71 g/t Au over 4.5 m. The S-50 Zone is characterized by a network of albitized sills-breccias-dykes, located near a contact between basaltic and komatiitic lavas.</p>						
29	32C04	Dubuisson	Agnico-Eagle Mines	Goldex	Au-Ag	D (x:x), RRE
<p>Project description: On October 19, 2011, Agnico-Eagle Mines announced the suspension, for an indefinite period, of mining operations and gold production at the Goldex mine citing safety reasons. Fracturing of the hanging wall volcanics in the GEZ lens allowed water to infiltrate the mine. Following this announcement, Agnico-Eagle Mines reclassified the reserves of the Goldex mine as resources. A positive preliminary economic assessment for the development of the M and E zones was announced in July. Work has begun with the goal of starting mining operations in 2014 with a target production rate of 5 100 t/d at an average grade of 1.5 g/t Au and a life of mine of 4 years. The proven and probable reserves of the M Zone total 3.619 Mt at 1.62 g/t Au (189 000 ounces gold). The probable reserves of the E Zone total 2.910 Mt at 1.43 g/t Au (134 000 ounces gold).</p>						
30	32C04	Dubuisson	Wesdome Gold Mines	Dubuisson	Au	D (x:x)
<p>Project description: At 3 km east of the Kiena mine, a new gold zone (the Dubuisson Zone) was discovered in 2008. A drift at a depth of 330 m was extended to reach the zone. In 2011, the sinking of the shaft continued and definition drilling commenced. In 2012, two drill holes intersected the new Dubuisson North Zone, located 190 m northeast of the Dubuisson Zone. Mineralized intervals include 16.75 g/t Au over 12.5 m in drill hole U-5941. Mineralization consists of quartz-albite-tourmaline-pyrite veinlets in the core of albitized diorites and fractured feldspar porphyries.</p>						
31	32C04	Dubuisson	Adventure Gold / Agnico-Eagle Mines	Dubuisson	Au	D (6:2364)
32	32C04	Dubuisson	NioGold Mining Corporation	Val-d'Or	Au	GpMa
33	32C04	Dubuisson, Vassan	Alexandria Minerals Corporation / NioGold Mining Corporation	Siscoe East	Au	D (2:1016), TE
34	32C04	Louvicourt	Adventure Gold / Mazorro Resources	Lapaska	Au	D (5:1303)
<p>Project description: In 2011, a new resource estimate for the Lapaska Central Zone established the inferred resource as 219 590 t at 3.14 g/t Au (22 197 ounces gold), using a cut-off grade of 2.0 g/t Au. In 2012, drill holes intersected the Lapaska Central and West zones. Mineralization is associated with quartz-carbonate-tourmaline-pyrite veins, enclosed in silicified and magnetic felsic volcanics. Several drill holes intersected the network of veins over considerable thicknesses, such as 138.4 m grading 1.1 g/t Au in drill hole LP-11-39.</p>						
35	32C04	Louvicourt	Eloro Resources	Simkar	Au	D (19:8710)
<p>Project description: At the former Louvicourt Goldfields gold mine, the objective of the 2012 drilling program was to intersect the depth extension of the East Shear, 600 and South gold zones. Gold mineralization in the newly discovered South Zone consists of quartz tension veins at shallow depth cutting a single diorite intrusion or a series of diorite intrusions. Hole SK12-19 intersected 13.15 g/t Au over 0.5 m.</p>						

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TABLE 4.4 - Exploration projects in the Abitibi-Témiscamingue administrative region in 2012
(see figures 4.4, 4.5 and 4.6)⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
36	32C04	Louvicourt	Globex Mining Enterprises	Beacon East	Au	Pr
37	32C04	Louvicourt, Bourlamaque	Alexandria Minerals Corporation	Akasaba	Au-Ag-Cu	D (35:15 659), G, Gs(h), MT, RRE
<p>Project description: Drill hole IAX-12-195 yielded an interval of 14.97 m (true thickness) grading 4.71 g/t Au, including a section of 3.96 m at 12.48 g/t Au. A new resource estimate was published in March 2012. For an underground operation, indicated resources amount to 563 660 t at 5.91 g/t Au and inferred resources total 1 462 560 t at 5.29 g/t Au. For an open pit operation, indicated resources amount to 3 000 214 t at 1.37 g/t Au and inferred resources total 284 374 t at 1.76 g/t Au. Cut-off grades are 2.25 g/t Au and 0.5 g/t Au, respectively. In addition, a new Au-Ag-Cu zone (the West Zone) was discovered during drilling to the west, in the same horizon hosting the Akasaba deposit (1.18 g/t Au, 3.04 g/t Ag and 0.7% Cu over 118 m; drill hole IAX-12-200).</p>						
38	32C04	<i>Pascalis</i>	<i>Richmont Mines</i>	<i>Beaufor Mine</i>	<i>Au-Ag</i>	<i>D (x:34 000)</i>
<p>Project description: The construction of a ramp began in November 2011. The ramp will access the W gold zone near the mine and at shallow depth. Development in the W Zone is advancing. In the third quarter of 2012, about 846 m of the ramp had been completed. The gold mineralization consists of quartz-tourmaline-pyrite veins.</p>						
39	32C04, 32D01	Malartic, Fournière, Dubuisson, Vassan	NioGold Mining Corporation / Aurizon Mines	Marban Block	Au	D (104:35 313), ES, MT, RRE, TE
<p>Project description: A new resource estimate was completed for the Marban deposit. Using a cut-off grade of 0.35 g/t Au, the measured and indicated resources that can be mined by open pit amount to 20.7 Mt at 1.58 g/t Au (1.053 million ounces), and the inferred resources total 3.78 Mt at 1.6 g/t Au (194 000 ounces). Using a cut-off grade of 0.35 g/t Au, the measured and indicated resources that can be mined underground amount to 0.98 Mt at 2.82 g/t Au (89 000 ounces), and the inferred resources total 800 000 t at 2.68 g/t Au (69 000 ounces).</p>						
40	32C05	Barraute, Fiedmont	Threegold Resources	Marcotte	Au	GpEm(A), GpMa(A)
41	32C05	La Corne	Canada Lithium Corporation	Québec Lithium	Li	FS, RRE
<p>Project description: In 2012, measured and indicated resources were estimated at 33.24 Mt at 1.19% Li₂O and inferred resources at 13.76 Mt at 1.21% Li₂O, using a cut-off grade of 0.80% Li₂O. The envisioned scenario is open pit mining with a production rate of 2950 t/d, with production expected to start in 2013 and a life of mine of at least 14.8 years, possibly up to 30 years. Pre-stripping work, waste rock removal, and the construction of the first phase of the tailings management facilities are now underway at the deposit. Commissioning of the mine and the spodumene processing plant were announced on December 20, 2012. Commercial production at the Québec Lithium deposit is scheduled for the first quarter in 2013.</p>						
42	32C05	Lacorne, Fiedmont	Jourdan Resources	Vallée Lithium	Li, REE	D (21:4256)
<p>Project description: A drilling program traced spodumene pegmatites over a lateral distance of 1.8 km. The pegmatites are similar to those of the Québec Lithium deposit, located 2 km to the east. The best results include: 1.03% Li₂O over 4.63 m (hole VAL11-17) and 1.187% Li₂O over 5.5 m (hole VAL11-20).</p>						
43	32C05	Landrienne	Cogitore Resources	Landrienne	Base metals	TE
44	32C05, 06	Courville, Fiedmont, Carpentier	Pershimco Resources / Osisko Mining Corporation	Courville	Au - Tonalite	D (24:6049), G, GpEl(G), GpMa(A), TE
<p>Project description: Two drill holes targeting IP geophysical anomalies on the Esteville Block intersected gold mineralization. Drill hole PO12-020 intersected, near the surface, 0.59 g/t Au over 40 m, including 1.48 g/t Au over 10.5 m.</p>						
45	32C05, 32D08	La Corne	RockTech Lithium	Lacorne Lithium	Li, Ni	Pr, RRE, S
46	32C05, 32D08	Malartic, La Motte, La Corne, Vassan	Romios Gold Resources	La Corne Molybdenum	Mo-Li-Mica	TE
<p>Project description: A drilling program in December 2010 targeted an area centred on the former La Corne molybdenite mine (1951-1972) for its potential to host a deposit amenable to open pit mining. Results were published in January 2012. The best results include 100.9 m at 0.061% MoS₂, 0.013% Bi, 0.047% Li and 0.879 g/t Ag in drill hole RQ-10-06.</p>						
47	32C06	Tiblemont	Corporation Exploration Îledor / Les Explorations Carat / J. Robert	Îledor	Au	D (5:1862)
<p>Project description: Drilling near the old Tiblemont Consolidated shaft intersected a granodiorite intrusion cut by diorite dykes. Drill holes intersected veins of quartz-carbonate-albite +/- tourmaline. Pyrite is mainly present in the wallrocks of the veins. The best results include: 3.79 g/t Au over 6.09 m (hole TIB-01-12) and 23.68 g/t Au over 0.58 m (hole TIB-03-12).</p>						

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.4 - Exploration projects in the Abitibi-Témiscamingue administrative region in 2012 (see figures 4.4,4.5 and 4.6) ⁽¹⁾ .						
No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
48	32C11	Carpentier	Hinterland Metals	Mozart	Au	D (7:1186), GpEl(A), GpMa(A)
Project description: Drilling along the Carpentier-Courville deformation corridor intersected intermediate tuffs intercalated with siltstone carrying massive sulphide horizons. Gold mineralization is associated with intervals of sheared and brecciated quartz diorite cut by quartz-carbonate veins. The best drilling intersection was 0.38 g/t Au over 6.0 m in hole MZ11-03.						
49	32C11	Rochebeaucourt	Threegold Resources	Charlemagne	Au	GpEm(A), GpMa(A)
50	32C11, 12, 13, 14	Despinassy, Rochebeaucourt	Alto Ventures	Destiny	Au	D (15:3472)
Project description: At the DAC deposit, a new resource estimate was published in 2011. It included 7600 m of drill holes completed since the previous resource estimate from 2007. Using a cut-off grade of 0.5 g/t Au, the DAC deposit contains, from surface to a depth of 400 m, indicated resources of 10.8 Mt at 1.05 g/t Au (364 000 ounces gold) and inferred resources of 8.3 Mt at 0.92 g/t Au (247 000 ounces gold). The objective of the 2012 drilling program was to test the area between the DAC deposit and the Darla Zone. Among the most significant results: 11.3 g/t Au over 8.0 m (hole DES12-147).						
51	32C12	Barraute	Abcourt Mines	Abcourt-Barvue	Ag-Zn	D (x:x)
Project description: A drilling program has been underway since 2010 to increase the resources and reserves on the Abcourt-Barvue property. In 2012, the program focused on the western part of the property. Results include 388.45 g/t Ag and 3.02% Zn over 8.5 m in drill hole AB11-71.						
52	32C12	Barraute	Threegold Resources	Barraute	Au	GpEm(A), GpMa(A)
53	32C12	Duverny	Tres-Or Resources / Aurizon Mines / Globex Mining Enterprises	Duvay	Au	B (x:x), D (x:x), GpEm(A,G), GpMa(G), Gs, Pr, S, T, TE
54	32C12	Duverny	Tres-Or Resources / Aurizon Mines / Globex Mining Enterprises / Merrex Gold	Fontana	Au	G, GpEm(A), GpMa(A,G), Gs, Pr, S, TE
55	32C12	Duverny	Threegold Resources	Rousseau East	Au	GpEm(A), GpMa(A)
56	32C12	Duverny, La Morandière, Castagnier	Aurizon Mines	Duverny	Au	D (21:4441)
Project description: Two of the 21 drill holes intersected gold mineralization. The best results include 8.4 g/t Au over 3.5 m and 11.7 g/t Au over 1.5 m.						
57	32C12	Duverny, Dalquier	Bowmore Exploration	Duverny Gold	Au	D (x:3000), G, GpEm(A), Pr, S
Project description: Two samples from historical trenches in the central part of the property, several hundred metres north of the Crésus-Silverny gold showing, yielded values of 1.35 g/t Au over 3.4 m and 1.76 g/t Au over 2.4 m. The Duverny property is characterized by rusty coloured iron carbonate alteration zones covering an area of 18 km ² .						
58	32C12	Duverny, La Morandière	Threegold Resources / Bowmore Exploration	Standard Gold	Au	D (10:3600), G, GpEm(A), GpMa(A), S
Project description: A drilling program was started in 2012 on the property. The objective was to validate historical data for a strongly ankeritized dyke near the Standard Gold deposit. Among the results, drill hole SG11-01 intersected 0.59 g/t Au over 44 m.						
59	32C12	Vassal, La Morandière	Alto Ventures	Dolsan	Au	GpEm(A), GpMa(A)
60	32C12, 13	Castagnier	Alto Ventures	Obalski	Au	GpEm(A), GpMa(A)

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TABLE 4.4 - Exploration projects in the Abitibi-Témiscamingue administrative region in 2012 (see figures 4.4,4.5 and 4.6) ⁽¹⁾ .						
No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
61	32C14, 32F03	Laas, Tonnancour	Maudore Minerals	Cedar-Rapids	Au	D (3:570)
62	32C15	Tonnancour, Josselin, Holmes	Globex Mining Enterprises	Tonnancour	Base metals	G, Gp, Pr, TE
63	32D01	Fournière	Osisko Mining Corporation	Canadian Malartic	Au	D (x:2632), G, Pr, T
<p>Project description: In 2011, a new reserve and resource estimate for the Canadian Malartic and Barnat South deposits was published. The estimate also incorporated new resources defined by the drilling program already underway, notably in the Barnat Extension and Gouldie zones. The proven and probable reserves were established at 343.7 Mt at 0.97 g/t Au (10.7 million ounces). The out-of-pit indicated resources are 47.6 Mt at 0.77 g/t Au (1.18 million ounces gold) and the global inferred resources are 33.9 Mt at 0.78 g/t Au (0.85 million ounces gold). The first gold pour took place on April 13. The official opening of the mine took place on Monday May 30, 2011, and the start of commercial production on May 19, 2011. The 500 000th ounce of gold at the mine was produced on October 9, 2012.</p>						
64	32D01	Fournière	Osisko Mining Corporation / Abitibi Royalties	Malartic CHL, Jeffrey Zone	Au	D (x:5963), RRE
<p>Project description: Definition drilling on the Jeffrey Zone was carried out on sections spaced 25 m apart over an E-W length of 400 m and a N-S width of 135 m. In January, the partners announced a new resource estimate for the western part of the Jeffrey Zone. The deposit contains indicated resources of 5.81 Mt at 0.70 g/t Au (130 760 ounces) and inferred resources of 1.76 Mt at 0.58 g/t Au (32 820 ounces), calculated at a cut-off grade of 0.265 g/t Au. The Jeffrey gold zone, situated over the southern limit of the Cadillac Tectonic Zone, consists of disseminated pyrite in quartzo-feldspathic porphyry dykes affected by potassic alteration, mainly in contact with ultramafic lavas and lesser amounts of sedimentary rocks and gabbro-diorite intrusions.</p>						
65	32D01	Fournière	Abitibi Royalties / Osisko Mining Corporation	Gouldie and Charlie	Au	RRE
<p>Project description: The Gouldie and Charlie gold deposits occur to the south of the nearby Canadian Malartic deposit currently being mined. They contain proven and probable reserves of 3 651 736 t at 1.0 g/t Au (117 863 ounces). Measured and indicated resources total 3 484 534 t at 0.842 g/t Au (94 290 ounces), and inferred resources amount to 907 300 t at 0.807 g/t Au (23 541 ounces).</p>						
66	32D01	Fournière	Osisko Mining Corporation	Barnat	Au	D (x:3450)
67	32D01	Malartic	Osisko Mining Corporation	East-Amphi	Au	D (x: 3213)
68	32D01	Malartic	Globex Mining Enterprises	Parbec	Au	TE
69	32D01	Malartic, Fournière	NioGold Mining Corporation	Malartic Block	Au	D (22:5713)
<p>Project description: Drill holes intersected the Ludovick gold-bearing shear zone at 2.7 km west of the former Camflo mine, as well as sediments of the Cadillac Group along cross-sections. The Ludovick Zone, which has been traced over a distance of 1.3 km, consists of altered sedimentary rocks carrying veins and sulphide mineralization. It yielded gold grades of 23.4 g/t Au over 1.0 m (hole CW-12-083). Further south, in Cadillac Group sediments, drill hole CW-12-087 intersected an interval grading 22.2 g/t Au over 1.0 m.</p>						
70	32D01, 08	Malartic, Cadillac	NioGold Mining Corporation	Héva	Au	D (4:1071), TE
71	32D08	Figury	Les Explorations Carat	Figury	Au	TE
72	32D08	La Motte	Glen Eagle Resources / Globex Mining Enterprises	Authier Lithium	Li	D (20:2400), ES, RRE, TE
<p>Project description: A new resource estimate has been completed for the property following drilling in 2010-2012. Using a cut-off grade of 0.5% Li₂O, measured and indicated resources amount to 7.387 Mt at 0.97% Li₂O and inferred resources total 572 000 t at 0.98% Li₂O. Among the best results for the 2012 holes that intersected the spodumene pegmatite was 25.5 m at 1.2% Li₂O, including an interval of 6.0 m at 1.67% Li₂O (hole AL-12-20). A preliminary economic assessment is underway.</p>						
73	32D09	Dalquier	Abcourt Mines	Jonpol	Base metals	D (x:x)
<p>Project description: In 2011, eight drill holes aimed at intersecting the western extension of a silver-bearing zone. The grades, published in early 2012, were low. The last drill hole intersected a mineralized zone with grades of 0.24% Zn and 267.5 g/t Ag at a depth of 100 m, at the contact between rhyolite and a tuff.</p>						

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TABLE 4.4 - Exploration projects in the Abitibi-Témiscamingue administrative region in 2012
(see figures 4.4,4.5 and 4.6)⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
74	32D09	Dalquier	Threegold Resources	Rousseau West	Au	GpEm(A), GpMa(A)
75	32D09	Dalquier	Threegold Resources	Dalquier	Au	TE
76	32D09	Dalquier, Béarn	Threegold Resources	Collines Béarn	Au	TE
Western part of region 08 : Rouyn-Noranda - La Sarre - Témiscamingue area						
77	31L04, 16		X-TERRA Resources Corporation	Lindsay	REE-Th-U	
78	31L10, 14, 15	Gendreau, Mercier	Matamec Explorations	Zeus	REE-Nb	D (210:17 578), RRE, PEA, FS, TE, MT, ES, Min, B (20:x)
Project description: In all, the company completed 16 158 m of diamond drilling since May 2012. The work led to the discovery of three new showings: Certitude Nord, Makwa and Pakwa. In October, 15 short holes were drilled on the PS Zone located 2 km southeast of the Kipawa deposit. A feasibility study was initiated in May 2012, and in July, Matamec signed a partnership agreement with Toyotsu Rare Earth Canada to advance the project. Metallurgical tests were carried out over the course of the year.						
79	31L15, 16, 31M01, 02	Booth, McLachlin, Senezergues	Forum Uranium Corporation / Aurizon Mines	Kipawa West	Au-REE	S
Project description: Samples from 5 boulders and a subcropping zone located 7 km west of the Matamec deposit included sample #78690061 with 14.24% TREO and 0.02% ZrO ₂ , and sample #78690036 with 5.58% TREO and 0.04% ZrO ₂ .						
80	31L16	Villedieu	Globex Mining Enterprises	Turner Falls	REE-Y	D (x:x)
81	31L16	Villedieu	Fieldex Exploration	Lac Sairs Kipawa	REE-Nb-Zr-Y	D (7:1335)
Project description: Seven drill holes were completed in February 2012. Drill hole LS-12-22 yielded an interval of 19.55 m grading 1.10% TREO.						
82	31M07	Guillet	Conway Resources	Belleterre Mine	Au	B (27:x), T, S
83	31M07	Guillet	Exploration Aurtois	New Extrême Est	Au	TE, D (x:x)
84	31M07	Guillet	Les Mines J.A.G.	Belleterre	Au	Pr
85	32D01	Bousquet	Agnico-Eagle Mines	Ellisson-Bousquet	Au	RRE, D (x:x)
86	32D01	Cadillac	Agnico-Eagle Mines	Lapa Mine	Au	D (x:11 524)
87	32D01	Cadillac	Globex Mining Enterprises / Queenston Mining	Wood-Pandora	Au	D (9:5601)
Project description: Drill hole W12-99B intersected an interval of 41.0 m at 3.81 g/t Au including a section of 9.1 m at 12.60 g/t Au.						
88	32D01	Cadillac	Midland Exploration / Agnico-Eagle Mines	Maritime-Cadillac	Au	D (2:1485)
Project description: Drill hole 141-12-33 intersected a section of 5.3 m at 0.97 g/t Au, including 1.6 m at 2.2 g/t Au, and another section of 5.9 m at 2.7 g/t Au, including 2.5 m at 5.4 g/t Au.						
89	32D01	Cadillac	Radisson Mining Resources	O'Brien-Kewagama	Au	D (x:3000), TE, Ramp
Project description: In April, the company published the results for several drill holes, including RM 11-16 that cut an interval of 28.4 m at 2.73 g/t Au, including 3.2 m at 16.2 g/t Au.						
90	32D02	Bousquet	IAMGOLD Corporation	Bousquet-Odino	Au	D (x:6 000), GpMa(A), GpEm(A), Gs(sl), T
91	32D02	Bousquet	IAMGOLD Corporation	Westwood	Au	D (x:x), RRE
Project description: In April, the company published a new resource estimate. The indicated resources of the Warrenmac lens are 219 000 t at 8.5 g/t Au, and Zone 2 at Westwood has indicated resources of 560 000 t at 13.8 g/t Au and inferred resources of 9.411 Mt at 11.3 g/t Au. The start of production is scheduled for early 2013 and the expected life of mine is 19 years.						

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TABLE 4.4 - Exploration projects in the Abitibi-Témiscamingue administrative region in 2012
(see figures 4.4,4.5 and 4.6)⁽¹⁾.

No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
92	32D02	Joannès	Aurizon Mines	Joanna	Au	FS, RRE, MT, TE, D (143:53 234)
<p>Project description: Drilling over several parts of the property yielded the following results: on the Heva Zone, drill hole JA-12-1070 cut 3.9 m (true thickness) at 13.8 g/t Au; on the Heva East Zone, hole JA-12-1092 yielded an interval of 3.9 m (true thickness) at 6.9 g/t Au; on the Hosco West Extension Zone, hole JA-12-1080 yielded a section of 6.6 m (true thickness) at 5.0 g/t Au. In June, the company announced the positive results of the feasibility study on the project. The scenario provides for 8500 t/d of ore processing, an annual production of 110 000 ounces of gold, and a life of mine of 13.4 years. The company has decided to delay the start-up of mining operations to concentrate on the zones further to the west on the property.</p>						
93	32D02	Joannès	QMX Gold Corporation	Cmb-Routhier	Au	D (1:321)
94	32D02	Joannès	QMX Gold Corporation	Lac Joannès	Au	D (2:576)
95	32D02	Bousquet	Fieldex Exploration	Bousquet	Au	Pr
96	32D02	Joannès	Newbaska Gold and Copper Mines	Davidson Creek (Joannes)	Au-Cu-Ag	D (3:459)
97	32D02, 03	Rouyn	Gold Bullion Development Corporation	Granada Mine	Au	RRE, D (17:8 353), MT, TE, PEA
<p>Project description: In November, the company announced a new resource estimate. Measured and indicated resources were established as 47.475 Mt at 1.05 g/t Au and inferred resources as 29.975 Mt at 1.07 g/t Au, calculated at a cut-off grade of 0.4 g/t Au. In December, the company announced the positive results of the preliminary economic assessment. The study proposed a milling rate of 1000 tonnes of ore per day at a grade of 3.51 g/t Au from the underground operations, and 6500 t/d at 1.07 g/t Au from the open pit. The life of mine is 11 years with an annual production of 102 000 ounces gold. Drill hole GR-12-400 cut a section of 85.50 m grading 0.45 g/t Au.</p>						
98	32D03	<i>Beauchastel</i>	<i>Richmont Mines</i>	<i>Francoeur</i>	<i>Au</i>	<i>D (x:9 100), RRE</i>
<p>Project description: In early July, the results of a new resource estimate were announced. The mine contains proven and probable reserves 504 687 t at 4.78 g/t Au for a total of 77 580 ounces of gold. Measured and indicated resources are 33 301 t at 4.20 g/t Au (4499 ounces gold) and inferred resources are 41 240 t at 4.35 g/t Au (5771 ounces gold), calculated at a cut-off grade of 3.75 g/t Au. The start of commercial production was announced on August 1, 2012. In a press release dated November 29, 2012, the company announced the immediate cessation of production at the mine and the complete closure and dismantling of the installations, which should take about four months.</p>						
99	32D03	Beauchastel	Richmont Mines	Globex Option	Au	D (13:8 848)
100	32D03	Beauchastel	Richmont Mines	Wasamac	Au	RRE, TE, MT, D (86:42 809)
<p>Project description: Drill hole WS-282-02 intersected 52.80 m grading 6.40 g/t Au. On November 29, 2012, the company announced it is continuing with technical studies on the project, but that exploration and development work have been suspended for the time being.</p>						
101	32D03	Beauchastel	Visible Gold Mines / Cadillac Mining Corporation	Wasa Creek	Au	D (10:5698)
<p>Project description: Drill hole WC-12-01 intersected an interval of 4.10 m at 21.75 g/t Au. Drill hole WC-12-05 intersected an interval of 7.50 m at 3.22 g/t Au.</p>						
102	32D03	Beauchastel	Visible Gold Mines / Cadillac Mining Corporation	Wasa East	Au	D (3:564)
<p>Project description: Drill hole WE-12-04 ext. intersected an interval of 0.60 m at 5.77 g/t Au.</p>						
103	32D02, 03	Beauchastel, Rouyn	Yorbeau Resources	Rouyn	Au	D (36:14 415), RRE, TE, Pr
<p>Project description: Drilling on the Lac Gamble Zone yielded, among other results, a section of 15.0 m at 3.7 g/t Au, including 1.0 m at 20.0 g/t Au, in drill hole 12-GA-593.</p>						
104	32D03, 04	Dufay	Lakeside Minerals (Mundiregina)	Dufay	Au-Cu	TE, Gp
105	32D05, 06	Hébécourt, Montbray	Golden Bridge Mining Corporation	Hebecourt	Au-Ag-Cu-Zn	D (4:450), GpEm(A), G, S

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No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
106	32D06	Beauchastel	Mines Abcourt	Elder-Tagami Mine	Au	TE, PEA, RRE, D (x:x), Dewatering
<p>Project description: A resource estimate for the Elder and Tagami deposits was completed during the year. The Elder deposit contains measured and indicated resources of 1 183 878 t at 6.58 g/t Au and inferred resources of 412 668 t at 5.76 g/t Au. The Tagami deposit contains measured and indicated resources of 173 162 t at 6.54 g/t Au and inferred resources of 175 384 t at 5.69 g/t Au. On November 5, the company published the results of a positive preliminary economic assessment. The project scenario presented a life of mine of 10.4 years at a production rate of 150 000 t/yr and an average grade of 5.48 g/t Au.</p>						
107	32D06	Duprat	QMX Gold Corporation	Lac Laynes	Au-Ag-Cu-Zn	GpEm(G)
108	32D06	Montbray	QMX Gold Corporation	Lac Fabie	Au-Ag-Cu-Zn	GpEm(G)
109	32D06	Dufresnoy	QMX Gold Corporation	Nord Macamic Highway	Au-Ag-Cu-Zn	D (1:324)
110	32D06	Duparquet	QMX Gold Corporation	Lac Mackay-Lac Dery	Au-Ag-Cu-Zn	GpEm(G)
111	32D06	Dasserat	Rocmec Mining	Rocmec 1	Au	Gp, S
112	32D06	Dasserat	Richmont Mines	Lac Labyrinthe	Au	G
113	32D06	Dasserat	Richmont Mines	Lac Arnoux	Au	GpEI
114	32D03	Dasserat	Richmont Mines	Lac Boissier	Au	G
115	32D03	Dasserat	Richmont Mines	Lac Fortune	Au	TE
116	32D03	Dasserat	Vantex Resources (acquired from Golden Share)	Lac Fortune West	Au	
117	32D03	Dasserat	Richmont Mines	Arncoeur	Au	G
118	32D06	Dasserat	Vantex Resources (acquired from Golden Share)	Galloway	Au	D (10:2900), Gp(A), RRE
<p>Project description: The company announced a new resource estimate for the Galloway-Pitchvein deposit, which concluded that indicated resources amount to 18 140 000 t at 0.41 g/t Au for a total of 240 000 ounces gold and inferred resources amount to 2 510 000 t at 0.39 g/t Au for a total of 32 000 ounces gold. Drill hole VPE12-50 cut sections of 6.20 m at 59.51 g/t Au and 5.05 m at 5.09 g/t Au.</p>						
119	32D06	Duparquet	Xmet	Pitt Gold	Au	RRE, TE
120	32D06	Duprat	Falco Pacific Resource Group (formerly Druk Capital Partners) / QMX Gold Corporation	Lac Rémillac	Au-Ag-Cu-Zn	GpEm(G)
121	32D06	Duprat	Falco Pacific Resource Group (formerly Druk Capital Partners)	Flavrian	Au	D (5:1 500)
122	32D06	Montbray	Falco Pacific Resource Group (formerly Druk Capital Partners)	Ruisseau St-Pierre	Au-Ag-Cu-Zn	GpEm(G)
123	32D06	Hébécourt, Montbray	Golden Bridge Mining Corporation / Northern Skye Resources	Hébécourt	Au-Ag-Cu-Zn	D (4:445), Gp(A), Pr, G, S
124	32D06	Hébécourt	Mag Copper	Magusi	Au-Ag-Cu-Zn	D (13:4591), TE, RRE, MT
<p>Project description: A new resource estimate was published in September, modifying the information published several months earlier. The deposit contains indicated resources of 1.309 Mt at 1.99% Cu, 4.12% Zn, 42.8 g/t Ag and 1.27 g/t Au and inferred resources of 355 000 t at 3.41% Cu, 0.39% Zn, 24.2 g/t Ag and 0.26 g/t Au. Drill hole MD-12-02 cut an interval of 24.13 m (true thickness) at 1.08% Cu, 1.23% Zn, 0.34 g/t Au and 25.63 g/t Ag.</p>						
125	32D06	Duprat	Falco Pacific Resource Group (formerly Druk Capital Partners) / QMX Gold Corporation	Rivière Mouilleuse	Au-Ag-Cu-Zn	GpEm(G)

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No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
126	32D06	Montbray	Falco Pacific Resource Group (formerly Druk Capital Partners)	Lac Montbray-Four Corners	Au-Ag-Cu-Zn	GpEm(G)
127	32D06, 11	Duparquet, Hébécourt	IAMGOLD Corporation	Porcupine	Au	D (x:2500), Pr
128	32D06, 11	Duparquet, Destor	Xmet / Globex Mining Enterprises	Duquesne-Ottoman	Au	RRE, D (3:1114), MT, T, S
Project description: Drill hole DQ04-23W intersected an interval of 4.5 m at 12.41 g/t Au.						
129	32D07	Aiguebelle	Typhoon Exploration / Agnico-Eagle Mines	Aiguebelle-Goldfields	Au	D (x:x)
130	32D07	Aiguebelle, Cléricy, Destor	Typhoon Exploration / Aurizon Mines	Fayolle	Au-Ag	D (8:7136), RRE, MT, TE, PEA
Project description: The partners completed a new resource estimate. The deposit contains indicated resources of 1 814 800 t at 2.7 g/t Au for 156 000 ounces of gold, calculated at a cut-off grade of 0.8 g/t Au. Metallurgical tests were carried out on two composite samples; recovery was 94-97%. Eight drill holes completed in the winter of 2012 yielded, among other results, a section of 4.0 m at 5.87 g/t Au in hole FA-12-93.						
131	32D07	Aiguebelle, Destor	Typhoon Exploration / Diamond Frank Exploration	Destorbelle	Au	G, S
132	32D07	La Pause	Diamond Frank Exploration	GoldPeak	Au	G, S
133	32D07	Destor	IAMGOLD Corporation	Lepine-Bassignac	Au	D (x:2682), GpMa(A)
134	32D07	Dufresnoy	QMX Gold Corporation	Collines Camac	Au-Ag-Cu-Zn	D (1:300)
135	32D07	La Pause	Cartier Resources	La Pause	Au	GpEm(G), D (x:x)
136	32D07	La Pause, Cléricy	Midland Exploration / Aurizon Mines	Patris	Au	D (2:x), GpEm(G), GpMa(G)
Project description: Drill hole PAT-11-15 cut a section of 17.0 m at 0.48 g/t Au, including an interval of 4.0 m at 0.94 g/t Au and another interval of 3.0 m at 0.86 g/t Au. Stripping on the KE-3 showing was channel sampled, yielding a result of 1.65 m at 1.6 g/t Au						
137	32D08	<i>Cadillac</i>	<i>Agnico-Eagle Mines</i>	<i>LaRonde Extension</i>	<i>Cu-Zn-Au-Ag-Pb</i>	<i>D (x:x)</i>
138	32D08	<i>Cadillac</i>	<i>Agnico-Eagle Mines</i>	<i>Mine LaRonde</i>	<i>Cu-Zn-Au-Ag-Pb</i>	<i>D (x:x)</i>
139	32D09	Launay, Trécesson	Royal Nickel Corporation	Dumont	Ni-PGE	MT, FS, RRE, TE, ES, D (x:x), G, Gs
Project description: Metallurgical tests were carried out over the course of the year. The results indicated the potential to produce an iron (magnetite) concentrate as a by-product of processing nickel ore. In May, the company announced the positive results of a revised prefeasibility study, and the granting of a contract for a feasibility study on the project. In November, the company filed an environmental and social impact study for evaluation.						
140	32D09	Trécesson	Knick Exploration / Carat Exploration	Trecesson Gold	Au	S, T, G, Pr, GpMa(G), GpEm(G)
Project description: Grab sampling in the vicinity of the former Chib-Kayrand mine and Vein #7 yielded 14.13 g/t Au and 6.27 g/t Au. Vein #7 was traced over a distance of 45 m by a series of trenches. A grab sample from a quartz vein containing grains of visible gold and galena masses yielded 420.37 g/t Au. This vein, Vein # 9, can be traced for 250 m.						
141	32D10	Launay	Lakeside Minerals (Mundiregina)	Launay	Au	Pg, S, GpMa(G), GpEm(G), D (13:3981), Gs(h), T
Project description: In July, the company announced the results of prospecting work carried out in 2011. Channel #740322 yielded 1.0 m at 12.55 g/t Au, and grab samples returned values that include 27.70 g/t Au (#740304) and 9.10 g/t Au (#740307). In January 2013, the company announced the first results of drilling on the Trojan Block that was carried out in late 2012. Drill hole LKTR-004 yielded a section of 18.00 m at 1.65 g/t Au, including an interval of 1.50 m at 7.08 g/t Au.						

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.4 - Exploration projects in the Abitibi-Témiscamingue administrative region in 2012 (see figures 4.4,4.5 and 4.6) ⁽¹⁾ .						
No.	NTS	TOWNSHIPS	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
142	32D10	Launay	Melkior Resources	Launay	Au	D (10:990), S
143	32D10	Poularies, Privat	Xmet	Authier	Au-Cu-Zn	S
144	32D10	Privat	Trijet Mining Corporation	Letourneur	Au	D (x:x)
145	32D11	Destor	Xmet / Clifton Star Resources	Duquesne	Au	GpEm(G)
146	32D11	Duparquet	Clifton Star Resources	Donchester	Au-Ag	D (x:x), RRE, TE, FS
Project description: Diamond drilling was completed within and east of the planned Donchester pit. Hole D12-34, drilled within the planned pit outline, intersected an interval of 36.6 m at 2.59 g/t Au including a zone of 14.1 m at 4.77 g/t Au.						
147	32D11	Duparquet	Clifton Star Resources	Duparquet	Au	D (x:33 036)
Project description: The preliminary results of a positive economic assessment were announced on January 15, 2013. According to the study, which focused exclusively on mining the entire Duparquet property by open pit, the proposed mining scenario involves an 8000 t/d mining rate, an average annual production of 104 400 ounces of gold, and a life of mine of 16 years.						
148	32D11	Duparquet	Clifton Star Resources	Hunter	Cu-Zn-Ag	GpEm(G)
149	32D11	Duparquet	Clifton Star Resources	Mine Beattie	Au-Ag	D (84:30 226), RRE, MT, TE, PEA
Project description: In April, the company announced the results of metallurgical testing on the Beattie mine tailings. Recovery reached 83.5% and the average grade of the processed material was 1.18 g/t Au. Diamond drilling is continuing both within the delineated pits and outside the modelled pits. Drill hole BD12-18 yielded an interval of 36.0 m at 2.08 g/t Au including a section of 18.9 m at 3.51 g/t Au.						
150	32D15, 16	Ligneris	Vior	Ligneris	Au	S
151	32D16	Berry, Desboues	Exploration Canuck / Stratabound Minerals Corporation	Gemini Hill	Au	D (1:156)

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012 (see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
Outaouais administrative region (07)						
1	31F10	07 / Grenville	Focus Graphite	Cobden	Graphite	TE
Project description: In 2012, Focus Graphite acquired claims for the Cobden project, located a few kilometres east of Portage-du-Fort. The project hosts the Baie Feline-Nord graphite deposit.						
2	31F09	07 / Grenville	Focus Graphite	Quyón	Graphite	TE
Project description: In 2012, Focus Graphite acquired claims for the Quyón project. The project is located 12 km northeast of Shawville, near the Dun Raven A Zone and G Zone deposits. According to previous work, the A Zone contains probable reserves of 571 532 t at 4.72% graphite, and the G Zone contains 3.04 Mt at 4.0% graphite.						
3	31G13	07 / Grenville	Solo International	Philadelphia REE	REE	S, Pg
Project description: Solo International is commencing rare earth exploration work on the Philadelphia project located near the town of Notre-Dame-de-la-Salette. The work is being carried out near the former Philadelphia mine from which nearly 2000 tonnes of apatite were extracted in the late 1900s.						
4	31G11, 12	07 / Grenville	Cavan Ventures	Buckingham	Graphite	TE
Project description: In 2012, Cavan Venture acquired claims for the Buckingham project located 10 km north of Buckingham and just north of the former Walker graphite mine from which more than 400 tonnes of graphite were extracted sporadically between 1876 and 1906.						
5	31G12	07 / Grenville	Velocity Minerals	Buckingham	Graphite	TE
Project description: In 2012, Velocity Minerals acquired claims for the Buckingham project, located about 10 km northwest of the town of Buckingham and near the former Walker graphite mine from which more than 400 tonnes of graphite were extracted sporadically between 1876 and 1906.						
6	31G11	07 / Grenville	Galaxy Graphite	Buckingham	Graphite	TE, GpEm(A)
Project description: The Buckingham project is located about 2 km west of the town of the same name. The project hosts the former Sainte-Marie artisanal mine that produced about 50 tonnes of graphite. Graphite mineralization is present as lenses in marble. In 2012, the company carried out a heliborne electromagnetic survey.						
7	31G11	07 / Grenville	RockTech Lithium	Lochaber	Graphite	TE, S, GpEm(G), D (13:2405)
Project description: The Lochaber project is situated in the Buckingham region, 45 kilometres northeast of the city of Gatineau. Graphite mineralization is hosted in gneisses associated with marbles. In 2012, the company carried out prospecting work and geological mapping. The work included a grab sampling program and a ground electromagnetic survey. Following this, 13 diamond drill holes were drilled for 2404 m of the originally planned 3000 m. The holes intersected 100.5 m of graphitic horizons containing between 1.01% and 14.47% graphite.						
8	31G11	07 / Grenville	Atocha Resources	Saint-Sixte	Graphite	G, Pg
Project description: In 2012, Atocha Resources acquired claims for the Saint-Sixte project located 6 km southwest of the town of the same name. The company explored for graphite while keeping in mind the area's favourable setting for gold, silver, copper, nickel, platinum group elements and rare earths. The company carried out a geological survey and preliminary prospecting to assess the project's potential.						
9	31G11	07 / Grenville	Soldi Ventures	Lochaber	Graphite	TE
Project description: In 2012, Soldi Venture acquired claims for the Lochaber project located 10 km north of Thurso. The company carried out a compilation of historical work in order to plan its exploration program.						
10	31G14	07 / Grenville	Atocha Resources	Montpellier	Graphite	TE
Project description: In 2012, Atocha Resources acquired claims for the Montpellier project located near the town of Ripon. The company has begun the process of obtaining authorization from land owners to access the property.						
11	31G15	07 / Grenville	Standard Graphite	Notre-Dame	Graphite	GpEm(A)
Project description: The Notre-Dame Project is located near the town of Notre-Dame-de-la-Paix. In 2012, Standard Graphite completed an airborne magnetic survey to identify potentially graphite-bearing conductive horizons.						
12	31G15	07 / Grenville	Bravura Ventures	Ponsonby / Arundel	Graphite	TE
Project description: In 2012, Bravura Ventures acquired claims for its Ponsonby / Arundel project located 6 km southeast of the town of Saint-Rémi-d'Amherst.						

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012
(see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
13	31G13, 14, 31J02, 03	15 / Grenville	Canada Rare Earths	La Loutre	Graphite	S, G, GpEm(A)
<p>Project description: The La Loutre project is located about 117 km northwest of Montréal and 15 km from Chénéville. Canada Rare Earths collected a series of grab samples, with best results of up to 22.04% graphite. An electromagnetic survey was also carried out.</p>						
14	31J03	07 / Grenville	Standard Graphite	Preston	Graphite	GpEm(A)
<p>Project description: The Preston project is located 15 km south of the Papineau-Labelle wildlife reserve, near the town of Duhamel. In 2012, Standard Graphite carried out an airborne magnetic survey to identify potentially graphite-bearing conductive horizons.</p>						
15	31K01	07 / Grenville	Bravura Ventures	Northfield	Graphite	TE
<p>Project description: In 2012, Bravura Ventures acquired claims for its Northfield project located 2 km east of Gracefield. According to work carried out in the 1930s, pegmatites and gneisses contain up to 16% graphite.</p>						
16	31J05	07 / Grenville	Soldi Ventures	Cameron Graphite	Graphite	S, G, Gs
<p>Project description: In 2012, Soldi Venture acquired claims for its Cameron Graphite project located 14 km southeast of Maniwaki, near Sainte-Thérèse-de-Gatineau. The company carried out a compilation of previous work in order to plan its exploration program. Preliminary geological and geophysical surveys were also performed. Two samples contained 26.85% and 25.02% graphite.</p>						
17	31K08	07 / Grenville	Cavan Ventures	Pythonga	REE	S, Pg
<p>Project description: The Pythonga project is located 20 km northwest of the city of Maniwaki. Cavan Ventures collected 390 grab samples. The best rare earth grades reached 2.69% TREO in pegmatites.</p>						
18	31O05	07 / Grenville	REEX Exploration	Lac Leroux	REE	S, GpMa(A)
<p>Project description: The Lac Leroux project is located about 90 km north of Mont-Laurier. In 2012, REEX Exploration carried out an aeromagnetic survey and collected pegmatite samples that assayed up to 6181.07 ppm in total rare earths.</p>						
Laurentides administrative region (15)						
19	31O03	15 / Grenville	Berkwood Resources	Peter Lake Copper	Cu-Ni	S, Pg
<p>Project description: The Peter Lake Copper project is located 90 km north of Mont-Laurier. Mineralized zones containing copper and nickel sulphides are present in a gabbro dyke. Berkwood Resources collected 6 grab samples, which yielded grades ranging from 0.42% to 22.8% Cu and from 0.13% to 0.73% Ni. The company plans to collect a bulk sample of roughly 2000 tonnes for metallurgical testing.</p>						
20	31O02	15 / Grenville	Goldstar Minerals	Brockaby	W	TE
<p>Project description: In 2012, Goldstar Minerals acquired claims for its Brockaby project. The latter is located about 75 km northeast of Mont-Laurier. The local geology comprises a sequence of marble and paragneiss injected by late granitic intrusions, representing a favourable setting for skarn-type mineralization.</p>						
21	31J14	15 / Grenville	Cavan Ventures	Sainte-Anne	Graphite	TE
<p>Project description: In 2012, Cavan Venture acquired claims for its Sainte-Anne project located 2 km east of Sainte-Anne-du-Lac.</p>						
22	31J10, 11	15 / Grenville	Lomiko Metals	Quatre Milles Graphite	Graphite	G, S, D (23:1600)
<p>Project description: The Quatre Milles Graphite project is located about 175 km northwest of Montréal and 17 km from Sainte-Véronique. The area is accessible from the highway. The mineral deposit consists of graphitic horizons intercalated in metamorphosed sedimentary rocks. In September 2012, Lomiko Metals carried out 23 diamond drill holes totalling 1600 m. The best drill results were 4.58% graphite over 12.50 m and 2.17% graphite over 70 m.</p>						
23	31J10	15 / Grenville	Standard Graphite	Mousseau East	Graphite	GpEm(A), GpMa(A), D (15:3000)
<p>Project description: The Mousseau East project is located 40 km northeast of Mont-Laurier. In 2012, Standard Graphite carried out airborne magnetic and electromagnetic surveys to identify potentially graphite-bearing conductive horizons. Fifteen diamond drill holes totalling about 3000 m were drilled. Graphitic layers up to 30 m thick were intersected by drilling. The best intersection was 7.5% graphite over 52.9 m including 12.9% graphite over 12.9 m.</p>						

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012
(see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
24	31J11	15 / Grenville	WestCan Uranium	Dominion Lake	Graphite	TE, Pg
	Project description: In 2012, WestCan Uranium acquired claims for the Dominion Lake project, located 40 km northeast of Mont-Laurier.					
25	31J10	15 / Grenville	Velocity Minerals	Ascension	Graphite	TE
	Project description: In 2012, Velocity Minerals acquired claims for the Ascension project located 8 km northwest of the town of L'Ascension. Previous exploration work, consisting mainly of diamond drilling, yielded graphite grades of up to 9.86% over 46.75 m.					
26	31J10	15 / Grenville	Velocity Minerals	Lac Vert	Graphite	TE
	Project description: In 2012, Velocity Minerals acquired claims for the Lac Vert project located 12 km north of the town of L'Ascension. Graphitic horizons are enclosed in marble. Previous exploration work included the collection of grab samples and the drilling of 11 diamond drill holes. The grab samples contained between 1.69% and 23.00% graphite and the best result was 5.79% graphite over 12.25 m.					
27	31J06	15 / Grenville	Standard Graphite	Kiamika	Graphite	G, GpEm(A)
	Project description: The Kiamika project is located 18 km southeast of Mont-Laurier. In 2012, Standard Graphite carried out an airborne magnetic survey to identify potentially graphite-bearing conductive horizons.					
28	31J06	15 / Grenville	Strike Graphite	Wagon	Graphite	TE
	Project description: In 2012, Strike Graphite acquired claims for its Wagon project. The three blocks comprising the property are located east of Highway 331 between the localities of Lac-du-Cerf and Kiamika. Work carried out in the 1990s identified graphite grades ranging from 0.57% to 18.13%.					
29	31J05, 06	15 / Grenville	Cavan Ventures	Big Flake	Graphite	TE
	Project description: In 2012, Cavan Venture acquired claims for its Big Flake project located near the Lac des Îles graphite mine owned by TIMCAL Graphite and Carbon.					
30	31J05, 06	15 / Grenville	Terra Firma Resources	Lac des Îles East	Graphite	TE, Pg
	Project description: In 2012, Terra Firma Resources acquired claims for its Lac des Îles East project. The project is located 15 km south of Mont-Laurier, just east of the Lac des Îles graphite mine owned by TIMCAL Graphite and Carbon.					
31	31J06	15 / Grenville	Bravura Ventures	Bouthillier	Graphite	TE
	Project description: In 2012, Bravura Ventures acquired claims for the Bouthillier project. The project is located about 10 km south of Mont-Laurier, just east of the Lac des Îles mine owned by TIMCAL Graphite and Carbon.					
32	31J05	15 / Grenville	Canada Rare Earths	Lac des Îles West	Graphite	G, GpEm(A)
	Project description: The Lac des Îles West project is located 18 km southwest of Mont-Laurier, just west of the Lac des Îles graphite mine owned by TIMCAL Graphite and Carbon. An airborne electromagnetic survey identified a target 8 km long by 400 m wide that may contain graphite.					
33	31J04	15 / Grenville	Uragold Bay	Mine Asbury	Graphite	TE, Pg
	Project description: The deposit of the former Asbury graphite mine occurs 8.5 km northeast of the town of Notre-Dame-du-Laus. In 2012, Uragold Bay acquired claims to cover this graphite deposit.					
34	31J07	15 / Grenville	Focus Graphite	L'Annonciation	Graphite	TE
	Project description: In 2012, Focus Graphite acquired claims for the L'Annonciation project located just south of the town of Labelle. The project contains the former Clot graphite mine with estimated reserves of 1340 t at 20% graphite.					
35	31J02	15 / Grenville	Canada Rare Earths	Labelle	Graphite	S, Pg
	Project description: The project is located 5 km south of the municipality of Labelle. Work carried out in the 1950s led to the identification of mineralized zones containing up to 30% graphite.					
36	31J02	15 / Grenville	Focus Graphite	Saint-Jovite	Graphite	TE
	Project description: In 2012, Focus Graphite acquired claims for the Saint-Jovite project. One of the project's claim blocks contains the Rivière Rouge-Est deposit, located about 1 km north of the town of La Conception, for which previous work revealed graphite grades of up to 32.88% in grab samples. Another block contains the Lac Despatie deposit, located 8 km east of La Conception, which yielded graphite grades of up to 10%. A third block contains the Mont Jumper-Ouest deposit, located 15 km west of Saint-Rémi-d'Amherst, for which graphite grades of up to 10% have been obtained.					

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012 (see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
37	31G16	15 / Grenville	Uragold Bay	Canadian Graphite	Graphite	TE, Pg
	Project description: The Canadian Graphite project is located 13 km north of the city of Lachute and 13 km east of Saint-Michel-de-Wentworth. In 2012, Uragold Bay acquired claims to cover the graphite deposit. The claims are located in area dedicated to vacationing, so Uragold Bay must obtain consent from the local municipality before carrying out exploration work.					
Lanaudière administrative region (14)						
n/a	n/a	n/a	n/a	n/a	n/a	n/a
Mauricie administrative region (04)						
38	31I11	04 / Grenville	Focus Graphite	Lac au Sorcier	Graphite	TE
	Project description: In 2012, Focus Graphite acquired claims for its Lac au Sorcier project located 20 km northeast of Saint-Alexis-des-Monts. The deposit hosts the Dugre graphite deposit discovered in 1919, for which a grab sample yielded a grade of 41.08% graphite.					
39	31P12	04 / Grenville	Canada Rare Earths	Manouane	REE	TE, Pg
	Project description: In September 2011, Canada Rare Earths acquired claims for its Manouane project. This project is located on the edge of Lac Châteauvert, about 90 km west of La Tuque. The target is an alkaline granite. The company compiled the historical data for the surrounding area, which included yttrium, lanthanum and samarium geochemical anomalies in sediments.					
40	31O16	04 / Grenville	Globex Mining Enterprises	Suzor (Siscoe)	Phlogopite (mica)	TE, Pg
	Project description: In August 2011, Globex Mining Enterprises acquired claims for the Siscoe project, located about 18 km east of Parent. This former mica and apatite mine was worked from 1946 to 1948. It hosts 1.17 million tonnes of remaining ore containing 60% phlogopite and 10% apatite.					
41	31O15	04 / Grenville	Globex Mining Enterprises	Lamy	Phlogopite (mica)	S, Min, G
	Project description: In August 2011, Globex Mining Enterprises acquired claims for its Lamy project located in Parent, near a railroad. The deposit, discovered in 1964, contains 70 to 90% mica as well as apatite as a secondary mineral. Mapping and sampling work was carried out in 2012. The samples are being assayed and subjected to mineralogical studies.					
Capitale-Nationale administrative region (03)						
42	31I16	03 et 04 / Grenville	Gold Dynamics	Lac Sainte-Anne	Au-Ag	D (9:200), T
	Project description: The Lac Sainte-Anne project, located south of the former Montauban mine (Pb-Zn-Cu-Au-Ag), was drilled by nine diamond drill holes, each between 25 and 115 m in length. The mineralized intersections graded up to 5.61 g/t Au and 9.63 g/t Ag over about 6 m. Other mineralized intersections yielded elevated silver grades ranging from 60 g/t to 175.00 g/t Ag.					
Saguenay-Lac-Saint-Jean administrative region (02)						
43	32G08	02 et en partie 10 / Supérieur	Priority Uranium	Joe Mann East	Au-Cu	S, G, GpEm
	Project description: Priority Uranium is continuing its exploration work for gold and silver on the Joe Mann East project located east of the Joe Mann mine, about 35 km south of Chibougamau.					
44	32G09	02 / Supérieur	Cartier Resources	Dollier	Au	Gp
	Project description: Cartier Resources is continuing its exploration work on the Dollier project located about 30 km south of Chibougamau. Assay results received in 2012 for the previous year's diamond drilling program defined a continuous gold zone. The best intersections yielded grades of 13.3 g/t over 1.2 m and 11.9 g/t over 1.0 m.					
45	32H07, 10	02 / Grenville	MDN	Crevier (Anita)	Ta-Nb	FS, MT
	Project description: In 2012, MDN continued its feasibility study on the Crevier project located about 90 km north of Lac Saint-Jean. The work focused on developing the metallurgical processing. For the flotation process, a second metallurgical test will take place at a pilot plant in order to complete the feasibility study in 2013.					
46	32H08	02 / Grenville	Khalkos Exploration	Poissons Blancs	Ni-Cu-Co	TE
	Project description: In 2012, Khalkos Exploration acquired claims for its Poissons Blancs project located 45 km north of the municipality of Dolbeau in Lac-Saint-Jean. The project contains the McNickel mineral deposit with historical resources of 5.9 Mt at 0.21% Ni, 0.11% Cu and 0.03% Co.					

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012 (see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
47	22D11	02 / Grenville	Micrex Development	Saint-Charles	Fe-Ti-P-V	GpMa, D (14:x)
	Project description: Micrex Development is continuing its exploration program on the Saint-Charles project, located in the area of the same name on the north shore of the Saguenay River. The work involved 14 diamond drill holes and preliminary results indicate that magnetite mineralization extends laterally for more than 300 m with thicknesses ranging from 20 to 30 m.					
48	22D11	02 / Grenville	IAMGOLD	REE Zone	REE	RRE
	Project description: In 2011, IAMGOLD carried out exploration work for rare earths in an area adjacent to its Niobec niobium mine. The work mainly consisted of a 21 000 metre diamond drilling program of which 8500 metres targeted the rare earth zone. The results allowed the company to estimate inferred resources of 466 800 000 tonnes at a grade of 1.65% total rare earth oxides (TREO).					
49	22D11	02 / Grenville	Dios Exploration	Shipshaw	Nb-REE	Min, D (4:x)
	Project description: In the fall of 2010, DIOS discovered the Shipshaw carbonatite. In 2012, the company discovered the Falardeau Alkaline Complex to the south of the Niobec mine. Four diamond drill holes were completed. Petrographic studies were also initiated to better understand the geology of this new alkaline complex.					
50	22D11	02 / Grenville	IAMGOLD	Mine Niobec	Nb	RRE, D (x:34 000), MT
	Project description: In 2011, IAMGOLD carried out work with the objective of determining the extent of mineralization on its expansion project at the Niobec mine. The mine is located in the municipality of Saint-Honoré. In late December 2011, probable reserves of niobium increased by about 616% to 1.7 billion kilograms of Nb ₂ O ₅ . Metallurgical tests confirmed the recoverable content of the intersected mineralization. A diamond drilling program will be carried out over several years, of which about 34 000 metres were planned for 2012. The goal of the program is to convert all inferred resources into indicated and measured resources by 2015.					
51	22E02	02 / Grenville	Glen Eagle Resources	Moose Lake	P	S, D (18:1800)
	Project description: The Moose Lake project is located 125 km north of Saguenay, in Chicoutimi. A grab sampling program revealed phosphate mineralization over a distance of 2.4 km and a width of 300 m. The best grades were 4.92% P ₂ O ₅ over 2 m, 5.16% P ₂ O ₅ over 1 m, and 3.38% P ₂ O ₅ over 1 m. In addition, 18 diamond drill holes were completed for a total of 800 m. The best intersection contained 5.3% P ₂ O ₅ over 64.5 m.					
52	22E10, 15	02 / Grenville	Jourdan Resources	Jazz phosphate	P	S, Pg
	Project description: The Jazz phosphate project is located about 200 km north of the city of Saguenay in the Pipmuacan Reservoir area. Prospecting work produced 31 grab samples, and assay results yielded grades of up to 13.2% P ₂ O ₅ .					
53	22E10, 15	02 / Grenville	Arianne Resources	Lac à Paul	P-Ti	FS, D (58:12 249), MT
	Project description: North of Lac Saint-Jean, Arianne Resources is continuing with the appraisal of its Lac à Paul phosphorous and titanium deposit in the Pipmuacan Reservoir area. Since the fall of 2011, 34 diamond drill holes totalling 8225 m have been drilled over the Lac à Paul area (Paul Zone). The drilling results demonstrate that the Paul Zone is more than 2.5 km long. This mineralized zone remains open at a vertical depth of 400 m. Three other areas have also been drilled: the Lise area (10 holes totalling 1401 m), the Nicole area (2 holes totalling 422 m), the Traverse area (6 holes totalling 954 m) and the Lucie area (6 holes totalling 1247 m). The modified prefeasibility study for the Lac à Paul project, which was carried out by Met-Chem Canada, confirms the economic viability of the Lac à Paul project for a production scenario of 3 million t/yr of phosphate concentrate. The economic model used in the study does not include the additional mineralization identified by the new drill holes. Arianne Resources has contracted the firm Cegertec WorleyParsons and the firm Jacobs Engineering to respectively proceed with a feasibility study and metallurgical testing for the Lac à Paul phosphorous mine project.					
54	22L07, 08	02 / Grenville	Glen Eagle Resources	Lac Lisette	P	D (10:3000)
	Project description: Glen Eagle Resources acquired claims for its Lac Lisette project in 2011. The project is located 150 km north of Lac Saint-Jean, in the Lac-Saint-Jean Anorthosite Complex. In 2012, the company started a program consisting of 10 diamond drill holes totalling 3000 m to evaluate a magnetic anomaly about 750 m wide by 12 km long. The best drill results reached 4.78% P ₂ O ₅ over 30 m including 6% P ₂ O ₅ over more than 10 m.					

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012 (see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
55	23D02, 03	02 / Supérieur	Abitex Resources	Lavoie	U	FS, ES, RRE
<p>Project description: Abitex Resources is continuing its deposit appraisal work for the Lavoie uranium project located at the northern end of the Saguenay-Lac-Saint-Jean administrative region, about 170 km north of Lac Manouane. Abitex Resources contracted InnovExplo to prepare a preliminary economic assessment for the Lavoie project. InnovExplo had previously prepared a mineral resource estimated for the deposit, concluding that it contained indicated resources of 391 000 tonnes grading 0.45% U₃O₈ and inferred resources of 749 000 tonnes grading 0.56% U₃O₈. Metallurgical tests were also performed by SGS Mineral Services. Abitex Resources expects to proceed with a more comprehensive assessment on the Lavoie Project. The work will include additional diamond drilling.</p>						
Côte-Nord administrative region (09)						
56	22N11, 14	09 / Grenville	Argex Titanium	Mouchalagane	Fe	GpEm(A), FS, GpGr(A), GpMa(A), GpRa(A)
<p>Project description: A multiparameter airborne geophysical survey has been flown over the entire Mouchalagane project.</p>						
57	22N02	09 / Grenville	Berkwood Resource	Lac Guéret East	Graphite (C)	S, GpEm(A), Pr, T
<p>Project description: Prospecting work over the project led to the discovery of a graphite-rich NE-trending zone measuring 55 m long and 4-5 m wide. The pending assay results are expected in late 2012.</p>						
58	22N03	09 / Grenville	Focus Graphite	LacTétépisca	Graphite (C)	S
<p>Project description: Sampling during 2012 revealed a graphitic corridor 900 m long and up to 100 m wide. Twenty-six (26) grab samples were assayed, of which 17 yielded grades ranging from 5.59% to 45.80% Cgr.</p>						
59	22N02	09 / Grenville	Amseco Exploration	Manic	Graphite (C)	Gp(G), Pr
60	22N03	09 / Grenville	Canada Rare Earths	Tétépisca North	Graphite (C)	S, Pr
61	22K14	09 / Grenville	Amseco Exploration / St-Georges Platinum and Base Metals	Tetepisca	Graphite (C)	Gp(R), Pr
62	22K04	09 / Grenville	Nevado Resources Corporation	La Blache #1 Iron-Titanium-Vanadium	Fe-Ti-V-Cgr	TE, RRE, Pr, MT
<p>Project description: A new resource estimate was prepared for the Farrell-Taylor deposit. Inferred resources total 101.7 Mt at 59.7% Fe₂O₃ (or 41.76% FeT), 18% TiO₂ and 0.33% V₂O₅. Drill hole FT-11-01, completed in 2011 on the Farrell-Taylor showing, intersected an interval of 108.6 m at 66.9% Fe₂O₃ (or 46.8% FeT), 20.6% TiO₂ and 0.25% V₂O₅. The company intends to initiate a preliminary economic assessment study during the third quarter and pilot plant-scale metallurgical tests on the ore.</p>						
63	22K04	09 / Grenville	Argex Titanium	La Blache (East and West Hervieux)	Ti-Fe-V-Mg	MT, FS
<p>Project description: The company is continuing with pilot plant-scale metallurgical tests in 2012, increasing from 0.3 kg to 10 kg of titanium dioxide per day. In October, the company announced that it had granted a contract for a feasibility study on the project.</p>						
64	22F13	09 / Grenville	Jourdan Resources	Dissimieux Lake Titanium-Phosphate-Rare Earth Elements	Ti-P-REE	D (23:2635)
<p>Project description: Over the year, 23 drill holes were completed for a total of 2635 m. Five phosphate-rich zones were intersected. Drill hole DL-12-07 yielded an interval of 124.78 m grading 2.39% P₂O₅.</p>						
65	22F14	09 / Grenville	Canada Rare Earths	Champagne	Graphite (C)	Pr
66	22F05	09 / Grenville	Argex Titanium	Lac Brûlé	Ti-Fe-V	GpEm(A), FS, GpMa(A), MT
<p>Project description: Preliminary pilot plant-scale metallurgical tests yielded a 94% leaching rate for TiO₂, 95% for V₂O₅ and 99% for iron oxides.</p>						

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TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012
(see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
67	22F14	09 / Grenville	Galaxy Graphite	Sun	Graphite (C)	S, G, Pr, D (x:x)
68	22F09	09 / Grenville	Randsburg International Gold Corporation	Nathalie Phosphate	P-Fe-Ti	G, Pr
Project description: Grab sample 698671 yielded 7.59% P ₂ O ₅ , 27.62 % Fe ₂ O ₃ and 6.98 % TiO ₂ . Grab sample 698615 yielded 1.87 % P ₂ O ₅ , 56.86 % Fe ₂ O ₃ and 18.94 % TiO ₂ .						
69	22F16	09 / Grenville	St-Georges Platinum and Base Metals	North Shore Flagship (Julie and Isukoustouc)	Pt-Pd-Rh-Cu-Co-Ni	D (x:1200)
Project description: In early April, the company announced a drilling program on the B40 zone and the northern part of the Isukoustouc project. The company also mentioned that 2100 m of drilling had been completed by December 2011 over the Mathilda section.						
70	22J07	09 / Grenville	Standard Graphite	River	Graphite (C)	S, G, GpEm(A), Pr
71	22J14	09 / Grenville	Big North Graphite	Grand Lac du Nord	Graphite (C)	S, TE, G, Pr
72	23B11	09 / Grenville	Nevado Resources Corporation	Fermont	Graphite (C)	Gp(A), GpEm(G)
73	23B06	09 / Grenville	Fancamp Exploration	Lac Lamêlée	Fe-Mg	S, RRE, GpMa, D (38:12 607), T, MT
Project description: Drill hole LS-12-01 encountered an interval of 145.5 m at 29.64 % FeT.						
74	23B06	09 / Grenville	Champion Iron Mines	Fermont (17 properties)	Fe	PEA, FS, ES, RRE, D (x:x), MT
Project description: A resource estimate was prepared for the Moire Lake deposit. The High Grade Zone contains indicated resources of 164 Mt at 30.53% FeT and inferred resources of 417.127 Mt at 29.35% FeT calculated at a cut-off grade of 15% FeT. The Low Grade Zone contains indicated resources of 20.889 Mt at 18.42% FeT and inferred resources of 119.711 Mt at 17.68% FeT. On the Oil Can deposit, inferred resources for the Oxide and Mixed zones are 972 Mt at 33.2% FeT and 924 Mt at 24.1% FeT, respectively.						
75	23B11	09 / Grenville	Focus Graphite	Lac Knife	Graphite (C)	PEA, TE, RRE, D (x:x), MT
Project description: The company published positive results of its preliminary economic assessment. The envisaged scenario is open pit mining at a rate of 300 000 t/yr and a mine life of 20 years, an average recovery rate of 91.3%, and a total production of 46 600 t of concentrate per year at a grade of 92% Cgr. Metallurgical tests yielded recovery rates of 85.9%, with large flakes constituting 46.1% and medium flakes constituting 39% of the recovered material.						
76	23B11	09 / Grenville	Standard Graphite	Carheil	Graphite (C)	S, G, GpEm(A), GpMa(A), Pr
Project description: Geophysical surveys identified a series of 4 conductors, each up to 6 km long.						
77	23B10	09 / Grenville	Standard Graphite	Sandy Lake	Graphite (C)	S, G, GpEm(A), GpMa(A), Pr
Project description: The interpretation of geophysical surveys revealed two anomalies about 8 km long. The conductors coincide with known graphite showings.						
78	23B10	09 / Grenville	Standard Graphite	Sandy NE	Graphite (C)	GpEm(A), GpMa(A)
79	22P03	09 / Grenville	Focus Graphite / SOQUEM	Kwyjibo	REE-P-F-Mo-U-Au-Cu	S, GpEm(G), D (31:4207), MT
Project description: In autumn 2011, 12 drill holes totalling 2604 m were completed. Drill hole 10885-11-57 intersected an interval of 48.8 m grading 2.40% TREO. A drilling program of roughly 4000 m has been planned to verify the REE-Fe-Cu-rich mineralization of the Josette horizon.						
80	22P08, 12M05	09 / Grenville	Fancamp Exploration	Magpie	Fe-Ti-V-Cr	RRE, B (1,5:x), D (x:x), MT
Project description: A new resource estimate was prepared for the Magpie #2 deposit. Indicated resources amount to 635.2 Mt at 42.49% FeT, 11.20% TiO ₂ and 0.30% V ₂ O ₅ , whereas inferred resources are 293.2 Mt at 42.29% FeT, 11.21% TiO ₂ and 0.32% V ₂ O ₅ , calculated at a cut-off grade of 15% FeT. Metallurgical testing on the ore was carried out over the course of the year.						

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012 (see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
Laval administrative region (13)						
n/a	n/a	n/a	n/a	n/a	n/a	n/a
Montréal administrative region (06)						
n/a	n/a	n/a	n/a	n/a	n/a	n/a
Montérégie administrative region (16)						
n/a	n/a	n/a	n/a	n/a	n/a	n/a
Estrie administrative region (05)						
81	21E04, 05	05 / Appalaches	Uragold Bay Resources	McDonald Gold	Au	Pg
	Project description: The McDonald Gold project is located several kilometres northeast of the city of Coaticook. At the western end of the project is a gold placer deposit on the Rivière Moe; the deposit was discovered in 1908. The analysis of 465 till samples collected in 2011 yielded more than 0.1 g/t Au for 30 of the samples. Four of the samples yielded the best values of 12.2 g/t Au, 2.05 g/t Au, 1.51 g/t Au and 1.41 g/t Au. Uragold Bay Resources is now focusing their exploration work on the basement rocks.					
82	21E11, 12, 13, 14	05 / Appalaches	Bowmore Exploration	Saint-Victor	Au	D (5:1193)
	Project description: The Saint-Victor project is located 15 km east of the city of Asbestos, in the central part of the Humber Zone. The Saint-Victor exploration program focuses on a geologically favourable environment for bulk-tonnage, low-grade gold deposits in which gold mineralization is associated with a relatively homogenous distribution of pyrite within Appalachian sediments belonging to the Magog Group and the Saint-Daniel Mélange. In 2012, Bowmore Exploration completed 5 diamond drill holes totalling 1193 m. All the holes yielded anomalous gold values. The best drill intersection was a zone of 142 m grading 0.34 g/t Au.					
83	21E07	05 / Appalaches	Fancamp Exploration	Clinton	Cu-Zn	Pg, TE
	Project description: To enlarge the Clinton project, located 20 km south of Lac Mégantic, Fancamp Exploration has acquired 6 claims from Namex Exploration. The acquisition consolidates the project, which covers volcanogenic massive sulphide copper and zinc targets.					
84	21E15	05 / Appalaches	J.A.G Mines	Saint-Robert	Au-Ag-Pb-Zn-W	S, G, GpEI
	Project description: The Saint-Robert project, located 35 km northeast of Lac Mégantic near the town of Saint-Robert-Bellarmin, contains several polymetallic sulphide-rich quartz and carbonate veins injected in sedimentary rocks. The exploration work of 2011 and 2012 included geological mapping and the collection of grab samples for chemical and mineralogical analyses. Electrical resistivity and induced polarization surveys were also carried out. Diamond drilling is now being planned.					
Centre-du-Québec administrative region (17)						
n/a	n/a	n/a	n/a	n/a	n/a	n/a
Chaudière-Appalaches administrative region (12)						
85	21L02	12 / Appalaches	Fancamp Exploration	Beauce	Au	D (x:2500)
	Project description: In early 2012, Fancamp Exploration started a 2500 -metre diamond drilling program in the Saint-Georges area, upstream of the Rivière Gilbert. Rivière Gilbert hosts an old placer-type gold deposit discovered in 1862.					
86	21L02	12 / Appalaches	Uragold Bay Resources	Beauce Placer Gold	Au	B (x:x), Gp
	Project description: Uragold Bay Resources is continuing its work on the Beauce Placer Gold project located 12 km north of Saint-Georges. The diamond drill holes completed in 2011 revealed gold anomalies in the bedrock underlying the gold placer. Grades ranging from 10 to 75 ppm Au were obtained for drill core assays. Uragold Bay Resources plans to collect a bulk sample.					
87	21L09	12 / Appalaches	Golden Hope Mines	Bellechasse (Timmins)	Au	RRE, D (x:5300)
	Project description: The Bellechasse-Timmins gold deposit occurs 5 km southeast of St-Magloire, and consists of a mineralized zone about 18 km long. In 2012, Golden Hope contracted SGS Canada to proceed with a resource estimate, which concluded that in situ indicated resources contain 313 900 ounces of gold (2.9 million tonnes at 3.36 g/t Au) and inferred resources contain 102 000 ounces of gold (2.17 million tonnes at 1.46 g/t Au), using a cut-off grade of 0.60 g/t. Other drill holes were necessary to delineate the higher grade zones in three dimensions. Also, Golden Hope plans to carry out a new diamond drilling program totalling 5300 m.					

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TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012 (see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
88	21L09	12 / Appalaches	Golden Hope Mines	Bellechasse (Champagne)	Au-Ag-Cu-Zn-Pb	GpEm(A), Pg, D (8:4126)
<p>Project description: In 2011, Golden Hope carried out an 8-hole drilling program (4126 m) over the Champagne project located 5 km east of Saint-Magloire. The drill holes intersected mineralized zones with grades of 1.23 g/t over 11 m and 1.15 g/t over 8.16 m. Golden Hope also carried out a VTEM electromagnetic survey in late 2011. The survey revealed volcano-genic massive sulphide targets near the Champagne deposit.</p>						
Bas-Saint-Laurent administrative region (01)						
89	21N06, 07	01 / Appalaches	Ardoisière du Témis	Ardoise - Témiscouata	Slate	Pg
<p>Project description: The Bas-Saint-Laurent region represents a favourable environment for discovering new slate supplies. Ardoisière du Témis has carried out exploration work in the Lac Long area where the company Glendyne is already quarrying a slate deposit.</p>						
90	22B11, 12, 13, 14, 22C08, 09	01 / Appalaches	Orbite Aluminae	n/a	Al	G, Pg
<p>Project description: Orbite Aluminae acquired 952 new claims totalling 543.2 km², covering a total distance of more than 170 km starting east of the city of Québec and extending to Cap-Chat, the site of Orbite's high-purity alumina production plant. The new claims, mainly located in the Bas-Saint-Laurent administrative region, cover a large part of the Orignal Formation, which contains aluminous schists. Orbite Aluminae plans to carry out exploration work to establish new resources of aluminous schists.</p>						
Gaspésie-Îles-de-la-Madeleine administrative region (11)						
91	22B02, 07	11 / Appalaches	Fancamp Exploration	Gaspé Gold	Au	Gs(G)
<p>Project description: Fancamp Exploration carried out a soil geochemistry survey and an induced polarization (IP) survey on its Gaspé Gold project located about 20 km north of the municipality of Pointe-à-la-Croix. Gold anomalies ranging from 10 to 69 ppb were detected in the soil samples. These anomalies coincide with electrical resistivity anomalies identified by the IP survey. Diamond drilling is being planned.</p>						
92	22A13	11 / Appalaches	Gespeg Copper Resources	Vortex	Cu-Ag-Mo	D (7:2572)
<p>Project description: In the fall of 2011, Gespeg Copper Resources carried out work just south of the Parc National de la Gaspésie, about 30 km west of Murdochville. The work consisted of 7 diamond drill holes totalling 2 572 m. The holes were drilled south of the Sullipek-East showing, within a hydrothermal system measuring 1000 m in diameter that contains limestone layers with possible skarn-type copper mineralization. The best grades obtained in drill core were 1.6% Cu and 12.2 g/t Ag over 2 m, and 1.3% Cu and 4.99 g/t Ag over 16.0 m.</p>						
93	22A13	11 / Appalaches	Xstrata Canada Corporation	Mont Porphyre	Cu	TE, Pg
<p>Project description: The Mont Porphyre project is located near the former Murdochville mine. The resources of the Mont Porphyre deposit have been estimated at more than 200 million tonnes at 0.73% Cu and 0.08% Mo.</p>						
94	22H03	11 / Appalaches	Orbite Aluminae	Grande-Vallée	Al-REE	PEA, Pg
<p>Project description: In August 2012, Orbite Aluminae obtained a mining lease for land located 15 km southwest of Grande-Vallée. The lease allows the company to mine an area of 90 hectares containing roughly 70 Mt of aluminous clay according to a preliminary economic assessment study updated in May 2012. Elsewhere, the company is continuing its exploration of the Grande-Vallée project. The plan is to drill a series of diamond drill holes, totalling 3 000 m to 4 000 m, in the Marin area with the objective of upgrading part of the indicated resources. In addition, other field-based exploration work will be carried out in the Simoneau and Madeleine areas. The company also plans to carry out a geophysical survey to define the contacts between the various geological formations. The survey will be followed by a drilling program of 1500 m to 2000 m that will provide a more in-depth investigation into the continuity of the aluminous clay and its alumina and rare earth contents.</p>						
95	22H03	11 / Appalaches	Ressources Pélican	Lefrançois	Limestone	S, D (x:x)
<p>Project description: In November 2011, Ressources Pélican completed diamond drilling and sampling over the Lefrançois deposit located 15 km northeast of Murdochville. Drill core samples were analyzed and the results confirmed the presence of a zone containing less than 1% silica, with results ranging from 0.097% to 0.99% silica and 54.7% to 56.9% CaO. These results have led to the conclusion that part of the deposit has a high degree of purity. Following this work, the company obtained, in June 2012, an exclusive lease to mine surface substances, allowing it to mine the deposit.</p>						

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

TABLE 4.5 - Exploration projects in Québec (Abitibi-Témiscamingue and Nord-du-Québec regions excluded) in 2012 (see Figure 4.7)⁽¹⁾.

No.	NTS	ADMINISTRATIVE REGION / GEOLOGICAL PROVINCE	COMPANIES / PROSPECTORS	PROJECTS	COMMODITIES	EXPLORATION WORK
96	22H03	11 / Appalaches	Canasia Industries Corporation	Murdochville Aluminous Clay	Al	S, Pg
<p>Project description: At 12 km north of Murdochville, Casania Industries Corporation is exploring for aluminous clay. Grab samples collected on the Murdochville Aluminous Clay project have been analyzed. The results revealed grades up to 20.57% Al₂O₃. Encouraged by these results, the company intends to pursue its exploration work.</p>						
97	22H03	11 / Appalaches	Habanero Resources	Grande-Vallée Nord	Al	S, G
<p>Project description: At 18 km southwest of Grande-Vallée, Habanero Resources has completed geological mapping and a soil sampling program. A total of 1658 samples were collected at a spacing of 50 m along lines 400 m apart in the southern part of the project, and 800 m apart in the northern part. A diamond drilling program and a soil sampling program with a tighter grid are being planned.</p>						
98	22H02, 03	11 / Appalaches	Manicouagan Minerals	Cloridorme Aluminous Clay	Al-REE	S, G, D (x:x)
<p>Project description: In the summer of 2012, Manicouagan Minerals carried out geological surveying and a grab sampling program in the Grande-Vallée area. Roughly 100 samples were collected, of which 39 had high Al₂O₃ contents ranging from 17.01% to 22.68%. Rare earth element assays for the red mudstones yielded an average TREO content of 430 ppm. A diamond drilling program commenced in October 2012.</p>						
99	22H03	11 / Appalaches	Brookemont Capital	Gaspé Bay Aluminous Clay	Al-REE	Pg
<p>Project description: Brookemont Capital carried out a soil sampling survey totalling 36 samples. The assay results revealed that 13 of the samples contained more than 18% Al₂O₃ with values ranging from 18.2% to 19.08% Al₂O₃. The project is located about 5 km south of the municipality of Grande-Vallée.</p>						
100	22A09	11 / Appalaches	WesternTroy Capital Resources	Gaspé	V-Se-Ag-Pb-Zn-Cu	S, Pg
<p>Project description: The Gaspé project, located near the town of Percé, west of the Bridgeville salt marsh, contains sedimentary rocks carrying vanadium and selenium mineralization, as well as Mississippi Valley-type lead, zinc and silver mineralization. WesternTroy started its exploration work in 2012, collecting 21 grab samples. One sample yielded grades of 7.20% V, 1.11% Pb and 0.12% Zn. Two other samples graded 11.3% Zn, and 5.43% Pb and 5.16% Zn.</p>						
101	22A02	11 / Appalaches	Gisement McInnis	Cimenterie Port-Daniel	Limestone	TE
<p>Project description: In December 2011, Société en commandite Gisement McInnis reached a partnership agreement with Cimbec Canada with respect to the Port-Daniel cement plant project. The limestone deposit contains estimated reserves in excess of 450 million tonnes of high-quality limestone. The company has begun preparing the site and developing the access route and maritime terminal, and has initiated engineering work.</p>						

1- See legend of abbreviations and the meaning of bold and italic types in Appendix 2.

CHAPTER 5

DEPOSIT APPRAISAL AND MINE DEVELOPMENT

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During 2012, twenty-eight mining projects reached or remained in the deposit appraisal phase (Figure 5.1; Table 5.1) and nine projects were in the mine development phase (Figure 5.2; Table 5.2).

5.1 Deposit appraisal

Alumina

Orbite Aluminae is planning to develop its argillite deposit in Grande-Vallée, Gaspésie. The company wants to produce smelter-grade alumina (SGA) to supply aluminium smelters in Québec and around the world. Argillite resources are estimated at one billion tonnes at an average grade of 23% aluminium oxide. The feasibility study on the SGA plant is expected in June 2013. A mining lease was issued by the MRN in September 2012 for this future mine.

Apatite

In Québec, two apatite projects are at the deposit appraisal phase. In both cases, the apatite concentrate would be used to produce fertilizer.

Mine Arnaud, a wholly-owned subsidiary of the State-owned company Investissement Québec Mines, submitted in March 2012 an environmental impact study for the Arnaud project in Sept-Îles. Assessment of the impact study will continue in 2013 and public consultations are also planned during the year. Mining operations could begin in 2016. The project, involving an open pit mine and a concentrator, will have an annual production on the order of 1.3 Mt of apatite concentrate. The estimated initial investment is \$836M and the mine would create about 320 jobs over a period of 23 years.

Arianne Resources released in May 2012 an updated prefeasibility study for its Lac à Paul project, located approximately 190 km northeast of the Town of Saguenay. The environmental impact study undertaken in 2012 is scheduled for release in 2013. Mining operations could begin in 2016. The project, involving an open pit mine and a concentrator, will have an annual production on the order of 3 Mt of apatite concentrate. The estimated initial investment is \$814M and the mine would create about 400 jobs over a period of 17 years.

Copper-molybdenum

Northwest of the Otish Mountains, **Western Troy Capital Resources** shelved its McLeod Lake copper-molybdenum project in 2012. Apparently, mineral resources were not sufficient to consider building and operating an open pit mine as planned. Consequently, this project has been reclassified from the deposit appraisal phase to the status of a deposit with estimated tonnage.

Diamonds

Stornoway Diamond Corporation achieved several milestones on its Renard project located north of the Otish Mountains, about 360 km north of Chibougamau. The company namely obtained a mining lease in October 2012, signed a new agreement with the government of Québec concerning the extension of Route 167 in November 2012, and obtained a comprehensive certificate of authorization in December 2012. Mining operations could begin in 2015. Ore will be extracted in an open pit mine as well as underground, with an average annual production on the order of 1.7 million carats of diamonds. The estimated cost for the project is \$802M and the mine will create 450 jobs over a period of at least 11 years.

Rare earth elements

There are three major deposit appraisal projects for rare earth elements in the province. First, about 220 km northeast of Schefferville, work by **Quest Rare Minerals** is progressing rapidly on the B-Zone project on its Strange Lake property. A prefeasibility study and a feasibility study are expected for release in the early part and by the end of 2013 respectively. The project involves an open pit mine, ore processing facilities and a hydrometallurgical plant, to produce a concentrate of mixed rare earth oxides with niobium and zirconium by-products. The estimated initial investment is \$565M, including the cost of building an access road and port facilities. Annual production is estimated at about 12 500 tonnes of rare earth oxide concentrate, over a period of at least 25 years. Mining operations could begin in 2016 and would lead to the creation of 220 jobs.

In the Labrador Trough, about 130 km south of Kuujuaq, **Commerce Resources** recently announced the results of a preliminary economic assessment for the Ashram Zone on its Eldor project. Under an open pit mining scenario, a mixed rare earth carbonate concentrate would be produced at a rate of 16.8 Kt per year

over a period of at least 25 years. Capital costs for the project are estimated at \$763M, including the cost of building a road and port facilities. The project would create 230 direct jobs.

In the Témiscamingue region on the Zeus property, **Matamec Explorations** is continuing preparation work for a feasibility study expected by the end of 2013 on its Kipawa rare earth deposit. The results of metallurgical tests were used to develop concentration and extraction processes for its eudyalite ore. Toyotsu Rare Earth Canada (TRECAn) and Matamec signed a sale and purchase agreement as well as a partnership agreement. The project would involve an open pit mine, a concentrator, and a hydrometallurgical plant, to produce annually 5 Kt of mixed rare earth concentrate in the form of carbonates. Mining operations may begin in 2015 or 2016. The estimated cost for the project is \$316M and 220 jobs would be created.

Also worthy of mention are two projects at the advanced exploration phase, namely the Montviel project by **GeoMegA Resources** near Lebel-sur-Quévillon and the Niobec rare earth project by **Mines Niobec** near Saguenay. In addition, **Innovation Metals** is currently planning to build a rare earth separation plant in the Bécancour area.

Iron

Adriana Resources continued preparation work for a feasibility study on its Lac Otelnuq project north of Schefferville. The study is scheduled for release during the first quarter of 2014. Mining operations on the site could begin in 2018.

Oceanic Iron Ore Corporation continued preparation work for a feasibility study on its Hopes Advance project located near Aupaluk on Ungava Bay. The study is scheduled for release in 2013. Mining operations on the site could begin in 2017.

Champion Iron Mines (formerly **Champion Minerals**) continued preparation work for a feasibility study on its Fire Lake North project

south of Fermont. The study is scheduled for release in the first quarter of 2013. Mining operations on the site could begin in 2016.

Partners **New Millennium Iron Corporation** and **Tata Steel** continued preparation work for a feasibility study on their Taconite-KeMag project north of Schefferville. The study is scheduled for release in the first quarter of 2013. Mining operations on the site could begin in 2016.

Barlow Mine continued exploration work and studies on its Montgolfier Iron Hills project located approximately 14 km south of the former Selbaie mine. The company is planning to release a prefeasibility study in the second quarter of 2013, then a feasibility study by the end of 2013.

Iron-titanium-vanadium

BlackRock Metals continued its efforts to obtain an environmental certificate of authorization for the start-up of its BlackRock mining project south of Chibougamau. The certificate is expected to be issued in 2013.

Argex Titanium began preparation work for a feasibility study concerning its project for a titanium dioxide (TiO₂) production plant, related to its Lac LaBlache mining project located north of Baie-Comeau.

Graphite

Focus Graphite (formerly **Focus Metals**) released the results of a preliminary economic assessment on its Lac Knife project located 35 km south of Fermont. The estimated initial investment is \$155M for an annual production of 300 000 tonnes of ore grading 15.66% carbon as graphite (Cgr) over a period of 20 years. Mining operations could begin in 2014 and would create up to 92 jobs. Primary processing on site would produce 46 000 tonnes per year of concentrate at 92% Cgr. The company intends to produce high-purity processed natural graphite for the battery market, as well as flake concentrate. Earlier in 2012, the company signed an agreement with Hydro-Québec's research institute for

the development of a graphite purification process and for the production of anodes for lithium-ion batteries.

Lithium

In the James Bay region about 30 km east of the Nemaska Cree community and approximately 280 km north of Chibougamau, **Nemaska Lithium** continued deposit appraisal work on its Whabouchi project. The projected open pit mine and concentrator with a capacity of 213 Kt per year of spodumene concentrate will supply a processing plant located in Valleyfield, near Montréal. The plant would produce 20 Kt per year of lithium hydroxide and 5 to 10 Kt of lithium carbonate, as early as 2014-2015. The entire project represents a global investment of \$454M and would create 190 jobs on the mine site and 75 jobs at the processing plant. A feasibility study is scheduled for release in 2013.

About 30 km north of the Nemaska Cree community on its Eastmain Rose project, **Critical Elements Corporation** plans to mine lithium and tantalum ore from an open pit mine and concentrate it on site. The company is also examining the possibility of building a lithium carbonate production plant on site. According to the preliminary economic assessment, the estimated cost for the project is \$270M. The company has undertaken various work programs, testing and studies in preparation for an upcoming feasibility study.

In the Abitibi region, near the Québec Lithium project by Canada Lithium, **Glen Eagle Resources** is continuing work on its Authier project. An open pit mine producing 1000 tonnes per day (tpd) of spodumene ore is envisioned.

Also, a few projects at the advanced exploration phase located near Chibougamau (the Sirmac project by **Nemaska Lithium** and the Moblan project by **Perilya** and **SOQUEM**) may move to the deposit appraisal phase over the next few months. New developments are also expected on the James Bay Lithium project by **Galaxy Resources**.

Nickel, copper, cobalt, and platinum group elements (PGE)

Royal Nickel Corporation continued preparation work for a feasibility study on its Dumont Nickel project near Amos. The study is scheduled for release in the summer of 2013. Mining operations on the site could begin in 2016. The company also submitted its environmental and social impact study.

Niobium and tantalum

Iamgold Corporation made Mines Niobec an independent company in May 2011 and has maintained an annual production at the mine of 4.4 million kilograms of ferroniobium. The company has an expansion project estimated at \$1.2B, to triple its annual ferroniobium production to 15 million kilograms. The environmental impact study was submitted in December 2012. This project would extend the mine life by 40 years and create 200 new jobs.

Northwest of Girardville in the Lac-Saint-Jean region, deposit appraisal work on the Crevier niobium-tantalum project by **Les Minéraux Crevier** continues. A feasibility study is scheduled for release in the first quarter of 2013. The estimated cost for the project is \$479M and the project would create 300 jobs. The start-up of mining operations is slated for 2016.

About 30 km north of the Nemaska Cree community, **Critical Elements Corporation** is planning to produce lithium carbonate and tantalum concentrate from an open pit mine on its Rose lithium-tantalum project.

Gold

In June 2012, on its Joanna project located east of Rouyn-Noranda, **Aurizon Mines** announced it would postpone its decision to mine the Hosco deposit, despite the positive outcome of the feasibility study. This announcement comes in the wake of excellent exploration results obtained on the Heva and Hosco West zones, indicating higher gold grades and

better metallurgical properties. The potential for a mining operation on the Joanna project thus remains quite realistic.

Conway Resources completed the acquisition of mining concessions at the former Belleterre mine. The company built surface facilities to proceed with dewatering of the No. 1 shaft. An access ramp, drilling, and bulk sampling are planned for 2013. This work will allow the company to better define mineral resources and reserves and to confirm grades.

QMX Gold Corporation (formerly Alexis Minerals Corporation) was involved in an arbitration process with **Thundermin Resources** concerning the Lac Pelletier property located near Rouyn-Noranda. The latter is the registered holder of the claims and mining concessions that make up the Lac Pelletier property however, QMX Gold Corporation has performed deposit appraisal work on the property.

Richmont Mines reached several milestones on its Monique project located near Val-d'Or. The company namely obtained a mining lease in February 2012 and a comprehensive certificate of authorization in October 2012. Open pit mining operations could be followed by an underground phase. A decision on the start-up of production is expected in 2013.

Richmont Mines announced in March 2012 the results of a preliminary economic assessment on the Wasamac property located near Rouyn-Noranda. Apparently, the project provided a less than adequate return on investment. Exploration and deposit appraisal work on this property were suspended in November 2012. Public consultations with local communities near Wasamac will continue in 2013.

Uranium

In the Otish Mountains area, on the Matoush project, **Strateco Resources** is awaiting Québec's environmental authorization to begin excavating an exploration ramp that would allow the deposit to be assessed at depth.

The underground exploration phase is estimated at \$76M and will create 180 jobs. The estimated cost for the 750-tpd mining project is \$342M and it would create 332 jobs. In 2012, exploration work led to a 58% increase in indicated mineral resources.

Abitex Resources continued exploration and deposit appraisal work on its Lavoie project in the Otish Mountains. An underground mining scenario is considered at 700 tonnes per day. The estimated cost for the project is \$91M and it would create 160 jobs.

Zinc

Xstrata Zinc and **Donner Metals** continued preparation work for a feasibility study on their PD1 project near Matagami, although no release date has been mentioned for the study.

5.2 Mine Development

Alumina

In December 2012, **Orbite Aluminae** completed construction work at its high-purity alumina (HPA) production plant in Cap-Chat, Gaspésie. This plant will process ore from its argillite deposit located in Grande-Vallée, Gaspésie. Commercial production at the plant is expected to be on the order of 3 tpd in the first quarter of 2013, ramping up to 5 tpd by the end of 2013. HPA will be sold to clients for the production of ceramics, electronic components, sapphires, and light-emitting diodes (LED).

Iron

Tata Steel Minerals Canada, a joint venture between **New Millennium Iron Corporation** and **Tata Steel**, began open pit mining operations to produce high-grade iron ore (~60%) on the DSO project near Schefferville. The commissioning and ramp-up period is underway and will continue throughout 2013.

Lithium

In the Abitibi region, near La Corne on the Québec Lithium project, **Canada Lithium Corporation** had completed, at year-end, the construction of mining and processing infrastructure as well as the lithium carbonate plant. The commissioning and ramp-up period is underway and commercial production will be achieved in 2013. The processing plant will process ore from the open pit mine. Production is expected to reach 20 000 tonnes of lithium carbonate per year. The expected mine life is at least 15 years and about 200 jobs will be created. A sales contract for 12 000 to 14 400 tonnes of lithium carbonate per year over a period of five years was concluded with a Chinese company. Other sales agreements are to be expected. This is the first lithium mining and processing project in Québec since 1955.

Nickel, copper, cobalt, and platinum group elements (PGE)

Canadian Royalties completed construction work on its Nunavik Nickel project. This mine site is located approximately 100 km west of the Inuit community of Kangiqsujuaq. Mining and processing operations will begin in the first half of 2013.

Gold

In the James Bay region, **Mines Opinaca**, a subsidiary of **Goldcorp**, continued mine development work with the construction of various infrastructure related to the Eleonore gold project, estimated at nearly \$1.7B. The company is aiming to begin production at this underground mine by the end of 2014, at a rate of 7 000 tpd for an average annual production of 600 000 ounces of gold. Mining operations should continue over a period of 15 years and create more than 600 jobs.

About 25 km south of Matagami, **North American Palladium** is working to achieve commercial production at the Vezza mine. The mine is expected to produce 39 000 ounces

of gold annually over a period of 7 to 9 years. The company also announced it was seeking divestiture of the Vezza mine and the Sleeping Giant mill.

Since October 2009, **Richmont Mines** has been conducting preparation and development work at the former Francoeur gold mine. The company began processing ore in 2012, but high operating costs forced the company to cease mining operations and close the mine in November 2012.

During 2012, **Agnico-Eagle Mines** continued work on its expansion project at the LaRonde mine, initially launched in 2006 to access higher-grade ore located at more than 3 km depth. This additional production will be combined with the production from other zones at the mine. Mining operations are expected to reach full capacity in 2013.

Agnico-Eagle Mines launched in 2012 development work on two new zones at the Goldex mine located near Val-d'Or. Capital investments are estimated at about \$100M, to consolidate 150 jobs and create 100 additional jobs. The proposed mining plan covers a period of 4 years beginning in 2014. Production was suspended indefinitely in the Goldex Extension Zone in October 2011 due to geotechnical problems.

Underground development continued at the Bachelor Lake mining project by **Metanor Resources** in 2012, including the processing of a 5 000-tonne bulk sample. The certificate of authorization for the start-up of production was issued in the summer of 2012. The project is progressing toward commercial production in the first quarter of 2013.

In the Abitibi region, **Iamgold Corporation** continued development work at the Westwood mining project. Sinking of the production shaft reached a depth of 1954 metres in 2012. Ore extracted at Westwood will be processed at the Doyon mill located nearby. Production is expected to begin in early 2013 and will reach 190 000 ounces per year over a period of about 20 years.

Zinc

South of Matagami, **Donner Metals** and **Xstrata Zinc** are going ahead with the development of the Bracemac-McLeod project. Capital investments are estimated at \$160M for an annual production of 220 Kt of concentrate over a period of 4 years. Mining operations will begin in 2013.

Figure 5.1 - Location of projects in the deposit appraisal phase in Québec in 2012.

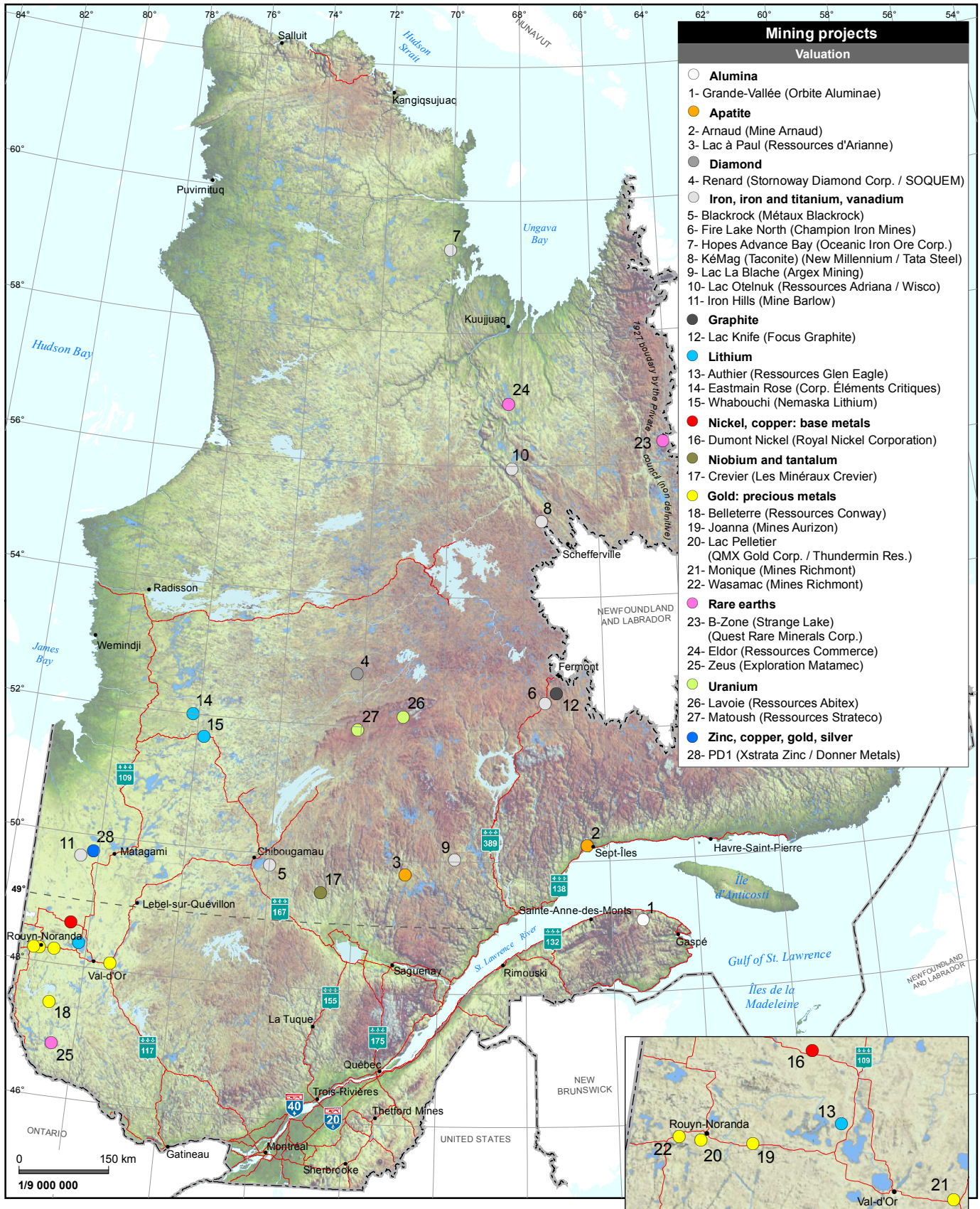


Figure 5.2 - Location of the mining projects in the development phase in Québec in 2012.

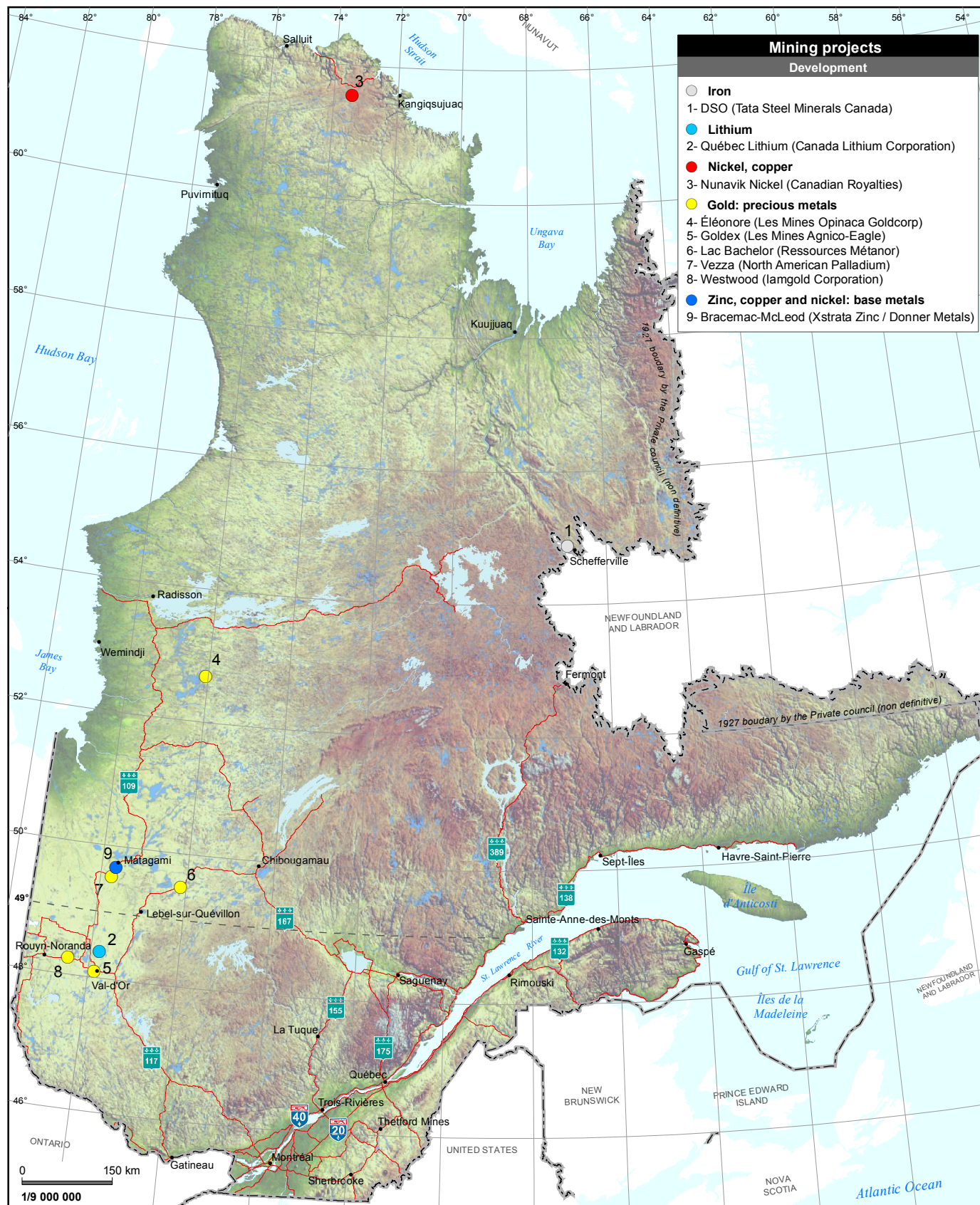


TABLE 5.1 – Mining projects in the deposit appraisal phase in Québec as of December 31, 2012 (see Figure 5.1) ⁽¹⁾.

SITE	TOWNSHIP / NTS / ADMINISTRATIVE REGION	PROJECT	COMPANY	SUMMARY DESCRIPTION OF THE PROJECT AND TYPE OF MINE	COMMODITIES	PROVEN AND PROBABLE RESERVES ⁽²⁾	MEASURED RESOURCES (M)	INDICATED RE-SOURCES (I)	INFERRED RES-SOURCES (P)	EXPECTED DAILY PRODUCTION	EXPECTED START-UP DATE	EXPECTED MINE LIFE
Alumina												
1	Lefrançois / 22H03 / Gaspésie-Îles-de-la-Madeleine	Grande-Vallée	Orbite Aluminae	Alumina Open pit mine	Alumina (silica, hematite, rare earths, scandium)	n/a	n/a	67.3 Mt at 23.4% Al ₂ O ₃	99.8 Mt at 23.1% Al ₂ O ₃	6900 t	n/a	25 years
Apatite												
2	Arnaud / 22J02 / Côte-Nord	Arnaud	Mine Arnaud	Layered mafic complex Open pit mine	Apatite	n/a	5.5 Mt at 5.17% P ₂ O ₅	97.6 Mt at 5.2% P ₂ O ₅	134.9 Mt at 4.6% P ₂ O ₅	30 Kt	2016	23 years
3	22E10, 22E15 / Saguenay-Lac-Saint-Jean	Lac à Paul	Ressources d'Ariane	Anorthosite-related magmatic deposit Open pit mine	Apatite	307 Mt at 6.6% P ₂ O ₅ 8.5% TiO ₂ Paul + Manouane	n/a	n/a	50.3 Mt at 6.6% P ₂ O ₅ 8.2% TiO ₂ Paul	50 Kt	2016	17 years
Diamond												
4	33A16 / Nord-du-Québec	Renard	Stornoway Diamond Corporation / SOQUEM	Kimberlite-hosted diamond deposit Open pit and underground mine	Diamond	23.1 Mt at 0.78 c/t	n/a	n/a	31 Mt at 0.56 c/t	7000 t	2015	11 years
Iron, iron-titanium-vanadium												
5	Lemoine, Rinfret, Dollier / 32G09, 32G16, 32H13 / Nord-du-Québec	Blackrock zone Sud-Ouest	Métaux Blackrock	Titanium-vanadium magnetite Open pit mine	Iron, titanium, vanadium	152 Mt at 29.1% Fe 0.47% V ₂ O ₅ 8.0% TiO	n/a	n/a	n/a	20 Kt - 50 Kt	2013	15 years
6	23B06 / Côte-Nord	Fire Lake North	Champion Iron Mines	Specular hematite in metamorphosed Lake Superior-type iron formation Open pit mine	Iron	n/a	26.6 Mt at 35.2% Fe East and West zones	666.9 Mt at 31.4% Fe East and West zones	521.6 Mt at 30.1% Fe East and West zones	65 Kt	2016	35 years
7	24M08 / Nord-du-Québec	Hopes Advance Bay	Oceanic Iron Ore Corporation	Taconite Open pit mine	Iron	1359 Mt at 32.2% Fe	n/a	n/a	72.7 Mt at 32.8% Fe	70 Kt - 140 Kt	2017	31 years
8	23O03 / Nord-du-Québec	K&Mag	New Millenium / Tata Steel	Taconite Open pit mine	Iron	2 141 Mt at 31.3% Fe	n/a	300 Mt at 31.3% Fe (not included in reserves)	1000 Mt at 31.2% Fe	200 Kt	2016	34 ans
9	22K01 / Côte-Nord	Lac La Blache	Argex Mining	Titanium-vanadium magnetite Open pit mine	Iron, titanium, vanadium	n/a	78 Mt at 41.9% Fe 0.24% V 10.7% Ti	16.9 Mt at 41.9% Fe 0.24% V 10.7% Ti	4.7 Mt at 41.7% Fe 0.25% V 10.7% Ti	3000 t	n/a	n/a
10	24C01 / Nord-du-Québec	Lac Otelnuq	Ressources Adriana / Wisco	Taconite Open pit mine	Iron	n/a	5510 Mt at 29.2% Fe	5840 Mt at 28.7% Fe	12 390 Mt at 30.4% Fe	500 Kt	2018	34 years
11	32E10 / Nord-du-Québec	Iron Hills	Mine Barlow	Taconite Open pit mine	Iron	n/a	826.5 Mt at 21.0% Fe	437.1 Mt at 20.1% Fe	1026.6 Mt at 20.1% Fe	160 Kt	n/a	25 years

TABLE 5.1 – Mining projects in the deposit appraisal phase in Québec as of December 31, 2012 (see Figure 5.1) ⁽¹⁾.

SITE	TOWNSHIP / INTS / ADMINISTRATIVE REGION	PROJECT	COMPANY	SUMMARY DESCRIPTION OF THE PROJECT AND TYPE OF MINE	COMMODITIES	PROVEN AND PROBABLE RESERVES ⁽²⁾	MEASURED RESOURCES (M)	INDICATED RE-SOURCES (I)	INFERRED RES-SOURCES (P)	EXPECTED DAILY PRODUCTION	EXPECTED START-UP DATE	EXPECTED MINE LIFE
Graphite												
12	Fermont / 23B11 / Côte-Nord	Lac Knife	Focus Graphite	Graphite deposit in paragneiss Open pit mine	Graphite	n/a	n/a	4.9 Mt at 15.7% Cgr	3.0 Mt at 15.6% Cgr	822 t	2014	20 years
Lithium												
13	La Motte / 32D08 / Abitibi-Témiscamingue	Authier	Ressources Glen Eagle	Spodumene-bearing granitic pegmatites Open pit mine	Lithium	n/a	2.2 Mt at 0.95% Li ₂ O	5.2 Mt at 0.98% Li ₂ O	0.6 Mt at 0.98% Li ₂ O	1000 t	n/a	n/a
14	33C01 / Nord-du-Québec	Eastmain Rose	Corporation Éléments Critiques	Spodumene-bearing granitic pegmatites Open pit mine	Lithium, tantalum	n/a	n/a	26.5 Mt at 0.98% Li ₂ O 163 ppm Ta ₂ O ₅	10.7 Mt at 0.86% Li ₂ O 145 ppm Ta ₂ O ₅	4000 t	2014	17 years
15	33J12 / Nord-du-Québec	Whabouchi	Nemaska Lithium	Spodumene-bearing granitic pegmatites Open pit mine	Lithium	n/a	11.3 Mt at 1.58% Li ₂ O	13.7 Mt at 1.50% Li ₂ O	4.4 Mt at 1.50% Li ₂ O	3000 t	2014	18 years
Nickel, copper: base metals												
16	Launay / 32D09 / Abitibi-Témiscamingue	Dumont Nickel	Royal Nickel Corporation	Magmatic Ni-Cu-PGE Open pit mine	Nickel, copper	1066 Mt at 0.27% Ni	11.7 Mt at 0.29% Ni (not included in reserves)	577 Mt at 0.26% Ni (not included in reserves)	513 Mt at 0.26% Ni	50 Kt - 100 Kt	2015	31 years
Niobium and tantalum												
17	Crevier / 32H07 / Saguenay-Lac-Saint-Jean	Crevier	Les Minéraux Crevier	Nepheline syenite dykes, alkaline igneous complex Open pit mine	Niobium, tantalum	n/a	12 Mt at 0.2% Nb ₂ O ₅ 234 ppm Ta ₂ O ₅	13 Mt at 0.19% Nb ₂ O ₅ 234 ppm Ta ₂ O ₅	15 Mt at 0.17% Nb ₂ O ₅ 252 ppm Ta ₂ O ₅	4000 t	2016	18 years
Gold: precious metals												
18	Guillet / 31M07 / Abitibi-Témiscamingue	Belleterre	Ressources Conway	Orogenic lode gold Underground mine	Gold	n/a	n/a	n/a	n/a	n/a	n/a	n/a
19	Joannès / 32D02 / Abitibi-Témiscamingue	Joanna	Mines Aurizon	Shear-related disseminated gold sulphides and quartz veinlets Open pit mine	Gold	41.1 Mt at 1.26 g/t Au Hosco zone	1.9 Mt at 1.14 g/t Au Hosco WXZone (not included in reserves)	13.9 Mt at 1.19 g/t Au Hosco zone (not included in reserves)	7.5 Mt at 1.29 g/t Au Hosco zone	n/a	n/a	n/a
20	Rouyn / 32D03 / Abitibi-Témiscamingue	Lac Pelletier	QMX Gold Corporation / Thundermin Resources	Lode gold: greenstone-hosted quartz-carbonate veins Underground mine	Gold	168 Kt at 6.4 g/t Au	n/a	n/a	420 Kt at 8.4 g/t Au	n/a	n/a	2 years

TABLE 5.1 – Mining projects in the deposit appraisal phase in Québec as of December 31, 2012 (see Figure 5.1) ⁽¹⁾.

SITE	TOWNSHIP / NTS / ADMINISTRATIVE REGION	PROJECT	COMPANY	SUMMARY DESCRIPTION OF THE PROJECT AND TYPE OF MINE	COMMODITIES	PROVEN AND PROBABLE RESERVES ⁽²⁾	MEASURED RESOURCES (M)	INDICATED RE-SOURCES (I)	INFERRED RE-SOURCES (P)	EXPECTED DAILY PRODUCTION	EXPECTED START-UP DATE	EXPECTED MINE LIFE
21	Louvicourt / 32C03 / Abitibi-Témiscamingue	Monique	Mines Richmont	Lode gold: greenstone-hosted quartz-carbonate veins Open pit mine	Gold	n/a	n/a	728 Kt at 2.35 g/t Au	11.6 Kt at 0.97 g/t Au	n/a	2013	2 years
22	Beauchastel / 32D03 / Abitibi-Témiscamingue	Wasamac	Mines Richmont	Lode gold: greenstone-hosted quartz-carbonate veins Underground mine	Gold	n/a	1.9 Mt at 2.81 g/t Au	4.8 Mt at 2.44 g/t Au	25.7 Mt at 2.58 g/t Au	n/a	n/a	14 years
Rare earths												
23	24A08 / Nord-du-Québec	B-Zone (Strange Lake)	Quest Rare Minerals Corporation	REE- and yttrium-enriched pegmatite and aplite in peralkaline granite Open pit mine	Rare earths, Yttrium, Zirconium, Niobium	n/a	n/a	278 Mt at 0.93% TREO+Y 1.9% ZrO ₂ 0.18% Nb ₂ O ₅	214 Mt at 0.85% TREO+Y 1.7% ZrO ₂ 0.14% Nb ₂ O ₅	4000 t	2015	25 years
24	24C16 / Nord-du-Québec	Eldor	Ressources Commerce	REE-enriched carbonatite Open pit mine	Rare earths, Yttrium, Niobium	n/a	1.59 Mt at 1.77% OTRT	276 Mt at 1.9% TREO	219.8 Mt at 1.88% TREO	4000 t	n/a	25 years
25	Gendreau, Mercier 31L10, 31L14 / Abitibi-Témiscamingue	Zeus	Exploration Matamec	REE-enriched syénite Open pit mine	Rare earths, Yttrium, Zirconium, Niobium	n/a	n/a	15.1 Mt at 0.43% TREO 0.11% Y ₂ O ₃ 0.91% ZrO ₂	3.8 Mt at 0.40% TREO 0.10% Y ₂ O ₃ 0.91% ZrO ₂	4000 t	2016	13 years
Uranium												
26	2339 / 23D02 / Saguenay-Lac-Saint-Jean	Lavoie	Ressources Abitex	Gabbro- and shear-related uranium deposit Underground mine	Uranium	n/a	n/a	391 Kt at 0.45% U ₃ O ₈	749 Kt at 0.56% U ₃ O ₈	700 t	n/a	6 years
27	32P16 / Nord-du-Québec	Matoush	Ressources Strateco	Shear-related uranium deposit Underground mine	Uranium	n/a	n/a	586 Kt at 0.95% U ₃ O ₈	1.7 Mt at 0.44% U ₃ O ₈	750 t	2015	7 years
Zinc, copper, gold, silver												
28	La Gauchetière / 32E16 / Nord-du-Québec	PD1	Xstrata Zinc / Donner Metals	Gold-rich volcanogenic massive sulphides Open pit and underground mine	Zinc, copper, gold, silver	n/a	0.6 Mt at 4.3% Zn 0.83% Cu 19.6 g/t Ag	1.1 Mt at 4.7% Zn 1.33% Cu 19.6 g/t Ag	n/a	n/a	n/a	n/a

NOTES:

1- The list of abbreviations is provided in Appendix 2.

Data compiled in this table are preliminary and are based on information publicly released by mining companies.

The distinction between proven and probable reserves, and between measured, indicated, and inferred resources is defined in accordance with National Instrument 43-101.

2- When proven reserves are reported, measured and inferred reserves are not presented, unless otherwise indicated.

TABLE 5.2 – Mining projects in the development phase in Québec as of December 31, 2012 (see Figure 5.2)⁽¹⁾.

SITE	TOWNSHIP / MTS / ADMINISTRATIVE REGION	PROJECT	COMPANY	SUMMARY DESCRIPTION OF THE PROJECT TYPE OF MINING PROJECT	COMMODITIES	PROVEN AND PROBABLE RESERVES ⁽²⁾	MEASURED RESOURCES (M)	INDICATED RESOURCES (I)	INFERRED RESOURCES (P)	EXPECTED DAILY PRODUCTION	EXPECTED START-UP DATE	EXPECTED MINE LIFE
Iron												
1	23J14 / Côte-Nord	DSO	Tata Steel Minerals Canada	Enriched iron formations Open pit mine	Iron	64 Mt at 58.8% Fe (OC and TNL)	n/a	8,1 Mt at 58.8% Fe	7,2 Mt at 56.8% Fe	28 000 t	2013	15 years
Lithium												
2	La Corne / Abitibi-Témiscamingue	Québec Lithium	Canada Lithium Corporation	Spodumene-bearing granitic pegmatites Open pit mine	Lithium	17,1 Mt at 0.94% Li ₂ O	n/a	n/a	21 Mt at 1.15% Li ₂ O	3000 t	2013	15 years
Nickel, copper												
3	35H11 / Nord-du-Québec	Nunavik Nickel	Canadian Royalties	Magmatic Ni-Cu-PGE Open pit and underground mine	Nickel, copper, gold, cobalt, PGE	n/a	560 Kt at 0.93% Ni 1.10% Cu 0.04% Co 0.60 g/t Pt 2.7 g/t Pd 0.10 g/t Au	21 Mt at 0.93% Ni 1.15% Cu 0.05% Co 0.54 g/t Pt 2.27 g/t Pd 0.14 g/t Au	5 Mt at 0.72% Ni 0.92% Cu 0.04% Co 0.51 g/t Pt 2.0 g/t Pd 0.13 g/t Au	4500 t	2013	15 years
Gold: precious metals												
4	33C09 / Nord-du-Québec	Éléonore	Les Mines Opinaca / Goldcorp	Disseminated-epilement gold deposit in a highly metamorphosed sedimentary sequence Underground mine	Gold	12 Mt at 7.6 g/t Au	n/a	1.3 Mt at 11 g/t Au	12.2 Mt at 11 g/t Au	7000 t	2014	15 years
5	Dubuisson / 32C04 / Abitibi-Témiscamingue	Goldex	Les Mines Agnico-Eagle	Quartz-tourmaline veins with Py-Cp cross-cutting granodiorite sills and dykes Underground mine	Gold	6,5 Mt at 1.54 g/t Au M+E zones	n/a	2,2 Mt at 1.73 g/t Au M+E zones (not included in reserves)	3,8 Mt at 1.28 g/t Au M+E zones	8000 t	2014	4 years
6	Le Sueur / 32F08 / Nord-du-Québec	Lac Bachelor	Ressources Métanor	Orogenic lode gold Underground mine	Gold	645 Kt at 7.5 g/t Au	n/a	n/a	207 Kt at 6.8 g/t Au	690 t	2013	5 years
7	Veza / 32F12 / Nord-du-Québec	Veza	North American Palladium	Orogenic lode gold Underground mine	Gold	n/a	190 Kt at 6.1 g/t Au	1,52 Mt at 5.8 g/t Au	633 Kt at 5.0 g/t Au	750 t	2013	7-9 years
8	Bousquet / 32D07 / Abitibi-Témiscamingue	Westwood	Iamgold Corporation	Gold-rich volcano-genic massive sulphides, stockwork and disseminated sulphides Underground mine	Gold	n/a	n/a	408 Mt at 7.5 g/t Au	9 Mt at 11.4 g/t Au	2300 t	2013	19 years

TABLE 5.2 – Mining projects in the development phase in Québec as of December 31, 2012 (see Figure 5.2)⁽¹⁾.

SITE	TOWNSHIP / NTS / ADMINISTRATIVE REGION	PROJECT	COMPANY	SUMMARY DESCRIPTION OF THE PROJECT TYPE OF MINING PROJECT	COMMODITIES	PROVEN AND PROBABLE RESERVES ⁽²⁾	MEASURED RESOURCES (M)	INDICATED RESOURCES (I)	INFERRED RESOURCES (P)	EXPECTED DAILY PRODUCTION	EXPECTED START-UP DATE	EXPECTED MINE LIFE
Zinc, copper and nickel: base metals												
9	Galinée / 32F12 / Nord-du-Québec	Bracemac-McLeod	Xstrata Zinc / Donner Metals	Volcanogenic massive sulfides Underground mine	Zinc, copper, gold, silver	3.7 Mt at 9.6% Zn 1.3% Cu 28 g/t Ag 0.43 g/t Au	n/a	n/a	2.6 Mt at 8.8% Zn 1.3% Cu 39 g/t Ag 1.1 g/t Au	2500 t	2013	4 years

NOTES:

1- The list of abbreviations is provided in Appendix 2.

Data compiled in this table are preliminary and are based on information publicly released by mining companies.

The distinction between proven and probable reserves, and between measured, indicated, and inferred resources is defined in accordance with National Instrument 43-101.

2- When proven reserves are reported, measured and inferred reserves are not presented, unless otherwise indicated.

CHAPTER 6

MINERAL PRODUCTION

6.1 Economic data and statistics on mineral production¹

Martin Labrecque

Mineral shipments

Québec is one of the most important mining producers in Canada, particularly for metallic minerals. In 2011, Québec ranked fourth among Canadian provinces in terms of the value of its mineral shipments, behind Ontario, Saskatchewan, and British Columbia. For metallic minerals however, after two years in the pole position in 2009 and 2010, Québec was the second largest producer in Canada in 2011, again trailing Ontario². Nevertheless, Québec remains the most diversified mineral producer in Canada, given the production and beneficiation of seventeen different metallic minerals

and fourteen non-metallic minerals within its borders.

The value of Québec shipments in 2011 (metallic and non-metallic minerals) should reach a record peak of \$8.1B, an increase of 14% relative to the previous year (\$7.1B). This considerable increase is attributable to high metal prices, several reaching historic highs during the first half of 2011. This is particularly true for iron ore, which is the most important mineral commodity produced in Québec in terms of tonnage and value. The price of iron ore peaked at US\$193/t³ in February 2011.

The extraction of surface mineral substances such as crushed stone, and sand and gravel, is so widespread that all administrative regions in Québec are involved in one way or another in the mining sector.

Commodities produced in Québec

In Québec, iron, gold, nickel, stone (crushed, architectural, etc.), zinc, titanium dioxide, and cement are the main commodities produced in terms of value of shipments. Québec also produces several other metallic and non-metallic mineral commodities.

Companies operating metallic ore mines in Québec

There were sixteen metallic ore mines in operation in Québec during the second half of 2012.

TABLE 6.1 - Value of mining product shipments per administrative region in Québec in 2010 and 2011 (\$M).

No.	REGIONS	2010	2011 ^p
1	Bas-Saint-Laurent	78	62
2	Saguenay-Lac-Saint-Jean	189	223
3	Capitale-Nationale	177	180
4	Mauricie	24	15
5	Estrie	76	81
6	Montréal	19	c
7	Outaouais	24	25
8	Abitibi-Témiscamingue	1,071	1,263
9	Côte-Nord	2,357	3,065
10	Nord-du-Québec	1,470	1,500
11	Gaspésie-Îles-de-la-Madeleine	55	66
12	Chaudière-Appalaches	87	74
13	Laval	39	c
14	Lanaudière	167	206
15	Laurentides	91	87
16	Montérégie	1,172	1,181
17	Centre-du-Québec	31	30
Total		7,127	8,111

p: data for 2011 are preliminary

c: confidential data

Source: Institut de la statistique du Québec

1 - All data on mining investments, jobs, and mineral production in Québec are compiled by the Institut de la statistique du Québec, under the Mining Statistics Program.

2 - According to preliminary data from the Institut de la statistique du Québec and Natural Resources Canada.

3 - Metal Bulletin Price Index for 62% Fe CFR China.

TABLE 6.2 - Mineral shipments from Québec per substance in 2010 and 2011.

SUBSTANCES	2010		2011p	
	Quantity	Value (\$M)	Quantity	Value (\$M)
METALLIC MINERALS				
Antimony (t)	c	c	c	c
Bismuth (t)	5	< 1	5	< 1
Cadmium (t)	2,351	9	1,711	5
Cobalt (t)	490	23	555	23
Copper (t)	23,384	181	20	184
Gold (kg)	25,327	1,027	27	1,302
Iron ore (kt)	17,009	c	19,267	c
Iron, remelt (t)	c	c	c	c
Lead (t)	1,942	4	2,135	5
Nickel (t)	30	669	27	643
Niobium (t)	4,298	c	4,532	c
Platinum group (kg)	c	c	c	c
Selenium (t)	18	1	19	3
Silver (t)	146	98	71	82
Tellurium (t)	3	< 1	2	< 1
Zinc (t)	200,693	447	190	428
Total - Metallic minerals	-	5,388	-	6,375
NON-METALLIC MINERALS				
Cement (kt)	2262	330	2648	354
Chrysotile asbestos (kt)	c	c	c	c
Clay products (bricks)	c	c	c	c
Graphite (t)	c	c	c	c
Ilmenite (kt)	c	c	c	c
Lime (kt)	684	93	762	101
Mica (t)	c	c	c	c
Peat (kt)	334	89	342	100
Salt (t)	c	c	c	c
Sand and gravel (kt)	19,372	96	16,878	96
Silica (kt)	451	17	406	14
Stone (kt)	48,691	511	47,115	495
Sulphur (kt)	152	18	144	26
Talc (t)	c	c	c	c
Titanium dioxide (t)	c	c	c	c
Total - Non-metallic minerals	-	1739	-	1735
Grand Total	-	7,127	-	8,111

p: data for 2011 are preliminary

c: confidential data

Sources: *Institut de la statistique du Québec* and Natural Resources Canada

Mining investments

In addition to exploration and deposit appraisal expenditures, the mining sector generates considerable investments in mine development, for the construction of new mines or on existing mine sites. These investments include mine development work, capital assets, and repairs.

Primary processing activities

Primary processing activities on ore mined in Québec include refineries, smelters, and clay, lime, and cement plants. These activities are often based outside of mining regions, which helps spread the economic benefits of the mining sector across the entire province. In 2011, the primary processing industry accounted for 3838 direct jobs in twelve plants located mainly in the Montérégie, Abitibi-Témiscamingue, and Montréal regions. With the anticipated expansion of mining activities, new primary processing plants are expected to appear in Québec in the coming years.

Note that there are in Québec several other primary processing plants that receive imported ores (aluminium smelters, perlite production plants, and one bauxite processing plant).

Jobs in the mining sector

In 2011, according to preliminary data from the Institut de la statistique du Québec, the total number of jobs related to mineral extraction activities in Québec (metallic and non-metallic ores) was 11,940. These jobs were distributed throughout all regions of Québec, particularly in the Abitibi-Témiscamingue, Côte-Nord, and Nord-du-Québec regions. The total number of direct jobs in the mining sector in Québec was 16,855, including those in the primary processing and diamond drilling sectors, representing an increase of 11% relative to 2010. Note that the extraction of peat, sand and gravel, and crushed stone is so widespread that all regions of Québec are involved in one way or another in the mining sector, including Montréal and Québec City.

TABLE 6.3 - Companies operating metallic ore mines in Québec (November 2012).

NAME OF MINE	NAME OF COMPANY	COMPANY STATUS	HEAD OFFICE
Beaufor	Richmont Mines	public	Rouyn-Noranda
Canadian Malartic	Osisko	public	Montréal
Casa Berardi	Aurizon Mines	public	Vancouver
Fire Lake	ArcelorMittal Mines Canada	subsidiary of ArcelorMittal	Luxembourg
Kiena	Wesdome Gold Mines	public	Toronto
Lac Bloom	Cliffs Natural Resources	public	Cleveland (USA)
Lac Herbin	QMX Gold Corporation	public	Toronto
LacTio	Rio Tinto Fer et Titane	subsidiary of Rio Tinto Group	London (UK)
Langlois	Nyrstar Canada Resources	subsidiary of Nyrstar	Zurich (Switzerland)
Lapa	Agnico-Eagle Mines	public	Toronto
LaRonde	Agnico-Eagle Mines	public	Toronto
Mont-Wright	ArcelorMittal Mines Canada	subsidiary of ArcelorMittal	Luxembourg
Mouska	Iamgold	public	Toronto
Niobec	Iamgold	public	Toronto
Perseverance	Xstrata Canada	subsidiary of Xstrata Plc.	Zoug (Switzerland)
Raglan	Xstrata Canada	subsidiary of Xstrata Plc.	Zoug (Switzerland)

Source: *Ministère des Ressources naturelles*. Data accurate as of November 2012.

According to a study by Deloitte and E&B Data released in September 2012⁴, in addition to these direct jobs, the mining sector generated in 2010 about 6,000 jobs related to mineral exploration, in addition to 12,000 indirect jobs related to mineral extraction activities, and more than 10,000 indirect jobs related to capital investments for mine development (construction of new mines or existing mines). Altogether, including indirect jobs related to primary processing activities (estimated at 3750)⁵, mining activities in Québec in 2010 generated more than 47,000 direct and indirect jobs⁶.

Employment injuries in the mining sector

As in any other industrial sector, the mining sector inevitably generates each year some employment injuries (occupational diseases, employment injuries, and industrial accidents)⁷.

The Act respecting industrial accidents and occupational diseases⁸ stipulates that employers must keep a register of all industrial accidents that take place in their establishment, even if the accident does not render the worker unable to perform his duties beyond the day on which the event took place. The employer must show the register to the worker, and the latter must sign the register to confirm the report and the date of the accident. The employer must also ensure the Commission de la santé et de la sécurité au travail (CSST) has access to the register.

Each year, the mining sector⁹ accounts for about 1% of all employment injuries reported in Québec by the CSST. Nevertheless, the performance of the mining sector continues to improve year after year. Employment injuries in the mining sector have dropped by 30% over the period from 2001 to 2011. This is comparable to what is observed in other industrial sectors in Québec.¹⁰

The most common accidents occurring in the mining sector include: collisions between vehicles, exposure to substances, excessive effort, being hit by an object, friction, vibration, and repetitive movements.

Substantial efforts are continuously expended by governments and industry to minimize and diminish employment injuries. The CSST is very much involved in the mining sector and has notably devoted an entire section of its website¹¹ to the mining sector, in which numerous guides and standards are presented. The CSST is also responsible for the Regulation respecting occupational health and safety in mines¹², which is updated on a regular basis. For example on January 20, 2011, seventeen amendments or additions were made. The previous amendments, totalling 39, were made in April 2009.

4 - fr.ebdata.com/wp-content/uploads/2012/04/EB_Data-Etude-miniére-260912-1.pdf

5 - Based on a study of economic benefits by the *Ministère des Ressources naturelles* released in May 2011.

6 - This figure is different from the 34,000 direct and indirect jobs reported in the Report on mining activities in Québec 2011. The difference is explained by the fact that the 34,000-job figure represented an annualized average of the economic benefits of investments in the 2000-2008 period, whereas the 47,000-job figure relates solely to 2010, a year in which mining investments were very high.

7 - Definitions of an employment injury according to the Act respecting industrial accidents and occupational diseases.

8 - www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/A_3_001/A3_001_A.html

9 - Data on employment injuries include mineral extraction activities, as well as drilling of oil and gas wells. The latter represents a very small proportion of jobs related to mining activities.

10 - These data do not include employment injuries related to exploration and deposit appraisal activities, nor to the primary processing of minerals.

11 - www.csst.qc.ca/prevention/secteur/minier/programme_intervention.htm

12 - www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=3&file=/S_2_1/S2_1R14_A.HTM

TABLE 6.4 - Total mining investments per administrative region in Québec (exploration and deposit appraisal, and mine development, in \$M).

	Abitibi-Témiscamingue			Côte-Nord			Nord-du-Québec			Other regions			Total		
	Expl. & dep. app.	Mine devel.*	Total	Expl. & dep. app.	Mine devel.*	Total	Expl. & dep. app.	Mine devel.*	Total	Expl. & dep. app.	Mine devel.*	Total	Expl. & dep. app.	Mine devel.*	Total
2008	182	426	608	32	382	413	290	602	891	22	76	98	526	1,485	2,011
2009	166	820	987	14	497	510	185	263	447	15	82	96	379	1,661	2,041
2010	182	1,236	1,418	45	561	607	261	484	746	23	124	147	512	2,405	2,917
2011	286	756	1,042	68	1,350	1,419	438	876	1,314	42	106	148	834	3,089	3,923
2012ir	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	796	4,586	5,382

* Data for 2012 represent revised spending intentions as of the spring/summer of 2012.
Source: *Institut de la statistique du Québec*

TABLE 6.5 - Refineries, smelters, and clay, lime, and cement plants in Québec, in 2012.

TYPE	NAME	OWNER	LOCATION
Refinery	Canadian Copper Refinery (CCR)	Xstrata	Montréal
Refinery	Canadian Electrolytic Zinc (CEZ)	Noranda Income Limited Partnership	Montréal
Smelter	Horne smelter	Xstrata	Abitibi-Témiscamingue
Smelter	RTFT metallurgical complex	RioTinto, Fer etTitane	Montréal
Clay plant	Briqueterie Saint-Laurent	Briques Hanson	Montréal
Lime plant	Joliette plant	Graymont	Lanaudière
Lime plant	Bedford plant	Graymont	Montréal
Lime plant	Marbleton plant	Graymont	Etrie
Lime plant	Bas-Saint-Laurent plant	Coopérative de Producteurs de chaux du Bas-Saint-Laurent	Bas-Saint-Laurent
Cement plant	Joliette plant	Holcim	Lanaudière
Cement plant	Ciment Québec	Ciment Québec	Québec
Cement plant	Cimenterie St-Constant	Lafarge Canada	Montréal
Cement plant	Kilmar facility	Colacem Canada	Laurentides

6.2 Mineral production

Martin Bernatchez, Denis Blackburn, Dominic Fragasso, Germain Girard, Jacinthe Paquet, Denis Raymond, and N'golo Togola

Figure 6.1 shows the location of active mines in Québec in 2012. Tables 6.8 and 6.9 provide mining statistics for the production of metallic and non-metallic commodities in Québec, respectively.

Metal commodities

Metal commodities mined in Québec in 2012 include iron and titanium, nickel and copper, niobium, gold, silver, and zinc. Figure 6.1 shows the

location of metallic ore mines and information on the latter is listed in Table 6.8. Note that active metallic ore mines are those where mining leases are currently in effect.

Iron

ArcelorMittal Mines Canada continued the expansion of its **Mont-Wright** mine, at an estimated cost of \$865M, to increase its annual production of iron ore concentrate by 8 Mt to reach 24 Mt. This investment will create 400 new jobs to be added to the existing 1100 jobs, and will extend the mine life until 2040. Work began in 2011 and will be completed in 2013. The company is also considering the possibility of doubling its production of iron pellets at its Port-Cartier plant from 9.2 to 18.5 Mt

per year. This project is still being considered but has been postponed to a later date.

ArcelorMittal Mines Canada also operates the Fire Lake mine where it extracts about 3 Mt per year on a seasonal basis. The ore is shipped by rail to the Mont-Wright processing plant.

In November 2012, **Cliffs Natural Resources** announced it was postponing its expansion project at the Bloom Lake mine site for one year. Work on this project had already started but has been suspended due to cash flow issues, production costs, and global market conditions. Postponement of this project has led to a temporary layoff for 450 construction workers, but has had no impact on the 420 jobs related to mining operations at the site.

TABLE 6.6 - Distribution of workers in the mining sector per administrative region in Québec in 2011p.

No.	REGIONS	Total number of jobs in the mining sector	Paid wages and salaries (\$M)	Paid hours (thosands)
01	Bas-Saint-Laurent	469	17	899
02	Saguenay–Lac-Saint-Jean	603	39	1,164
03	Capitale-Nationale	557	26	986
04	Mauricie	78	2	94
05	Estrie	319	17	530
06	Montréal	570	39	1,073
07	Outaouais	71	3	128
08	Abitibi-Témiscamingue	3,318	308	6,600
09	Côte-Nord	3,762	340	7,088
10	Nord-du-Québec	1,365	164	2,771
11	Gaspésie-Îles-de-la-Madeleine	206	10	357
12	Chaudière-Appalaches	532	17	802
13	Laval	101	6	197
14	Lanaudière	402	28	692
15	Laurentides	348	18	722
16	Montérégie	2,917	208	5,776
17	Centre-du-Québec	160	6	269
	Diamond drilling	1077	45	1,593
Total		16,855	1,292	31,742

N.B.: Jobs in diamond drilling represent only a fraction of jobs related to exploration and deposit appraisal activities. *L'Institut de la statistique du Québec* (ISQ) does not compile all jobs related to these activities (estimated at more than 2000 by the MRN).

This table does not take into account indirect jobs.

p: data for 2011 are preliminary.

Source: *Institut de la statistique du Québec*

TABLE 6.7 - Registered and confirmed employment injuries - Mines, quarries and oil wells.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Industrial accident	1,375	1,436	1,274	1,170	1,175	1,077	1,130	1,051	792	897	948
Occupational disease	140	135	131	118	152	141	137	123	156	110	113
Total - Mining sector	1,515	1,571	1,405	1,288	1,327	1,218	1,267	1,174	948	1,007	1,061
Total - All sectors in Québec	141,283	137,456	135,724	132,906	125,931	122,086	112,009	108,758	95,597	92,112	91,030

Source : *Service de la statistique, Commission de la santé et de la sécurité au travail*, November 2012.

The data represent the inscription year of the registered and confirmed employment injuries, with or without compensation.

Iron-titanium

Rio Tinto Fer et Titane continued its \$200M investment project announced previously at its Lac Tio mine in the Côte-Nord region. This mine will be in operation at least until 2050.

Nickel, copper, cobalt, and platinum group elements (PGE)

Xstrata Nickel continued mining operations at the Raglan mine site, with no major announcements or issues. An expansion project at its No. 2 mine was announced in 2011.

Niobium

Iamgold Corporation made Mines Niobec an independent company in September 2011. In operation since 1976, annual production at the Niobec mine has been maintained at 4.4 million kilograms of ferroniobium. Iamgold has an expansion project estimated at \$1.2B to triple its annual ferroniobium production to 15 million kilograms. A preliminary economic assessment was released in 2011, which estimated reserves at 458 Mt of niobium oxide. The environmental impact study was submitted in December 2012. The project would extend the mine life by 40 years and create 200 new jobs.

Gold

During the first nine months of 2012, the Beaufor mine operated by **Richmont Mines** produced 15 554 ounces of gold, in line with its annual production target of 20 000 to 25 000 ounces of gold. **Richmont Mines** also continued work on the W Zone, a satellite deposit located near surface, in preparation for a bulk sampling program in 2013.

Osisko Mining Corporation continued its investments at the Canadian Malartic mine to increase the daily production capacity at the processing plant by adding new stationary equipment. The design capacity of the plant is expected to reach 60 000 tonnes per day for an annual production between 610 000 and 670 000 ounces of gold. The company

expects to achieve this production rate in 2013. In addition, the company was able to come to an agreement with the majority of homeowners in the south neighborhood concerning the area jointly designated with the Town of Malartic. Overall, the rate of satisfaction of Malartic citizens toward Osisko is particularly high.

In 2012, the Casa Berardi mine began its fourth year of commercial production since operations resumed at the mine in November 2006. Work to deepen the shaft at the West mine, undertaken by **Aurizon Mines** in 2011, continued in 2012. The shaft is expected to reach 1100 metres depth and will be completed in the second half of 2013, with commissioning scheduled by the end of 2013. This work is expected to lead to an increase in mineral reserves and possibly extend the mine life over a period of 6 to 10 years. With all required permits in hand, construction of the paste backfill plant accelerated in the fourth quarter of 2012 and commissioning of the plant is now anticipated for the second quarter of 2013. Paste backfill will be used to maximize extraction of high-grade ore in Zone 113 and will improve mining flexibility. Given the shortage of experienced miners, Aurizon wants to use its own workforce to enhance mining productivity and its ability to recruit, attract, and retain miners.

The Kiena mine, held by **Wesdome Gold Mines**, produced 18 900 ounces of gold in 2012 from 265 800 tonnes of ore mined at an average recovered grade of 2.2 g/t Au. In 2013, the company anticipates producing approximately 20 000 ounces of gold from 260 000 tonnes mined at an average recovered grade of 2.49 g/t Au. Exploration and development work in the South Zone will continue over the course of 2013.

At the Lac Herbin mine, **QMX Gold Corporation** (formerly Alexis Minerals Corporation) continued implementation of its turnaround plan announced in June 2011. The plan involved intensive underground development work, major exploration programs near the mine, and improved recovery rates at the Aurbel

mill. Production for the first nine months of 2012 was 16 000 ounces of gold from 118 000 tonnes of ore mined. For 2013, production at the Lac Herbin mine is expected to reach 18 500 to 20 500 ounces of gold.

During the first nine months of 2012, the Lapa mine held by **Agnico-Eagle Mines** produced 81 570 ounces of gold, in line with the previously announced annual production guidance of 100 000 ounces. Investments in mine development and equipment were approved during 2012, in an effort to extend the mine life beyond 2016.

During the first nine months of 2012, **Agnico-Eagle Mines** produced 123 964 ounces of gold at the LaRonde mine, in line with its stated annual objective of 157 500 ounces. The LaRonde mine also produces copper, zinc, and silver. In 2013, some work will be performed to solve ventilation and congestion issues in the lower levels of the mine. In 2014 and 2015, the mine should progress toward an average annual production rate of about 320 000 ounces over the life of the mine. The company expects to continue mining operations until 2026.

Iamgold Corporation continues to use its processing facilities at the former Doyon mine in Preissac to process ore from its Mouska mine and intends to keep the mill operational to eventually process ore from its Westwood project in 2013. Ore extracted in 2012 at the Mouska mine was stockpiled for processing in 2013 and operations at the mine are expected to cease in 2013.

In January 2012, **North American Palladium** announced the closure of its Sleeping Giant gold mine for economic reasons. The concentrator, with a daily design capacity of 800 tonnes, remains operational and will process ore from the Veza mine.

The Francoeur mine was the first mining operation for **Richmont Mines** and enabled the company to become a gold producer some twenty years ago. The Francoeur mine resumed commercial production from August 1, 2012 to November 30,

2012, for a period of four months. According to the company, low grades, difficult mining conditions, and the lack of experienced miners are the main factors that led to the high operating costs and ultimately, to the mine closure.

Century Mining became a wholly-owned subsidiary of White Tiger Gold on October 20, 2011. After the shutdown in 2010, Century Mining resumed operations at the Lamaque mining complex, including the processing plant, in February 2012. Their main partner terminated its financial support in May 2012, since Century Mining failed to reach the requested level of gold production and to meet its commitments to the bank. The Lamaque mine was again shut down on May 25, 2012.

Zinc, copper, and silver

Nyrstar, owner and operator of the Langlois mine, announced in July the start of commercial production at the mine.

Mining operations by Xstrata Zinc began at the Perseverance mine in the fall of 2008 and will cease in 2013. Donner Metals and Xstrata Zinc intend to bring the Bracemac-McLeod deposit into production to provide a continuous supply of ore for the Matagami mill.

Non-metallic commodities

The value of industrial mineral shipments, as established by the Institut de la statistique du Québec, was \$873M in 2012 (provisional data), compared to \$734M in 2011 (preliminary data), an increase of 29% in the value of mineral shipments. These figures do not include limestone, dolomite, and clay product shipments, which are included with stone products, nor do they take into account the value of sand and gravel shipments.

Non-metallic commodities (industrial minerals) produced in Québec in 2012 include potassium feldspar, graphite, mica, rock salt, and silica. Figure 6.1 shows the location of non-metallic ore mines, and information about the latter is listed in Table 6.9.

Note that active non-metallic ore mines are those where mining leases are currently in effect.

Chrysotile

The last two mines producing chrysotile in Québec, namely the Black Lake mine and the Jeffrey mine, ceased all production operations in 2011. Consequently, there was no chrysotile production in 2012.

In June 2012, the government of Québec awarded a \$58M loan to Mines Jeffrey to restart the Jeffrey mine. However, in September 2012, representatives from the newly elected government indicated that the loan provided for the development of this underground mine was being recalled.

Industrial minerals

Feldspar

Dentsply Canada extracts feldspar, used to make dental ceramics, at the Othmer mine near Buckingham, in the Outaouais region. Mining operations are sporadic and excavation work is planned in 2013 to renew reserves and supply their plants located in the United States and in Puerto Rico. Only 5 to 8% of the feldspar recovered at the mine is dental quality. Reserves are sufficient for several years.

Graphite

Timcal Graphite & Carbon extracts graphite at the Lac-des-Îles deposit located near Mont-Laurier. The company, member of the Imerys group, annually produces 24 000 tonnes of ultrafine to coarse flake graphite at its concentration plant. Reserves currently stand at 1.6 Mt and may increase. Graphite is used to produce refractories, lubricants, batteries (primary and rechargeable), in metallurgy, to make automotive parts and in new technologies (polymers, supercapacitors, fullerene, nanotubes, graphene).

Mica

Imerys Mica Suzorite operates the Lac Letondal mine in Haute-Mauricie since 1970. Ore is extracted every

four years to supply their processing plant located in Boucherville. The next extraction campaign at the mine is scheduled for 2013. At the current production rate, the 27 Mt in ore reserves are sufficient to last one hundred years. The plant produces annually 30 000 tonnes of micronized mica which, given its insulating and heat-resistant properties, is destined for the construction market (ceramics, rubber, plastic, plaster, paint, electric and electronic components).

Salt

In 2012, 1 400 000 tonnes of rock salt (halite) were extracted at the Seleine mine in the Îles-de-la-Madeleine. This mine is held by the **Canadian Salt Company** (formerly Windsor Salt), headquartered in Pointe-Claire. The mine has 10 Mt in proven reserves and 30 Mt in probable reserves. The rock salt is used for winter de-icing purposes on roads in Québec, Ontario, in the Maritimes and along the East Coast of the United States.

Silica

Three silica mines were in operation in 2012.

The Petit-Lac-Malbaie mine in Charlevoix municipality produces annually 200 000 tonnes of silica and is jointly operated by **Silicium Québec** and **Sitec**. The silica production supplies foundries, glass factories, as well as the **Silicium Québec** plant in Bécancour and **Elkem Metal Canada's** plant in Saguenay.

The mine operated by **Unimin** in Saint-Canut produced 172 000 tonnes of silica from a siliceous sandstone in 2012. The processing plant on site has an annual production capacity of 500 000 tonnes. The silica supplies markets for glass containers, flatware, fibreglass, silicon carbide, and filtration sand.

The third silica mine in operation is held by **Société minière Gardin** in Saint-Rémi-d'Amherst, in the Laurentides region. This is a private company that releases very little information on its silica production. In the past, the company also extracted kaolinite at the mine.

Industrial stone

The location of industrial stone quarries in Québec is shown in Figure 6.2 and information relating to these quarries is listed in Table 6.10.

Industrial stone produced in Québec in 2012 included limestone, dolomite, marble, quartzite, sandstone, and shale. Limestone, dolomite, and marble are mined for industrial purposes in fourteen quarries and are used to produce quick lime, various aggregate products (soil amendments, mineral fillers, granules), or cement.

The main sources of silica are quartzites, sandstones, and natural sand deposits. Shale used to manufacture facing bricks is quarried in a single location in the Montréal region.

Architectural stone

Figure 6.3 shows the location of architectural stone quarries in operation in Québec in 2012. Brief descriptions of each quarry are presented in Table 6.11.

Seventy-seven (77) architectural stone quarries were active in Québec in 2012. The Rivière-à-Pierre area, with its twelve quarries in operation, constitutes the most important region in Québec for the production of dimension stone. Other areas of interest for the production of architectural stone namely include Saint-Nazaire and Chute-des-Passes (six quarries) as well as the Saint-Alexis-des-Monts and Saint-Didace areas (five quarries).

Granite D.R.C. Gesrock ceased producing “Canadian Caledonia” stone at its quarry in Rivière-à-Pierre.

Firstake Capital Corporation ceased all production operations for “Joliette Grey” and “Joliette Yellow” varieties in its quarry located near Joliette.

Polycor also ceased extraction of “Riviera”-type stone at its quarry in Rivière-à-Pierre.

Peat

Information regarding peat harvesting sites in Québec is listed in Table 6.12 and the location of these sites is shown in Figure 6.4.

For the 2011-2012 fiscal year, peat production in Québec was about 9 567 000 bags of 170 dm³ for a total value on the order of \$99 581 000. The peat production sector in Québec represents some 600 direct jobs related to peatland harvesting and some 1550 direct jobs in the peat industry in general. In addition to peat harvesting, the industry includes the production of value-added products (horticultural growing media), the design of harvesting and packaging equipment, as well as environmental applications (wastewater biofilters and absorbents).

Fifteen producers were active in Québec, harvesting peat from nearly thirty different sites. Production in Québec comes from eight different regions: Bas-Saint-Laurent (± 36%), Centre-du-Québec (± 21%), Côte-Nord (± 19%), Montérégie (± 15%), Chaudière-Appalaches (± 4%), Saguenay-Lac-Saint-Jean (± 4%),

Capitale-Nationale (± 1%), and Gaspésie-Îles-de-la-Madeleine (± 0.02%).

Note that, for 2006-2011, a strategic five-year plan for the VTTA (*Valorisation de la tourbe et des technologies agroenvironnementales*; development of peat soil and agri-environmental technologies) niche of excellence was adopted under the ACCORD (*Action concertée de coopération régionale de développement*; regional development cooperation) program. The VTTA niche produced the best results among all niches of excellence, and was thus recognized as a “leader” niche with the potential to become both a North American and world leader.

Consequently, the renewal of the VTTA niche was approved in 2012 under another five-year agreement. By 2016, the peat and agri-environmental technology industry in Québec is hoping to be recognized as a leader on international markets, namely for its responsible management of resources and its diversified technologies and innovative products.

The VTTA niche is coordinated by the Québec Peat Moss Producers Association (APTHQ, www.tourbehorticole.com).

Figure 6.1 - Active mines in Québec in 2012.

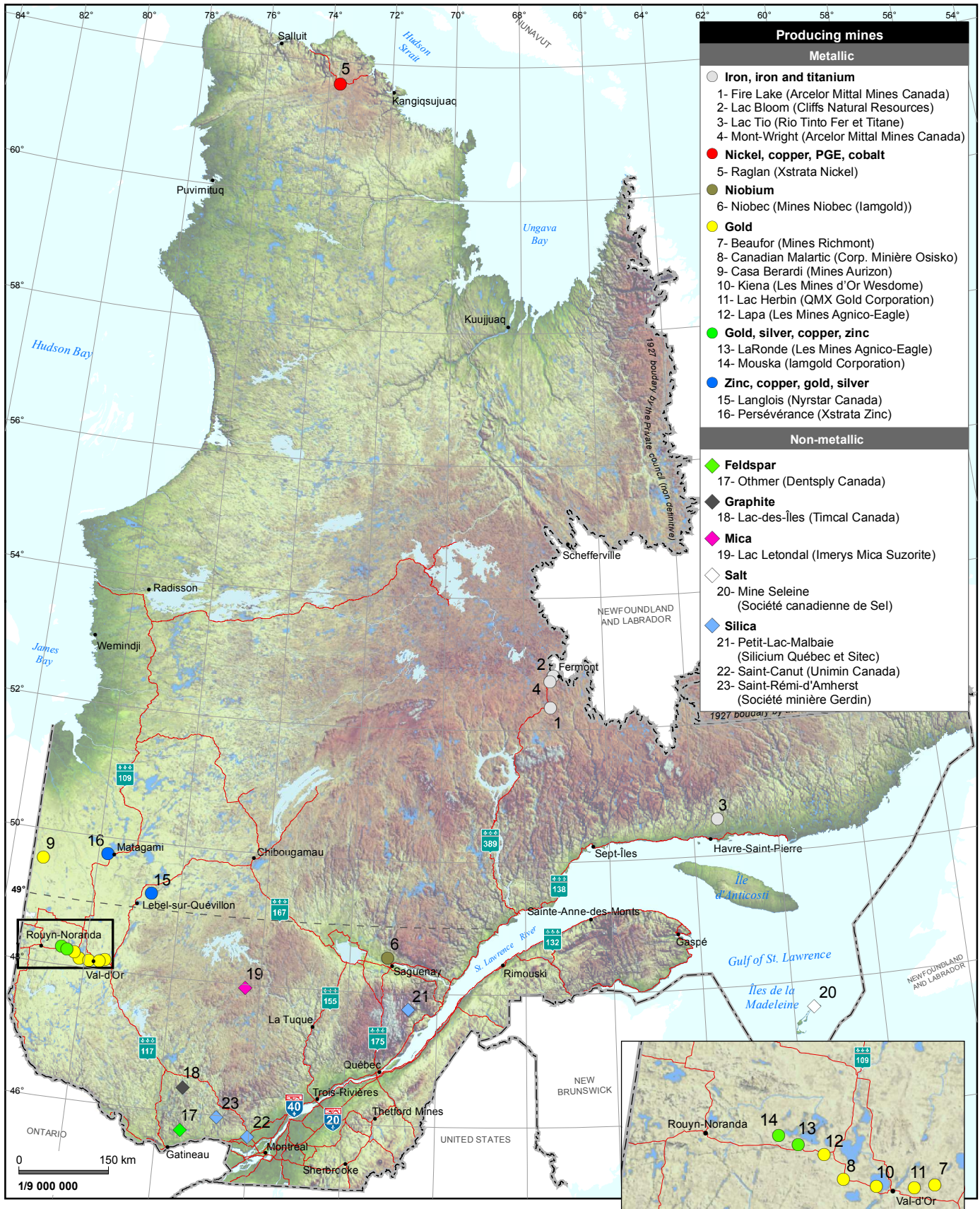


Figure 6.2 - Industrial stone quarries exploited in Québec in 2012.

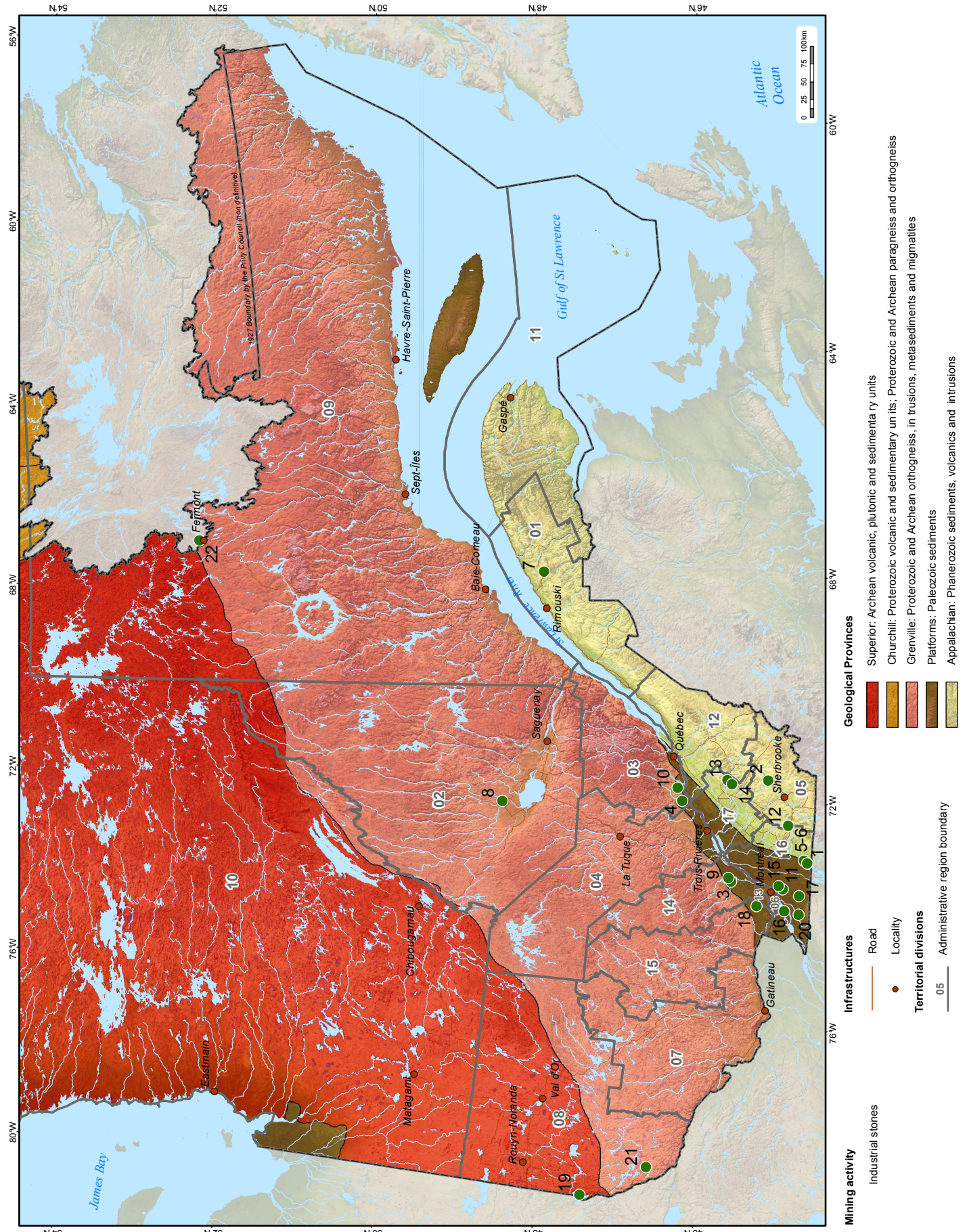


Figure 6.3 - Architectural stone quarries exploited in Québec in 2012.

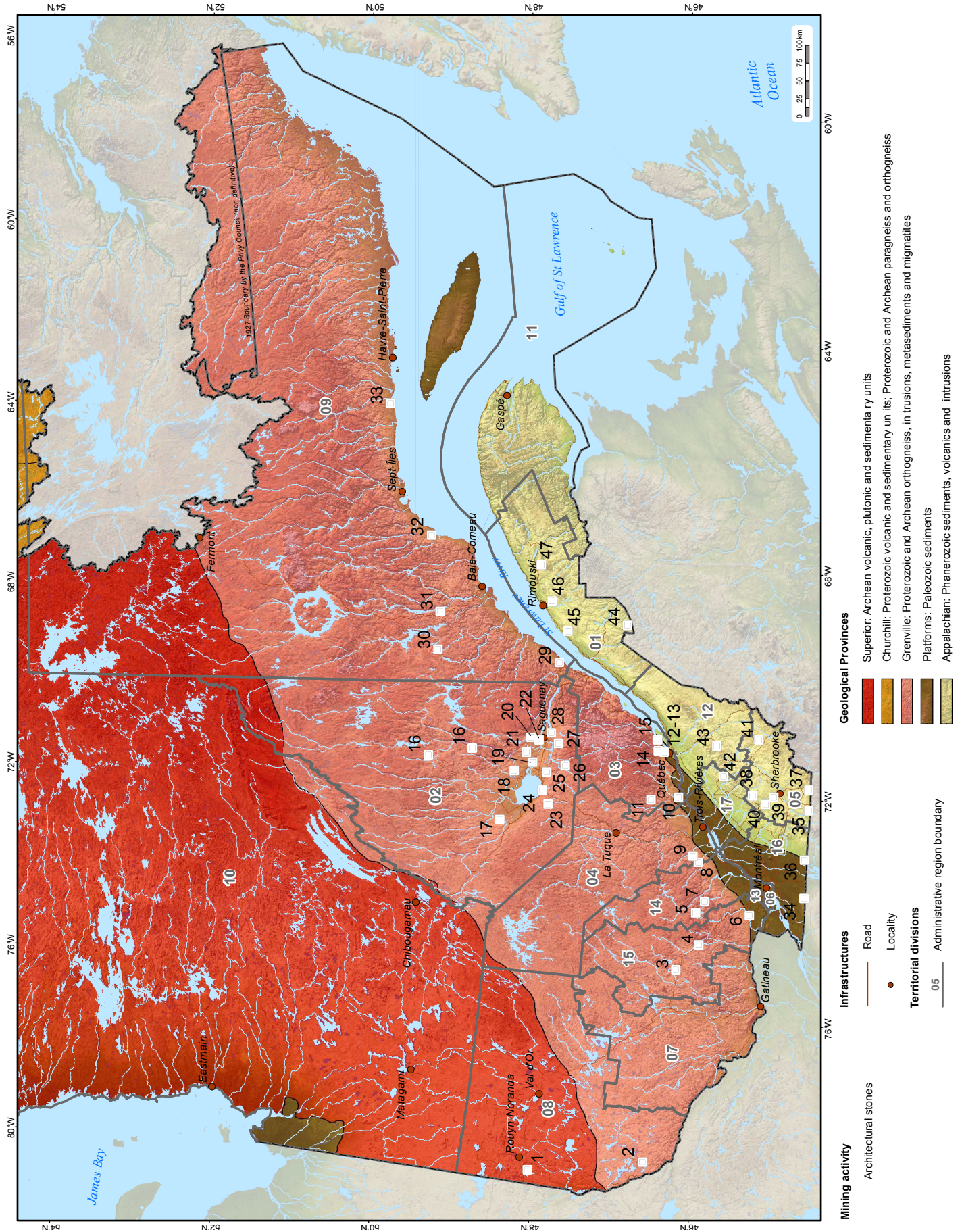


Figure 6.4 - Peatlands exploited in Québec in 2012.

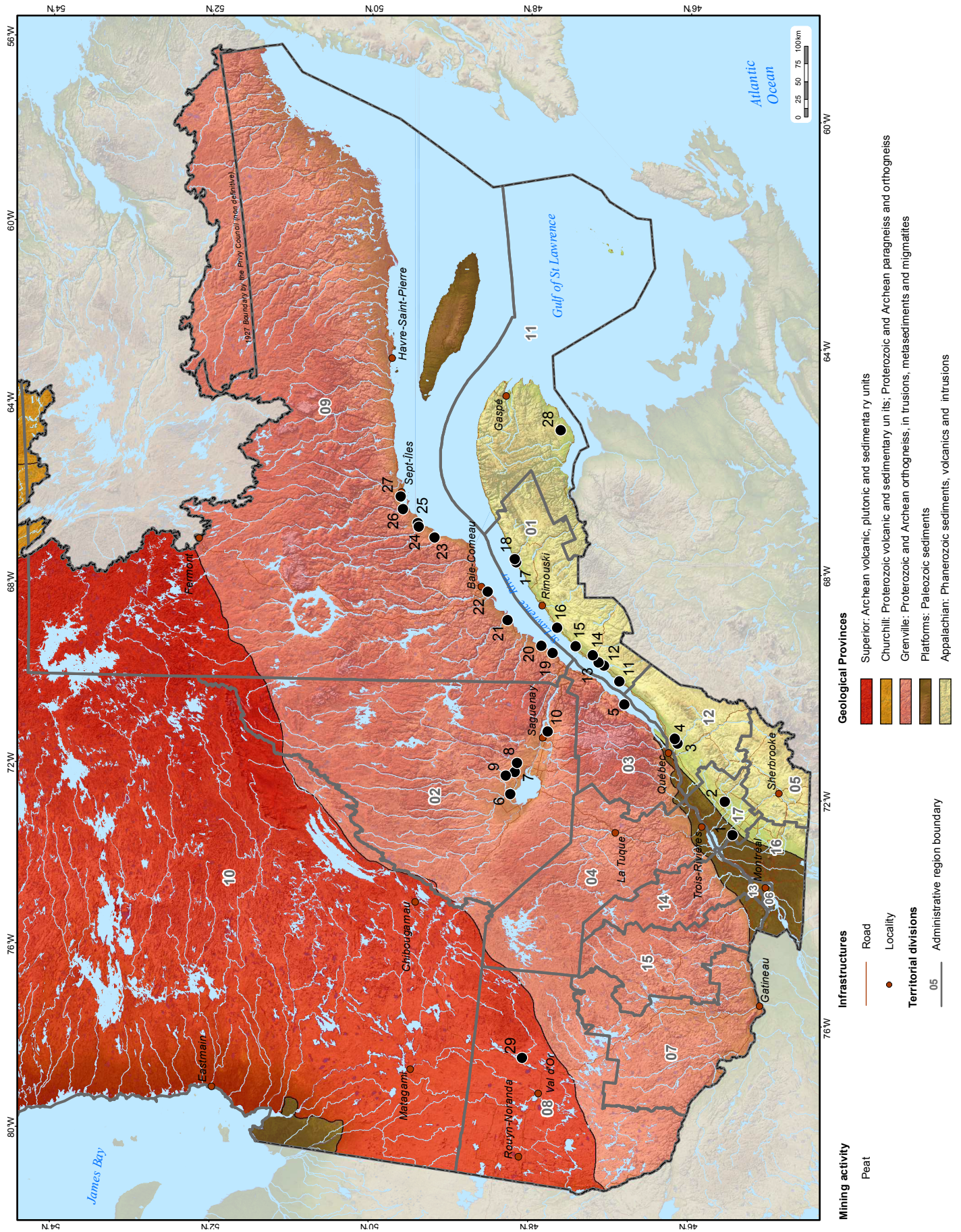


TABLE 6.8 - Production of metal commodities in Québec as of December 31, 2012 (see Figure 6.1)^(a).

SITE	TOWNSHIP/ NTS / ADMINISTRATIVE REGION	MINE	COMPANY	SUMMARY DESCRIPTION OF ORE DEPOSIT AND TYPE OF MINE	ANNUAL PRODUCTION OF ORE MINED	DAILY PRODUCTION OF ORE MINED	NOMINAL DAILY CAPACITY OF THE MILL	ANNUAL METAL PRODUCTION	PROVEN AND PROBABLE RESERVES	AVERAGE NUMBER OF JOBS	YEARS OF PRODUCTION (NUMBER)	
Iron, iron and titanium												
1	23B06 / Côte-Nord	Fire Lake	Arcelor Mittal Mines Canada	Specular hematite in metamorphosed Lake Superior-type iron formation Open pit mine	c	c	14 000 t Mont-Wright mill	c	c	20	1976 - 1984 (9) 2006 - 20.. (6)	
2	23B14 / Côte-Nord	Lac Bloom	Cliffs Natural Resources	Magnetite and specular hematite in metamorphosed Lake Superior-type iron formation Open pit mine	c	c	58 000 t	c	c	420	2010 - 20.. (2)	
3	Parker / 12L09 / Côte-Nord	Lac Tio	Rio Tinto Fer et Titane	Massive hemo-ilmenite in anorthosite from the Havre-Saint-Pierre Intrusive Suite Open pit mine	c	c	10 000 t	c	c	345	1950 - 20.. (62)	
4	Normanville / 23B14, 23B11, 23B09 / Côte-Nord	Mont-Wright	Arcelor Mittal Mines Canada	Specular hematite in metamorphosed Lake Superior-type iron formation Open pit mine	c	c	58 000 t	c	c	1600	1975 - 20.. (37)	
Nickel, copper, PGE, cobalt												
5	35G09, 35H11 and 35H12 / Nord-du-Québec	Raglan	Xstrata Nickel	Magmatic Ni-Cu in massive sulphide lenses at the base of ultramafic flows Underground and open pit mine	c	c	3600 t	c	c	830	1998 - 20.. (14)	
Niobium												
6	Simard / 22D11 / Saguenay-Lac-Saint-Jean	Niobec	Mines Niobec (Iamgold)	Niobium deposit in a carbonate Underground mine	c	c	6000 t	c	c	460	1976 - 20.. (36)	
Gold												
7	Pascal / 32C04 / Abitibi-Témiscamingue	Beaufor	Mines Richmont	Auriferous veins within E-W-trending shear zones along the margins of the Bourlamaque Batholith Underground mine	c	c	1200 t Camflo mill	c	c	120	1933 - 1951 (18) 1996 - 2000 (4) 2002 - 20.. (10)	
8	Fournière / 32D01 / Abitibi-Témiscamingue	Canadian Malartic	Corporation Minière Osisko	Porphyry gold Open pit mine	c	c	55 000 t Osisko mill	c	c	550	2011 - 20.. (2)	
9	Casa-Berardi / 32F11 / Nord-du-Québec	Casa Berardi	Mines Aurizon	Quartz-carbonate-pyrite-arsenopyrite veins in shear zones or stockworks Underground mine	c	c	2400 t Casa Berardi mill	c	c	500	1988 - 1997 (9) 2006 - 20.. (6)	
10	Dubuisson / 32C04, 08 / Abitibi-Témiscamingue	Kiena	Les Mines d'Or Wesdome	Auriferous breccias and quartz veins lodged between two komatiitic flows Underground mine	c	c	20 Kt/month	c	c	179	1981 - 2002 (21) 2006 - 20.. (6)	

TABLE 6.8 - Production of metal commodities in Québec as of December 31, 2012 (see Figure 6.1)⁽¹⁾.

SITE	TOWNSHIP/NTS / ADMINISTRATIVE REGION	MINE	COMPANY	SUMMARY DESCRIPTION OF ORE DEPOSIT AND TYPE OF MINE	ANNUAL PRODUCTION OF ORE MINED	DAILY PRODUCTION OF ORE MINED	NOMINAL DAILY CAPACITY OF THE MILL	ANNUAL METAL PRODUCTION	PROVEN AND PROBABLE RESERVES	AVERAGE NUMBER OF JOBS	YEARS OF PRODUCTION (NUMBER)
11	Bourlamaque / 32C04 / Abitibi-Témiscamingue	Lac Herbin	QMX Gold Corporation	Gold associated with quartz-pyrite veining in shear zones cross-cutting the Bourlamaque Batholith Underground mine	c	c	1000 t Aurbel mill	c	c	92	2008 - 20.. (4)
12	Dubuisson / 32C04 / Abitibi-Témiscamingue	Lapa	Les Mines Agnico-Eagle	Blue-grey quartz vein in biotite- and sericite-rich volcanic rock Underground mine	c	c	1725 t Lapa at LaRonde site	c	c	212 (Lapa excluded)	2009 - 20.. (3)
Gold, silver, copper, zinc											
13	Bousquet / 32D08 / Abitibi-Témiscamingue	LaRonde	Les Mines Agnico-Eagle	Massive to semi-massive pyrite lenses in sericitized felsic volcanic rocks metamorphosed to andalusite-kyanite schists Underground mine	c	c	7000 t LaRonde mill	c	c	794	1988 - 20.. (24)
14	Bousquet / 32D07 / Abitibi-Témiscamingue	Mouska (Mine Doyon)	lamgold Corporation	Quartz veins in Mooshla diorite near the northern sheared contact Underground mine	c	c	3500 t Doyon mill	c	c	160	1991 - 20.. (21)
Zinc, copper, gold, silver											
15	Grevet / 32F02 / Nord-du-Québec	Langlois	Nyrstar Canada	VMS-type in a mafic and felsic lava sequence Underground mine	c	c	2570 t	c	c	250	2012 - 20.. (1)
16	Daniel / 32F12, 13 / Nord-du-Québec	Perséverance (Mine Matagami)	Xstrata Zinc	VMS-type in a mafic and felsic lava sequence Underground mine	c	c	3000 t	c	c	225	2008 - 20.. (4)

1- The list of abbreviations is provided in Appendix 2.
c: confidential data

TABLE 6.9 - Production of non metal commodities in Québec as of December 31, 2012 (see Figure 6.2)⁽¹⁾.

SITE	TOWNSHIP/ NTS/ ADMINISTRATIVE REGION	MINE	COMPANY	SUMMARY DESCRIPTION OF ORE DEPOSIT AND TYPE OF MINE	ANNUAL PRODUCTION OF ORE MINED	DAILY PRO- DUCTION OF ORE MINED	NOMINAL DAILY CAPACITY OF THE MILL	ANNUAL METAL PRODUCTION	PROVEN AND PROBABLE RESERVES	AVERAGE NUMBER OF JOBS	YEARS OF PRODUCTION (NUMBER)
Feldspar											
17	Portland / 31G11 / Outaouais	Othmer	Dentsply Canada	Potassium feldspar from pegmatite Open pit mine	c	c	c	c	c	~10	2002 - 20.. (10)
Graphite											
18	Bouthiller / 31J05 / Laurentides	Lac-des-Îles	Timcal Canada	Graphite as disseminated flakes in crystalline limestone Open pit mine	c	c	c	c	c	~65	1989 - 20.. (23)
Mica											
19	Suzor / 31O16 / Mauricie	Lac Letondal	Imerys Mica Suzorite	Lenticular alkaline intrusion containing 80-85% phlogopite Open pit mine	c	c	120 st	c	c	~30	1970 - 20.. (42)
Salt											
20	Îles-de-la- Madeleine / 11N12 / Gaspésie- Îles-de-la-Madeleine	Mine Seleine	Société canadienne de Sel	Carboniferous salt diapir Underground mine	1.4 Mt	c	5600 t	c	40 Mt	~160	1982 - 20.. (30)
Silica											
21	Charlevoix 3 / 21M15 / Capitale-Nationale	Petit-Lac-Malbaie	Silicium Québec and Sitec	Quartzite Open pit mine	200 Kt	c	c	c	c	~20	1977 - 20.. (35)
22	Lac des Deux- Montagnes / 31G09 / Laurentides	Saint-Canut	Unimin Canada	Postdam Group sandstone Open pit mine	195 Kst	c	975 st	c	c	~23	1978 - 20.. (34)
23	Amherst / 31G15 / Laurentides	Saint-Rémi- d'Amherst	Société minière Gerdin	Quartzite Open pit mine	c	c	c	c	c	~20	1970 - 20.. (42)

1- The list of abbreviations is provided in Appendix 2.
c: confidential data

TABLE 6.10 - Industrial stone quarries in production in Québec in 2012 (see Figure 6.3).

SITE	DEPOSIT	COMPANY	SUMMARY DESCRIPTION OF DEPOSIT	PRODUCTS	TOWNSHIP / NTS	ADMINISTRATIVE REGION
Limestone, dolomite, and marble						
1	Bedford	Graymont (Qc) (Bedford division)	Corey Formation limestone	Quicklime, ground limestone products for industrial use, crushed stone	Stanbridge / 31H03	16
2	Domlim #5 et #6	Graymont (Qc) (Marbleton division)	Lac Aylmer Formation limestone	Quicklime, ground limestone products for industrial use, crushed stone	Dudswell / 21E12	12
3	Jolichaux	Graymont (Qc) (Joliette division)	Deschambault Formation limestone	Quicklime, ground limestone products for industrial use, crushed stone	Lavaltrie / 31I03	14
4	Calco	Graymont (Portneuf)	Deschambault Formation limestone	Crushed stone, ground limestone products for industrial use	Seigniory of Grondines / 31I09	3
5	Saint-Armand, Messier-Missisquoi	Omya Canada (St-Armand division)	Strites Pond Formation limestone	Pulverized limestone for use as mineral filler	Seigniory of Saint-Armand / 31H03	16
6	Saint-Armand Principale	Omya Canada (St-Armand division)	Strites Pond Formation limestone	Pulverized limestone for use as mineral filler, white terrazzo granules	Seigniory of Saint-Armand / 31H03	16
7	La Rédemption	Coopérative des Producteurs de chaux du Bas-Saint-Laurent	Dolomitic marble from the Sayabec Formation	Magnesian soil improvement	Awantjish / 22B05	1
8	Pères Trappistes	Denis Lavoie & Fils	Calcitic marble	White granules for artificial stone, masonry sand, soil improvement	Pelletier / 32A16	2
9	Ciment indépendant	Ciment St-Laurent (indépendant)	Limestone from the Trenton and Black River Groups	Cement production	Lanoraye / 31I03	14
10	Saint-Basile-sud	Ciment Québec	Limestone from the Trenton and Black River Groups	Cement production	Auteuil / 21L12	03
11	Ciment Lafarge	Lafarge Canada	Limestone from the Trenton and Black River Groups	Cement production	Sault-Saint-Louis / 31H05	16
12	Soca	Agrégats Waterloo	Dolomitic marble from the Stukely-South fault zone	Magnesium-rich soil improvement, terrazzo granules, decorative aggregate	Stukely / 31H08	5
13	Saint-Ferdinand	Les Carrières St-Ferdinand	Oak Hill Group dolomite	Magnesium-rich soil improvement, decorative aggregate	Halifax / 21L04	17
14	Trottier Mills	Les Carrières St-Ferdinand	Oak Hill Group dolomite	Magnesium-rich soil improvement	Chester / 21L04	17
Claystone minerals						
15	Briqueterie Saint-Laurent	Hanson Brick	Nicolet Formation shale	Briques de parement	La Prairie / 31H06	16
Silica						
16	Ormstown	La Compagnie Bon Sable (Ormstown division)	Natural sand	Washed sand for sandblasting, smelting, ceramic glue mixtures	Beauharnois-2 / 31H04	16
17	Sainte-Clotilde	Les Sables Silco	Potsdam Group sandstone	Silica-rich crushed stone for cement plant and ferrosilicon	Beauharnois-1 / 31H04	16
18	Saint-Joseph-du-Lac	La Compagnie Bon Sable	Natural sand	Washed sand for masonry and sandblasting	Lac-des-Deux-Montagnes-1 / 31H12	15
19	Saint-Bruno-de-Guigues	OPTA Minerals	Ordovician sandstone	Sand for filtering, smelting, hydraulic fracturing	Guigues / 31M06	8
20	Chromasco	Carrières Sud-Ouest	Potsdam Group sandstone	Crushed stone and silica-rich aggregate for cement plant and ferrosilicon	Beauharnois / 31H05	16
21	Lac Beauhène	Les Pierres du Nord	Muscovite quartzite from the Kipawa Formation	Quartz granules for artificial stone	Campeau / 31L10	8
22	Lac Daviault	Exploration Québec / Labrador	Quartzite from the Wishart Formation, Gagnon Group	Quartz granules for artificial stone	Lislois / 23B14	9

TABLE 6.11 - Architectural stone quarries exploited in Québec in 2012 (see Figure 6.3)⁽¹⁾.

SITE	LOCATION	COMPANY	TYPE OF ROCK - PRODUCT	COMMERCIAL NAME	NTS	ADMINISTRATIVE AREA	TITLE
1	Beaudry	Les Pierres du Nord	Biotite schist - BS	Schiste Nordic	32D03	8	BEX 86
2	Témiscaming	Les Pierres du Nord	Muscovite quartzite - BS	Aventurine	31L10	8	BEX 355
3	Guénette	Rock of Ages Canada	Monzogranite - DS, MO	Laurentian Pink, Autumn Pink	31J11	15	CM 79
4	Labelle	Excavation R.B.Gauthier	Paragneiss - BS	n/a	31J07	15	BEX 330
		Excavation R.B.Gauthier	Paragneiss - BS	n/a	31J07	15	BEX 337
		Excavation R.B.Gauthier	Paragneiss - BS	n/a	31J07	15	BEX 76
5	Saint-Donat-de-Montcalm	Carrières F. L.	Gneiss - BS	n/a	31J08	14	BEX 140
6	Mirabel	Les Pierres Saint-Canut	Sandstone - BS	Saint-Canut Sandstone	31G09	15	Private
7	Notre-Dame-de-la-Merci	A. Lacroix et Fils Granit	Anorthosite - DS	Orion	31I05	14	BEX 255
8	Saint-Didace	A. Lacroix et Fils Granit	Quartz mangerite - DS	Nordix Red	31I06	14	Private
9	Saint-Alexis-des-Monts	A. Lacroix et Fils Granit	Quartz mangerite - DS	Autumn Brown	31I06	4	BEX 463
		Firstake Capital	Quartz mangerite - DS	Newton Brown	31I06	4	BEX 174
		Granicor	Quartz mangerite - DS, CS	Autumn Brown	31I06	4	Private
		Polycor	Quartz mangerite - DS	Newton Brown	31I06	4	Private
10	Saint-Marc-des-Carières	Graymont (Portneuf)	Limestone - DS	Saint-Marc Limestone	31I09	3	Private
11	Rivière-à-Pierre	A. Lacroix et Fils Granit	Quartz mangerite - DS	Atlantic Blue	31P01	3	BEX 178, 372
		A. Lacroix et Fils Granit	Quartz mangerite - DS	Forest Green	31P01	3	BEX 349
		A. Lacroix et Fils Granit	Farsundite - DS	Salmon Brown	31P01	3	BEX 366, 367
		A. Lacroix et Fils Granit	Farsundite - DS	Deer Brown, Atlantic Green	31P01	3	BM 723, 746
		A. Lacroix et Fils Granit	Farsundite, quartz mangerite - DS	Forest Green, Atlantic Green, Atlantic Blue	31P01	3	BEX 488
		Granicor	Farsundite - DS, CS	New New	31I16	3	Private
		Granicor	Farsundite - DS, CS	Abbey Rose	31P01	3	Private
		Granicor	Quartz mangerite and quartz jotunite - DS, MO, CS	Vert Prairie	31P01	3	BEX 164, 165
		Granicor	Quartz mangerite, farsundite - DS, CS	Nara	31P01	3	BEX 231
		Polycor	Farsundite - DS, CS	Caledonia, Caledonia Dark	31P01	3	Private
		Polycor	Farsundite - DS, CS	Caledonia Dark	31P01	3	BEX 33
	Polycor	Farsundite - DS, CS	Galaxie blue	31P02	3	BEX 1013	
12	Charlesbourg	Construction B. M. L.	Limestone - BS	n/a	21L14	3	Private
13	Québec	Les Pierres S.D.	Limestone - BS	n/a	21L14	3	Private
14	Sainte-Brigitte-de-Laval	Sablère Vallière	Granit block - BS	n/a	21L14	3	Private
15	Château-Richer	Carrière Laplante	Calcaire - BS	n/a	21L14	3	Private
16	Chute-des-Passes	A. Lacroix et Fils Granit	Gneiss - DS	New Rainbow	22E14	2	BEX 377
		Polycor	Gabbroic anorthosite - DS	Kodiac	22E06	2	BEX 402

1- See legend abbreviations in Appendix 2.

TABLE 6.11 - Architectural stone quarries exploited in Québec in 2012 (see Figure 6.3)⁽¹⁾.

SITE	LOCATION	COMPANY	TYPE OF ROCK - PRODUCT	COMMERCIAL NAME	NTS	ADMINISTRATIVE AREA	TITLE
17	Saint-Thomas-Didyme	Granicor	Quartz mangerite - DS, CS	Acajou	32A15	2	Private
18	Chute-du-Diable	Granicor	Anorthosite - DS, MO, CS	Canadian Black (Peribonka)	22D13	2	Private
		Granicor	Anorthosite - DS, MO, CS	Canadian Black (Peribonka)	22D13	2	BEX 449
19	Saint-Nazaire	A. Lacroix et Fils Granit	Leucogabbronorite - DS	Nordix Green, Atlantic Black, Black Forest	22D12	2	Private (2 quarries)
		A. Lacroix et Fils Granit	Leucogabbronorite - DS	Nordix Green, Atlantic Black	22D12	2	BEX 148
		Granicor	Leucogabbronorite - DS, MO, CS	Cambrian	22D12	2	BEX 332
		Polycor	Leucogabbronorite - DS, MO	Cambrian Black	22D12	2	BM 705 (2 quarries)
20	Falardeau	Les Pierres Naturelles Tremblay	Limestone - BS	n/a	22D11	2	Private
21	Bégin	A. Lacroix et Fils Granit	Quartz mangerite - DS	Atlantic Pink	22D11	2	Private
		Granicor	Quartz mangerite - DS, CS	Granville	22D11	2	Private
22	Tremblay	Carrière 500	Limestone - BS	n/a	22D06	2	Private
23	Saint-François-de-Sales	A. Lacroix et Fils Granit	Quartz mangerite - DS	Spring Green	32A08	2	BEX 203
24	Chambord	A. Lacroix et Fils Granit	Limestone - DS	Chambord Limestone	32A08	2	Private
25	Saint-André-du-Lac-Saint-Jean	Jean-Guy Simard et Fils	Quartz mangerite - DS	Saint-André Green	22D05	2	BEX 80
26	Réserve faunique des Laurentides	A. Lacroix et Fils Granit	Farsundite - DS	Autumn Harmony	22D03	2	BEX 225
		Granicor	Quartz mangerite - DS, CS	Laurentian Green	22D04	2	BEX 421
		Polycor	Quartz jotunite - DS, MO	Laurentian Green	22D04	2	BEX 210
27	Laterrière	Intergestion GL	Stromatolite dolostone block - BS	Pikauba	22D03	2	BEX 343
28	La Baie	Granicor	Farsundite - DS, CS	Polychrome	22D07	2	Private
		Polycor	Farsundite - DS	Polychrome	22D07	2	Private
		Sablère BY	Granite Block - BS	n/a	22D07	2	Private
29	Grandes-Bergeronnes	Granicor	Gneiss - DS, CS	Tadoussac	22C04	9	Private
30	Lac Poulin	Granijem	Granite - DS	Nordic Frost	22F14	9	BEX 490
31	Manic 3	Granijem	Gneiss - DS	Manic	22F15	9	BEX 489
32	Rivière-Pentecôte	Polycor	Anorthosite - DS	Nordic Black	22G14	9	BEX 155
33	Magpie	Granijem	Hypersthene Syenite - DS	Anticosti	22I08	9	BEX 436
		Polycor	Hypersthene Syenite - DS	Picasso	22I07	9	BEX 419
34	Havelock	Carrières Ducharme	Sandstone - BS	Ducharme	31H04	16	Private (2 quarries)
35	Stanstead	Granite D.R.C	Granite - DS, BS	Beverly Grey	31H01	5	Private
		Polycor	Granodiorite - DS, MO	Stanstead Grey	31H01	5	Private
		Rock of Ages du Canada	Granodiorite - DS, MO	Stanstead Grey	31H01	5	Private
36	Brome-Missisquoi	Polycor	Marble - BS	Missisquoi	31H03		Private

TABLE 6.11 - Architectural stone quarries exploited in Québec in 2012 (see Figure 6.3)⁽¹⁾.

SITE	LOCATION	COMPANY	TYPE OF ROCK - PRODUCT	COMMERCIAL NAME	NTS	ADMINISTRATIVE AREA	TITLE
37	Stanhope	Granicor	Granodiorite - DS, MO, SC	Snow White	21E04	5	Private
38	Asbestos	Ardopec	Slate - BS	n/a	21E12	5	Private
39	Bromptonville	Ardoise 55	Slate - DS, BS	n/a	21E05	5	Private
40	Melbourne	Ardoise Kingsbury	Slate - DS	n/a	31H09	5	Private
41	Saint-Sébastien	Polycor	Granite - DS	San Sebastian Grey	21E10	5	Private
42	Saint-Ferdinand	Les Carrières St-Ferdinand	Sanstone, dolomite - BS	n/a	21L04	17	Private
43	East Broughton	Les Pierres Stéatites	Steatite, talc-carbonate rock, serpentinite - RS	n/a	21L03	12	Private
44	Saint-Marc-du-Lac-Long	Glendyne	Slate - BS, RT	La Canadienne, La Québécoise	21N07	1	Private
45	Saint-Mathieu-de-Rieux	J.-C. Ouellette	Sandstone - BS	n/a	22C03	1	Private
		Les Pierres St-Mathieu	Sandstone - BS	Grès Basques	22C02	1	BEX 460
46	Mont-Label	Entreprises Antoine Jean	Siltstone - BS	n/a	22C08	1	Private
		Les Pierres Naturelles du Québec	Siltstone - BS	n/a	22C08	1	Private
47	Saint-Cléophas	Carrière Bernier	Siltstone - BS	n/a	22B05	1	Private (2 quarries)

1- See legend abbreviations in Appendix 2.

BEX: exclusive lease to mine mineral surface

BM: mining lease

CM: mining concession

TABLE 6.12 - Peatlands harvested in Québec in 2011-2012 (see Figure 6.4).

SITE	DEPOSIT	COMPANY	SUMMARY DESCRIPTION OF DEPOSIT	PRODUCTS	TOWNSHIPS / NTS	ADMINISTRATIVE REGION
1	Saint-Bonaventure	Fafard et Frères (Saint-Bonaventure division)	Peat	Sphagnum moss, potting soil, compost	Upton / 31H15	17
2	Saint-Valère Centre	Fafard et Frères	Peat	Sphagnum moss	Bulstrode / 31I01	17
3	Saint-Henri-de-Lévis	Premier Horticulture (Saint-Henri division)	Peat	Sphagnum moss	Seigneurie Lauzon / 21L11	12
4	Saint-Charles	Les tourbes M.L. (Saint-Charles division)	Peat	Sphagnum moss, potting soil	Seigneurie Lauzon and Fief de La Martinière (Beauchamp) / 21L10	12
5	Îsles-aux-Coudres	Tourbières Pearl	Peat	Sphagnum moss	Seigneurie Îsle-aux-Coudres / 21M08	3
6	Sainte-Marguerite	Fafard et Frères (Sainte-Marguerite division)	Peat	Sphagnum moss	Dolbeau / 32A16	2
7	L'Ascension Ouest	Tourbières Lambert (Ascension division)	Peat	Sphagnum moss	Garnier / 22D12, 22D13	2
8	Saint-Léon	Tourbières Lambert division	Peat	Sphagnum moss	Labrecque / 22D12	2
9	Saint-Ludger-de-Milot SW	Fafard et Frères (Milot division)	Peat	Sphagnum moss	Milot / 22D13	2
10	La Baie	Gazon Savard Saguenay	Peat	Sphagnum peat blocks and sphagnum moss	Bagot / 22D02, 22D07	2
11	Rivière Ouelle	Tourbières Lambert (Rivière-Ouelle division)	Peat	Sphagnum moss, potting soil, floral moss	Seigneurie Rivière-Ouelle / 21N05	1
12	Saint-Alexandre	Tourbières Berger (Saint-Alexandre division)	Peat	Sphagnum moss	Seigneurie Islets-du-Portage and Lachenaie / 21N12	1
13	Notre-Dame-du-Portage	Premier Horticulture (Tardif division)	Peat	Sphagnum moss	Seigneurie Terrebois / 21N12	1
14	Rivière-du-Loup	Premier Horticulture (Premier division)	Peat	Sphagnum moss, potting soil, compost, endomycorrhiza, biofilters	Seigneurie Rivière-du-Loup and Cacouna / 21N13, 14	1
		Premier Horticulture (Verbois division)	Peat	Sphagnum moss	Seigneurie Rivière-du-Loup and Cacouna / 21N13, 14	1
		Premier Horticulture (Saint-Laurent division)	Peat	Sphagnum moss	Seigneurie Rivière-du-Loup and Cacouna / 21N13, 14	1
		Tourbière Michaud	Peat	Sphagnum moss	Seigneuries Rivière-du-Loup and Cacouna / 21N13, 14	1
		Les tourbes M.L. (Rivière-du-Loup division)	Peat	Sphagnum moss	Seigneuries Rivière-du-Loup and Cacouna / 21N13, 14	1
		Tourbières Berger	Peat	Sphagnum moss, potting soil, peat granules	Seigneuries Rivière-du-Loup and Cacouna / 21N13, 14	1

TABLE 6.12 - Peatlands harvested in Québec in 2011-2012 (see Figure 6.4).

SITE	DEPOSIT	COMPANY	SUMMARY DESCRIPTION OF DEPOSIT	PRODUCTS	TOWNSHIPS / NTS	ADMINISTRATIVE REGION
		Tourbière Henri Théberge et associés	Peat	Sphagnum moss	Seigneuries Rivière-du-Loup and Cacouna / 21N13, 14	1
		Sun Gro Horticulture Canada (St-Arsène division)	Peat	Sphagnum moss	Seigneuries Rivière-du-Loup and Cacouna / 21N13, 14	1
15	Isle-Verte, Est	Tourbière Réal Michaud et fils	Peat	Sphagnum moss	Seigneurie Isle-Verte / 22C03	1
16	Saint-Fabien	Tourbières Henri Théberge et associés	Peat	Sphagnum moss	Seigneurie Nicolas-Rioux 03 / 22C07	1
		Tourbières Berger (Saint-Fabien division)	Peat	Sphagnum moss	Seigneurie Nicolas-Rioux 03 / 22C07	1
17	Saint-Ulric	Les tourbes M.L. (Saint-Ulric division)	Peat	Sphagnum moss	Matane / 22B13	1
18	Rivière-Blanche	Permier Horticulture (Saint-Ulric division)	Peat	Sphagnum moss	Matane / 22B13	1
19	Les Escoumins	Tourbières Lambert (Anse-aux-Basques division)	Peat	Sphagnum moss	Bergeronnes / 22C06	9
20	La Petite Romaine	Tourbières Lambert (Saint-Paul-du-Nord division)	Peat	Sphagnum moss	Iberville / 22C06	9
21	Sainte-Thérèse Colombier	Sun Gro Horticulture Canada (Colombier division)	Peat	Sphagnum moss	Betsiamites / 22C15	9
22	Pointe-Lebel	Pemier Horticulture (Sogevex division)	Peat	Sphagnum moss	Manicouagan / 22F01	9
23	Rivière-Pentecôte	Tourbières Berger	Peat	Sphagnum moss	Fitzpatrick / 22G14	9
24	Port-Cartier Ouest	Les tourbes M.L. (Port-Cartier division)	Peat	Sphagnum moss Sphagnum peat blocks	Babel / 22J02	9
25	Port-Cartier Ouest and Port-Cartier NW	Sun Gro Horticulture Canada	Peat	Sphagnum moss	Babel / 22J02	9
26	Clarke City	Les tourbes M.L.	Peat	Sphagnum moss	Arnaud / 22J02	9
27	Ville de Sept-Îles / Letellier	Les tourbes M.L. (Sept-Îles peatlands division)	Peat	Sphagnum moss	Letellier / 22J01, 22J08	9
28	Saint-Jogues	Shigawake Organics	Peat	Sphagnum moss	Hope / 22A03	11
29	Senneterre	Corporation de développement économique de Senneterre	Peat	Sphagnum moss	Senneterre / 32C06	8

CHAPTER 7

MINE REHABILITATION

Philippe-André Lafrance, Robert Lacroix, Sophie Proulx and Malek Zetchi

7.1 Introduction

Before the beginning of mining activities, the Mining Act requires that a rehabilitation and restoration plan be submitted, as well as details of the financial guarantee. This financial guarantee must cover 70% of the cost for restoring accumulation areas. It is paid according to a schedule based on the expected duration of the mining operation (to a maximum of 15 years). The rehabilitation plan and financial guarantee must be reviewed every 5 years or less, or when there is a change in mining activities.

Some mining sites in Québec are designated as “abandoned” because the owners are unknown or insolvent. These sites become the responsibility of the State, as do sites that have reverted to the State in the past, or have been the subject of a certificate of release under section 232.10 of the Mining Act. Figure 7.1 shows the location of orphaned mine sites where rehabilitation and securement work was carried out in 2012.

7.2 Active mines

Since March 9, 1995, anyone carrying out mining activities is required to submit, before start-up, a rehabilitation plan and a financial guarantee.

In 2012, operators paid \$79M in financial guarantees, bringing the total amount of guarantees held by the MRN to \$196.8M.

The government wants to introduce measures to reduce the risk to the State of having to assume mine site rehabilitation costs. Consequently, the amount of the required financial guarantee will correspond to 100% of the cost of restoration work for the entire mine site. Furthermore, this guarantee shall be paid over a period of three years (50% - 25% - 25%). If the financial guarantee is not paid, the operator will be subject to a fine of 10% of the total amount of the guarantee. The operator will be required to begin rehabilitation and restoration work within three years after the cessation of mining activities.

7.3 Mine sites under the responsibility of the State (surrendered, released, or abandoned)

In 2006, to assess the extent of its environmental liabilities, the government requested that all ministries and government agencies compile an inventory of contaminated sites under the responsibility of the State. This inventory was completed on March 31, 2011.

The required rehabilitation work for mine sites in this inventory must be carried out by 2017. The necessary funds are recorded as a reduction in environmental liabilities with respect to the contaminated sites listed in the consolidated financial statements of the government.

As at March 31, 2012, a total of 698 mine sites were listed in the Québec government’s inventory of environmental liabilities, for a total of \$891.6M. Among these:

- 488 are exploration sites:
 - 275 exploration sites in Nunavik, most of which require cleanup due to waste left on site. Work is already completed on the 18 most serious cases;
 - 213 exploration sites on Cree territory, for which restoration work is expected to begin shortly;
- 198 are mining sites. Of these, 130 have had work done, either securement of mine openings, dismantling of infrastructure, site cleanup, or restoration of tailings accumulation areas;
- 12 are quarries and sand pits. Restoration work has already been carried out at six sites.

In 2011-2012, the Mines Sector set aside \$16M to carry out rehabilitation work on sites under the responsibility of the State.

Mauricie (04)

Montauban

Located in the municipality of Notre-Dame-de-Montauban, this site encompasses the region’s three former mine sites, all of which are under the responsibility of the State: Tétreault 1, Tétreault 2, and Montauban United. These zinc and lead mines extracted and processed 2.5 Mt of ore between 1913 and 1955, resulting in three tailings sites with a total area of approximately 20 hectares.

In 2009, an initial characterization study was conducted to determine the size of the affected area and the nature and volume of the tailings. A complementary characterization study was carried out in July 2011 to collect all of the data required to prepare a site rehabilitation plan. The latter was completed in May 2012. Plans and specifications are expected to be drawn up in the summer of 2013.

Estrie (05)

Suffield

This former zinc and copper mine is located approximately 10 kilometres southwest of Sherbrooke. Ore from this mine was processed at the Moulton Hill plant. There is no tailings pond on site, but there is a waste pile covering more than one hectare that may generate acid mine drainage (AMD).

A site characterization study was carried out in the fall of 2012. The goal of the study was to measure the potential impact of the site on the environment by sampling waste material, soils, groundwater, surface water, and sediments. Preliminary results namely indicate a sharp increase in zinc, nickel, and copper concentrations in groundwater in contact with the site. The final report will be available in the spring of 2013, following a second water sampling program.

Outaouais (07)

Lac Renzy

The Lac Renzy site is located approximately 40 kilometres west of Highway 117, roughly on line with kilometre 294, within the Poirier outfitter's territory.

Open pit mining operations took place at this nickel and copper mine from 1969 to 1972. Nearly 800 000 tonnes of ore were mined and processed on site.

Although the site has been inactive for several years, the smell of chemical products persists. Soils may be contaminated with petroleum hydrocarbons in a few locations. The tailings pond is located in the south part of the lake and sulphur-bearing tailings are partly submerged. A waste pile is also present along the lakeshore.

A site characterization study was conducted in the fall of 2012. The results will be available in the spring of 2013, following a second water sampling program.

New Calumet

The New Calumet mine site is located 6 kilometres west of the village of Bryson. This former lead and zinc mine was in operation from 1943 to 1968.

Mining in this location resulted in three tailings ponds covering approximately 20 hectares. Two of the ponds are unconfined and one pond is only partially confined. Tailings are thus exposed to erosion (water and wind).

Apparently, these tailings do not however generate acid mine drainage. To confirm this and to measure other potential impacts, the MRN proceeded with a site characterization study in November 2012. The results will be available in the spring of 2013, following a second water sampling program.

Abitibi-Témiscamingue (08)

Barvue

Located approximately 50 kilometres north of Val-d'Or, the Barvue mine site is a former zinc and silver producer, discovered in 1950. Over 5 Mt of ore were extracted and processed on site between 1952 and 1957. These operations created a roughly 35-hectare tailings pond that is the source of acid mine drainage.

A major breach of the north dike of the tailings pond occurred while the mine was still in operation and resulted in the release of large amounts of tailings into Rivière Laflamme and its tributary, Ruisseau Marcotte. The spillage zone extends over an area of about 28 hectares, and the thickness of spilled tailings reaches up to 12 metres high.

Following an environmental characterization of the site in 2009, a rehabilitation plan for the tailings pond and the spillage zone was prepared in 2011. The preferred restoration scenario namely called for:

- Stabilization of confinement dikes around the tailings pond and partial rerouting of Ruisseau Marcotte;
- Excavation of spilled tailings (about 360 000 m³) and shipment to the old Barvue tailings pond for long-term storage;
- Confinement of AMD-generating tailings under an impervious cover (geomembrane) to prevent oxidation of tailings and generation of AMD;



Partial view of the Barvue site, before restoration work (1978).



The Barvue site, berm construction.



The Barvue site, creek diversion work.

- Implementation of a passive water treatment system for the final effluent, and revegetation of the entire site to integrate it into its surroundings.

Rehabilitation work began in December 2011 with the construction of an access road and tree removal in areas to be restored. During the summer and fall of 2012, dikes around the former tailings pond were reinforced and redesigned and the Ruisseau Marcotte was partially diverted. The next phase of work, planned in early 2013, will involve the removal of mine tailings in the spillage zone and revegetation along the shores of Ruisseau Marcotte. It is anticipated that rehabilitation work at the Barvue mine site will be completed in December 2014.

Darius O'Brien, Pandora, Thompson Cadillac, and Lapa (Zulapa)

Located on either side of Highway 117, near the Cadillac area, these four former gold mines were active until the 1960s.

The MRN completed an environmental characterization of these four abandoned mine sites with a view to eventual rehabilitation. Given their similar environmental issues and proximity to each other, it has been proposed that rehabilitation work be done jointly for logistical and economic reasons.

Work on this project will continue in the fall of 2013.

Preissac Molybdenite B

This is a former molybdenum and bismuth mine located near the municipality of Preissac, along Route 395, that was active mainly between 1962 and 1971, with 2.2 Mt of ore mined and processed on the site.

In 2011, an environmental characterization study was undertaken by the MRN under the mine site rehabilitation program targeting mine sites listed in the Québec government's inventory of environmental liabilities. Numerous samples of soil, mine tailings, sediments, surface water, and groundwater were collected. Analyses indicated high concentrations of dioxins and furans in waste material, backfill, and groundwater samples collected on the mine site and near Baie Indienne on Lac Fontbonne.

Work on this project will continue in the fall of 2013 and will consist in the preparation of a rehabilitation plan, possibly including a detailed risk assessment study.

Siscoe

This gold deposit, located on the island of the same name, lies in the middle of Lac De Montigny, near Val-d'Or. It was mined between 1926 and 1949, with a final total of 3.3 Mt of extracted ore. From 1985 to 1988, the site was reassessed with a view

to possibly reopening it, but the project never materialized.

The site includes two tailings ponds totalling approximately 30 hectares. Tailings were deposited directly in Lac De Montigny, with no confinement measures whatsoever. To assess the potential impact of this site on the environment, an environmental characterization study was conducted in the fall of 2011.

The rehabilitation plan will be prepared and plans and specifications will be drawn up during the winter of 2013. If all required authorizations are granted by the MDDEFP, restoration work may begin as early as the summer of 2013. The main objectives will be to reduce water seepage into the tailings ponds and minimize the amount of suspended tailings in the waters of Lac De Montigny.

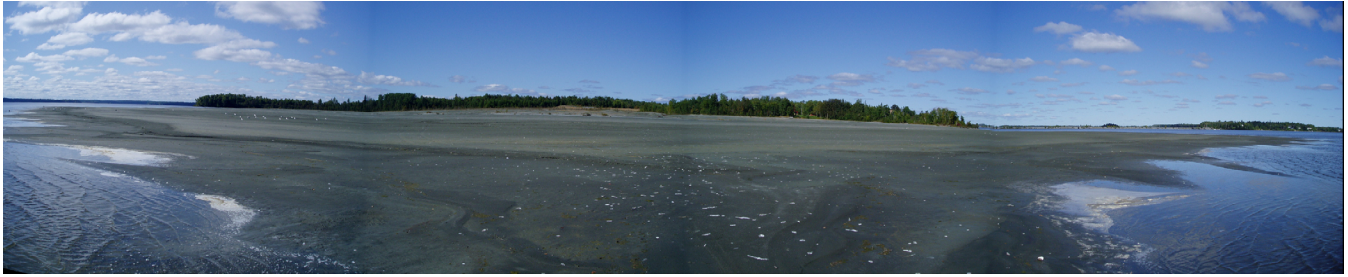
Nord-du-Québec (10)

Principale mine

This former copper mine, one of the largest in Chibougamau, was active from 1953 to 1979. The mill, however, continued to be fed by neighbouring mines until 2005, when the State inherited the site after the mining company went bankrupt. The site comprises three tailings areas covering 170 hectares and a 100-hectare polishing pond.

Several studies were conducted in 2011: an environmental characterization of the site, a geotechnical study of the dikes, and a study of the site's general stability. Over the course of the summer, the buildings were demolished and securement work performed. Preparation of the rehabilitation plan was completed in January 2013.

The Oujé-Bougoumou Cree community has been involved with the project since its inception, and this involvement will continue throughout the rehabilitation process and the



The Siscoe site park.

subsequent monitoring of the site. The Cree participated in the selection of the firm that conducted the site characterization study and, more recently, the selection of the firm preparing the rehabilitation plan.

Exploration sites in Nunavik

The inventory conducted in 2001 identified 275 abandoned mining exploration sites in Nunavik, of which 18 sites were classified as major, and the remaining 257 as intermediate or minor.

In 2007, the Québec government, the Kativik Regional Government, the Makivik Corporation, and the Nunavik Restor-Action Fund signed a partnership agreement with the aim of cleaning up the 18 top-priority exploration sites.

In 2012, the agreement was extended until 2017. The cleanup of all major sites is now almost completed, at a lesser cost than what was initially

planned. Consequently, there are sufficient funds to consider continuing cleanup work on intermediate sites.

7.4 Inspection and securement

The MRN annually conducts a major inspection program of mine sites under the responsibility of the State, allowing it to identify potential risks to the environment and human safety, and to plan maintenance and securement work. The main purpose of this inspection is to secure former mine entrances and openings by installing fences and concrete slabs, or by backfilling.

In 2012, 158 orphaned mine sites were inspected by MRN inspectors to ensure, among other things, the safety of these sites. Securement or maintenance work was carried out on 29 of these sites distributed in four different regions across Québec:

Estrie (05)

Open pits at the former Boudreau and Québec Copper mine sites were backfilled for safety reasons.

Outaouais (07)

Open pits at the Bertrand, Gemmil, Lac Jake, Stewart, Asselin, and Grant orphaned mine sites were backfilled in 2012.

For some larger-scale sites, backfill was not a viable option. Instead, fences were installed around open pits at the Blackburn North Hill, Gauthier, McLemments, New York, and Pednaud sites.

Abitibi-Témiscamingue (08)

The Kewagama site, located midway between Val-d'Or and Rouyn-Noranda, encompassed a variety of waste material and hydrocarbon-contaminated soils. The site was cleaned up, decontaminated, and levelled in 2012.



The Gauthier site, before and after securement work.

Securement work began at the former Claremont and Lac Fortune West mine sites. Finally, monitoring and maintenance work was carried out at the East-Sullivan, Claverny, Arntfield, Lorraine, Wendell, Vauze, Powell, Waite-Amulet, and Wood-Cadillac sites.

Nord-du-Québec (10)

Securement installations at the former Kokko Creek mine were repaired in 2012.

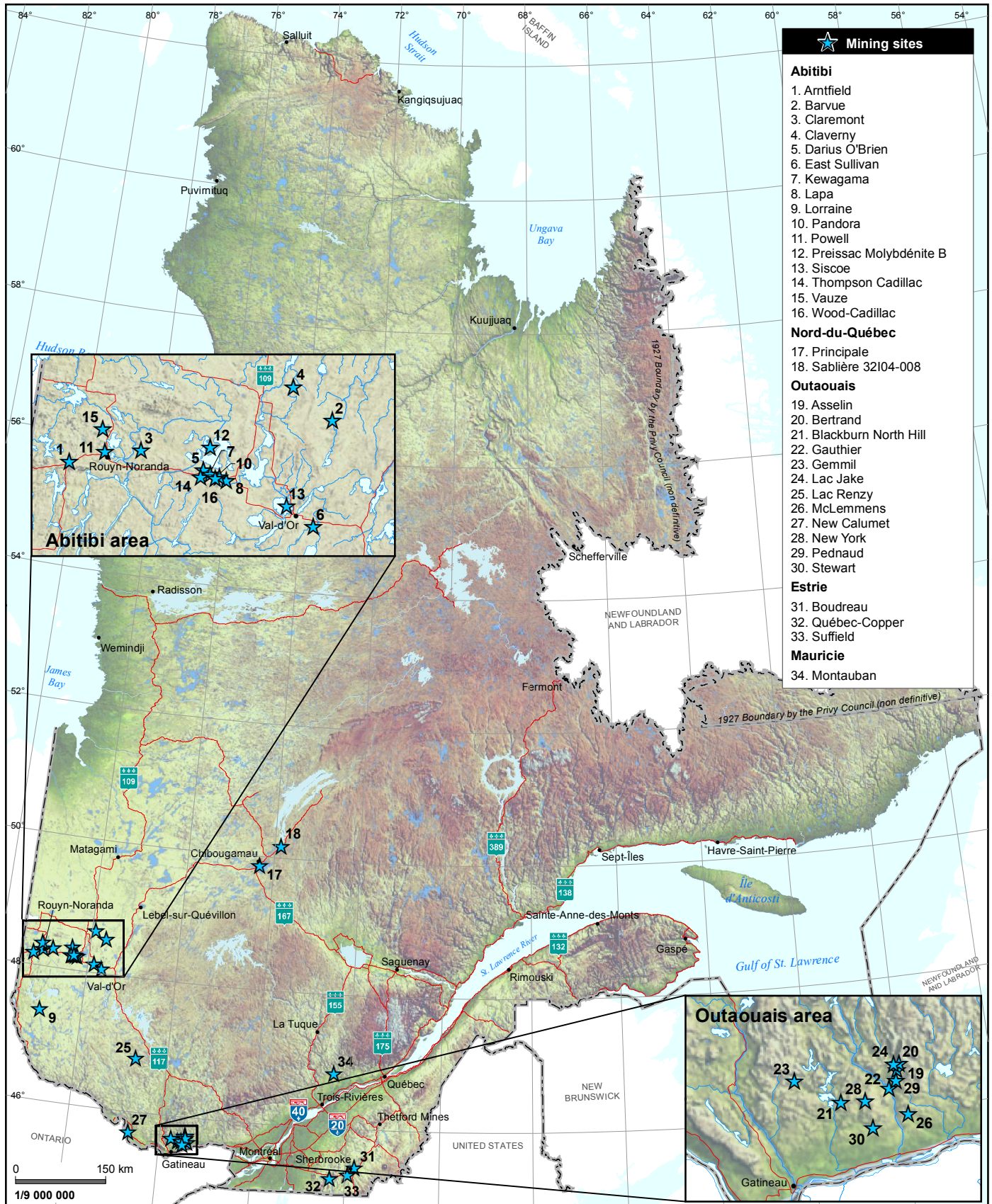
Chaudière-Appalaches (12)

The two open pits at the American Chrome abandoned mine site were backfilled in December 2012.

7.5 Conclusion

The government of Québec intends to tighten the rules governing mine site restoration in the near future. Rehabilitation plans will need to be approved before a mining lease is even issued. The financial guarantee will also be increased to 100% of restoration costs for the entire site, to be paid over the course of the first three years of operation.

Figure 7.1 - Location of rehabilitation and securement work performed at orphaned mine sites in 2012.



CHAPTER 8

RELATIONS WITH ABORIGINAL COMMUNITIES

Pierre Marcoux

The Government of Québec signed, on March 30, 2012, an agreement-in-principle with the Council of the Abitibiwinni First Nation and the Council of the Anishnabe Nation of Lac Simon, to bring about the implementation of a consultation and accommodation process in light of developing mining projects. The final agreement is currently being negotiated and will namely specify the territory subject to the agreement, its nature, scope, as well as the plan for

implementation. This agreement may eventually serve as an example for other Aboriginal communities.

In the private sector, more and more Impacts and Benefits Agreements (IBAs) are signed between mining companies and the Aboriginal communities concerned by their mining projects. These agreements generally include provisions on the protection of heritage sites and environmental monitoring, guarantees for jobs and contracts as well as financial payments. In Québec, IBAs are not mandatory but are encouraged by the government, as they contribute to a more harmonious development of the territory.

In 2012, four IBAs were concluded between mining companies and Aboriginal entities. Among the latter, mining companies Tata Steel Minerals Canada and Labrador Iron Mines each concluded an agreement with the Uashat Mak Mani-Utenam Innu community, regarding their respective projects to mine direct-shipping iron ore (DSO) in the Schefferville area.

In the James Bay region, Stornoway Diamond announced in March the execution of an IBA regarding the Renard diamond project with the Cree Nation of Mistissini, the Grand Council of the Crees (GCC), and the Cree Regional Authority (CRA). This agreement, referred to as the "Mecheshoo Agreement", namely includes, for the Crees, provisions on training, employment, and business

opportunities as well as long-term financial benefits linked with the project's economic success. Metanor Resources signed in September a socio-economic participation agreement for its Bachelor mining project with the Cree Nation of Waswanipi, the GCC, and the CRA. This agreement provides for business and employment opportunities for the Crees during every step of the project including the production phase.

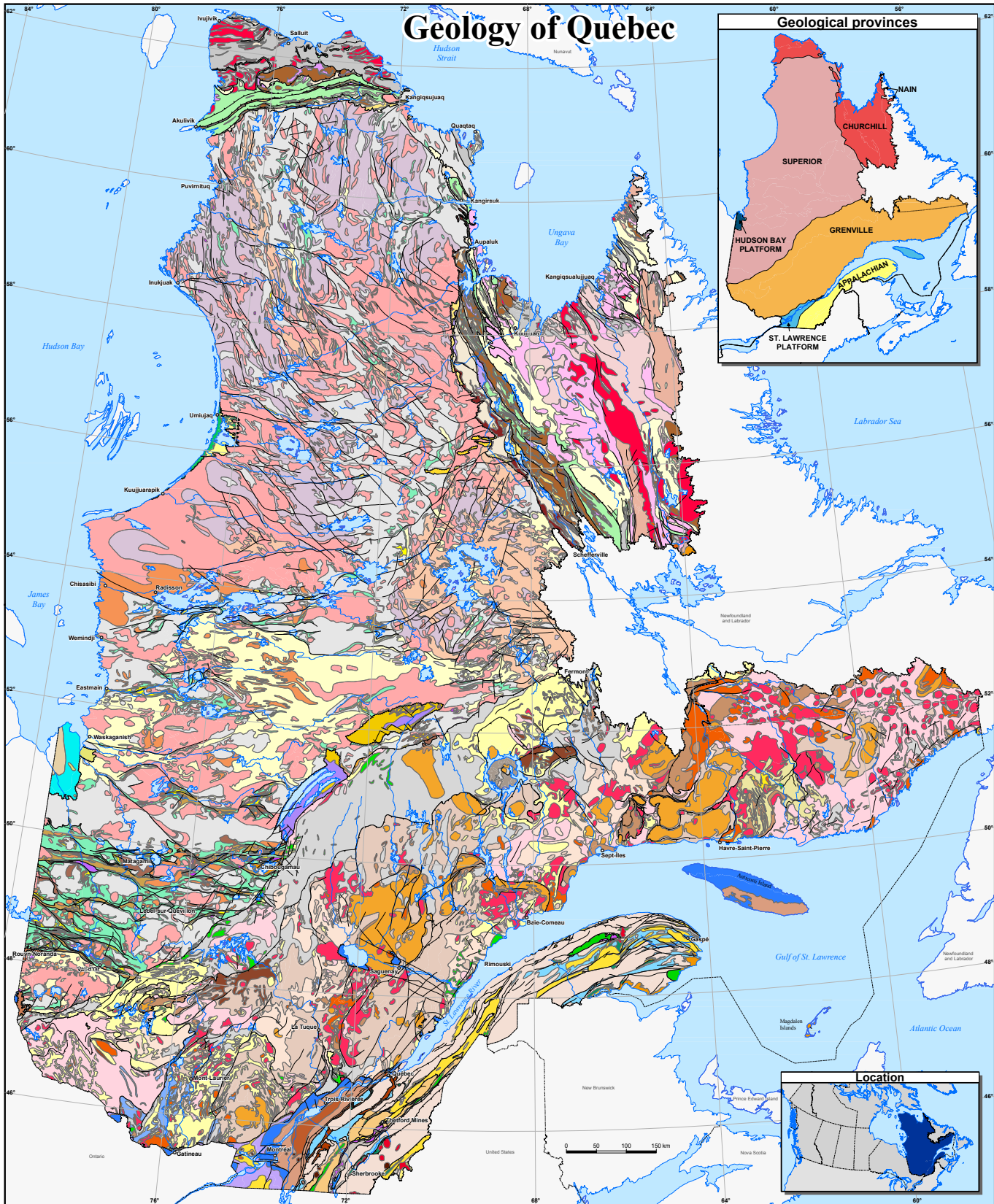
Moreover, other types of agreements were also concluded during the year between mining companies and Aboriginal communities. Eagle Hill Exploration signed an exploration agreement on the Windfall Lake project with the Cree Nation of Waswanipi, the GCC, and the CRA. In the Chibougamau area, BlackRock Metals signed a pre-development agreement with the Cree Nation of Ouje-Bougoumou, the GCC, and the CRA concerning its Lac Doré iron ore mining project. Critical Elements Corporation signed a similar agreement with the GCC, the CRA, and the Cree Nation of Eastmain for the development of the Rose tantalum-lithium deposit. Finally, Canada Lithium signed a memorandum of understanding with Algonquin communities in Pikogan (Abitibiwinni) and Lac Simon (Anishnabe) concerning the Québec Lithium project located near Amos.

The following table lists all IBAs currently in effect in Québec.

TABLEAU 8.1 - Impacts and Benefits Agreements (IBAs) in effect in Québec.

Year of signature	Project	Nation	Mining company	Aboriginal community or entity
1995	Raglan (Ni)	Inuit	Xstrata	Salluit, Kangiqsujaq, and Makivik Corporation
2008	Lac Bloom (Fe)	Innu	ConsolidatedThompson Iron Mines	Uashat Mak Mani-Utenam
2010	DSO (Fe)	Naskapi	New Millennium	Kawawachikamach
2011	Nunavik Nickel (Ni)	Inuit	Jien Canada Mining	Puvirnitug, Salluit, Kangiqsujaq, and Makivik Corporation
2011	DSO - Schefferville Area (Fe)	Innu	Labrador Iron Mines	Matimekush-Lac John
2011	DSO (Fe)	Innu	New Millennium	Matimekush-Lac John
2011	Eleonore (Au)	Cree	Goldcorp	Wemindji, Grand Council of the Crees, and Cree Regional Authority
2012	DSO (Fe)	Innu	Tata Steel Minerals Canada	Uashat Mak Mani-Utenam
2012	DSO - Schefferville Area (Fe)	Innu	Labrador Iron Mines	Uashat Mak Mani-Utenam
2012	Renard (diamond)	Cree	Stornoway Diamond	Mistissini, Grand Council of the Crees, and Cree Regional Authority
2012	Bachelor (Au)	Cree	Metanor	Waswanipi, Grand Council of the Crees, and Cree Regional Authority

Appendix I
Geological map
of Québec and
mining customer
service offices
in Québec



ST. LAWRENCE PLATFORM

(St. Lawrence Lowlands and Anticosti platforms)

MESOZOIC

CRETACEOUS

Alkaline intrusive rocks

PALEOZOIC

CAMBRIAN TO SILURIAN

Red shale and green sandstone
Black shale, mudrock and limestone
Limestone, shale and sandstone
Dolostone and dolomitic sandstone
Sandstone and conglomerate

HUDSON BAY PLATFORM

PALEOZOIC

ORDOVICIAN TO DEVONIAN

Sandstone and arkose
Mudstone, sandstone and evaporite
Limestone and dolostone

APPALACHIAN PROVINCE

PALEOZOIC

PERMO-CARBONIFEROUS

Conglomerate, red sandstone and red mudrock

ORDOVICIAN TO DEVONIAN

Granite, granodiorite and syenite
Limestone, dolostone, mudrock and sandstone
Sandstone, conglomerate, mudrock and limestone
Mudrock, wacke, slate, sandstone, limestone and conglomerate
Schist with blocks
Mélange
Mafic volcanic rocks
Ultramafic to mafic rocks

PROTEROZOIC TO CAMBRIAN

Phyllite, schist and slate
Mafic volcanic rocks
Paragneiss and granulitic intrusive rocks

GRENVILLE PROVINCE

MESOZOIC

TRIASSIC

Impactite

PROTEROZOIC AND ARCHEAN

Granite, granodiorite, quartz monzonite and unsubdivided granitoids
Syenite, monzonite and monzodiorite
Migmatite
Granitoid gneiss
Orthopyroxene-bearing granitoids and gneiss
Tonalitic gneiss, unsubdivided gneiss and tonalite
Anorthosite, leucogabbro and leucotroctolite
Gabbro, norite, troctolite and pyroxenite
Mafic gneiss and amphibolite
Sandstone and wacke
Marble and calc-silicate rocks
Iron formation
Paragneiss, quartzite and migmatite
Felsic volcanic rocks
Mafic volcanic rocks and amphibolite

CHURCHILL PROVINCE

PROTEROZOIC AND ARCHEAN

Syenite and monzonite
Anorthosite and gabbro
Gabbro and diorite
Peridotite, pyroxenite and dunite
Iron formation
Dolostone and dolomitic sandstone
Sandstone and conglomerate
Granite, granodiorite and monzonite
Migmatite
Granitoid gneiss
Orthopyroxene-bearing granitoids and gneiss
Tonalitic gneiss and tonalite
Mafic volcanic rocks and amphibolite
Mudrock and wacke
Paragneiss, schist, quartzite and marble

SUPERIEUR PROVINCE

PALEOZOIC

PERMIAN

Impactite

ORDOVICIAN

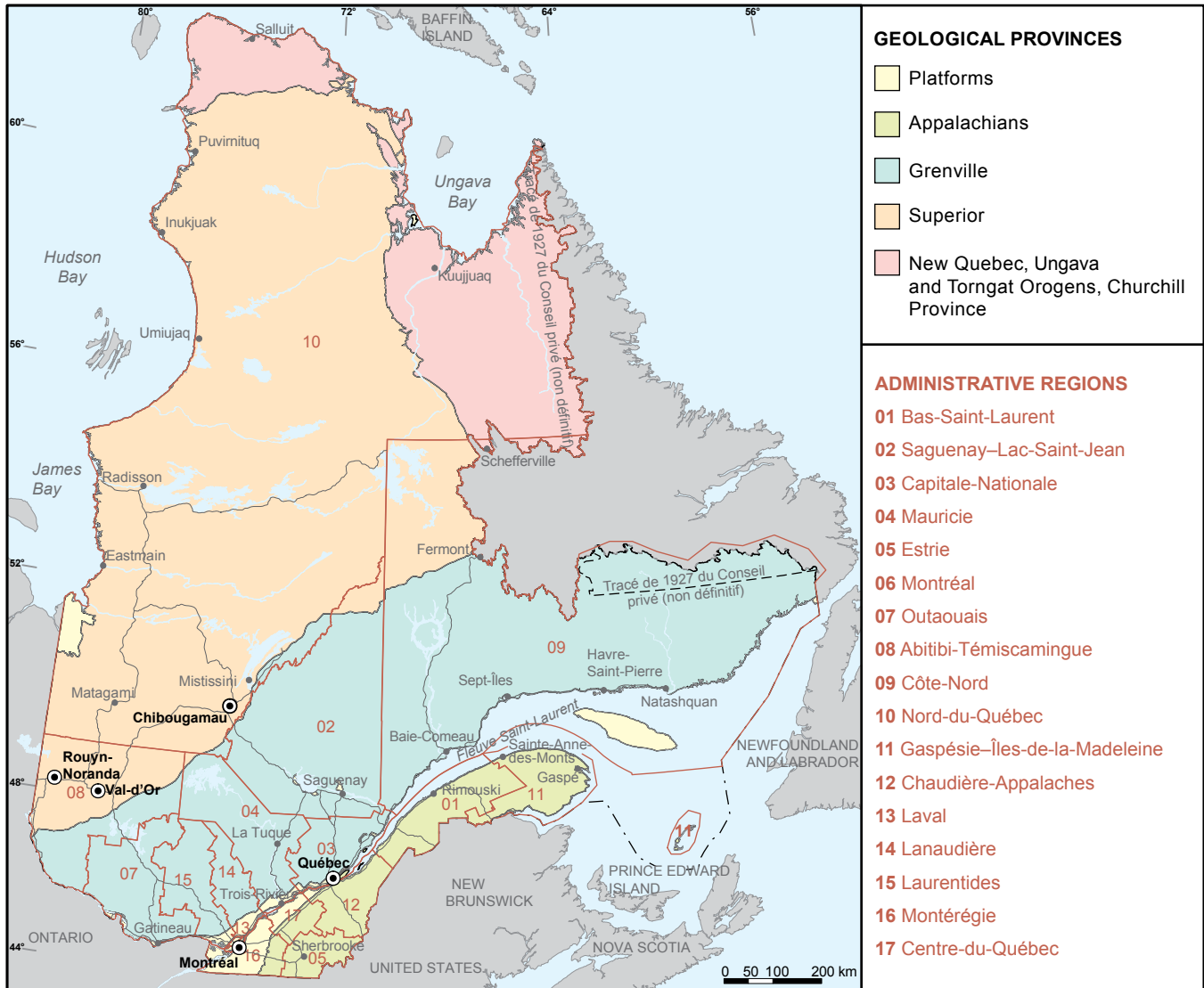
Limestone and shale

PROTEROZOIC

Basalt, dolostone, sandstone and conglomerate
Sandstone, red mudrock, basalt and conglomerate
Sandstone and conglomerate
Dolostone and dolomitic sandstone
Conglomerate, sandstone and iron formation
Argillite, wacke and conglomerate

ARCHEAN

Diatexite
Monzonite, syenite and monzodiorite
Granite and granodiorite
Orthopyroxene-bearing granitoids
Tonalite and tonalitic gneiss
Anorthosite, gabbro and pyroxenite
Gabbro and diorite
Pyroxenite, peridotite and dunite
Wacke and mudrock
Conglomerate
Iron formation
Paragneiss and schist
Felsic volcanic rocks
Mafic volcanic rocks
Ultramafic volcanic rocks



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Direction de l'expertise Énergie-Faune-Forêts-Mines-Territoire du Nord-du-Québec

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Appendix II

Legend of abbreviations used in tables

Prospecting and geology works

B (mt:g/t)	Bulk sampling including tonnage and gradeor (mt: % Xx) (metric tons:gram per ton) or (metric tons: % Xx)
Bs	Block sampling for dimension stones
Ct	Characterization tests and analysis (peat)
D (#h:m)	Diamond drilling (number of holes:total meters)
G	Geological mapping
Min	Mineralogical studies
Pg	Unspecified prospecting and geological works
Pr	Prospection
Pt	Polishing test
Rcd (#h:m)	Reversed circulation drilling (number of holes:total meters)
Rsi	Remote sensing interpretation
S	Sampling
T	Trenching and stripping

Geochemical surveys

Gs	Unspecified geochemical surveys
Gs(e)	Esker geochemical survey
Gs(h)	Humus geochemical survey
Gs(l)	Lake sediments geochemical survey
Gs(r)	Lithochemical survey (rock)
Gs(s)	Stream sediments geochemical survey
Gs(sl)	Soils geochemical survey
Gs(t)	Till geochemical survey

Geophysical surveys

Gp	Unspecified geophysical survey
GpEl	Electric survey
GpEm	Electromagnetic survey
GpGr	Gravimetry survey
GpMa	Magnetometric (magnetic) survey
GpMt	Magnetotelluric survey
GpRa	Radiometric survey
GpSi	Seismic survey

(A) aerial, (B) borehole, (G) ground

Other types of works

ES	Environmental studies
FS	Feasability studies
MSR	Mining site rehabilitation
MT	Metallurgical test
PEA	Preliminary economic assesment
PFS	Prefaisability study
QS	Quaternary studies
RRE	Reserve and resource evaluation
TE	Technical evaluation

Substances

Ag	Silver
Au	Gold
Be	Beryllium
Bi	Bismuth
Co	Cobalt
Cr	Chrome
Cs	Cæsium
Cu	Copper
PGE	Platinum Group Elements
Fe	Iron
Ga	Gallium
Li ₂ O	Lithium oxyde
Mg	Magnesium

Mo	Molybdenum
Nb	Niobium
Nb ₂ O ₅	Niobium oxyde
Ni	Nickel
TREO	Total Rare Earth Oxydes
P	Phosphorus
P ₂ O ₅	Phosphorus oxyde
Pb	Lead
Pd	Palladium
Pt	Platinum
Rb	Rubidium
REE	Rare earth elements
Ta	Tantalum
Ta ₂ O ₅	Tantalum oxyde
Te	Tellurium
Th	Thorium
Ti	Titanium
U	Uranium
U ₃ O ₈	Uranium Oxyde
V	Vanadium
W	Tungsten
Y	Yttrium
Y ₂ O ₃	Yttrium oxyde
Zn	Zinc
Zr	Zirconium
ZrO ₂	Zirconium oxyde

Measurement Units

c/t	Carat/ton
G	Billion
g/t	Gram per ton
K	Thousand
M	Million
st	Short ton
t	Metric ton
t/d	Metric ton per day
t/y	Metric ton per year
st/d	Short ton per day

Products and usages of architectural stones

BS	Building stone and landscaping
CS	Curbstone
DeS	Decorative stone
DS	Dimension stone
MO	Monument stone
RS	Refractory stone
RT	Roofing tiles

Other abbreviations used

CA	Certificate of authorization
GESTIM	Gestion des titres miniers
MDDEFP	<i>Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs du Québec</i>
SIGÉOM	<i>Système d'informations géominières</i>
c	Confidential data
n/a	Not available
Italic	Exploration work done on mine properties
Bold	Advanced exploration project

Appendix III

The Mineral Development Process

The Mineral Development Process

This schematic chart describes the nature and duration of work, objectives, evaluation methods, targeted results, nature of mineral inventory, and investment and risk levels, for each of the four phases of the mineral resource development process: mineral resource assessment, exploration, deposit appraisal, and mine complex development.

In this chart, a mineral showing requires at least one grab sample or one drill intercept, trench or channel sample from a mineralized zone that exhibits

potential economic value. A mineral deposit consists of at least one mineralized zone for which the economic potential has been broadly assessed through a first mineral resource estimation. Conversion of mineral resources into mineral reserves not only requires a positive feasibility study following deposit appraisal work, but also a commitment to bring the deposit into production. The mine complex development phase includes work conducted during the preparation and development of the project, mining operations, and mine site rehabilitation.

Mineral Resource Assessment

Exploration

Deposit Appraisal

Mine Complex Development

Phase	VRM	EX-1	EX-2	EX-3	EX-4	EX-5	MV-1	MV-2	MV-3	MV-4	ACM-1	ACM-2	ACM-3
Work	Surveys, research, and metallogenic syntheses.	Exploration planning	Regional reconnaissance and surveys.	Prospecting and ground surveys on anomalies.	Verification of anomalies and showings.	Discovery and delineation of a deposit with estimated tonnage.	Definition of deposit with estimated tonnage.	Definition of technical parameters. (Engineering)	Definition of economic parameters.	Feasibility study.	Construction. Start-up of mine.	Production and marketing.	Mine closure. Mine site rehabilitation.
Duration				2 years +				3 to 8 years			2 to 3 years	5 years +	
Objectives	Provide information and tools to develop mineral resources in a sustainable development perspective.	Select targeted minerals and metals. Establish objectives and strategies. Select prospective target areas.	Find regional and local anomalies. Select the most promising targets.	Acquire properties. Confirm the presence, position and characteristics of anomalies.	Determine the source of anomalies. Find mineral showings. Acquire additional properties as needed.	Discover, confirm and delineate a first mineral inventory for the deposit. Assess its economic potential in a preliminary fashion. First pre-feasibility study.	Define the extent, controls and internal distribution of the mineralogy and ore grade of the deposit. Plan and design project engineering.	Establish technical feasibility. Establish mining plans, schedules and estimations for the project.	Establish parameters for economic and financial assessment. Examine potential sources of financing.	Ensure validity of data, assumptions, and estimations. Decide whether or not to proceed.	Complete mine development and required construction work in line with budget and schedule. Prepare start-up of mine and processing plant.	Achieve commercial production as per planned rate and specifications. Achieve profitability in a sustainable development perspective.	Rehabilitate mine site to safe and visually acceptable level and environment. Achieve quality compatible with future development land uses.
Evaluation methods	Surveys, research, and geoscientific, metallogenic and economic syntheses by governments, universities, and other research groups.	Studies and selection of metals and minerals. Review and synthesize geological and metallogenic information for various regions. Assess legal and political context.	Remote sensing, aerial photography, airborne geophysics. Prospecting, geology and geochemistry. Assessment and selection of anomalies.	Prospecting and ground geoscientific surveys. Overview and selection of anomalies for follow-up.	Geological mapping and other surveys. Trenching, drilling. Sampling of results and selection of targets.	Stripping, mapping, trenching, drilling, geophysics. Preliminary resource estimation. Environmental characterization.	Definition work by mapping, sampling, surface and underground drilling. Acquire engineering data for project. Detailed surveys of site and environment.	Bulk sampling. Pilot-scale tests, engineering and cost estimates for the mine, the ore concentration process, infrastructure, environmental protection and site rehabilitation.	Market, price, and financial studies. Analysis of technical, economic, financial, social, political, and environmental risks.	Due diligence review of all available information on the project. Assess profitability, risks, and positive aspects of the project.	Project management and quality improvement of mine start-up and training of personnel. Exploration, deposit appraisal, and development of new zones on and off mine site.	Manage production in line with continuous improvement of quality and performance. Exploration, deposit appraisal, and development of new zones on and off mine site.	Decommissioning of mine. Environmental reclamation and monitoring.
Targeted results	Databases, maps, and models	Exploration projects	Regional anomalies	Local anomalies	Mineral showings	Deposit with estimated tonnage	Define mineral resources	Determine mining methods	Technical and economic feasibility	Ore deposit Decision to go into production	Start-up of production	Profitability	Rehabilitated mine site
Mineral Inventory	MINERAL POTENTIAL	NEW UNIDENTIFIED, SPECULATIVE, HYPOTHETICAL, OR MODELLED MINERAL RESOURCES					INFERRED MINERAL RESOURCES	MEASURED AND INDICATED MINERAL RESOURCES			PROVEN AND PROBABLE MINERAL RESERVES	MINERAL RESOURCES	

Source: Modifications coordinated by S. Lacroix in August 2001, based on SOQUEM Annual Report 1976-77, p.4-5 and Vallee, M., 1992. Guide to the Evaluation of Gold Deposits, CIM Special Volume, p.4. Graphic design: Charlotte Grenier



