

# Mineral Exploration, Deposit Appraisal and Mine Complex Development Activity in Canada

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## **INTRODUCTION**

This review provides analytical highlights and describes mineral resource development activities from grass-roots exploration up to production for 2004 (final) and to some extent 2005 (revised spending intentions) with data current as of September 2005. The full spectrum of data covers three work phases – exploration, deposit appraisal, and mine complex development expenditures – with the associated capital and repair and maintenance costs for construction, machinery and equipment. To better understand the major trends of the mineral exploration industry (generally speaking), two work phases, exploration and deposit appraisal, will be examined at the level of activity occurring either off-mine-site or on-mine-site. The regional context, including projects with a major impact on the 2004 and 2005 level of activity, is discussed where appropriate. Then, results are presented from the perspective of *factors of success*, including the metal price context and expenditures by commodity group, the Canadian tax incentive regime, and junior company spending. Supplementary results and other exploration indicators not necessarily discussed in this review can be found in the tables and graphs following the analysis.

Statistics for the years 2004 and 2005 were collected in the federal-provincial/territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures. The definitions in use for the survey are based upon the Generalized Model of Mineral Resource Development described in Table 18. The survey response rate reached about 98%. Additional information about the survey history and methodology can be found on the Internet at [http://mmsd1.mms.nrcan.gc.ca/mmsd/exploration/default\\_e.asp](http://mmsd1.mms.nrcan.gc.ca/mmsd/exploration/default_e.asp).

In 2004, statistics were compiled from the reports of 761 active company project operators and some individual

prospectors or groups of prospectors. All 675 companies, compared to 604 in 2003, reported that they were active in mineral exploration at more than 2100 properties. Of these companies, 572 were junior project operators, compared to 519 in 2003. Seventy-four companies were active in deposit appraisal (36 of them were junior project operators) at 94 properties, and 94 were active in mine complex development at 170 mining projects of the 187 principal mines in operation that year. (Note: Some companies are involved in more than one work phase and property at the same time.)

## **OVERVIEW OF RESULTS**

### **Total Mineral Resource Development Expenditures**

The Canadian mineral resource development sector (excluding petroleum, and sand and gravel) is currently enjoying impressive levels of activity as evidenced by a 45% increase in 2004 total mineral resource development spending (Table 1). Close to \$5.8 billion was recorded in 2004, compared to \$4.0 billion in 2003. Once 2005 expenditures are confirmed, it will not be surprising to see a further increase to a level surpassing \$6.0 billion, which would represent the highest total since 1997. The combined capital investment portion of all three work phases (mineral exploration, deposit appraisal, and mine complex development) between 2003 and 2005 has climbed successively from \$1.0 billion to \$2.0 billion in 2004 and to a likely \$2.5 billion in 2005 (Figures 1a and b). The exploration work phase (mainly field work costs, excluding capital and repair and maintenance costs) is the second most important in terms of increase (\$365 million increase) after total capital expenditures. Diamond drilling and geophysical surveys accounted for 61% of the exploration increase (Table 9a). In 2005, the increase in the exploration work phase, still ranking second in importance, is less than in 2004, but still significant (\$181 million increase).

Most of the investment increase for 2004 (Figure 1c) was fueled by very large-scale mine complex development at projects such as the Voisey's Bay mine (Voisey's Bay Nickel Company Limited) in Newfoundland and Labrador and the Kidd Creek mine D (Falconbridge Limited) in Ontario for base metals. Both projects were at their

development peak in 2004. Other examples of key projects in Ontario included Falconbridge's new Montcalm base-metal mine where construction was completed in 2004, as well as its intense underground development program at the Nickel Rim South project, which is designed to access and better define the nickel deposit at depth. At Nickel Rim South, the shaft sinking operation was prepared in 2004 and main construction began in 2005. As a result of all of this buoyant activity, total mineral resource development expenditures for base metals reached \$1.8 billion in 2004 and led all the other commodity groups. Despite a decline in total base-metal spending anticipated in 2005, the leading trend is expected to be maintained.

Other examples of major mine developments in 2004 were the expansion at BHP Billiton Ltd.'s Ekati diamond mine (mainly Panda underground) in the Northwest Territories, which will have significant activity in 2005, and the expansion of the Potash Corporation of Saskatchewan's Rocanville potash mine in Saskatchewan. On a smaller scale, several coal projects started production in 2004; among them, Elk Valley Coal's Cheviot Creek project in Alberta was one of the most significant in terms of expenditures.

In 2005, apart from strong but declining investment at the above-mentioned base-metal projects, which are approaching completion (except for the Nickel Rim project), the Raglan nickel mine (Falconbridge Limited) in Quebec continued its expansion and several coal and potash mines in British Columbia and Saskatchewan, respectively, achieved significant investment levels. Four new major projects are also in the development stage, namely Cigar Lake (Cameco Corporation) in Saskatchewan for uranium, Snap Lake (De Beers Canada Mining) in the Northwest Territories for diamonds, and a smaller diamond project, Jericho (Tahera Corporation), in Nunavut. Finally, the De Beers' Victor diamond project in Ontario just received all of the necessary environmental assessment approvals during the second half of 2005. The bulk of the spending on this project, therefore, will be forthcoming. The dyke construction at the A418 pipe at the Diavik diamond mine (Diavik Diamond Mines Inc.) in the Northwest Territories, coupled with the feasibility study of underground mining at its three main kimberlite pipes (A418, A154N and A154S), highlight the very important ongoing development at this mine.

In total for 2004 and 2005, 11 projects (including 6 metal mining projects) and 17 projects (including 9 metal mining projects), respectively, are newly committed to production and have reported mine complex development expenditures (but are not necessarily producing ore yet). Although the number of projects are numerous in 2004 and 2005 (not final), these may include small-scale, short-lived projects and some mine re-openings.

About one quarter of the total mineral resource development expenditures was dedicated to exploration and deposit appraisal activity (inclusive of capital, repair and maintenance expenditures) for each of 2004 and 2005 with \$1.4 million and an estimated \$1.6 million, respectively. The exploration phase alone accounted for 16% of the 2004 level with a similar level indicated for 2005. In 2003, the percentage reached 14%.

## Exploration and Deposit Appraisal Expenditures

Analysis in this review is mainly built upon exploration and deposit appraisal expenditures, excluding capital and repair and maintenance costs. This subset of mineral resource development expenditures rose substantially in 2004 to reach \$1178 million (Table 3b). This 72% increase in spending over 2003 revitalized the Canadian mineral exploration sector. It also marked the first year since 1997 that spending exceeded the \$1 billion level. This favourable context is quite the opposite from the one that existed just a few years ago when exploration and deposit appraisal spending levels in 2000 (\$540 million in 2004 constant dollars) reached a low comparable to the amount recorded in 1992 (also around \$540 million, when adjusted with an estimate for newly collected costs included since 1997) (Tables 3a and b, Figure 2a). The turnaround in expenditures started slowly in 2001 and increased steadily, reaching \$707 million in 2003. For 2005, a more modest but significant increase of 16% (up to \$1369 million) is anticipated. However, expenditure levels of close to \$2 billion in 1987 and 1988 remain the highest ever reached in the 1969-2005 statistical series.

In 2004 (Table 8), the current upward trend in exploration and deposit appraisal expenditures was felt across all of Canada's mining jurisdictions. Together, Ontario (\$307 million), Quebec (\$227 million) and Nunavut (\$188 million) accounted for 61% of total expenditures in 2004. More than 100% increases were recorded in each of British Columbia, the Northwest Territories and Nunavut, while New Brunswick saw an increase of more than 400%. In dollar terms, Nunavut, Quebec, British Columbia and Ontario accounted for a \$365 million increase, equivalent to 74% of the total exploration and deposit appraisal expenditures increase. However, in 2005, a total decrease of \$32 million is expected in Nunavut, New Brunswick, Quebec and Alberta combined. In each remaining jurisdiction, the increases totaled \$224 million with Saskatchewan, British Columbia and the Yukon accounting for 64% of this total (\$144 million increase). By jurisdiction, percentage increases are generally more modest, except for the Yukon (147% increase). In 2005, British Columbia is expected to increase in rank from fourth in 2004 to third in total spending after Ontario and Quebec and ahead of Nunavut.

## Off-Mine-Site Expenditure Trend

### EXPLORATION

Around three-quarters (\$903 million) of the total on- and off-mine-site exploration and deposit appraisal expenditures was dedicated to exploration in 2004 and close to 80% (\$1085 million) is expected for 2005. In 2004, 69% of the increase in exploration and deposit appraisal expenditures resulted from the intense activity in the off-mine-site exploration work phase while, for 2005, 88% of the increase is attributable to this work phase. In 2004, as in 2003, the share of off-mine-site exploration represented 70% of the total exploration and deposit appraisal expenditures (\$478 million in 2003 and \$819 million in 2004) while, for 2005, this amount is expected to reach 72% (\$987 million). The provincial/territorial ranking shows that when considering only off-mine-site exploration, Nunavut ranked second after Ontario, followed by Quebec in each of 2004 and 2005 (Tables 7a and b).

### IMPACT OF MAJOR PROJECTS

Nunavut in 2004 contributed 28% of the total \$341 million increase in the off-mine-site exploration work phase. Not only did Nunavut lead in terms of the number of large exploration projects in Canada (12 projects reporting above \$5 million each), it also had large budget increases for 9 of these major projects compared to 2003. In 2004, diamonds (ranking first) and precious metal spending were not far apart. Not only were Qilalugaq (BHP Billiton Diamond Inc.), Aviat (Stornoway Diamond Corporation) and Churchill (Shear Minerals Ltd.) important diamond projects with very large expenditure increases, but other projects, such as Hope Bay (Miramar Hope Bay Ltd.), Goose Lake or Back River JV (Miramar Bathurst Resources Ltd.), and Committee Bay (Committee Bay Resources Ltd.), for gold were also the target of important increases. Wolfden Resources continued to be strongly involved at its High Lake base-metal project. It also acquired the Ulu gold property from Kinross Gold Corp. in 2004 and launched an important exploration program on this newly acquired property. The properties of Hackett River (Sabina Resources Limited) and Ferguson Lake (Starfield Resources Inc.) for base metals, and Mary River (Baffinland Iron Mines Corporation) for iron ore, also attracted more interest. In 2005, in Nunavut, the large expenditure increase at the Mary River iron project was not enough to counteract decreases totaling \$20 million, mainly affecting diamond expenditures (probably ranking second with \$52 million, after precious metals at \$65 million). Miramar Hope Bay Ltd. (gold), De Beers Canada Exploration Inc. and BHP Billiton Inc. (both for diamonds) have seen a slow-down in their operations.

Ontario, Quebec and British Columbia each contributed about 16% of the total increase of \$341 million for 2004 at the off-mine-site exploration work phase. The increase in Ontario is mainly attributed to 27 projects with a budget

increase of between \$1 million and \$4 million each. The increase is principally distributed between precious metals (more than \$30 million) and base metals (more than \$20 million). In 2005, a further increase of \$20 million is expected as budgets are firmed up, especially at four main projects with expenditure increases of around \$5 million each. The projects include Island Gold (Richmont Mines Inc.), gold; and Podolsky (Dynatec Corporation), base metals, including a shaft-sinking project to evaluate the deposit at depth. This company, with its partner FNX Mining Company Inc., is also involved in large exploration programs, not only at Podolsky, but also at the Levack Footwall. Finally, De Beers Canada Exploration Inc. continues to be active in diamond exploration near James Bay. Decreased budgets of at least \$1 million were reported at 14 companies affecting 11 major projects for either base or precious metals (plus one company for one diamond project), including a much larger decrease for Falconbridge Limited at Nickel Rim South. At this project, the underground development is now being captured under the deposit appraisal work phase. However, for base metals, decreases and increases almost counterbalanced each other as precious metals showed a net gain, causing the off-mine-site exploration expenditures for precious metals to grow from \$108 million in 2004 to an estimated \$126 million in 2005. First insight into more recent 2005 results indicates an important budget downsizing from the 2005 revised spending intentions, especially for the precious metals projects at the off-mine-site exploration work phase in Ontario. The full impact of those new results has not yet been evaluated.

In Quebec, most of the \$61 million increase in 2004 came from important investments in northern Quebec, such as at the Otish Monts for the Foxtrot (Ashton Mining of Canada) diamond project; in the Raglan District for various nickel projects (for example, Anglo American Exploration [Canada] Inc.), and near James Bay at the very promising Eleonore (Virginia Gold Mines Inc.) gold project. The East Amphi (Richmont Mines Inc.) gold project, close to Malarctic in Abitibi, was also subject to a budget increase, but in 2005 this project will likely be classified in the deposit appraisal work phase. In terms of commodity grouping, although expenditures increased for both base metals and diamonds, the biggest expenditure increase was reported for precious metals in 2004. No major increase is anticipated for 2005 in the off-mine-site exploration category. Base-metal expenditures are expected to increase while those for diamonds, especially for the Ashton Mining budget, will decline slightly. It was also indicated that Ressources Manicouagan Inc. intends to explore for nickel on a large parcel of land in the Manicouagan area (close to the hydro dam) in 2005.

British Columbia and Saskatchewan also had an important impact on the 2004 exploration trend, but their impact will be more significant for the 2005 trend. They are contributing close to 70% of the total off-mine-site exploration increase (\$168 million) in 2005. In British

Columbia in 2004, most of the increase came not only from a dozen projects with increased spending that was higher by \$1 million or \$2 million, but also from four projects that include three former mines: Mount Polley (Imperial Metals Corp.), base metals; Cariboo (International Wayside Gold Mines), gold; and the the Tulsequah project, mainly the Tulsequah Chief deposit (Redcorp Ventures Ltd.), base metals, each of which had expenditure increases of more than \$5 million. These former mines are targeted for major work aimed at increasing mineral resources in the hope of leading them again to production. In fact, the Mount Polley mine re-opened in October 2004. The precious metals (ranking first) and base metals commodity groups more than doubled in expenditures in 2004 while further important increases are expected for base metals and coal (tenfold) in 2005. For example, in 2005, the Galore Creek copper-gold project (NovaGold Canada Inc.) was the object of an aggressive exploration program on the large inferred resource portion of the deposit, while a large exploration budget for coal was also realized, especially at Pine Pass (Pine Valley Coal Ltd.).

In Saskatchewan for 2004, three uranium companies (AREVA, UEX Corporation, and International Uranium Corporation [IUC]) decided to greatly increase their activity and, except for IUC, are expanding further in 2005. Other big players such as Cameco Corporation and CanAlaska Ventures Ltd. (new property) have also increased their budgets for 2005. Many other companies, on a different scale, however, have decided to participate in this uranium rush, mainly in the Athabasca Basin of Saskatchewan. With respect to diamonds, Shore Gold Inc. at the Star Kimberlite project and De Beers Canada Exploration Inc. at the Fort-à-la-Corne Joint Venture (FalC-JV) are the leading project operators in the Fort-à-la-Corne area. Shore Gold Inc., through wholly owned Kensington Resources Ltd. (as of October 2005), is indirectly a participant in the FalC-JV. Both operators have very aggressive exploration strategies and want to undertake early pre-feasibility (scoping) studies with extensive delineation drilling. This buoyant activity in Saskatchewan has caused expenditures for the leading commodities (uranium and diamonds), to double successively in 2004 and 2005. This has likely pushed the province to second place for off-mine-site diamond exploration expenditures in Canada behind Nunavut in 2005.

#### DEPOSIT APPRAISAL

The off-mine-site deposit appraisal work phase contributed 19% (\$222 million) of the total exploration and deposit appraisal on- and off-mine-site expenditures and, with an 80% increase in 2004 (\$99 million increase), this phase represents the second most important increase after off-mine-site exploration. About 90% of the 2004 increase that year originated in the Northwest Territories, British Columbia and Quebec. In 2005, about the same amount should be spent, representing 16% of the total for

both phases considering again that most of the increase for that year should come from off-mine-site exploration (Tables 7a and b).

#### IMPACT OF MAJOR PROJECTS

In 2004, the total off-mine-site deposit appraisal increase of \$99 million resulted mainly from more activity at the Gahcho Kué and Snap Lake diamond projects located in the Northwest Territories, both operated by De Beers Canada Mining; the Casa Berardi (Aurizon Mines Ltd.) gold project (a former mine) in Quebec; and nine major projects (mainly base-metal and coal projects with increases above \$1 million each) in British Columbia. The Trend coal project in British Columbia, as well as the Snap Lake and Casa Berardi projects, are expected to be in the mine complex development phase in 2005. As a result, the Northwest Territories in 2004 ranked first in off-mine-site deposit appraisal followed by British Columbia and then Quebec and Ontario. In 2005, Ontario is expected to be ahead of Quebec with the other top jurisdictions occupying the same rank. Although no major increases are forecast for 2005, the Yukon Wolverine base-metal deposit (Yukon Zinc Corporation) would likely compensate for the Quebec decline resulting mainly from a change of work phase at Casa Berardi.

The number of off-mine-site deposit appraisal projects totalled 78 in 2004 (Table 17). Classification criteria were strengthened in 2004, thus making comparisons with previous years difficult. The leading jurisdictions for the number of advanced projects are British Columbia with 23 projects, followed by Quebec and Ontario with 18 and 12 projects, respectively (11 for Ontario when excluding capital and repair).

#### *On-Mine-Site Expenditure Trend*

#### EXPLORATION AND DEPOSIT APPRAISAL

Total on-mine-site exploration expenditures represented only 9% of total exploration spending with 63% of it associated with 11 gold mines in 2004 (Table 7a). Comparatively, for on-mine-site deposit appraisal, representing 19% of total deposit appraisal, close to 60% of the spending was realized at 7 gold mines. The number of on-mine-site exploration projects increased by 33% (reaching 36) and the associated expenditures increased by 40% (reaching \$84 million) in 2004 over 2003. Even though the percentage of mines reporting both mine complex development expenditures and on-mine-site exploration was higher in 2004 (22% compared to 16% in 2003), this share is still low compared to the 1997-2000 period (e.g., 33% in 1997 with 227 mines reporting mine complex development expenditures among 258 principal mines in operation that year) (Figure 10). The same observation can be made of the on-mine-site deposit appraisal ratio. On-mine-site deposit appraisal expenditures doubled in 2004 (\$52 million compared to

\$25 million in 2003), but the number of projects increased by only one (to 20 from 19 in 2003). In 2004, Ontario and Quebec contributed 86% (\$44 million) of the total on-mine-site exploration and deposit appraisal increase.

In 2005, about a 16% increase (\$22 million) is anticipated for both the on-mine-site exploration and deposit appraisal work phases for a total of \$159 million, compared to \$137 million in 2004 (Table 7b). Quebec, the Northwest Territories and Ontario will likely contribute 76% (\$17 million) to the total on-mine-site increase in 2005. Total on-mine-site expenditures, including field work and overhead costs only, can also be traced back to 1969 in constant dollars (Figure 3c). As mentioned above, those levels of expenditures are very low, especially when compared to the record peak years of 1987 (\$264 million) and 1981 (\$305 million).

### IMPACT OF MAJOR PROJECTS

In each of 2004 and 2005, Ontario and Quebec together contributed around 80% of the total on-mine-site exploration and deposit appraisal expenditures as they each had very important producers, such as the Red Lake gold mine (Goldcorp Inc.) in the former jurisdiction and the La Ronde gold mine (Agnico-Eagle Mines Limited) in the latter, with both companies sustaining important mine-site exploration strategies. Although different types of mines are receiving exploration or deposit appraisal budgets, such as coal, diamonds and base metals, the leading type remains gold mines. However, in 2004, on-mine-site base-metal expenditures increased by \$23 million compared to precious metals, which increased by \$17 million. Higher spending at three base-metal on-mine-site exploration projects in Ontario and at two major precious-metal on-mine-site deposit appraisal projects in Quebec pushed expenditures up in 2004.

## Factors of Success

### *Metal Prices*

The recent heightened commitment to the development of mineral resources in Canada for which Canada has a rich mining history (gold, nickel, copper, zinc, lead, uranium, metallurgical coal, iron ore) is a result of strong commodity prices. Figure 2c shows many correlations with metal price cycles and exploration plus deposit appraisal expenditure levels, especially for the depressed expenditure years of 1972, 1983 and 1992 when low metal prices were recorded. In 1999, as in 2001, field work and overhead expenditures, excluding diamonds, were low again, as was the metals price index. At \$364 million (in 2004 constant dollars), 2001 expenditures, excluding diamonds, were at their lowest level ever recorded, but both expenditures and the metals price index have recovered and are still climbing from the low observed that year. Commodity prices strengthened significantly in 2004 and have continued to climb in 2005, when compared to the same

10-month period in both years. An exception is palladium (Appendix 1). Notable increases so far in 2005 include molybdenum, coal and iron ore, up close to 130%, 119% and 87%, respectively. Some metal prices reached near-record levels in 2005. For example, gold traded at its highest level since 1981 and platinum traded at its highest level since 1980. As of this writing, copper, coal and iron ore prices were at record high levels. Potash prices also increased by 50% over the previous year.

Precious metal prices are mainly driven by investor demand, especially as slightly higher inflation rates are foreseen. The continuing strong demand for most mineral commodities has been driven by industrial sector demand, mainly from China and India and, to some extent, from the United States. This demand put significant upward pressure on commodity prices. Despite weaker stainless steel production in the Western World in 2005 due to market oversupply, demand for nickel from China remains strong, as does demand for iron ore in Asia. In the short term, the coal price is expected to remain high. Commodities such as platinum and molybdenum, because of their exceptionally high prices, are at risk of being substituted by cheaper commodities. The international demand for a clean source of energy and serious supply shortages for uranium are putting pressure on the uranium price. Some content in this short analysis has been based on the first chapter of this yearbook entitled *General Review*, which gives a more complete description of mineral commodity prices and associated economic conditions.

### ***Exploration and Deposit Appraisal Expenditures by Commodity Group***

The order of importance of mineral commodity expenditures continues to be about the same as in 2003 for 2004 and likely for 2005 (Table 12). Precious metals (more than 40% of total expenditures) ranked first followed by base metals (around 20%), diamonds (between 20% and 25%), uranium (roughly 5%), other metals (roughly 2%), coal (roughly 2%, climbed one rank over 2003), nonmetals (lower than 2%), and iron ore (lower than 2% but likely climbing to second last in 2005). Since 1993 at the beginning of the northern diamond rush, diamonds have continuously sustained at least 20% of the total mineral exploration and deposit appraisal spending. Overall, despite small variations in commodity expenditure ranking, spending has continued to increase due to the exceptional circumstances discussed previously. In 2004, increases of between roughly 40% and 100% were recorded in each commodity grouping, with the exception of iron ore and coal, which increased close to ninefold and threefold, respectively. In dollar terms, the most significant increases were \$227 million for precious metals, \$106 million for diamonds and \$104 million for base metals. In 2005, increases are indicated at between 5% and 84%. The base-metal expenditures increase was up by \$61 million, precious metals were up by \$53 million, and uranium was up by \$37 million. In 2005, precious metals

at \$596 million and base-metal expenditures at \$302 million may be close to the 1990 spending level (base metals also reached the same level in 1997), and diamonds and uranium are expected to reach record highs (Figures 5a and b). It is impossible to compare coal, iron ore and other mineral commodities over a long statistical series. Record peak expenditures for precious metals and base metals were reached in 1987 (at least \$1.6 billion in 2004 constant dollars) and 1981 (around \$500 million), respectively.

#### PROVINCIAL/TERRITORIAL TRENDS

In 2004, as in 2003, and also probably in 2005, most of the expenditures for base-metal and precious-metal exploration and deposit appraisal were found in Ontario, Quebec and British Columbia (Table 13c). In 2003, Quebec was ahead of Ontario in base-metal exploration expenditures, but fell to second place for the following two years. As for precious metals, Nunavut was third in 2003 but fell to fourth place the following two years behind Ontario, Quebec and British Columbia as exploration and deposit appraisal activity strongly revived in 2004 and 2005 in B.C. The Northwest Territories remains first in terms of total diamond expenditures for 2003, 2004 and 2005, followed by Ontario in 2003 and 2005 because of its respective large portion of off-mine-site deposit appraisal expenditures. In 2004, Nunavut was second in total diamond expenditures. In that territory, precious metals were a close second in importance and are expected to even surpass diamond expenditures in 2005. As usual, uranium was dominant in Saskatchewan. As for other commodities, coal became a very active commodity in British Columbia in 2004 and 2005, as did iron ore in Nunavut, especially in 2005.

In 2003, base-metal expenditures were not leading in any province or territory, but they were predominant in New Brunswick in 2004, and again in 2005 in Newfoundland and Labrador and Manitoba. In 2004, apart from New Brunswick (base metals), Saskatchewan (uranium), Alberta (nonmetals), the Northwest Territories (diamonds) and Nunavut (diamonds), precious metals was the leading commodity group in the other jurisdictions.

#### **Tax Incentive Measures**

The availability of generous tax and non-tax incentives has also been singled out as a success contributor to the wealth of activity in the exploration industry. Tax incentives, such as the already existing flow-through-share (FTS) mechanism tied in with the federal 15% Investment Tax Credit for Exploration introduced in 2000, and similar tax measures in Quebec, Ontario, Manitoba, Saskatchewan, British Columbia and the Yukon (some of which are harmonized with the federal tax credit), aimed at supporting the junior exploration sector are listed in Appendix 2. Although the federal tax measure is scheduled to lapse at the end of 2005, companies will still have until the end of 2006 to incur eligible expenses. It has been estimated by

Natural Resources Canada that, from the tax credit's inception in October 2000 to the end of December 2004, a total of \$1.1 billion was raised via the FTS mechanism to finance mineral exploration in Canada.

A similar situation existed during the astonishing peak expenditure period of 1987 and 1988. A combination of strong metal prices and tax incentives resulting from the enhancement of flow-through shares by a super deduction, called the Mining Exploration Depletion Allowance (MEDA), was mostly responsible for the anomalous levels of spending recorded during that period (Figures 2a and c).

#### **Expenditures by Junior and Senior Companies**

In 2004, junior exploration and deposit appraisal expenditures increased by 111% to reach \$600 million, and a further increase of 32% to \$790 million is expected for 2005 (Table 3b). The 2004 junior level of expenditures was similar to 1986 during the upward trend leading to unprecedented levels in 1987 and 1988 above \$900 million (Table 3a). In 2004, the junior share of expenditures reached 51%, thus surpassing the senior expenditure level, and should reach close to 58% in 2005, a ratio never observed before in the statistical series. The main reason is that senior off-mine-site exploration spending is barely increasing compared to junior off-mine-site exploration and has been surpassed by juniors in that area since 2003 (Table 3c). In fact, the junior share of off-mine-site exploration expenditures reached 54% in 2003, 64% in 2004, and is likely to reach 71% in 2005. Strategically, the seniors now seem to prefer to leave the task of discovering deposits to juniors or to partner with them to a certain extent as juniors can easily raise money in the context of the FTS and the various tax credits (Appendix 2). The seniors can then take over and bring a project to the deposit appraisal phase or into mine complex development when high capital costs and different expertise are required. In 2004, total junior spending was dominant over the seniors in Newfoundland and Labrador, Nova Scotia, Alberta, British Columbia, the Yukon, and Nunavut (Table 15a). In 2005, New Brunswick and Saskatchewan will likely be added to the list (Table 15b).

In 2004, juniors were more attracted to precious metals for their exploration and deposit appraisal activity than to base metals and diamonds (in 2003, diamonds were second). As for the seniors, precious metals are also the main target, followed by diamonds and then base metals for each of 2004 and 2005 (Tables 14a and b). Compared to 2003, seniors are no longer dominant over juniors in terms of precious-metal and base-metal spending, but they are still first for diamonds. In 2004, juniors spent \$107 million for diamonds while seniors spent \$168 million. In 2005 this is expected to be \$114 million and \$176 million, respectively. In 2004 and 2005, juniors spent more than seniors on off-mine-site diamond exploration while the seniors led in off-mine-site deposit appraisal spending. In 2004, seniors spent more on uranium, but the lead is shifting

towards juniors in 2005 as more juniors are participating in the Saskatchewan uranium rush.

As in 2003, the number of off-mine-site deposit appraisal projects operated by juniors exceeded those operated by seniors (42 compared to 36), but seniors spent more per project as their budgets are generally higher, about \$2 million and \$10 million, respectively (Table 17).

In 2004, the adjusted number of active junior companies (off-mine-site exploration and deposit appraisal) calculated by counting all participants and their share of expenditures within any joint-venture or partnership context, reached 649, compared to 585 project operators (Table 14c). Although the number of partners increased by 11%, expenditures climbed by only 3% (from \$523 million to \$540 million). In 2003, the situation was reversed as there was much less spending reported by the partners. This shift is mainly attributable to Ontario where, in 2004, the junior spending for all partners (\$127 million), similar to the junior project operator spending (\$128 million), indicated that all junior partners started to have a stronger influence than the seniors in the different partnerships when compared to 2003 (spending ratio partners/operators of 99% in 2004 compared to 77% in 2003).

The higher amount spent by junior companies is the determinant factor of increased activity in the mineral exploration industry when also pondering the impact of new expenditures from the new or revived junior companies (about 92 companies) and the junior company reclassification as they make commitments to production (4 in 2004 and 7 in 2005). The spending increase, for example, in 2002 indicated that 10% of the junior companies spending \$1 million or more accounted for 56% of the total junior spending, while for 2003 this number reached 14%, accounting for 66% of the total junior spending. In 2004, this reached about 24%, accounting for 80% of the total junior spending and, in 2005, it is indicated that this will be about 34%, accounting for 85% of the total junior spending (Table 4).

## SUMMARY AND CONCLUSION

Total expenditures in mineral resource development increased by 45% to reach \$5.8 billion in 2004. A further increase is expected in 2005 as more than \$6 billion (estimated) should be realized. In 2004, the large Voisey's Bay nickel project helped boost total base-metal expenditures, which was the leading commodity group at \$1.8 billion. Base-metal expenditures are still expected to dominate in 2005. However, major mine developments, such as the Cigar Lake deposit for uranium, the three new diamond mines (Snap Lake, Victor and Jericho), and important expansions at the Ekati and Diavik diamond mines, as well as more coal mine development, will be reflected in higher total investment in 2005 and beyond. Eleven pro-

jects became committed to production in 2004 (including 6 metal mines) and 17 projects (including 9 metal mines) are expected to be committed in 2005. Four and five projects in each year are mine re-openings.

Apart from capital investment, the second most important component of increased spending is the off-mine-site exploration work phase. This phase was responsible for 69% of the expenditure increase in exploration and deposit appraisal in 2004 and for 75% of the increase recorded so far in 2005. This amounted to \$819 million of the \$1.2 billion recorded in 2004 and to a total of \$987 million of the \$1.4 billion anticipated in 2005.

Higher commodity prices have been a major factor in driving these buoyant exploration and development activities. Prices strengthened significantly in 2004 and have continued to climb in 2005. Canada has also benefitted since 2000 from the federal 15% Investment Tax Credit tied in to the FTS mechanism and other similar provincial/territorial measures. Indeed, between its inception and December 2004, a total of \$1.1 billion had been raised via the FTS mechanism. Most of this has benefitted juniors, who have now become the most important player in the grassroots exploration industry in Canada.

The current tight worldwide supply situation for many mineral commodities, coupled with the recent growth cycle in global industrial demand, particularly in the Far East, has put pressure on the exploration sector to make important discoveries and to ensure that sufficient mineral supply is available. In Canada, there are challenges, notwithstanding the recent high level of exploration and development activities. For example, reserves need to be replenished for many major commodities, especially for base metals, and more Canadian mines should be the target of on-mine-site exploration and deposit appraisal activity. As well, it is unclear how the Canadian exploration industry will adapt to the phasing out of the federal tax credit at the end of 2005. Nevertheless, Canada, with its rich mining heritage, its exceptional exploration and development expertise, and its long history of mineral industry financing, should be well positioned to meet the challenges.

*Notes: Information in this review was current as of September 30, 2005. (2) This and other reviews, including previous editions, are available on the Internet at [www.nrcan.gc.ca/mms/cmy/2004CMY\\_e.htm](http://www.nrcan.gc.ca/mms/cmy/2004CMY_e.htm).*

### NOTE TO READERS

**The intent of this document is to provide general information and to elicit discussion. It is not intended as a reference, guide or suggestion to be used in trading, investment, or other commercial activities. The author and Natural Resources Canada make no warranty of any kind with respect to the content and accept no liability, either incidental, consequential, financial or otherwise, arising from the use of this document.**

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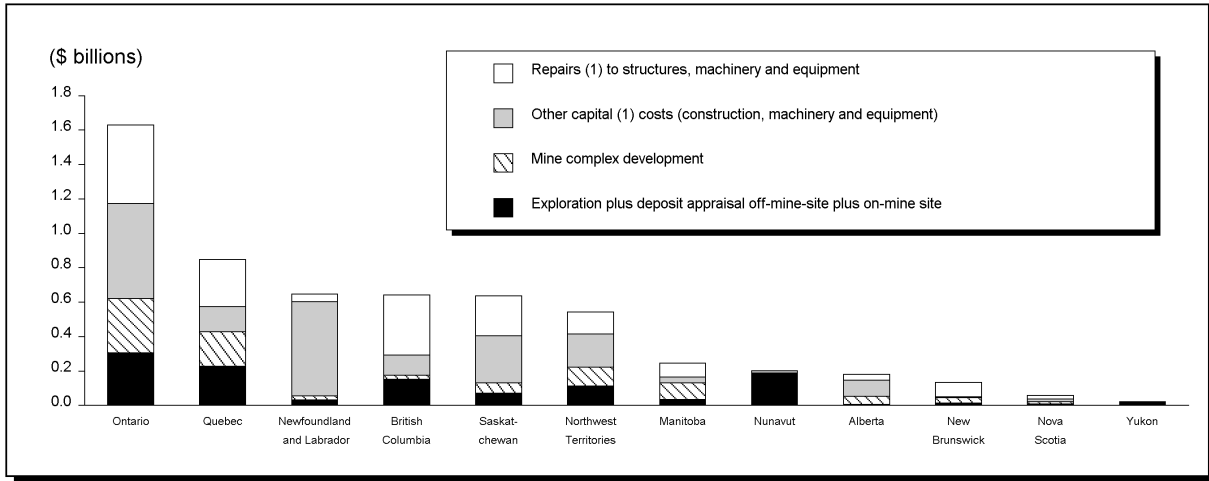
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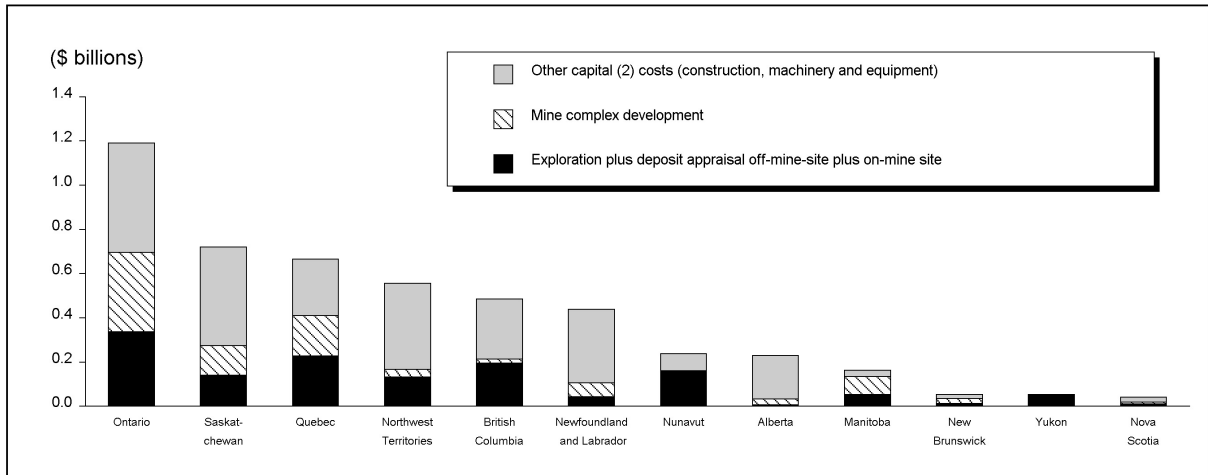
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**Figure 1a**  
**Total Mineral Resource Development Expenditures in Canada, by Province and Territory, 2004**  
**\$5.8 Billion**



Source: Natural Resources Canada, from a federal-provincial territorial survey of mining and exploration companies.  
 (1) Includes expenditures related to exploration (0.7%), deposit appraisal (6.0%) and mine complex development (93.3%).

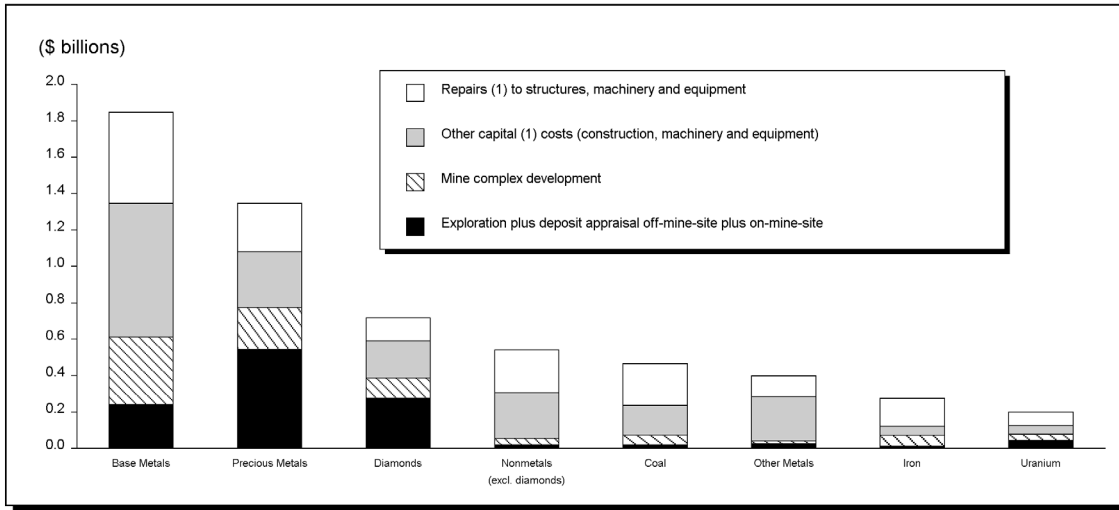
**Figure 1b**  
**Total Mineral Resource Development Expenditures (1) in Canada, by Province and Territory, 2005**  
**\$4.8 Billion**



Source: Natural Resources Canada, from a federal-provincial territorial survey of mining and exploration companies.  
 (1) Repair and maintenance expenditures are not available. (2) Includes expenditures related to exploration (1.0%), deposit appraisal (6.5%) and mine complex development (92.5%).

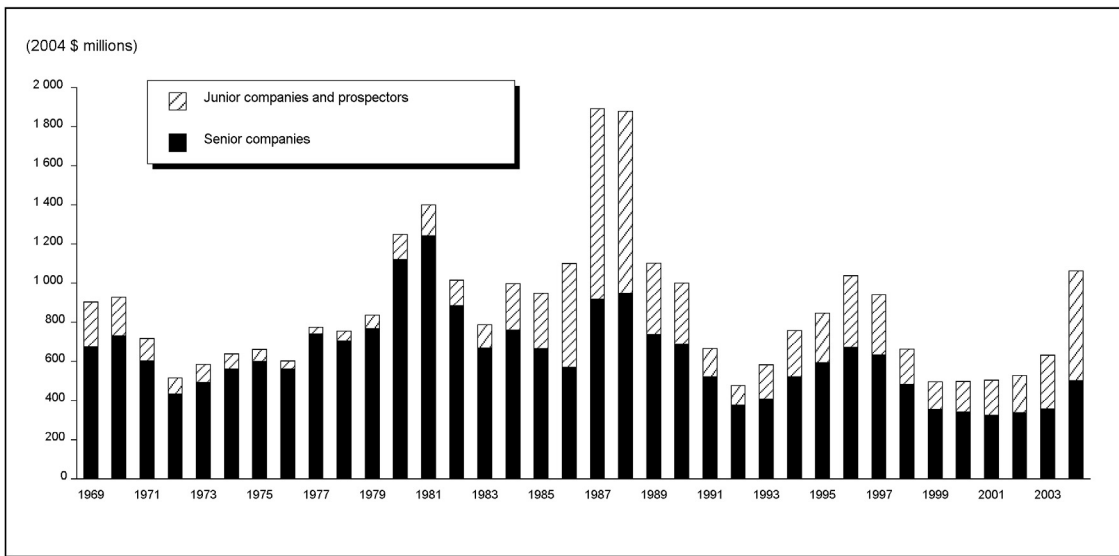
Note: Data for 2005 are revised spending intentions.

**Figure 1c**  
**Total Mineral Resource Development Expenditures in Canada, by Mineral Commodity, 2004**  
**\$5.8 Billion**



Source: Natural Resources Canada, from a federal-provincial territorial survey of mining and exploration companies.  
 (1) Includes expenditures related to exploration (0.7%), deposit appraisal (6.0%) and mine complex development (93.3%).

**Figure 2a**  
**Exploration Plus Deposit Appraisal Expenditures, (1) Field and Overhead (2) Costs, by Junior and Senior Companies, 1969-2004**

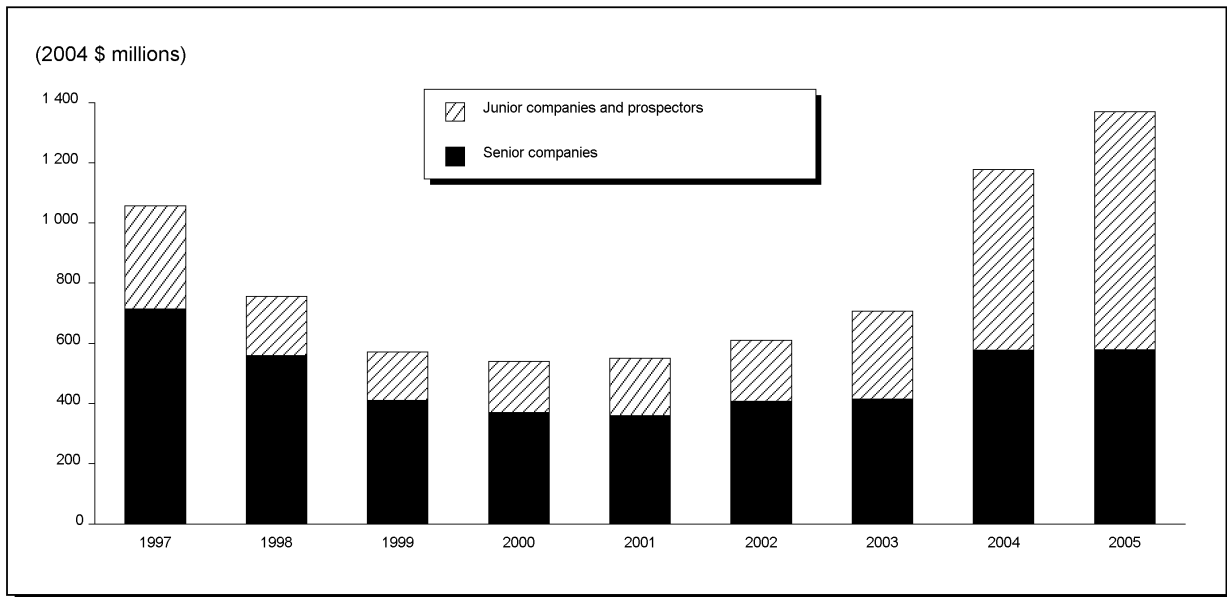


Sources: Natural Resources Canada and Statistics Canada, from a federal/provincial-territorial survey of mining and exploration companies.

(1) Includes on-mine-site plus off-mine-site activities. (2) Overhead costs include mineral leases, claims and property taxes, and project-related head office expenditures.

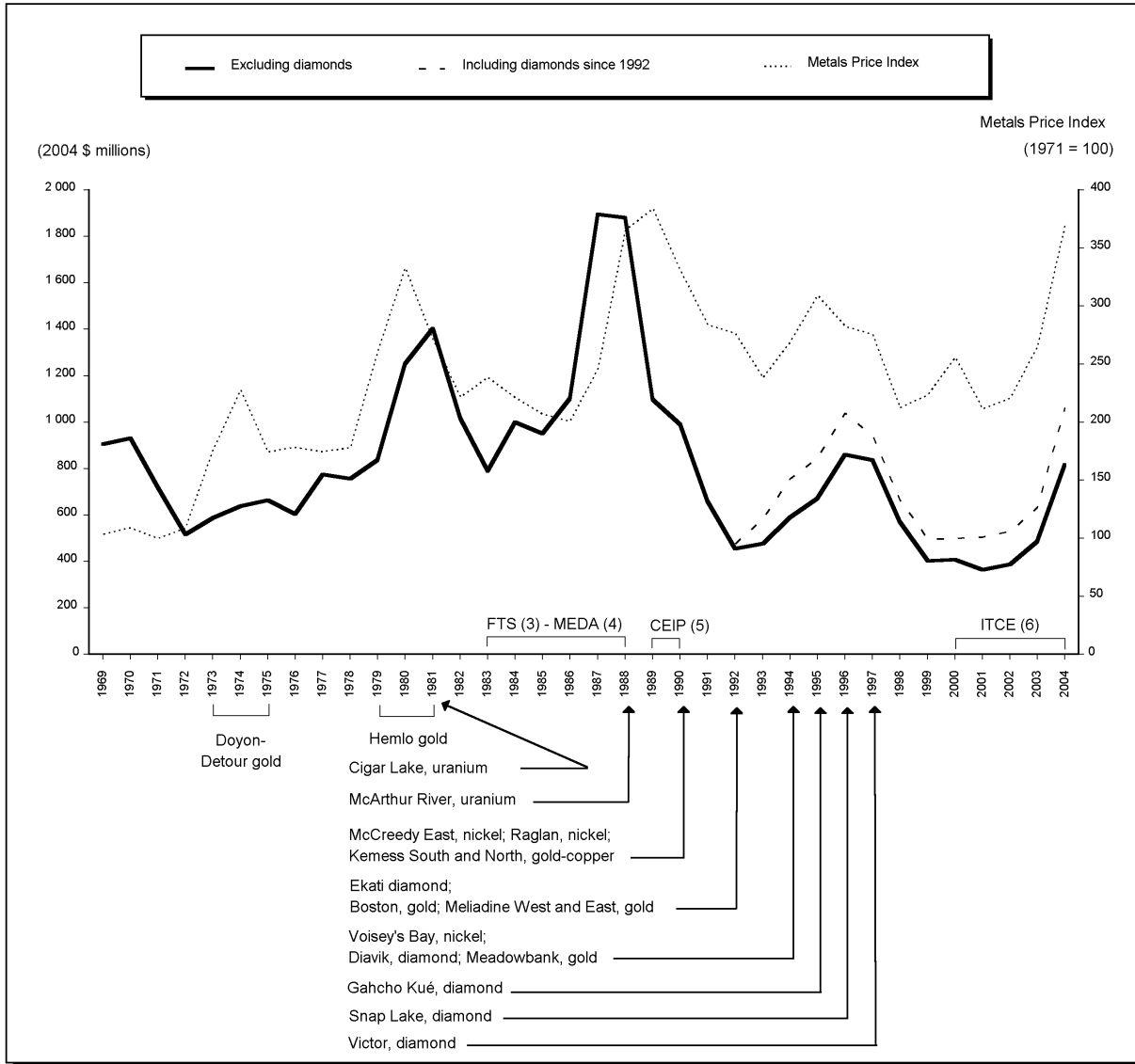
Notes: Total exploration expenditures for 1975-81 are overstated by an average of about 17% relative to earlier and later years because of changes to the methodology used by Statistics Canada over the years. Expenditures for 1997 to 2004 include both exploration plus deposit appraisal as per new definitions; up to and including 1996, most of the expenditures now included in the deposit appraisal work phase were reported under exploration (broadly speaking).

**Figure 2b**  
**Exploration Plus Deposit Appraisal Expenditures, (1) by Junior and Senior Companies, 1997-2005**



Source: Natural Resources Canada, from a federal-provincial territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.  
 Note: Data for 2005 are revised spending intentions.

**Figure 2c**  
**Exploration Plus Deposit Appraisal Expenditures, (1) Field and Overhead (2) Costs, Comparing Metals Price Index, Some Major Discoveries, and Federal Incentive Measures, 1969-2004**



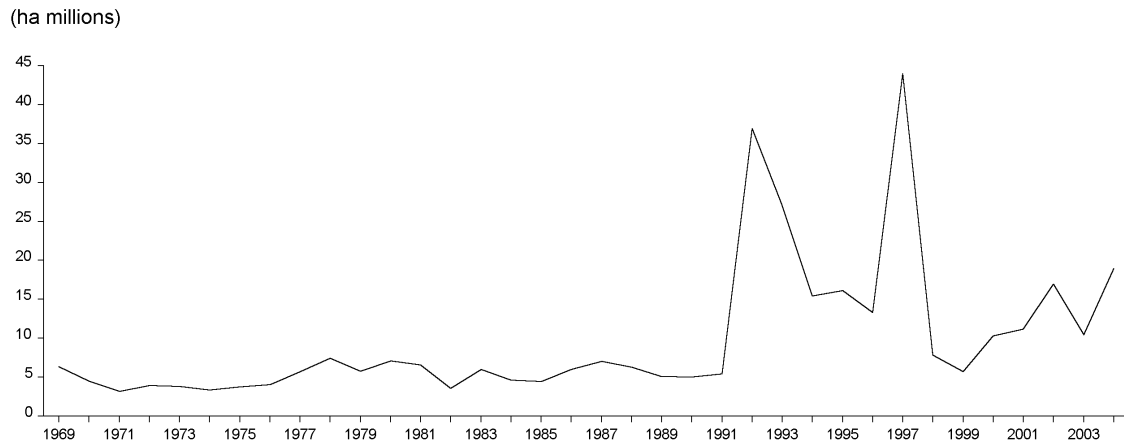
Sources: Natural Resources Canada and Statistics Canada, from a federal-provincial/territorial survey of mining and exploration companies.

(1) Includes on-mine-site plus off-mine-site activities. (2) Overhead costs include mineral leases, claims and property taxes, and project-related head office expenditures. (3) FTS: Flow-through shares. (4) MEDA: Mining Exploration Depletion Allowance. (5) CEIP: Canadian Exploration Incentive Program. (6) ITCE: Investment Tax Credit for Exploration.

Notes: FTS program is continuous since 1983. Total exploration expenditures for 1975-81 are overstated by an average of about 17% relative to earlier and later years because of changes to the methodology used by Statistics Canada over the years. Expenditures for 1997 to 2004 include both exploration plus deposit appraisal as per new definitions; up to and including 1996, most of the expenditures now included in the deposit appraisal work phase were reported under exploration (broadly speaking).

**Figures 3a and 3b  
Selected Measures of Exploration Activity**

**Figure 3a. Area of New Mineral Claims  
Staked or Recorded, 1969-2004**



Source: Information obtained and compiled annually by Natural Resources Canada from provincial and territorial mining recorders.

**Figure 3b. Surface Diamond Drilling, 1969-2004  
(all minerals except oil and gas)**

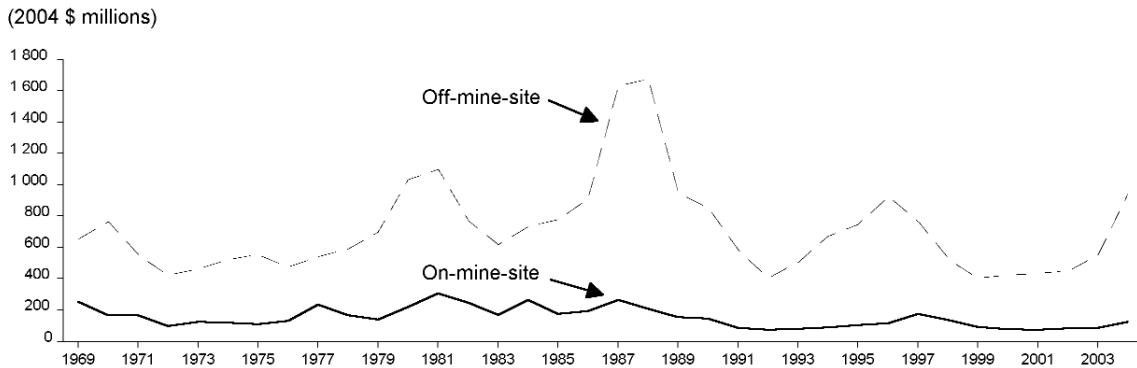


Source: 1969-84, Statistics Canada (cat no. 26-201); 1985-2004, from a federal-provincial territorial survey of mining and exploration companies.

Note: Data for 1969-84 include surface diamond drilling for the entire mineral development cycle. Data for 1985-2004 include surface diamond drilling in the exploration and deposit appraisal work phases only.

**Figures 3c and 3d  
Selected Measures of Exploration Activity**

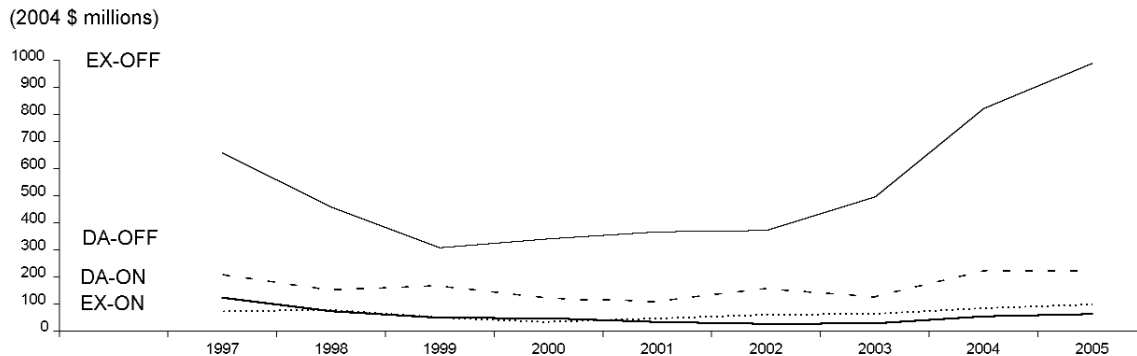
**Figure 3c. Exploration Plus Deposit Appraisal,  
Field Work Plus Overhead Expenditures, On- and Off-Mine-Site, 1969-2004**  
(all minerals except oil and gas)



Sources: 1969-84, Statistics Canada, Exploration, Development and Capital Expenditures for Petroleum and Natural Gas Wells, Intentions (cat. no. 61-216); 1985-2004, from a federal-provincial/territorial survey of mining and exploration companies.

Notes: Adjusted to 2004 dollars using Gross Domestic Product deflator series. These expenditures do not include expenditures for oil and gas exploration. Expenditures for 1997-2004 include exploration plus deposit appraisal as per new definitions; up to and including 1996, most of the expenditures now included in the deposit appraisal work phase were under exploration (broadly speaking). Off-mine-site and on-mine-site overhead expenditures for 1969-88 were estimated based on an average of the overhead/total ratio from the years 1989-96.

**Figure 3d. Exploration and Deposit Appraisal  
Expenditures, (1) On- and Off-Mine-Site, 1997-2005**



Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

EX-OFF: Exploration off-mine-site. DA-OFF: Deposit appraisal off-mine-site.

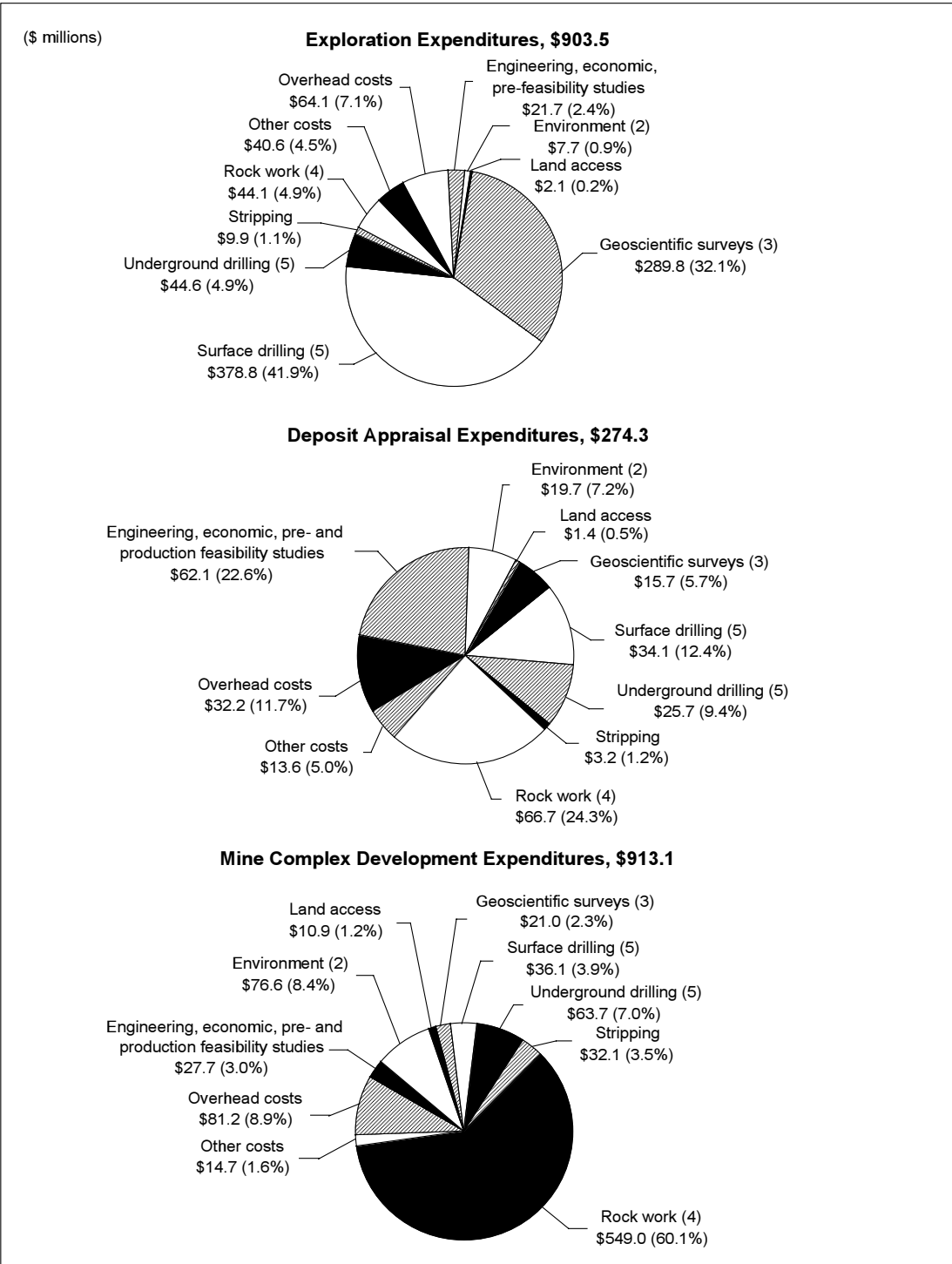
EX-ON: Exploration on-mine-site. DA-ON: Deposit appraisal on-mine-site.

(1) Includes field work, overhead, engineering, economic, pre- or production feasibility studies, environment and land access costs.

Note: Data for 2005 are revised spending intentions.

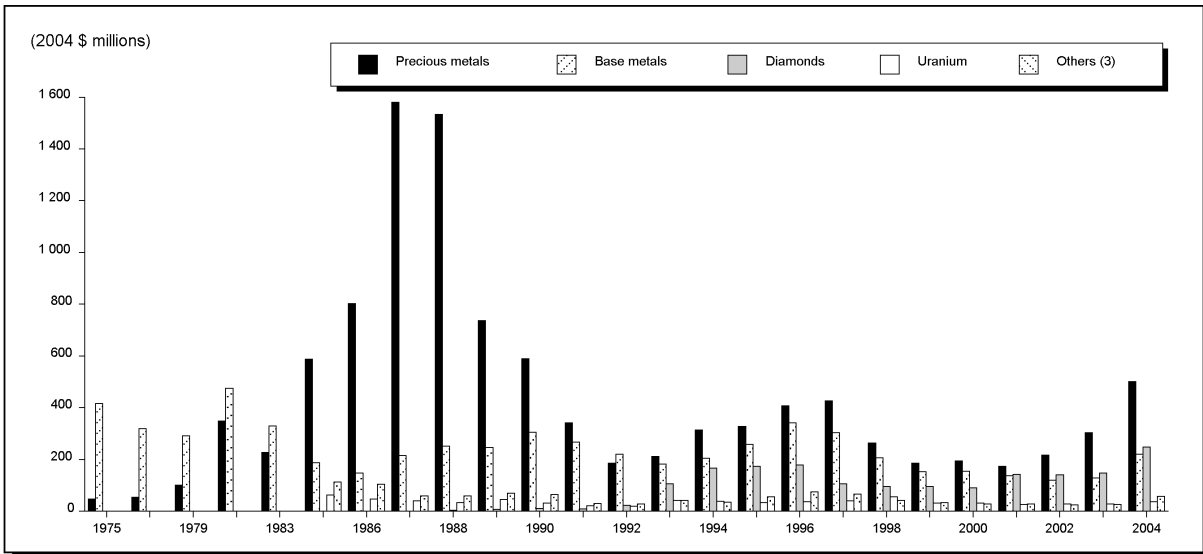


**Figure 4**  
**Exploration, Deposit Appraisal and Mine Complex Development Expenditures, (1) by Type of Work, 2004**



Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. (2) Environment includes characterization, permitting, protection, monitoring and restoration.  
 (3) Geoscientific surveys include geology, geochemistry, ground geophysics and airborne geophysics. (4) Rock work activity includes shaft work, drifts, cross-cuts, raises, declines, rock sampling and dewatering costs. (5) Drilling includes diamond and other types of drilling.

**Figure 5a**  
**Exploration Plus Deposit Appraisal Expenditures, (1) Field and Overhead (2) Costs, by Mineral Commodity, 1975-2004**

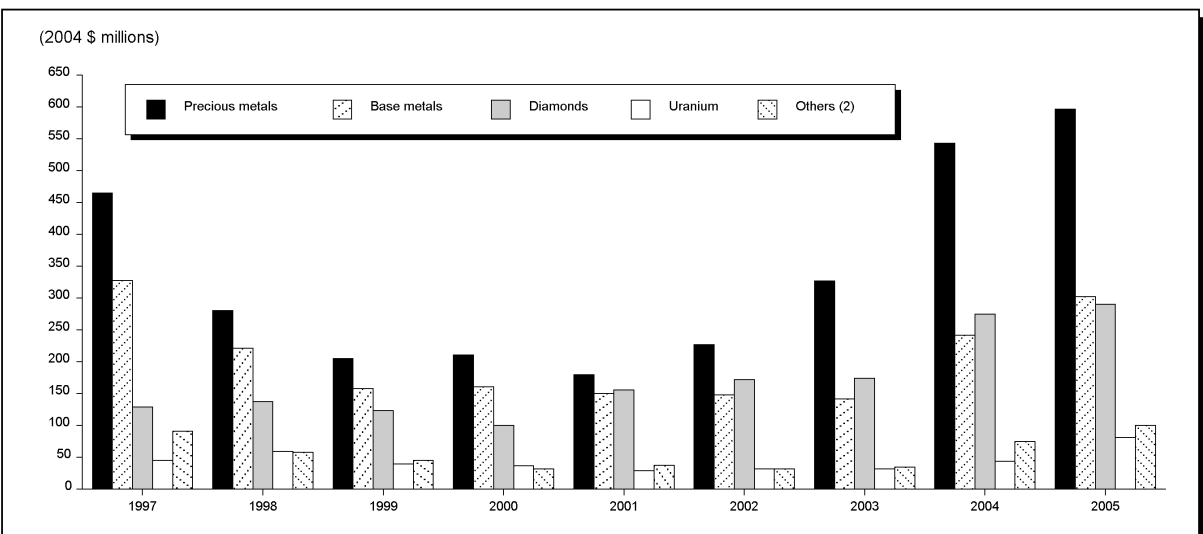


Sources: Natural Resources Canada and Statistics Canada, from a federal-provincial/territorial survey of mining and exploration companies.

(1) Includes on-mine-site plus off-mine-site activities; up to and including 1996, most of the expenditures now included in the deposit appraisal work phase were under exploration (broadly speaking). (2) Overhead includes mineral leases, claims, property taxes and project-related head-office expenditures. (3) Others include coal, iron, other metals, and nonmetals.

Note: Data have not been compiled for 1976, 1978, 1980, 1982 and 1984.

**Figure 5b**  
**Exploration Plus Deposit Appraisal Expenditures, (1) by Mineral Commodity, 1997-2005**

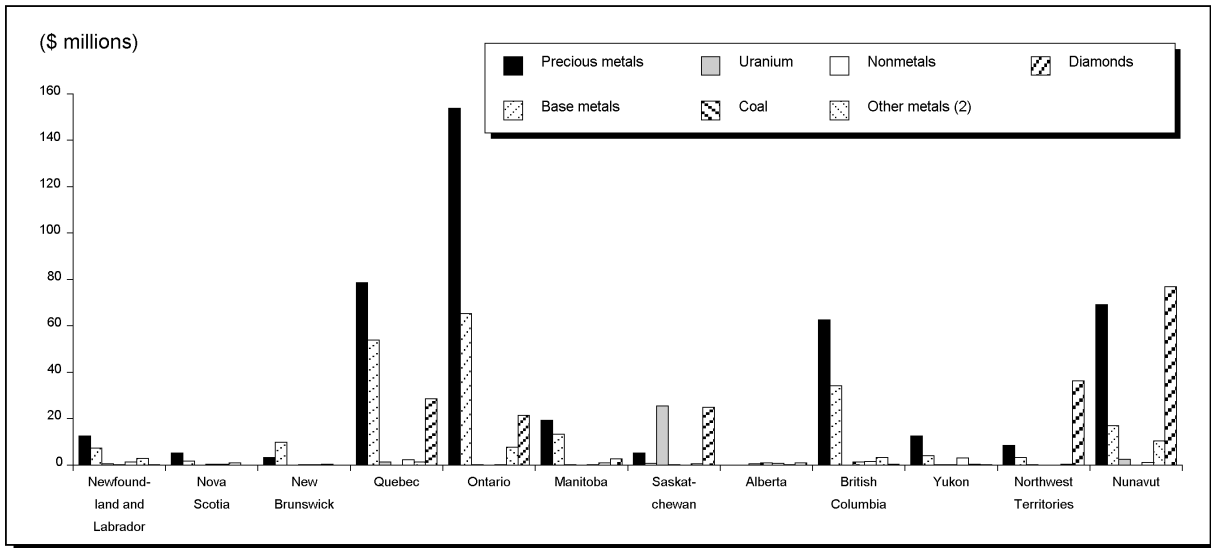


Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

(1) Includes on-mine-site plus off-mine-site activities for field work, overhead, engineering, economic pre- or production feasibility studies, environment and land access costs. (2) Others include coal, iron, other metals, nonmetals and unspecified mineral commodities where applicable.

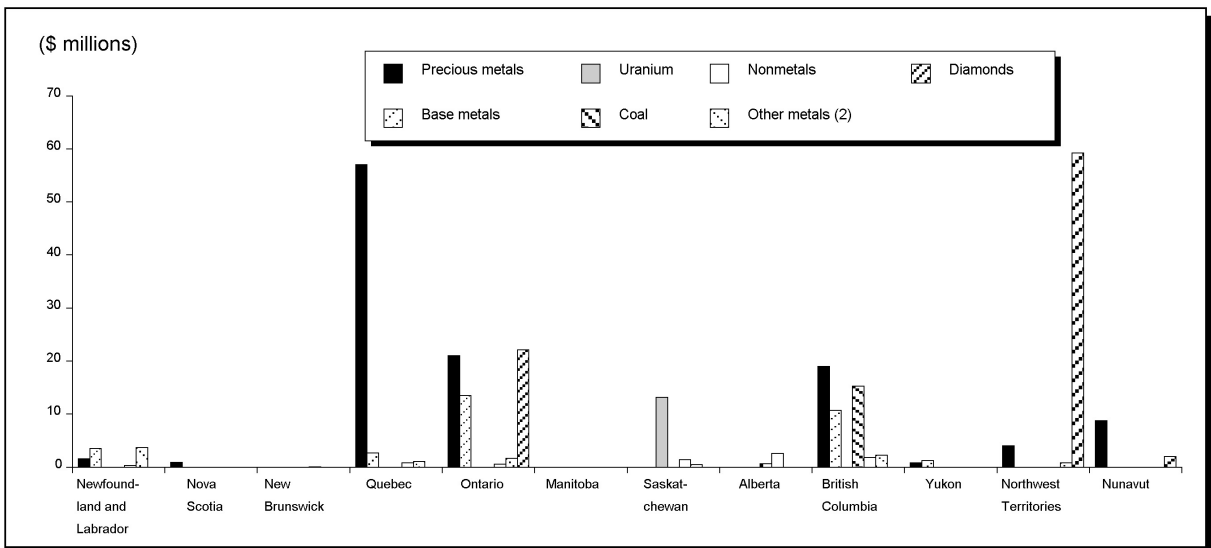
Note: Data for 2005 are revised spending intentions.

**Figure 6a**  
**Exploration Expenditures (1) by Province and Territory, by Mineral Commodity, 2004**



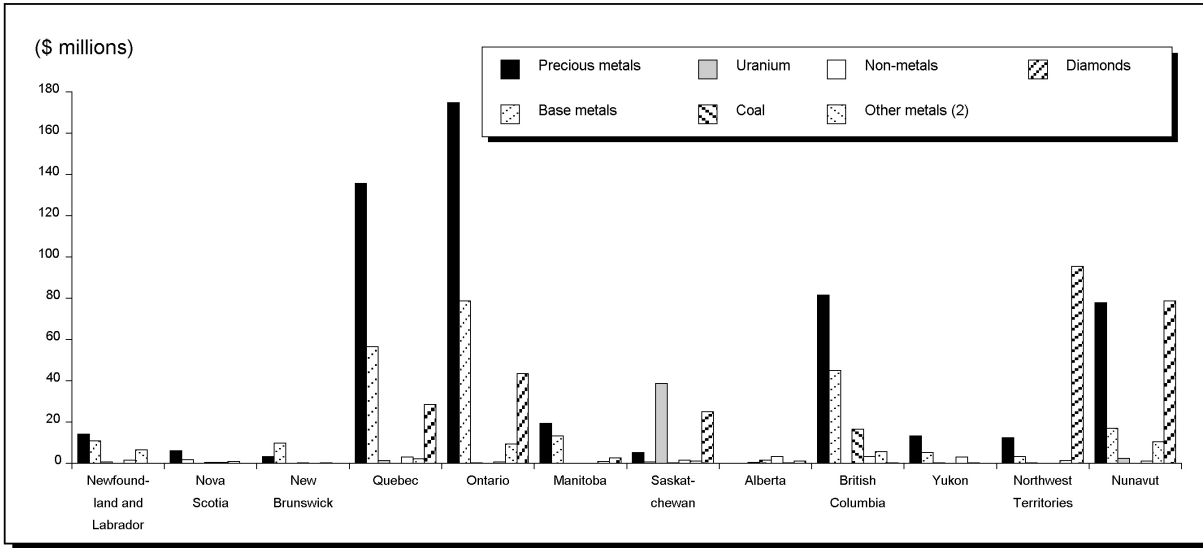
Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre-feasibility studies, environment and land access costs. (2) Includes ferrous metals.

**Figure 6b**  
**Deposit Appraisal Expenditures (1) by Province and Territory, by Mineral Commodity, 2004**



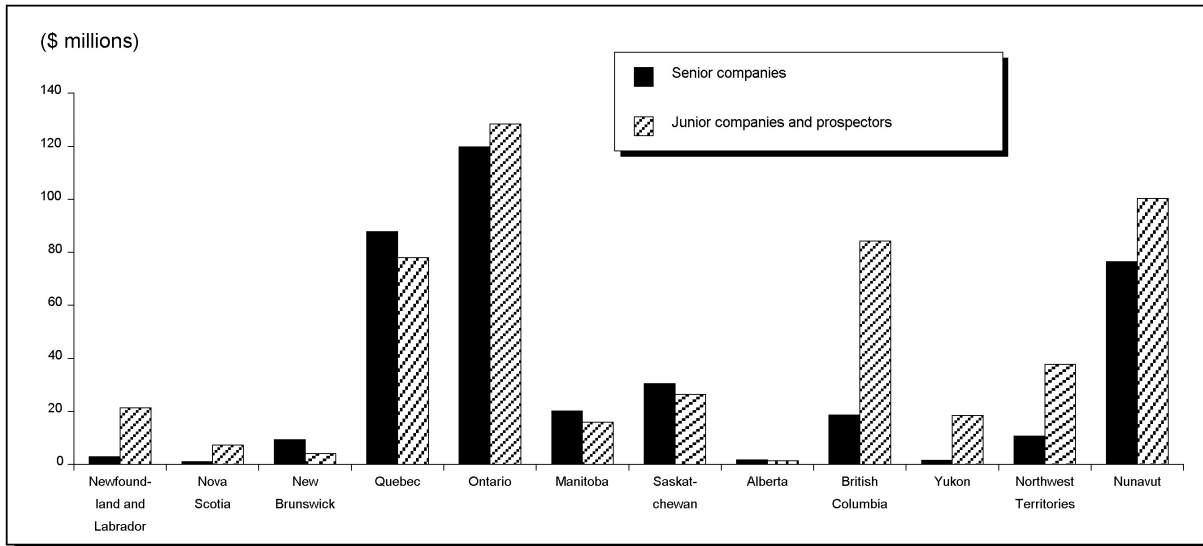
Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs. (2) Includes ferrous metals.

**Figure 6c**  
**Exploration Plus Deposit Appraisal Expenditures (1) by Province and Territory, by Mineral Commodity, 2004**



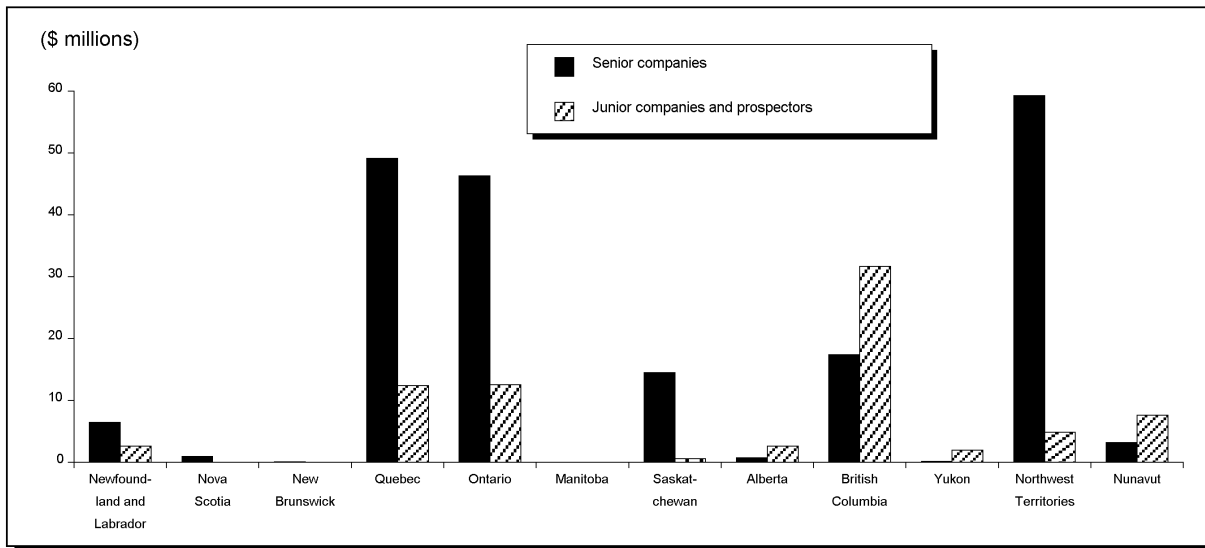
Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs. (2) Includes ferrous metals.

**Figure 7a**  
**Exploration Expenditures (1) by Province and Territory, by Junior and Senior Companies, 2004**



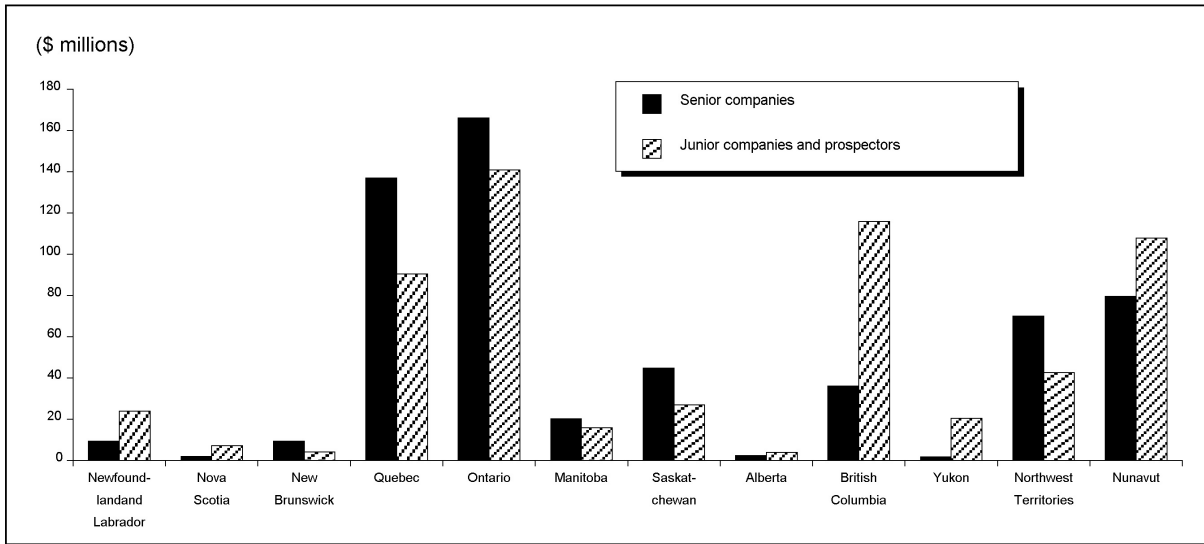
Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre-feasibility studies, environment and land access costs.

**Figure 7b**  
**Deposit Appraisal Expenditures (1) by Province and Territory, by Junior and Senior Companies, 2004**



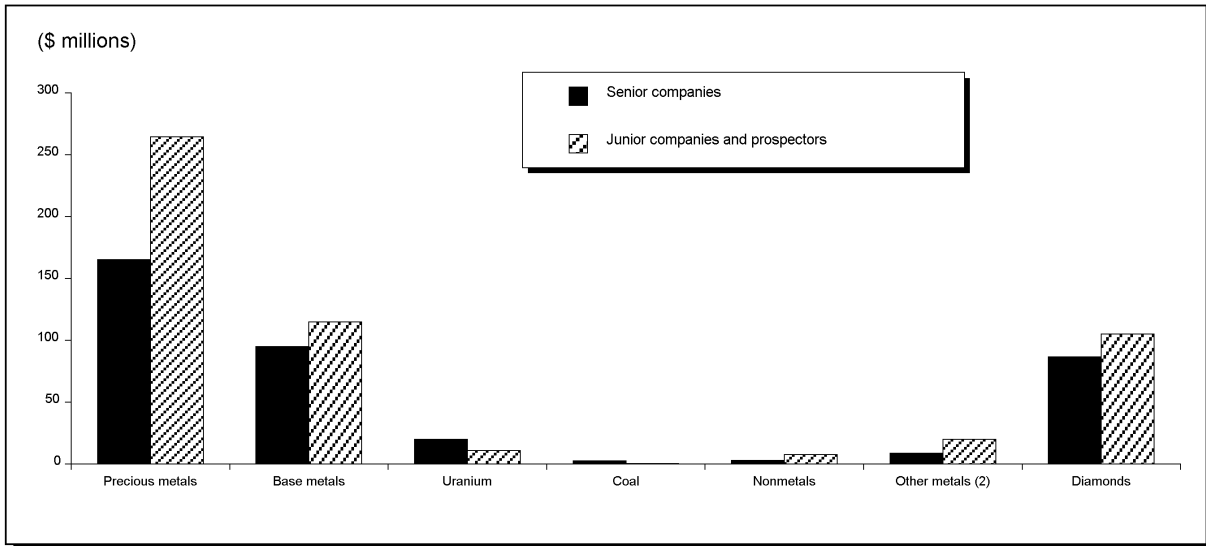
Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

**Figure 7c**  
**Exploration and Deposit Appraisal Expenditures (1) by Province and Territory, by Junior and Senior Companies, 2004**



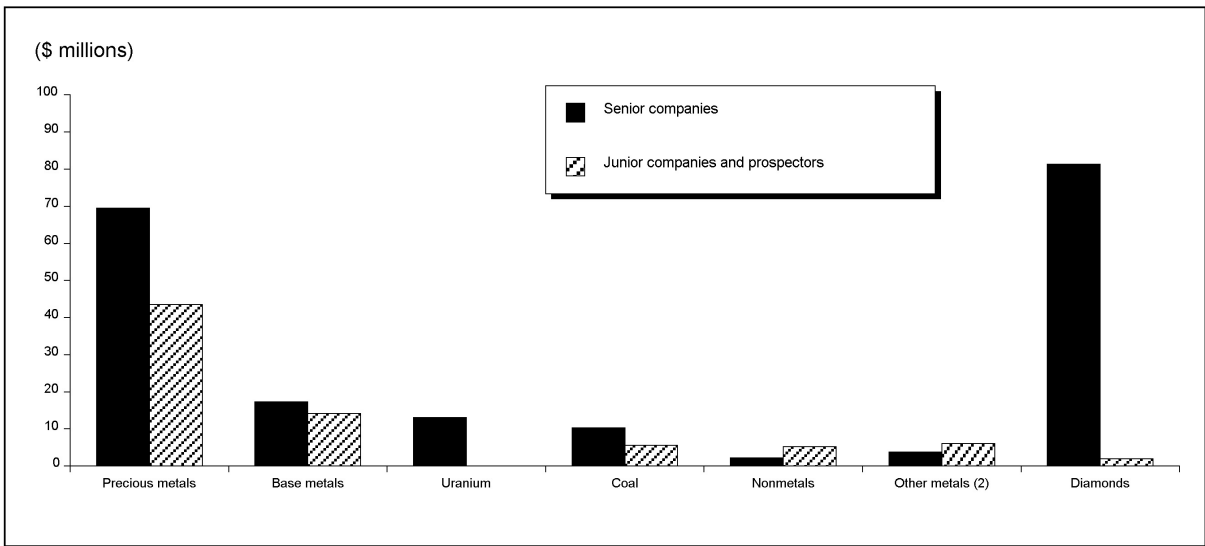
Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

**Figure 8a**  
**Exploration Expenditures, (1) by Junior and Senior Companies and by Mineral Commodity, 2004**



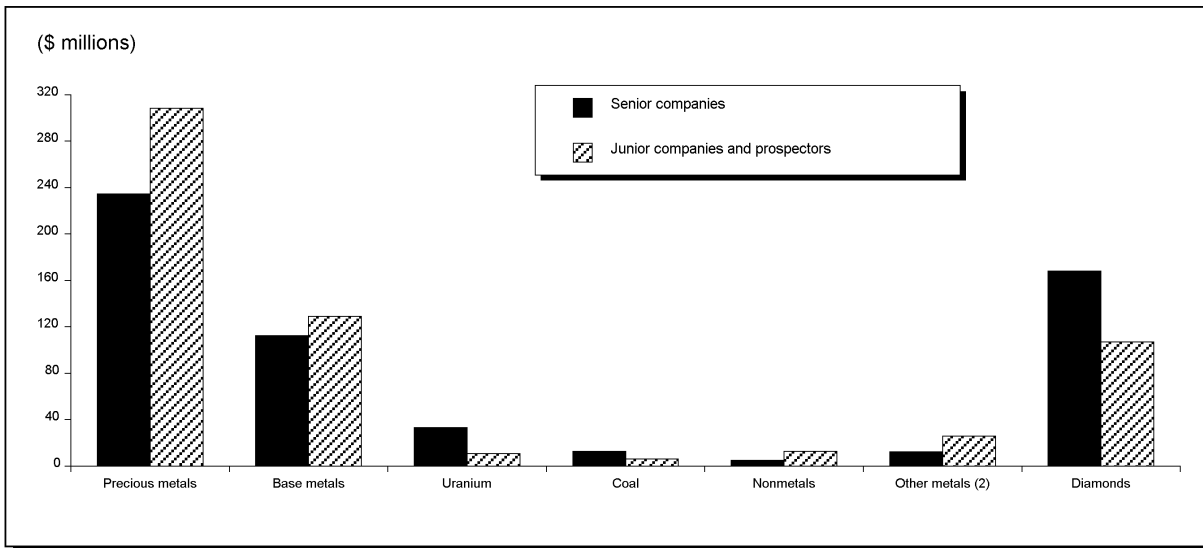
Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre-feasibility studies, environment and land access costs. (2) Includes ferrous metals.

**Figure 8b**  
**Deposit Appraisal Expenditures, (1) by Junior and Senior Companies and by Mineral Commodity, 2004**



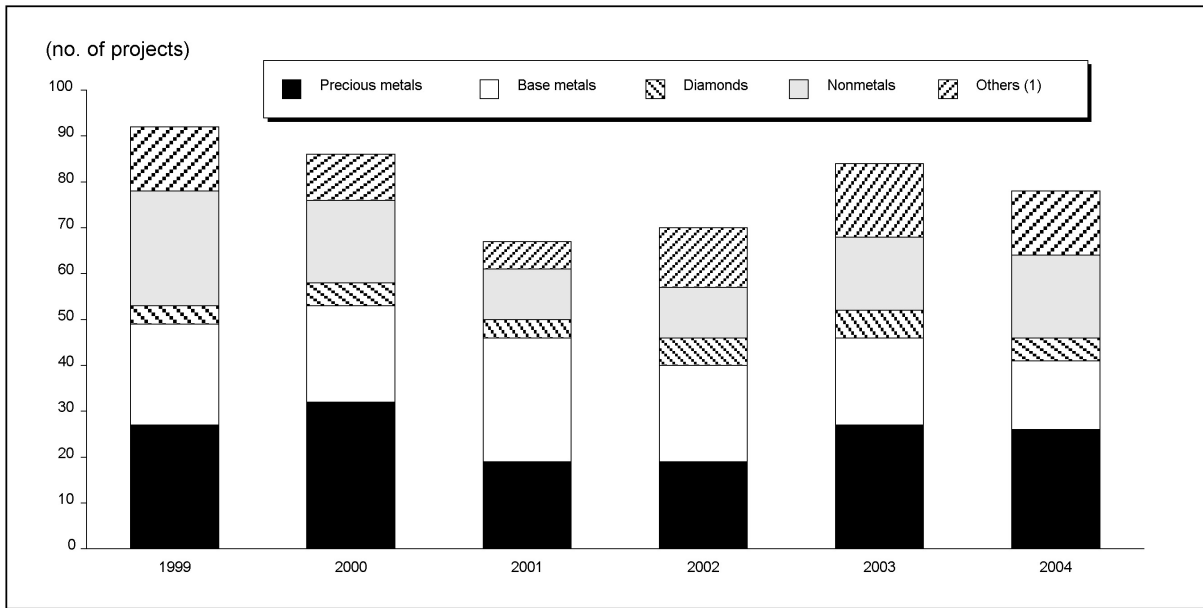
Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs. (2) Includes ferrous metals.

**Figure 8c**  
**Exploration Plus Deposit Appraisal Expenditures, (1) by Junior and Senior Companies and by Mineral Commodity, 2004**



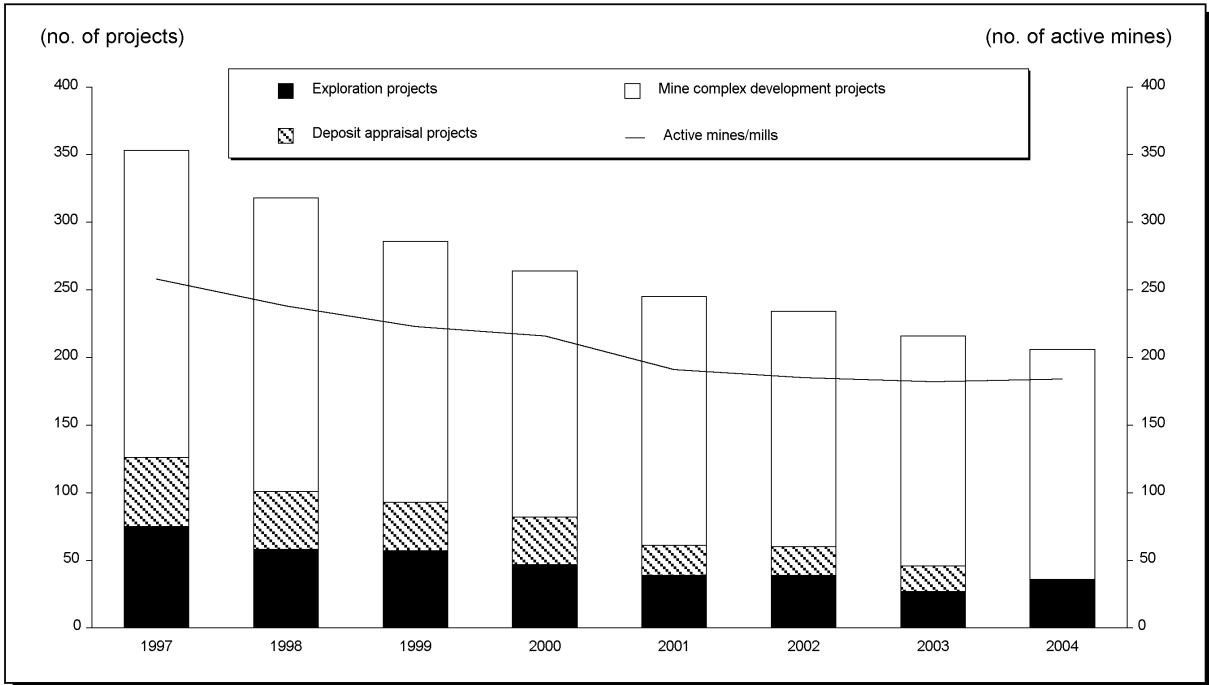
Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs. (2) Includes ferrous metals.

**Figure 9**  
**Deposit Appraisal Off-Mine-Site, Number of Projects by Mineral Commodity, 1999-2004**



Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.  
 (1) Includes iron, uranium, other metals and coal.  
 Notes: In 2002 and 2003, the number of diamond projects includes two separate projects at Ekati. In 2004, classification criteria were strengthened making comparisons with previous years difficult.

**Figure 10**  
**Number of On-Mine-Site Projects by Work Phase, and Important Mines, 1997-2004**



Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration company and Map 900A.



TABLE 1. EXPLORATION, DEPOSIT APPRAISAL AND MINE COMPLEX DEVELOPMENT ACTIVITY, ON- AND OFF-MINE-SITE, 2003-05

Expenditure Category by Work Phase	2003					2004					2005				
	Off-Mine-Site		On-Mine-Site		Total	Off-Mine-Site		On-Mine-Site		Total	Off-Mine-Site		On-Mine-Site		Total
	(\$ millions)	(%)	(\$ millions)	(%)	(\$ millions)	(\$ millions)	(%)	(\$ millions)	(%)	(\$ millions)	(\$ millions)	(%)	(\$ millions)	(%)	(\$ millions)
<b>EXPLORATION</b>															
Field work and overhead (1)	464.1	88.7	59.4	11.3	523.5	791.8	90.8	80.0	9.2	871.9	..	..	..	..	..
Engineering studies	8.6	92.6	0.7	7.4	9.3	6.2	62.8	3.7	37.2	9.9	..	..	..	..	..
Economic studies	0.6	100.0	–	–	0.6	0.8	96.5	..	3.5	0.9	..	..	..	..	..
Pre-feasibility studies	0.7	100.0	–	–	0.7	10.9	100.0	–	–	10.9	..	..	..	..	..
Environment	2.6	96.6	0.1	3.4	2.7	7.0	91.2	0.7	8.8	7.7	..	..	..	..	..
Land access	1.2	97.7	0.0	2.3	1.3	2.1	100.0	–	–	2.1	..	..	..	..	..
Subtotal	477.8	88.8	60.2	11.2	538.1	819.0	90.7	84.4	9.3	903.5	987.0	91.0	97.6	9.0	1 084.6
Capital (2)	1.6	28.8	3.9	71.2	5.5	16.1	91.4	1.5	8.6	17.6	22.4	89.6	2.6	10.4	25.0
Repair and maintenance (2)	0.5	8.6	5.4	91.4	5.9	3.7	46.1	4.3	53.9	8.0	..	..	..	..	..
Total	480.0	87.3	69.5	12.7	549.5	838.9	90.3	90.3	9.7	929.1	1 009.4	91.0	100.2	9.0	1 109.6
<b>DEPOSIT APPRAISAL</b>															
Field work and overhead	68.4	75.4	22.3	24.6	90.7	148.0	77.5	43.1	22.5	191.1	..	..	..	..	..
Engineering studies	17.5	88.6	2.3	11.4	19.7	27.3	88.9	3.4	11.1	30.7	..	..	..	..	..
Economic studies	0.8	100.0	–	–	0.8	0.8	100.0	–	–	0.8	..	..	..	..	..
Pre- or production feasibility studies	19.1	99.5	0.1	0.5	19.2	26.2	85.6	4.4	14.4	30.6	..	..	..	..	..
Environment	14.5	95.8	0.6	4.2	15.1	18.5	94.0	1.2	6.0	19.7	..	..	..	..	..
Land access	3.0	96.8	0.1	3.2	3.1	1.4	100.0	–	–	1.4	..	..	..	..	..
Subtotal	123.3	82.9	25.4	17.1	148.7	222.2	81.0	52.1	19.0	274.3	223.7	78.6	61.1	21.4	284.8
Capital (2)	16.3	97.3	0.5	2.7	16.7	171.1	99.3	1.3	0.7	172.4	165.6	99.8	0.3	0.2	165.9
Repair and maintenance (2)	3.9	14.5	22.8	85.5	26.7	48.4	95.0	2.6	5.0	51.0	..	..	..	..	..
Total	143.4	74.7	48.7	25.3	192.1	441.7	88.8	55.9	11.2	497.6	389.3	86.4	61.3	13.6	450.7
<b>EXPLORATION PLUS DEPOSIT APPRAISAL</b>															
Field work and overhead	532.5	86.7	81.7	13.3	614.2	939.8	88.4	123.1	11.6	1 063.0	..	..	..	..	..
Engineering studies	26.1	89.9	2.9	10.1	29.0	33.6	82.5	7.1	17.5	40.7	..	..	..	..	..
Economic studies	1.4	100.0	–	–	1.4	1.7	98.2	..	1.8	1.7	..	..	..	..	..
Pre- or production feasibility studies	19.9	99.5	0.1	0.5	20.0	37.1	89.4	4.4	10.6	41.5	..	..	..	..	..
Environment	17.1	95.9	0.7	4.1	17.8	25.6	93.2	1.9	6.8	27.5	..	..	..	..	..
Land access	4.3	97.1	0.1	2.9	4.4	3.5	100.0	–	–	3.5	..	..	..	..	..
Subtotal	601.2	87.5	85.6	12.5	686.7	1 041.3	88.4	136.5	11.6	1 177.8	1 210.7	88.4	158.7	11.6	1 369.4
Capital (2)	17.9	80.2	4.4	19.8	22.3	187.2	98.5	2.8	1.5	190.0	188.0	98.5	2.9	1.5	190.9
Repair and maintenance (2)	4.4	13.4	28.2	86.6	32.6	52.1	88.3	6.9	11.7	59.0	..	..	..	..	..
Total	623.4	84.1	118.2	15.9	741.6	1 280.6	89.8	146.2	10.2	1 426.8	1 398.7	89.6	161.5	10.4	1 560.2
<b>MINE COMPLEX DEVELOPMENT</b>															
Field work and overhead	n.a.	n.a.	679.5	100.0	679.5	n.a.	n.a.	797.8	100.0	797.8	n.a.	n.a.	..	..	..
Engineering studies	n.a.	n.a.	15.6	100.0	15.6	n.a.	n.a.	17.6	100.0	17.6	n.a.	n.a.	..	..	..
Economic studies	n.a.	n.a.	0.1	100.0	0.1	n.a.	n.a.	0.2	100.0	0.2	n.a.	n.a.	..	..	..
Pre- or production feasibility studies	n.a.	n.a.	7.9	100.0	7.9	n.a.	n.a.	10.0	100.0	10.0	n.a.	n.a.	..	..	..
Environment	n.a.	n.a.	73.5	100.0	73.5	n.a.	n.a.	76.6	100.0	76.6	n.a.	n.a.	..	..	..
Land access	n.a.	n.a.	10.1	100.0	10.1	n.a.	n.a.	10.9	100.0	10.9	n.a.	n.a.	..	..	..
Subtotal	n.a.	n.a.	786.7	100.0	786.7	n.a.	n.a.	913.1	100.0	913.1	n.a.	n.a.	933.1	100.0	933.1
Capital (2)	n.a.	n.a.	1 015.3	100.0	1 015.3	n.a.	n.a.	1 804.6	100.0	1 804.6	n.a.	n.a.	2 344.1	100.0	2 344.1
Repair and maintenance (2)	n.a.	n.a.	1 440.7	100.0	1 440.7	n.a.	n.a.	1 641.2	100.0	1 641.2	n.a.	n.a.	..	..	..
Total	n.a.	n.a.	3 242.7	100.0	3 242.7	n.a.	n.a.	4 358.9	100.0	4 358.9	n.a.	n.a.	3 277.2	100.0	3 277.2
Grand total	623.4	15.6	3 360.8	84.4	3 984.2	1 280.6	22.1	4 505.1	77.9	5 785.7	1 398.7	28.9	3 438.7	71.1	4 837.4

Sources: Natural Resources Canada and Statistics Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil; n.a. Not applicable; .. Not available.

(1) Includes mineral leases, claims, staking, and project-related head office expenditures. (2) Includes construction, and machinery and equipment expenditures, as well as related environmental protection and restoration expenditures.

Notes: Data for 2005 are revised spending intentions. Totals for 2005 revised spending intentions are incomplete; they do not include any repair and maintenance expenditures. Numbers may not add to totals due to rounding.

**TABLE 2. SUMMARY OF ENVIRONMENT EXPENDITURES FOR EXPLORATION, DEPOSIT APPRAISAL AND MINE COMPLEX DEVELOPMENT, 2003 AND 2004**

Expenditure Category	Exploration				Deposit Appraisal				Exploration Plus Deposit Appraisal				Mine Complex Development				Total				
	2003		2004		2003		2004		2003		2004		2003		2004		2003		2004		
	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	(\$000)	(%)	
Environment																					
Characterization	784	24.5	2 631	29.3	8 098	52.0	6 783	33.1	8 883	47.3	9 414	31.9	2 091	1.7	4 303	2.8	10 973	7.7	13 717	7.5	
Permits	690	21.6	1 773	19.7	5 539	35.6	10 363	50.6	6 229	33.2	12 137	41.2	353	0.3	3 483	2.3	6 583	4.6	15 620	8.5	
Protection (1)	337	10.5	1 711	19.0	1 200	7.7	2 493	12.2	1 536	8.2	4 204	14.3	27 925	22.5	45 187	29.3	29 461	20.6	49 391	26.9	
Restoration (2)	867	27.1	1 606	17.9	267	1.7	95	0.5	1 134	6.0	1 701	5.8	43 115	34.7	23 671	15.4	44 248	31.0	25 372	13.8	
Subtotal	2 678		7 722		15 104		19 734		17 782		27 456		73 483		76 645		91 266		104 101		
Capital, share of environment	513	16.0	675	7.5	269	1.7	415	2.0	782	4.2	1 090	3.7	34 305	27.6	49 392	32.1	35 087	24.6	50 482	27.5	
Repair and maintenance, share of environment	10	0.3	593	6.6	205	1.3	348	1.7	215	1.1	941	3.2	16 332	13.2	28 029	18.2	16 546	11.6	28 970	15.8	
<b>Total environment</b>	<b>3 201</b>	<b>100.0</b>	<b>8 990</b>	<b>100.0</b>	<b>15 578</b>	<b>100.0</b>	<b>20 497</b>	<b>100.0</b>	<b>18 779</b>	<b>100.0</b>	<b>29 487</b>	<b>100.0</b>	<b>124 119</b>	<b>100.0</b>	<b>154 067</b>	<b>100.0</b>	<b>142 899</b>	<b>100.0</b>	<b>183 553</b>	<b>100.0</b>	
Total environment as a percentage of work phase total (3)		0.6		1.0		8.1		4.1		2.5		2.1		3.8		3.5		3.6		3.2	

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

(1) Additional to normal practice. (2) Excludes reclamation of permanently closed mine sites. (3) Work phase total refers to Table 1.

Notes: Numbers may not add to totals due to rounding. Data may be overlooked at times by some companies.

**TABLE 3a. EXPLORATION PLUS DEPOSIT APPRAISAL EXPENDITURES, (1)  
FIELD WORK PLUS OVERHEAD, (2) BY JUNIOR AND SENIOR COMPANIES,  
1969-2004**

Year	Current Dollars				Constant 2004 Dollars			
	Share of Total		Total	% of Total Junior	Share of Total		Total	% of Total Junior
	Junior	Senior			Junior	Senior		
	(\$ millions)		(%)		(\$ millions)		(%)	
1969	44.4	130.5	174.9	25.4	229.4	674.3	903.7	25.4
1970	39.9	147.2	187.1	21.3	198.1	730.9	929.0	21.3
1971	24.5	127.5	152.0	16.1	115.6	601.8	717.5	16.1
1972	18.3	97.4	115.7	15.8	81.7	434.7	516.4	15.8
1973	22.5	121.6	144.1	15.6	91.5	494.6	586.1	15.6
1974	21.8	158.5	180.3	12.1	77.2	561.1	638.3	12.1
1975	19.5	187.8	207.3	9.4	62.3	600.0	662.3	9.4
1976	13.9	192.9	206.8	6.7	40.6	563.0	603.6	6.7
1977	12.5	271.0	283.5	4.4	34.1	740.1	774.2	4.4
1978	19.8	275.0	294.8	6.7	50.7	704.1	754.8	6.7
1979	29.4	329.5	358.9	8.2	68.5	768.2	836.7	8.2
1980	60.2	530.0	590.2	10.2	127.4	1 121.6	1 249.0	10.2
1981	83.0	651.2	734.2	11.3	158.4	1 242.8	1 401.2	11.3
1982	73.8	502.5	576.3	12.8	130.0	885.4	1 015.4	12.8
1983	71.2	400.6	471.8	15.1	118.9	668.8	787.7	15.1
1984	146.9	470.4	617.3	23.8	237.7	761.0	998.7	23.8
1985	181.1	424.7	605.8	29.9	283.8	665.4	949.3	29.9
1986	348.6	374.7	723.3	48.2	530.3	570.0	1 100.3	48.2
1987	668.2	631.8	1 300.0	51.4	972.6	919.6	1 892.3	51.4
1988	668.3	681.8	1 350.1	49.5	930.3	949.1	1 879.3	49.5
1989	272.6	555.3	827.9	32.9	363.2	739.8	1 102.9	32.9
1990	241.0	533.7	774.7	31.1	310.9	688.6	999.5	31.1
1991	116.1	415.6	531.8	21.8	145.6	521.0	666.6	21.8
1992	79.9	305.4	385.3	20.7	98.9	377.9	476.8	20.7
1993	142.7	334.5	477.3	29.9	174.2	408.2	582.4	29.9
1994	195.8	432.3	628.1	31.2	236.2	521.4	757.6	31.2
1995	213.4	504.2	717.6	29.7	251.8	595.0	846.8	29.7
1996	314.7	580.0	894.8	35.2	365.4	673.4	1 038.7	35.2
1997	266.7	553.5	820.2	32.5	305.9	634.9	940.8	32.5
1998	155.9	420.0	575.9	27.1	179.5	483.7	663.2	27.1
1999	123.3	314.6	437.9	28.2	139.6	356.2	495.8	28.2
2000	142.3	315.8	458.1	31.1	154.7	343.4	498.0	31.1
2001	167.7	302.4	470.1	35.7	180.3	325.0	505.3	35.7
2002	179.0	318.2	497.2	36.0	190.5	338.6	529.1	36.0
2003	267.2	347.0	614.2	43.5	275.1	357.3	632.3	43.5
2004	560.4	502.6	1 063.0	52.7	560.4	502.6	1 063.0	52.7

Sources: Natural Resources Canada and Statistics Canada, from a federal-provincial/territorial survey of mining and exploration companies.

(1) Includes on-mine-site plus off-mine-site activities. (2) Includes mineral leases, claims, property taxes, and project-related head office expenditures.

Notes: Up to and including 1996, most of the expenditures now included in the deposit appraisal work phase were reported under exploration (broadly speaking). For 1987 and 1988, totals with overhead were calculated by multiplying the field expenditures by the ratio total/field from Statistics Canada.

**TABLE 3b. EXPLORATION PLUS DEPOSIT APPRAISAL EXPENDITURES, (1)  
BY JUNIOR AND SENIOR COMPANIES, 1997-2005**

Year	Current Dollars				Constant 2004 Dollars			
	Share of Total		Total	% of Total Junior	Share of Total		Total	% of Total Junior
	Junior	Senior			Junior	Senior		
	(\$ millions)		(%)		(\$ millions)		(%)	
1997	298.0	623.0	921.0	32.4	341.8	714.6	1 056.4	32.4
1998	170.5	485.4	655.9	26.0	196.4	559.0	755.4	26.0
1999	141.4	362.9	504.3	28.0	160.1	410.9	571.1	28.0
2000	156.0	340.7	496.7	31.4	169.6	370.4	540.0	31.4
2001	177.7	335.1	512.9	34.7	191.1	360.3	551.3	34.7
2002	190.8	382.6	573.4	33.3	203.0	407.1	610.1	33.3
2003	283.7	403.0	686.7	41.3	292.1	415.0	707.1	41.3
2004	599.7	578.1	1 177.8	50.9	599.7	578.1	1 177.8	50.9
2005	790.3	579.0	1 369.4	57.7	790.3	579.0	1 369.4	57.7

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

Note: Data for 2005 are revised spending intentions.

**TABLE 3c. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES, (1) ON- AND OFF-MINE-SITE, BY JUNIOR AND SENIOR COMPANIES, 1997-2005**

	Exploration		Deposit Appraisal		Exploration Plus Deposit Appraisal		Exploration Plus Deposit Appraisal
	On-Mine-Site	Off-Mine-Site	On-Mine-Site	Off-Mine-Site	On-Mine-Site	Off-Mine-Site	On- and Off-Mine-Site
	(\$000)						
<b>1997</b>							
Junior	n.a.	233 231	n.a.	64 730	n.a.	297 961	297 961
Senior	62 383	338 796	105 608	116 222	167 991	455 018	623 009
Total	62 383	572 027	105 608	180 951	167 991	752 979	920 970
<b>1998</b>							
Junior	n.a.	144 970	n.a.	25 573	n.a.	170 544	170 544
Senior	67 875	249 959	61 535	106 018	129 411	355 977	485 387
Total	67 875	394 929	61 535	131 591	129 411	526 520	655 931
<b>1999</b>							
Junior	n.a.	92 923	n.a.	48 498	n.a.	141 421	141 421
Senior	44 471	177 265	42 302	98 889	86 773	276 154	362 927
Total	44 471	270 188	42 302	147 386	86 773	417 575	504 348
<b>2000</b>							
Junior	n.a.	127 853	n.a.	28 109	n.a.	155 962	155 962
Senior	30 743	183 929	42 273	83 744	73 016	267 672	340 689
Total	30 743	311 782	42 273	111 853	73 016	423 635	496 651
<b>2001</b>							
Junior	n.a.	157 913	n.a.	19 820	n.a.	177 733	177 733
Senior	42 297	180 963	29 173	82 704	71 469	263 667	335 136
Total	42 297	338 876	29 173	102 524	71 469	441 400	512 869
<b>2002</b>							
Junior	n.a.	172 402	n.a.	18 391	n.a.	190 793	190 793
Senior	56 408	174 735	23 863	127 621	80 272	302 356	382 628
Total	56 408	347 137	23 863	146 012	80 272	493 149	573 421
<b>2003</b>							
Junior	n.a.	256 578	n.a.	27 110	n.a.	283 688	283 688
Senior	60 203	221 272	25 370	96 203	85 572	317 475	403 047
Total	60 203	477 850	25 370	123 313	85 572	601 163	686 735
<b>2004</b>							
Junior	n.a.	523 104	n.a.	76 614	n.a.	599 718	599 718
Senior	84 431	295 943	52 095	145 598	136 526	441 541	578 067
Total	84 431	819 047	52 095	222 212	136 526	1 041 259	1 177 785
<b>2005</b>							
Junior	n.a.	701 898	n.a.	88 452	n.a.	790 350	790 350
Senior	97 629	285 087	61 052	135 268	158 680	420 356	579 036
Total	97 629	986 985	61 052	223 720	158 680	1 210 706	1 369 386

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

n.a. Not applicable.

(1) Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

Note: Data for 2005 are revised spending intentions.

**TABLE 4. EXPLORATION PLUS DEPOSIT APPRAISAL EXPENDITURES, (1) BY RANGE OF EXPENDITURES AND BY JUNIOR AND SENIOR COMPANIES, 2002-05**

Range of Expenditures	Junior			Senior			Total		
	Companies	Expenditures	Percentage of Total Expenditures	Companies	Expenditures	Percentage of Total Expenditures	Companies	Expenditures	Percentage of Total Expenditures
(\$)	(number)	(\$000)	(%)	(number)	(\$000)	(%)	(number)	(\$000)	(%)
<b>2002</b>									
>10 million	–	–	–	12	256 148	66.9	12	256 148	44.7
5 million-10 million	6	37 258	19.5	8	56 659	14.8	14	93 917	16.4
1 million-5 million	40	69 855	36.6	23	61 252	16.0	63	131 107	22.9
500 000-1 million	48	32 201	16.9	4	2 918	0.8	52	35 118	6.1
200 000-500 000	89	28 979	15.2	10	3 448	0.9	99	32 427	5.7
100 000-200 000	76	10 886	5.7	9	1 426	0.4	85	12 312	2.1
50 000-100 000	60	3 939	2.1	6	448	0.1	66	4 387	0.8
1-50 000	144	2 828	1.5	21	329	0.1	165	3 157	0.6
Subtotal	463	185 946	97.5	93	382 628	100.0	556	568 573	99.2
Prospectors (2)	30	4 847	2.5	–	–	–	30	4 847	0.8
Total 2002	493	190 793	100.0	93	382 628	100.0	586	573 421	100.0
<b>2003</b>									
>10 million	–	–	–	12	261 891	65.0	12	261 891	38.1
5 million-10 million	8	60 146	21.2	14	93 128	23.1	22	153 274	22.3
1 million-5 million	66	127 868	45.1	15	36 807	9.1	81	164 676	24.0
500 000-1 million	59	40 660	14.3	10	6 547	1.6	69	47 206	6.9
200 000-500 000	105	33 910	12.0	6	2 179	0.5	111	36 089	5.3
100 000-200 000	76	10 662	3.8	9	1 386	0.3	85	12 048	1.8
50 000-100 000	72	5 057	1.8	9	620	0.2	81	5 677	0.8
1-50 000	144	2 353	0.8	21	489	0.1	165	2 842	0.4
Subtotal	530	280 655	98.9	96	403 047	100.0	626	683 703	99.6
Prospectors (2)	25	3 032	1.1	–	–	–	25	3 032	0.4
Total 2003	555	283 688	100.0	96	403 047	100.0	651	686 735	100.0
<b>2004</b>									
>10 million	6	80 773	13.5	16	420 603	72.8	22	501 376	42.6
5 million-10 million	22	155 683	26.0	10	80 607	13.9	32	236 291	20.1
1 million-5 million	111	243 179	40.5	22	61 691	10.7	133	304 870	25.9
500 000-1 million	88	63 673	10.6	12	8 782	1.5	100	72 456	6.2
200 000-500 000	110	36 254	6.0	13	4 154	0.7	123	40 408	3.4
100 000-200 000	74	10 403	1.7	9	1 188	0.2	83	11 591	1.0
50 000-100 000	59	4 225	0.7	9	617	0.1	68	4 842	0.4
1-50 000	119	2 129	0.4	21	424	0.1	140	2 553	0.2
Subtotal	589	596 319	99.4	112	578 067	100.0	701	1 174 386	99.7
Prospectors (2)	13	3 399	0.6	–	–	–	13	3 399	0.3
Total 2004	602	599 718	100.0	112	578 067	100.0	714	1 177 785	100.0
<b>2005</b>									
>10 million	13	199 399	25.2	15	405 916	70.1	28	605 315	44.2
5 million-10 million	24	149 118	18.9	15	93 585	16.2	39	242 703	17.7
1 million-5 million	160	323 813	41.0	25	65 555	11.3	185	389 368	28.4
500 000-1 million	110	71 849	9.1	14	8 897	1.5	124	80 746	5.9
200 000-500 000	106	31 712	4.0	11	3 094	0.5	117	34 806	2.5
100 000-200 000	63	8 194	1.0	10	1 335	0.2	73	9 528	0.7
50 000-100 000	36	2 183	0.3	6	375	0.1	42	2 558	0.2
1-50 000	70	1 201	0.2	17	280	0.0	87	1 480	0.1
Subtotal	582	787 468	99.6	113	579 036	100.0	695	1 366 504	99.8
Prospectors (2)	11	2 882	0.4	–	–	–	11	2 882	0.2
Total 2005	593	790 350	100.0	113	579 036	100.0	706	1 369 386	100.0

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil.

(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs. (2) The number of prospectors is underestimated because it contains groups of prospectors.

Notes: Data for 2005 are revised spending intentions. Numbers may not add to totals due to rounding.

**TABLE 5. SUMMARY OF TOTAL DIAMOND EXPLORATION, DEPOSIT APPRAISAL AND MINE COMPLEX DEVELOPMENT EXPENDITURES, (1) 2000-2004**

Expenditure Category	2000	2001	2002	2003	2004
	(\$ millions)				
Field work and overhead (2)	95.0	240.2	188.3	188.9	339.9
Engineering, economic and pre- or production feasibility studies, environment and land access	55.2	27.5	34.4	41.3	45.8
Capital (3)	226.3	531.4	459.7	53.9	203.8
Repair (3)	55.5	88.4	63.3	43.3	126.8
<b>Total</b>	<b>432.1</b>	<b>887.4</b>	<b>745.7</b>	<b>327.4</b>	<b>716.3</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

(1) Includes on-mine-site plus off-mine-site activities. (2) Includes mineral leases, claims, staking, and project-related head office expenditures. (3) Includes construction, and machinery and equipment expenditures.

Note: Numbers may not add to totals due to rounding.

**TABLE 6a. AREA (1) OF NEW MINERAL CLAIMS STAKED OR RECORDED IN CANADA AS A PERCENTAGE OF PREVIOUS YEAR, 1998-2004**

Province/Territory	1998		1999		2000		2001		2002		2003		2004	
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)
Newfoundland and Labrador	361 900	108.3	241 075	66.6	324 225	134.5	391 625	120.8	828 150	211.5	338 675	40.9	482 875	142.6
Nova Scotia	74 180	35.6	157 394	212.2	96 819	61.5	87 722	90.6	147 713	168.4	202 784	137.3	63 764	31.4
New Brunswick	40 000	74.4	28 336	70.8	49 344	174.1	35 712	72.4	33 888	94.9	46 976	138.6	102 816	218.9
Quebec	728 142	69.3	754 102	103.6	2 187 551	290.1	2 115 424	96.7	3 290 446	155.5	1 204 523	36.6	1 546 640	128.4
Ontario	577 632	67.5	604 096	104.6	874 896	144.8	981 904	112.2	813 424	82.8	951 488	117.0	931 072	97.9
Manitoba	475 634	123.1	801 550	168.5	1 759 381	219.5	1 054 106	59.9	1 287 997	122.2	879 155	68.3	1 620 449	184.3
Saskatchewan	680 048	71.6	(a) 161 083	23.7	523 440	325.0	558 131	106.6	339 490	60.8	438 819	129.3	1 854 008	422.5
Alberta	3 490 000	9.4	1 026 000	29.4	2 349 600	229.0	4 192 055	178.4	4 670 028	111.4	2 904 300	62.2	4 727 344	162.8
British Columbia	474 296	62.0	478 740	100.9	699 050	146.0	636 800	91.1	688 500	108.1	912 575	132.5	1 169 050	128.1
Yukon	113 057	57.5	146 419	129.5	53 413	36.5	40 644	76.1	81 872	201.4	75 038	91.7	169 997	226.5
Northwest Territories (2)	827 615	42.4	563 378	(b) 68.1	891 419	158.2	626 177	70.2	1 099 888	175.7	391 371	35.6	2 095 979	535.5
Nunavut (2)	..	..	710 092	..	498 230	70.2	441 270	88.6	3 623 559	821.2	2 054 000	56.7	4 188 834	203.9
<b>Total</b>	<b>7 842 504</b>	<b>17.8</b>	<b>5 672 265</b>	<b>72.3</b>	<b>10 307 368</b>	<b>181.7</b>	<b>11 161 570</b>	<b>108.3</b>	<b>16 904 955</b>	<b>151.5</b>	<b>10 399 704</b>	<b>61.5</b>	<b>18 952 828</b>	<b>182.2</b>

Source: Provincial and territorial mining recorders.

.. Not available.

(a) Prior to 1999, Saskatchewan data do not include exploration permits. (b) Percentage based on new claims staked in 1999 in the Northwest Territories and Nunavut combined.

(1) Excludes coal. (2) Excludes prospecting permits.

Note: Numbers may not add to totals due to rounding.

**TABLE 6b. AREA (1) OF NEW MINERAL CLAIMS STAKED OR RECORDED BY PROVINCE AND TERRITORY AS A PERCENTAGE OF TOTAL CANADA, 2000-2004**

Province/Territory	2000		2001		2002		2003		2004	
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)
Newfoundland and Labrador	324 225	3.1	391 625	3.5	828 150	4.9	338 675	3.3	482 875	2.5
Nova Scotia	96 819	0.9	87 722	0.8	147 713	0.9	202 784	1.9	63 764	0.3
New Brunswick	49 344	0.5	35 712	0.3	33 888	0.2	46 976	0.5	102 816	0.5
Quebec	2 187 551	21.2	2 115 424	19.0	3 290 446	19.5	1 204 523	11.6	1 546 640	8.2
Ontario	874 896	8.5	981 904	8.8	813 424	4.8	951 488	9.1	931 072	4.9
Manitoba	1 759 381	17.1	1 054 106	9.4	1 287 997	7.6	879 155	8.5	1 620 449	8.5
Saskatchewan	523 440	5.1	558 131	5.0	339 490	2.0	438 819	4.2	1 854 008	9.8
Alberta	2 349 600	22.8	4 192 055	37.6	4 670 028	27.6	2 904 300	27.9	4 727 344	24.9
British Columbia	699 050	6.8	636 800	5.7	688 500	4.1	912 575	8.8	1 169 050	6.2
Yukon	53 413	0.5	40 644	0.4	81 872	0.5	75 038	0.7	169 997	0.9
Northwest Territories (2)	891 419	8.6	626 177	5.6	1 099 888	6.5	391 371	3.8	2 095 979	11.1
Nunavut (2)	498 230	4.8	441 270	4.0	3 623 559	21.4	2 054 000	19.8	4 188 834	22.1
Total	10 307 368	100.0	11 161 570	100.0	16 904 955	100.0	10 399 704	100.0	18 952 828	100.0

Source: Provincial and territorial mining recorders.

(1) Excludes coal. (2) Excludes prospecting permits.

Note: Numbers may not add to totals due to rounding.

**TABLE 7a. EXPLORATION AND DEPOSIT APPRAISAL, OFF-MINE-SITE AND ON-MINE-SITE EXPENDITURES, (1) BY PROVINCE AND TERRITORY, 2004**

Province/Territory	Exploration		Deposit Appraisal		Exploration Plus Deposit Appraisal	
	Off-Mine-Site	On-Mine-Site	Off-Mine-Site	On-Mine-Site	Off-Mine-Site	On-Mine-Site
	(\$000)					
Newfoundland and Labrador	23 961	242	8 426	573	32 387	815
Nova Scotia	7 963	264	912	–	8 874	264
New Brunswick	13 365	–	13	–	13 377	–
Quebec	151 645	14 073	39 103	22 351	190 748	36 424
Ontario	189 222	58 926	37 699	21 093	226 921	80 019
Manitoba	31 374	4 662	–	–	31 374	4 662
Saskatchewan	56 793	–	13 659	1 335	70 451	1 335
Alberta	3 096	–	2 567	670	5 663	670
British Columbia	99 975	2 919	42 947	6 074	142 922	8 993
Yukon	19 928	–	2 038	–	21 966	–
Northwest Territories	45 154	3 135	64 110	–	109 264	3 135
Nunavut	176 573	210	10 739	–	187 311	210
Total	819 047	84 431	222 212	52 095	1 041 259	136 526
Total (on- plus off-mine-site)	903 478		274 307		1 177 785	

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil.

(1) Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

Note: Numbers may not add to totals due to rounding.

**TABLE 7b. EXPLORATION AND DEPOSIT APPRAISAL, OFF-MINE-SITE AND ON-MINE-SITE EXPENDITURES, (1) BY PROVINCE AND TERRITORY, 2005**

Province/Territory	Exploration		Deposit Appraisal		Exploration Plus Deposit Appraisal	
	Off-Mine-Site	On-Mine-Site	Off-Mine-Site	On-Mine-Site	Off-Mine-Site	On-Mine-Site
	(\$000)					
Newfoundland and Labrador	34 747	1 175	6 374	1 600	41 121	2 775
Nova Scotia	8 986	269	1 800	100	10 786	369
New Brunswick	11 605	5	–	–	11 605	5
Quebec	155 163	20 274	26 511	24 599	181 674	44 872
Ontario	210 104	60 331	42 356	23 806	252 460	84 137
Manitoba	46 233	6 500	–	–	46 233	6 500
Saskatchewan	127 753	600	8 182	3 669	135 935	4 269
Alberta	2 865	500	2 400	–	5 265	500
British Columbia	141 137	475	45 935	7 278	187 072	7 753
Yukon	36 990	–	17 200	–	54 190	–
Northwest Territories	54 788	7 500	71 062	–	125 850	7 500
Nunavut	156 616	–	1 900	–	158 516	–
<b>Total</b>	<b>986 985</b>	<b>97 629</b>	<b>223 720</b>	<b>61 052</b>	<b>1 210 706</b>	<b>158 680</b>
Total (on- plus off-mine-site)	1 084 614		284 772		1 369 386	

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil.

(1) Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

Notes: Data for 2005 are revised spending intentions. Numbers may not add to totals due to rounding.

**TABLE 8. EXPLORATION PLUS DEPOSIT APPRAISAL EXPENDITURES, (1) BY PROVINCE AND TERRITORY AS A PERCENTAGE OF TOTAL AND AS A PERCENTAGE OF THE PREVIOUS YEAR, 2002-05**

Province / Territory	2002			2003			2004			2005		
	2002 as a % of 2001 Expenditures		2003 as a % of 2002 Expenditures	2004 as a % of 2003 Expenditures		2005 as a % of 2004 Expenditures						
	(\$ millions)	(%)		(\$ millions)	(%)		(\$ millions)	(%)				
Newfoundland and Labrador	44.2	7.7	155.3	23.1	3.4	52.2	33.2	2.8	143.9	43.9	3.2	132.2
Nova Scotia	3.4	0.6	120.1	6.4	0.9	188.7	9.1	0.8	143.0	11.2	0.8	122.1
New Brunswick	3.2	0.6	33.9	2.6	0.4	79.6	13.4	1.1	524.2	11.6	0.8	86.8
Quebec	111.2	19.4	108.0	134.0	19.5	120.5	227.2	19.3	169.5	226.5	16.5	99.7
Ontario	139.0	24.2	122.3	219.4	32.0	157.9	306.9	26.1	139.9	336.6	24.6	109.7
Manitoba	29.8	5.2	104.1	27.2	4.0	91.0	36.0	3.1	132.7	52.7	3.9	146.3
Saskatchewan	41.4	7.2	110.4	47.7	6.9	115.2	71.8	6.1	150.4	140.2	10.2	195.3
Alberta	5.6	1.0	125.8	4.9	0.7	87.6	6.3	0.5	129.1	5.8	0.4	91.0
British Columbia	39.2	6.8	134.6	62.5	9.1	159.4	151.9	12.9	243.0	194.8	14.2	128.2
Yukon	7.8	1.4	99.8	12.7	1.8	162.6	22.0	1.9	173.3	54.2	4.0	246.7
Northwest Territories	72.7	12.7	83.9	53.6	7.8	73.6	112.4	9.5	209.8	133.3	9.7	118.6
Nunavut	75.9	13.2	123.7	92.7	13.5	122.2	187.5	15.9	202.3	158.5	11.6	84.5
<b>Total</b>	<b>573.4</b>	<b>100.0</b>	<b>111.8</b>	<b>686.7</b>	<b>100.0</b>	<b>119.8</b>	<b>1 177.8</b>	<b>100.0</b>	<b>171.5</b>	<b>1 369.4</b>	<b>100.0</b>	<b>116.3</b>
Exploration	403.5	70.4	105.9	538.1	78.3	133.3	903.5	76.7	167.9	1 084.6	79.2	120.0
Deposit appraisal	169.9	29.6	129.0	148.7	21.7	87.5	274.3	23.3	184.5	284.8	20.8	103.8

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

Notes: Data for 2005 are revised spending intentions. Numbers may not add to totals due to rounding.



TABLE 9a. EXPLORATION ACTIVITY, (1) BY PROVINCE AND TERRITORY, 2004

Province/Territory	Drilling (Surface and Underground)				Geochemical	Geology	Geophysical		Rock Work (2)	Other Field Costs	Engineering Studies	Economic Studies	Pre-Feasibility Studies	Mineral Lease and Head Office	Environment	Land Access	Grand Total
	Diamond		Other				Ground	Airborne									
	Metres	Cost	Metres	Cost													
	(000)	(\$000)	(000)	(\$000)													
Newfoundland and Labrador	61	7 019	7	787	1 457	6 538	3 234	1 650	111	919	149	35	9	2 098	132	65	24 203
Nova Scotia	20	1 873	4	189	338	1 293	237	76	537	966	1 465	296	272	591	86	9	8 226
New Brunswick	34	3 513	—	—	333	1 908	1 949	5 141	61	171	126	—	—	155	...	7	13 365
Quebec	656	74 115	8	536	6 610	25 088	13 285	5 993	13 581	11 483	842	405	39	12 529	778	433	165 718
Ontario	1 248	131 696	10	3 880	10 732	32 204	11 972	10 778	16 519	3 745	4 660	55	9 573	10 249	1 946	141	248 148
Manitoba	111	19 044	—	—	1 161	3 138	2 774	2 287	3 729	916	85	—	—	2 640	254	6	36 036
Saskatchewan	173	22 754	—	—	2 074	499	4 035	5 102	14 856	919	248	—	60	5 486	643	117	56 793
Alberta	1	48	2	277	107	347	326	782	—	17	225	10	—	916	41	—	3 096
British Columbia	412	53 953	4	471	5 940	19 778	4 746	2 358	2 693	5 432	485	33	157	5 305	1 492	51	102 894
Yukon	27	8 083	2	580	1 375	4 088	1 410	738	1 313	388	148	—	246	1 320	67	172	19 928
Northwest Territories	52	14 007	1	1 177	9 417	4 204	4 501	6 450	329	1 032	1 155	5	582	4 432	776	222	48 289
Nunavut	184	71 914	10	7 464	24 553	10 367	4 567	21 901	284	14 566	353	30	—	18 358	1 506	919	176 783
Total	2 977	408 018	49	15 361	64 097	109 453	53 037	63 254	54 014	40 554	9 942	869	10 937	64 078	7 721	2 142	903 478
Percentage of grand total	n.a.	45.2	n.a.	1.7	7.1	12.1	5.9	7.0	6.0	4.5	1.1	0.1	1.2	7.1	0.9	0.2	100.0

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

— Nil; ... Amount too small to be expressed; n.a. Not applicable.

(1) Includes on-mine-site plus off-mine-site activities. (2) Includes stripping, trenching, shaft work, drifts, cross-cuts, raises, declines, rock sampling, and de-watering costs.

Note: Numbers may not add to totals due to rounding.

TABLE 9b. DEPOSIT APPRAISAL ACTIVITY, (1) BY PROVINCE AND TERRITORY, 2004

Province/Territory	Drilling (Surface and Underground)				Geochemical	Geology	Geophysical		Rock Work (2)	Other Field Costs	Engineering Studies	Economic Studies	Pre- or Production Feasibility Studies	Mineral Lease and Head Office	Environment	Land Access	Grand Total
	Diamond		Other				Ground	Airborne									
	Metres	Cost	Metres	Cost													
	(000)	(\$000)	(000)	(\$000)													
Newfoundland and Labrador	31	2 490	—	—	106	379	448	—	45	2 839	1 735	82	200	405	270	—	8 999
Nova Scotia	3	532	—	—	—	114	—	—	—	—	51	55	2	124	16	17	912
New Brunswick	—	—	—	—	—	2	—	—	—	—	10	—	—	1	—	—	13
Quebec	207	14 623	4	458	64	2 602	12	—	23 561	3 681	8 284	69	5 314	1 133	1 647	5	61 454
Ontario	139	12 288	...	15	349	1 001	213	—	16 583	78	1 965	90	16 117	8 765	1 327	—	58 792
Manitoba	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0
Saskatchewan	1	408	...	1 599	—	214	1 335	—	798	907	5 623	65	200	2 270	1 575	—	14 994
Alberta	...	264	6	670	285	—	—	26	11	64	55	200	49	126	1 488	1	3 237
British Columbia	90	10 320	27	2 364	366	6 492	253	75	2 827	4 755	6 926	258	1 968	2 471	8 745	1 200	49 021
Yukon	2	848	—	—	26	249	—	—	—	296	223	—	224	52	120	—	2 038
Northwest Territories	11	9 542	1	389	119	930	—	—	26 070	972	5 060	—	4 742	16 078	207	—	64 110
Nunavut	8	2 961	—	—	—	—	—	—	—	804	14	14	1 742	748	4 340	129	10 739
Total	493	54 277	38	5 494	1 314	11 984	2 262	101	69 894	13 592	30 739	832	30 557	32 173	19 734	1 353	274 307
Percentage of grand total	n.a.	19.8	n.a.	2.0	0.5	4.4	0.8	...	25.5	5.0	11.2	0.3	11.1	11.7	7.2	0.5	100.0

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

— Nil; ... Amount too small to be expressed; n.a. Not applicable.

(1) Includes on-mine-site plus off-mine-site activities. (2) Includes stripping, trenching, shaft work, drifts, cross-cuts, raises, declines, rock sampling, and de-watering costs.

Note: Numbers may not add to totals due to rounding.

**TABLE 9c. EXPLORATION PLUS DEPOSIT APPRAISAL ACTIVITY, (1) BY PROVINCE AND TERRITORY, 2004**

Province/Territory	Drilling (Surface and Underground)				Geochemical	Geology	Geophysical		Rock Work (2)	Other Field Costs	Engineering Studies	Economic Studies	Pre- or Production Feasibility Studies	Mineral Lease and Head Office	Environment	Land Access	Grand Total
	Diamond		Other				Ground	Airborne									
	Metres	Cost	Metres	Cost													
	(000)	(\$000)	(000)	(\$000)	(\$000)												
Newfoundland and Labrador	92	9 509	7	787	1 563	6 917	3 682	1 650	156	3 758	1 884	117	209	2 503	402	65	33 202
Nova Scotia	23	2 405	4	189	338	1 407	237	76	537	966	1 516	351	274	715	102	26	9 138
New Brunswick	34	3 513	—	—	333	1 910	1 949	5 141	61	171	136	—	—	155	..	7	13 377
Quebec	863	88 738	12	994	6 674	27 691	13 297	5 993	37 143	15 164	9 127	474	5 353	13 662	2 425	438	227 172
Ontario	1 388	143 984	11	3 895	11 081	33 205	12 185	10 778	33 102	3 822	6 625	145	25 689	19 014	3 273	141	306 940
Manitoba	111	19 044	—	—	1 161	3 138	2 774	2 287	3 729	916	85	—	—	2 641	254	6	36 036
Saskatchewan	174	23 162	..	1 599	2 074	714	5 370	5 102	15 654	1 826	5 871	65	260	7 757	2 217	117	71 787
Alberta	1	312	8	947	392	347	326	808	11	81	280	210	49	1 041	1 529	1	6 333
British Columbia	502	64 272	31	2 835	6 306	26 271	4 999	2 433	5 520	10 187	7 411	291	2 125	7 777	10 237	1 251	151 915
Yukon	29	8 931	2	580	1 401	4 337	1 410	738	1 313	685	372	—	470	1 371	187	172	21 966
Northwest Territories	62	23 549	1	1 566	9 537	5 134	4 501	6 450	26 399	2 004	6 216	5	5 324	20 510	983	222	112 399
Nunavut	192	74 875	10	7 464	24 553	10 367	4 567	21 901	284	14 566	1 158	44	1 742	19 106	5 846	1 048	187 521
<b>Total</b>	<b>3 470</b>	<b>462 295</b>	<b>87</b>	<b>20 855</b>	<b>65 411</b>	<b>121 437</b>	<b>55 298</b>	<b>63 355</b>	<b>123 908</b>	<b>54 146</b>	<b>40 681</b>	<b>1 701</b>	<b>41 495</b>	<b>96 252</b>	<b>27 456</b>	<b>3 494</b>	<b>1 177 785</b>
Percentage of grand total	n.a.	39.3	n.a.	1.8	5.6	10.3	4.7	5.4	10.5	4.6	3.5	0.1	3.5	8.2	2.3	0.3	100.0

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

— Nil; .. Amount too small to be expressed; n.a. Not applicable.

(1) Includes on-mine-site plus off-mine-site activities. (2) Includes stripping, trenching, shaft work, drifts, cross-cuts, raises, declines, rock sampling and de-watering costs.

Note: Numbers may not add to totals due to rounding.

**TABLE 9d. MINE COMPLEX DEVELOPMENT ACTIVITY, (1) BY PROVINCE AND TERRITORY, 2004**

Province/Territory	Drilling (Surface and Underground)				Geochemical	Geology	Geophysical		Rock Work (2)	Other Field Costs	Engineering Studies	Economic Studies	Pre- or Production Feasibility Studies	Mineral Lease and Head Office	Environment	Land Access	Grand Total
	Diamond		Other				Ground	Airborne									
	Metres	Cost	Metres	Cost													
	(000)	(\$000)	(000)	(\$000)	(\$000)												
Newfoundland and Labrador	6	471	98	2 334	12	35	—	—	11 936	—	445	60	—	3 786	1 069	2 424	22 572
Nova Scotia	—	—	149	225	—	125	—	—	8 137	40	685	30	50	815	2 830	93	13 030
New Brunswick	9	421	272	6 330	37	42	4 779	25	16 724	—	—	—	—	55	2 202	1	30 616
Quebec	161	5 676	3	307	437	2 675	—	—	149 561	1 477	4 802	—	6 889	15 746	13 024	132	200 726
Ontario	547	36 149	161	2 467	942	6 187	224	—	227 400	11 606	3 450	—	527	2 766	21 772	—	313 490
Manitoba	108	5 545	—	—	—	503	—	—	83 177	—	1 917	—	25	2 874	—	—	94 041
Saskatchewan	87	3 650	73	9 526	—	515	—	—	25 188	—	3 723	—	80	8 790	7 280	6	58 757
Alberta	3	345	21	383	31	212	—	—	11 096	1 064	1 683	105	209	14 547	15 948	48	45 671
British Columbia	33	1 787	24	1 369	672	964	5	—	7 587	502	466	18	255	4 996	4 828	81	23 528
Yukon	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Northwest Territories	17	7 088	8	15 692	75	830	1 059	645	40 314	49	382	—	1 949	26 821	7 692	8 089	110 685
Nunavut	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
<b>Total</b>	<b>971</b>	<b>61 131</b>	<b>810</b>	<b>38 632</b>	<b>2 206</b>	<b>12 089</b>	<b>6 066</b>	<b>670</b>	<b>581 118</b>	<b>14 738</b>	<b>17 553</b>	<b>212</b>	<b>9 984</b>	<b>81 198</b>	<b>76 645</b>	<b>10 874</b>	<b>913 116</b>
Percentage of grand total	n.a.	6.7	n.a.	4.2	0.2	1.3	0.7	0.1	63.6	1.6	1.9	..	1.1	8.9	8.4	1.2	100.0

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

— Nil; .. Amount too small to be expressed; n.a. Not applicable.

(1) Includes on-mine-site plus off-mine-site activities. (2) Includes stripping, trenching, shaft work, drifts, cross-cuts, raises, declines, rock sampling and de-watering costs.

Note: Numbers may not add to totals due to rounding.

**TABLE 10. SUMMARY OF DRILLING ACTIVITY IN CANADA, 2004**

Drilling Activity	Exploration				Deposit Appraisal				Exploration Plus Deposit Appraisal
	Off-Mine-Site		On-Mine-Site		Off-Mine-Site		On-Mine-Site		On-Plus Off-Mine-Site
	(metres)	(% of subtotal)	(metres)	(% of subtotal)	(metres)	(% of subtotal)	(metres)	(% of subtotal)	(metres)
Diamond drilling									
Surface	2 256 536	94.7	212 053	35.7	166 285	71.2	6 683	2.6	2 641 557
Underground	127 024	5.3	381 847	64.3	67 331	28.8	252 204	97.4	828 406
Subtotal	2 383 560	100.0	593 900	100.0	233 616	100.0	258 887	100.0	3 469 963
Percentage of work phase total diamond drilling	80.1		19.9		47.4		52.6		
Other drilling									
Surface	48 595	99.3	–	–	14 475	80.9	20 005	100.0	83 075
Underground	340	0.7	–	–	3 409	19.1	–	–	3 749
Subtotal	48 935	100.0	–	–	17 884	100.0	20 005	–	86 824
Percentage of work phase total other drilling	100.0		–		47.2		52.8		n.a.
Total surface drilling	2 305 131		212 053		180 760		26 688		2 724 632
Total underground drilling	127 364		381 847		70 740		252 204		832 155
Grand total	2 432 495		593 900		251 500		258 887		3 556 787

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil; n.a. Not applicable.

Note: Numbers may not add to totals due to rounding.

**TABLE 11a. EXPLORATION PLUS DEPOSIT APPRAISAL (SURFACE DRILLING), (1) BY PROVINCE AND TERRITORY, BY MINERAL COMMODITY, 2004**

Province/Territory	Metals					Nonmetals	Diamonds	Coal	Total
	Base	Precious	Iron	Uranium	Other				
	(000 metres)								
Newfoundland and Labrador	23	45	9	...	19	2	–	–	97
Nova Scotia	3	18	–	–	2	–	–	1	23
New Brunswick	17	15	–	–	1	–	–	1	34
Quebec	217	394	–	–	2	3	30	–	646
Ontario	219	624	2	1	24	–	19	–	890
Manitoba	22	61	–	–	5	–	1	–	89
Saskatchewan	3	38	–	117	–	–	16	–	173
Alberta	–	–	–	–	1	...	1	8	9
British Columbia	137	269	1	–	21	6	1	35	469
Yukon	6	22	–	–	...	4	–	–	31
Northwest Territories	5	29	...	...	...	–	28	–	63
Nunavut	29	141	3	1	4	–	22	–	201
Total	681	1 655	15	119	80	14	118	44	2 725

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil; ... Amount too small to be expressed.

(1) Includes on-mine-site plus off-mine-site drilling activity for diamond and other types of drilling.

Note: Numbers may not add to totals due to rounding.

**TABLE 11b. EXPLORATION PLUS DEPOSIT APPRAISAL (UNDERGROUND DRILLING), (1) BY PROVINCE AND TERRITORY, BY MINERAL COMMODITY, 2004**

Province/Territory	Metals					Nonmetals	Diamonds	Coal	Total
	Base	Precious	Iron	Uranium	Other				
	(000 metres)								
Newfoundland and Labrador	–	2	–	–	–	–	–	–	2
Nova Scotia	–	1	–	–	..	1	–	–	3
New Brunswick	–	–	–	–	–	–	–	–	–
Quebec	23	206	–	–	–	–	–	–	229
Ontario	162	337	–	–	10	–	–	–	509
Manitoba	22	–	–	–	–	–	–	–	22
Saskatchewan	–	–	–	1	–	–	–	–	1
Alberta	–	–	–	–	–	–	–	–	–
British Columbia	25	39	–	–	–	–	–	–	64
Yukon	–	–	–	–	–	–	–	–	–
Northwest Territories	–	1	–	–	–	–	–	–	1
Nunavut	–	1	–	–	–	–	–	–	1
<b>Total</b>	<b>232</b>	<b>588</b>	<b>–</b>	<b>1</b>	<b>10</b>	<b>1</b>	<b>–</b>	<b>–</b>	<b>832</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil; . . . Amount too small to be expressed.

(1) Includes on-mine-site plus off-mine-site drilling activity for diamond and other types of drilling.

Note: Numbers may not add to totals due to rounding.

**TABLE 12. COMPARISON OF 2003 AND 2004 EXPLORATION PLUS DEPOSIT APPRAISAL EXPENDITURES, (1) BY MINERAL COMMODITY**

Mineral Commodity	2003 Expenditures	2004 as % of 2003 Expenditures	2004 Total Expenditures			Percentage of Total
			On-Mine-Site	Off-Mine-Site	On-Mine-Site Plus Off-Mine-Site	
	(\$ millions)	(%)		(\$ millions)		(%)
Base metals (2)	137.0	176.1	37.6	203.7	241.3	20.5
Precious metals (3)	316.4	171.6	84.1	458.8	542.9	46.1
Gold	272.1	172.6	78.9	390.6	469.5	39.9
Platinum group elements	30.0	139.4	2.6	39.3	41.9	3.6
Iron ore	1.3	978.0	0.6	11.9	12.4	1.1
Uranium	30.8	142.4	–	43.8	43.8	3.7
Other metals	14.3	180.4	3.7	22.1	25.9	2.2
Nonmetals	13.0	136.8	2.2	15.6	17.8	1.5
Diamonds	168.8	162.9	3.1	271.8	275.0	23.3
Coal	5.1	365.4	5.2	13.4	18.7	1.6
<b>Total</b>	<b>686.7</b>	<b>171.5</b>	<b>136.5</b>	<b>1 041.3</b>	<b>1 177.8</b>	<b>100.0</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil.

(1) Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

(2) Includes copper, nickel, lead and zinc. (3) Includes silver, gold and platinum group metals.

Note: Numbers may not add to totals due to rounding.

**TABLE 13a. EXPLORATION EXPENDITURES, (1) BY PROVINCE AND TERRITORY, BY MINERAL COMMODITY, 2004**

Province/Territory	Metals					Nonmetals	Diamonds	Coal	Total
	Base	Precious	Iron	Uranium	Other				
	(\$000)								
Newfoundland and Labrador	7 184	12 503	2 032	563	701	1 179	20	20	24 203
Nova Scotia	1 597	5 062	53	–	742	398	–	374	8 226
New Brunswick	9 840	3 118	1	–	228	38	–	140	13 365
Quebec	53 907	78 504	316	1 360	861	2 268	28 503	–	165 718
Ontario	65 183	153 705	456	94	7 183	129	21 399	–	248 148
Manitoba	13 166	19 324	–	36	833	45	2 633	–	36 036
Saskatchewan	624	5 152	96	25 465	450	–	24 880	125	56 793
Alberta	–	–	89	464	54	728	948	812	3 096
British Columbia	34 208	62 548	172	–	3 108	1 412	214	1 232	102 894
Yukon	3 931	12 461	34	118	231	3 065	63	25	19 928
Northwest Territories	3 150	8 407	154	164	221	–	36 193	–	48 289
Nunavut	16 933	69 111	8 489	2 435	1 950	1 113	76 752	–	176 783
<b>Total</b>	<b>209 723</b>	<b>429 896</b>	<b>11 891</b>	<b>30 699</b>	<b>16 563</b>	<b>10 374</b>	<b>191 605</b>	<b>2 727</b>	<b>903 478</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil.

(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre-feasibility studies, environment and land access costs.

Note: Numbers may not add to totals due to rounding.

**TABLE 13b. DEPOSIT APPRAISAL EXPENDITURES, (1) BY PROVINCE AND TERRITORY, BY MINERAL COMMODITY, 2004**

Province/Territory	Metals					Nonmetals	Diamonds	Coal	Total
	Base	Precious	Iron	Uranium	Other				
	(\$000)								
Newfoundland and Labrador	3 554	1 529	558	–	3 085	272	–	–	8 999
Nova Scotia	–	912	–	–	–	–	–	–	912
New Brunswick	–	–	–	–	–	13	–	–	13
Quebec	2 625	57 016	–	–	1 022	791	–	–	61 454
Ontario	13 486	21 003	–	–	1 693	517	22 094	–	58 792
Manitoba	–	–	–	–	–	–	–	–	–
Saskatchewan	–	–	–	13 132	435	1 427	–	–	14 994
Alberta	–	–	–	–	–	2 567	–	670	3 237
British Columbia	10 663	19 025	–	–	2 225	1 845	–	15 263	49 021
Yukon	1 223	815	–	–	–	–	–	–	2 038
Northwest Territories	–	4 007	–	–	833	–	59 270	–	64 110
Nunavut	–	8 738	–	–	–	–	2 001	–	10 739
<b>Total</b>	<b>31 552</b>	<b>113 044</b>	<b>558</b>	<b>13 132</b>	<b>9 293</b>	<b>7 432</b>	<b>83 365</b>	<b>15 933</b>	<b>274 307</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil.

(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

Note: Numbers may not add to totals due to rounding.

**TABLE 13c. EXPLORATION PLUS DEPOSIT APPRAISAL EXPENDITURES, (1) BY PROVINCE AND TERRITORY, BY MINERAL COMMODITY, 2004**

Province/Territory	Metals					Nonmetals	Diamonds	Coal	Total
	Base	Precious	Iron	Uranium	Other				
	(\$000)								
Newfoundland and Labrador	10 739	14 032	2 590	563	3 786	1 451	20	20	33 202
Nova Scotia	1 597	5 974	53	–	742	398	–	374	9 138
New Brunswick	9 840	3 118	1	–	228	50	–	140	13 377
Quebec	56 532	135 519	316	1 360	1 883	3 059	28 503	–	227 172
Ontario	78 668	174 708	456	94	8 875	646	43 492	–	306 940
Manitoba	13 166	19 324	–	36	833	45	2 633	–	36 036
Saskatchewan	624	5 152	96	38 597	885	1 427	24 880	125	71 787
Alberta	–	–	89	464	54	3 295	948	1 482	6 333
British Columbia	44 872	81 573	172	–	5 333	3 257	214	16 494	151 915
Yukon	5 154	13 276	34	118	231	3 065	63	25	21 966
Northwest Territories	3 150	12 414	154	164	1 053	–	95 464	–	112 399
Nunavut	16 933	77 848	8 489	2 435	1 950	1 113	78 753	–	187 521
<b>Total</b>	<b>241 275</b>	<b>542 940</b>	<b>12 449</b>	<b>43 831</b>	<b>25 856</b>	<b>17 806</b>	<b>274 969</b>	<b>18 660</b>	<b>1 177 785</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil.

(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

Note: Numbers may not add to totals due to rounding.

**TABLE 13d. MINE COMPLEX DEVELOPMENT EXPENDITURES, (1) BY PROVINCE AND TERRITORY, BY MINERAL COMMODITY, 2004**

Province/Territory	Metals					Nonmetals	Diamonds	Coal	Total
	Base	Precious	Iron	Uranium	Other				
	(\$000)								
Newfoundland and Labrador	4 390	785	14 464	–	2 195	737	–	–	22 572
Nova Scotia	–	–	–	–	–	9 910	–	3 120	13 030
New Brunswick	14 523	9 682	–	–	–	6 411	–	–	30 616
Quebec	70 061	77 219	44 168	–	4 510	4 768	–	–	200 726
Ontario	179 528	129 930	–	–	1 463	2 570	–	–	313 490
Manitoba	93 577	–	–	–	309	155	–	–	94 041
Saskatchewan	2 219	8 756	–	34 293	–	12 638	–	852	58 757
Alberta	–	–	296	–	–	410	–	44 966	45 671
British Columbia	7 018	4 962	–	–	5 417	310	–	5 821	23 528
Yukon	–	–	–	–	–	–	–	–	–
Northwest Territories	–	–	–	–	–	–	110 685	–	110 685
Nunavut	–	–	–	–	–	–	–	–	–
<b>Total</b>	<b>371 316</b>	<b>231 335</b>	<b>58 928</b>	<b>34 293</b>	<b>13 893</b>	<b>37 907</b>	<b>110 685</b>	<b>54 759</b>	<b>913 116</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil.

(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

Note: Numbers may not add to totals due to rounding.

**TABLE 14a. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES, (1) BY JUNIOR AND SENIOR COMPANIES, OFF- AND ON-MINE-SITE, AND BY MINERAL COMMODITY, 2004**

Work Phase/ Type of Company	Base Metals	Precious Metals	Uranium	Diamonds	Others (2)	Total
(\$000)						
Exploration, off-mine-site						
Junior companies and prospectors	114 750	264 687	10 727	105 081	27 859	523 104
Senior companies	67 285	114 470	19 972	83 388	10 828	295 943
<b>Total</b>	<b>182 035</b>	<b>379 156</b>	<b>30 699</b>	<b>188 469</b>	<b>38 687</b>	<b>819 047</b>
Exploration, on-mine-site						
Junior companies and prospectors	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Senior companies	27 688	50 739	–	3 135	2 868	84 431
<b>Total</b>	<b>27 688</b>	<b>50 739</b>	<b>–</b>	<b>3 135</b>	<b>2 868</b>	<b>84 431</b>
Exploration, off- plus on-mine-site						
Junior companies and prospectors	114 750	264 687	10 727	105 081	27 859	523 104
Senior companies	94 973	165 209	19 972	86 523	13 697	380 374
<b>Total</b>	<b>209 723</b>	<b>429 896</b>	<b>30 699</b>	<b>191 605</b>	<b>41 555</b>	<b>903 478</b>
Deposit appraisal, off-mine-site						
Junior companies and prospectors	14 191	43 518	–	2 001	16 903	76 614
Senior companies	7 446	36 160	13 132	81 364	7 497	145 598
<b>Total</b>	<b>21 637</b>	<b>79 678</b>	<b>13 132</b>	<b>83 365</b>	<b>24 400</b>	<b>222 212</b>
Deposit appraisal, on-mine-site						
Junior companies and prospectors	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Senior companies	9 915	33 365	–	–	8 815	52 095
<b>Total</b>	<b>9 915</b>	<b>33 365</b>	<b>–</b>	<b>–</b>	<b>8 815</b>	<b>52 095</b>
Deposit appraisal, off- plus on-mine-site						
Junior companies and prospectors	14 191	43 518	–	2 001	16 903	76 614
Senior companies	17 360	69 525	13 132	81 364	16 312	197 693
<b>Total</b>	<b>31 552</b>	<b>113 044</b>	<b>13 132</b>	<b>83 365</b>	<b>33 215</b>	<b>274 307</b>
Exploration plus deposit appraisal, off- plus on-mine-site						
Junior companies and prospectors	128 942	308 205	10 727	107 082	44 762	599 718
Senior companies	112 333	234 734	33 104	167 887	30 009	578 067
<b>Total</b>	<b>241 275</b>	<b>542 940</b>	<b>43 831</b>	<b>274 969</b>	<b>74 771</b>	<b>1 177 785</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil; n.a. Not applicable.

(1) Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

(2) Includes iron, other metals, coal and nonmetals.

Note: Numbers may not add to totals due to rounding.

**TABLE 14b. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES, (1) BY JUNIOR AND SENIOR COMPANIES, OFF- AND ON-MINE-SITE, AND BY MINERAL COMMODITY, 2005**

Work Phase/ Type of Company	Base Metals	Precious Metals	Uranium	Diamonds	Others (2)	Total
(\$000)						
Exploration, off-mine-site						
Junior companies and prospectors	162 425	334 538	46 357	114 282	44 297	701 898
Senior companies	65 746	95 547	29 862	78 567	15 366	285 087
<b>Total</b>	<b>228 170</b>	<b>430 085</b>	<b>76 219</b>	<b>192 849</b>	<b>59 663</b>	<b>986 985</b>
Exploration, on-mine-site						
Junior companies and prospectors	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Senior companies	35 742	52 255	–	7 500	2 133	97 629
<b>Total</b>	<b>35 742</b>	<b>52 255</b>	<b>–</b>	<b>7 500</b>	<b>2 133</b>	<b>97 629</b>
Exploration, off- plus on-mine-site						
Junior companies and prospectors	162 425	334 538	46 357	114 282	44 297	701 898
Senior companies	101 487	147 801	29 862	86 067	17 498	382 716
<b>Total</b>	<b>263 912</b>	<b>482 339</b>	<b>76 219</b>	<b>200 349</b>	<b>61 795</b>	<b>1 084 614</b>
Deposit appraisal, off-mine-site						
Junior companies and prospectors	21 025	46 823	–	–	20 604	88 452
Senior companies	3 836	29 449	932	89 494	11 558	135 268
<b>Total</b>	<b>24 861</b>	<b>76 273</b>	<b>932</b>	<b>89 494</b>	<b>32 162</b>	<b>223 720</b>
Deposit appraisal, on-mine-site						
Junior companies and prospectors	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Senior companies	13 278	37 708	3 669	–	6 397	61 052
<b>Total</b>	<b>13 278</b>	<b>37 708</b>	<b>3 669</b>	<b>–</b>	<b>6 397</b>	<b>61 052</b>
Deposit appraisal, off- plus on-mine-site						
Junior companies and prospectors	21 025	46 823	–	–	20 604	88 452
Senior companies	17 114	67 158	4 601	89 494	17 954	196 320
<b>Total</b>	<b>38 139</b>	<b>113 981</b>	<b>4 601</b>	<b>89 494</b>	<b>38 558</b>	<b>284 772</b>
Exploration plus deposit appraisal, off- plus on-mine-site						
Junior companies and prospectors	183 450	381 361	46 357	114 282	64 900	790 350
Senior companies	118 601	214 959	34 463	175 561	35 453	579 036
<b>Total</b>	<b>302 051</b>	<b>596 320</b>	<b>80 820</b>	<b>289 842</b>	<b>100 353</b>	<b>1 369 386</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil; n.a. Not applicable.

(1) Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

(2) Includes iron, other metals, coal and other nonmetals.

Notes: Data for 2005 are revised spending intentions. Numbers may not add to totals due to rounding.



**TABLE 14c. COMPARISON OF OFF-MINE-SITE EXPLORATION EXPENDITURES FOR JUNIOR PROJECT OPERATORS AND ALL JUNIOR SPENDERS, (1) 2004**

	Junior Project Operators	All Junior Spenders
	(\$000)	
Newfoundland and Labrador	21 357	21 357
Nova Scotia	7 218	7 218
New Brunswick	3 999	8 484
Quebec	77 927	85 707
Ontario	128 316	127 474
Manitoba	15 874	21 082
Saskatchewan	26 414	32 677
Alberta	1 400	1 400
British Columbia	84 229	83 259
Yukon	18 378	17 441
Northwest Territories	37 682	38 013
Nunavut	100 310	95 520
<b>Total</b>	<b>523 104</b>	<b>539 633</b>
Number of companies included	585	649

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

(1) Includes expenditure share of any junior joint-venture participant regardless of the operator type.

**TABLE 15a. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES, (1) BY PROVINCE AND TERRITORY, BY JUNIOR AND SENIOR COMPANIES, 2004**

Province/Territory	Exploration			Deposit Appraisal			Exploration Plus Deposit Appraisal		
	Junior Companies and Prospectors	Senior Companies	Total	Junior Companies and Prospectors	Senior Companies	Total	Junior Companies and Prospectors	Senior Companies	Total
	(\$000)								
Newfoundland and Labrador	21 357	2 846	24 203	2 590	6 409	8 999	23 947	9 255	33 202
Nova Scotia	7 218	1 008	8 226	–	912	912	7 218	1 920	9 138
New Brunswick	3 999	9 366	13 365	–	13	13	3 999	9 379	13 377
Quebec	77 927	87 790	165 718	12 372	49 082	61 454	90 299	136 872	227 172
Ontario	128 316	119 832	248 148	12 531	46 260	58 792	140 848	166 092	306 940
Manitoba	15 874	20 162	36 036	–	–	–	15 874	20 162	36 036
Saskatchewan	26 414	30 378	56 793	527	14 467	14 994	26 942	44 845	71 787
Alberta	1 400	1 696	3 096	2 567	670	3 237	3 967	2 366	6 333
British Columbia	84 229	18 665	102 894	31 662	17 359	49 021	115 891	36 024	151 915
Yukon	18 378	1 550	19 928	1 933	105	2 038	20 310	1 655	21 966
Northwest Territories	37 682	10 607	48 289	4 840	59 270	64 110	42 522	69 877	112 399
Nunavut	100 310	76 473	176 783	7 592	3 147	10 739	107 902	79 620	187 521
<b>Total</b>	<b>523 104</b>	<b>380 374</b>	<b>903 478</b>	<b>76 614</b>	<b>197 693</b>	<b>274 307</b>	<b>599 718</b>	<b>578 067</b>	<b>1 177 785</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil.

(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access

Note: Numbers may not add to totals due to rounding.

**TABLE 15b. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES, (1) BY PROVINCE AND TERRITORY, BY JUNIOR AND SENIOR COMPANIES, 2005**

Province/Territory	Exploration			Deposit Appraisal			Exploration Plus Deposit Appraisal		
	Junior Companies and Prospectors	Senior Companies	Total	Junior Companies and Prospectors	Senior Companies	Total	Junior Companies and Prospectors	Senior Companies	Total
	(\$'000)								
Newfoundland and Labrador	32 018	3 905	35 922	20	7 954	7 974	32 038	11 858	43 896
Nova Scotia	8 519	736	9 254	—	1 900	1 900	8 519	2 636	11 154
New Brunswick	6 243	5 367	11 610	—	—	—	6 243	5 367	11 610
Quebec	103 007	72 430	175 437	3 682	47 428	51 110	106 689	119 858	226 547
Ontario	137 709	132 726	270 435	8 650	57 512	66 162	146 359	190 238	336 597
Manitoba	22 184	30 549	52 733	—	—	—	22 184	30 549	52 733
Saskatchewan	74 001	54 352	128 353	4 050	7 801	11 851	78 051	62 153	140 204
Alberta	818	2 547	3 365	—	2 400	2 400	818	4 947	5 765
British Columbia	118 618	22 993	141 612	38 850	14 363	53 213	157 468	37 357	194 825
Yukon	35 887	1 104	36 990	17 200	—	17 200	53 087	1 104	54 190
Northwest Territories	43 564	18 724	62 288	14 100	56 962	71 062	57 664	75 686	133 350
Nunavut	119 332	37 284	156 616	1 900	—	1 900	121 232	37 284	158 516
<b>Total</b>	<b>701 898</b>	<b>382 716</b>	<b>1 084 614</b>	<b>88 452</b>	<b>196 320</b>	<b>284 772</b>	<b>790 350</b>	<b>579 036</b>	<b>1 369 386</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

— Nil.

(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access

Notes: Data for 2004 are revised spending intentions. Numbers may not add to totals due to rounding.

**TABLE 16. EXPLORATION PLUS DEPOSIT APPRAISAL EXPENDITURES, (a) BY PROVINCE AND TERRITORY, BY TYPE OF COMPANY, 2004**

Province/Territory	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Companies With a Producing Mine in Canada	Affiliates of (1)	Oil Companies	Foreign Companies Excluding (1-3)	Junior Companies and Prospectors	Other Companies	Total
	(\$'000)						
Newfoundland and Labrador	8 894	—	—	259	23 947	101	33 202
Nova Scotia	603	—	67	1 125	7 218	125	9 138
New Brunswick	9 155	164	—	—	3 999	60	13 377
Quebec	107 003	28 182	—	1 520	90 299	167	227 172
Ontario	127 409	2 443	408	33 960	140 848	1 872	306 940
Manitoba	10 796	1 944	—	541	15 874	6 881	36 036
Saskatchewan	33 539	315	—	10 142	26 942	849	71 787
Alberta	1 419	769	—	178	3 967	—	6 333
British Columbia	34 930	534	—	—	115 891	560	151 915
Yukon	1 244	23	—	388	20 310	—	21 966
Northwest Territories	7 340	1 211	210	59 361	42 522	1 755	112 399
Nunavut	25 926	40 222	3 193	10 279	107 902	—	187 521
<b>Total</b>	<b>368 258</b>	<b>75 807</b>	<b>3 877</b>	<b>117 755</b>	<b>599 718</b>	<b>12 370</b>	<b>1 177 785</b>

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

— Nil.

(a) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs.

Notes: Senior companies include categories 1, 2, 3, 4 and 6. Numbers may not add to totals due to rounding.

**TABLE 17. DEPOSIT APPRAISAL, OFF-MINE-SITE PROJECTS, BY PROVINCE AND TERRITORY, BY JUNIOR AND SENIOR COMPANIES, 2003 AND 2004**

	2003			2004		
	Projects	Costs (a)	Cost Per Project	Projects	Costs (a)	Cost Per Project
	(no.)	(\$000)	(\$000)	(no.)	(\$000)	(\$000)
Newfoundland and Labrador						
Junior	5	522	104	4	10 607	2 652
Senior	2	4 426	2 213	3	5 836	1 945
Nova Scotia						
Junior	5	2 750	550	–	–	–
Senior	1	x	x	1	x	x
New Brunswick						
Junior	–	–	–	–	–	–
Senior	1	x	x	1	x	x
Quebec						
Junior	8	5 515	689	7	13 382	1 912
Senior	12	23 752	1 979	11	38 247	3 477
Ontario						
Junior	7	982	140	7	12 594	1 799
Senior	6	34 293	5 715	5	147 299	29 460
Manitoba						
Junior	2	61	30	–	–	–
Senior	–	–	–	–	–	–
Saskatchewan						
Junior	1	x	x	2	5 052	2 526
Senior	2	20 895	10 448	2	63 601	31 801
Alberta						
Junior	1	x	x	1	x	x
Senior	–	–	–	–	–	–
British Columbia						
Junior	11	5 550	505	15	32 832	2 189
Senior	3	5 872	1 957	8	11 285	1 411
Yukon						
Junior	3	29	10	1	x	x
Senior	2	193	97	1	x	x
Northwest Territories						
Junior	5	2 816	563	3	4 840	1 613
Senior	4	20 939	5 235	3	72 442	24 147
Nunavut						
Junior	2	10 550	5 275	2	14 075	7 037
Senior	1	x	x	1	x	x
Subtotal, junior	50	29 238	585	42	97 883	2 331
Subtotal, senior	34	114 203	3 359	36	343 823	9 551
Total	84	143 441	1 708	78	441 705	5 663

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.

– Nil; x Confidential.

(a) Deposit appraisal expenditures include field work, overhead, engineering, economic and pre- or production feasibility studies, environment, land access, non-residential construction, and machinery and equipment costs (capital and repair).

TABLE 18. GENERALIZED MODEL OF MINERAL RESOURCE DEVELOPMENT

PHASE	MINERAL EXPLORATION					MINERAL DEPOSIT APPRAISAL				MINE COMPLEX DEVELOPMENT	MINE PRODUCTION	ENVIRONMENTAL RESTORATION	
	GRASS-ROOTS EXPLORATION					DA-1	DA-2	DA-3	DA-4				
STAGE	MIRA	EX-1	EX-2	EX-3	EX-4	EX-5	DA-1	DA-2	DA-3	DA-4	MCD	MP	ER
<b>OBJECTIVES</b>	Various surveys, research and synthesis.	Exploration planning.	Regional reconnaissance and surveys.	Prospecting and ground surveys of anomalies.	Verification of anomalies and showings.	Discovery and delimitation of a mineral deposit.	Mineral deposit definition.	Project engineering.	Project economics.	Feasibility study, production decision.	Mine development, construction of processing plant and infrastructure.	Production, marketing and renewals.	Mine complex decommissioning, site restoration.
<b>OBJECTIVES</b>	Supply information and tools required to develop the mineral potential for economic benefit in the perspective of sustainable development.	Select target commodities. Establish exploration objectives and strategies. Select target areas and sites. Acquire claims or permits if appropriate.	Seek anomalies of interest over wide areas by various survey methods. Select the more promising targets. Acquire claims or permits.	Confirm the presence, exact location and characteristics of anomalies. Acquire claims, leases and properties.	Investigate the cause of anomalies. Find mineral showings. Acquire additional claims, leases and properties.	Discover, delimit and interpret grids, quality new mineral deposit. Determine if it constitutes a mineral resource of "potential economic interest" to justify more intensive and detailed work.	Define the limits, controls and internal distribution of grades, mineralogy and mineral processing characteristics of the deposit. Acquire all data required for project engineering and cost estimation.	Determine, in an iterative fashion, the design, plans, schedules, capital costs and operating cost estimates for all aspects of the project. Establish technical feasibility and costs thoroughly and realistically.	Obtain all the information required and determine parameters for the economic, financial and social-political evaluation of the project.	Diligently validate and integrate project data, interpretations, plans, schedules, estimates, MCD and production objectives. Decide whether to develop the mining project. Obtain permits and financing.	Complete mine development and construction on schedule and within budgets and specifications. Ensure efficient and timely mine complex start-up according to schedule, specifications and cash flow forecasts.	Achieve commercial production on schedule and meet cash flow forecasts and quantity and quality specifications. Achieve mine profitability and company survival in the perspective of sustainable development.	Restore mine site, outside plant and infrastructure to environmentally acceptable condition. Ensure the future quality of the environment.
<b>EVALUATION METHODS</b>	Geoscientific, mineral and economic surveys, research, compilations and synthesis by government, research institutes, universities and industry.	Metal and mineral market research. Review of geological and ore deposit information and of the legal, fiscal and socio-political context in various areas.	Remote sensing, aerial photography and airborne geophysics. Prospecting, geology and geochemistry. Appraisal, rating and selection of anomalies.	Ground, geological, geochemical and geophysical prospecting and surveys. Completion and selection of significant anomalies.	Geological mapping and other surveys. Trending, drilling and sampling. Appraisal of results, recommendations for further work, and selection of new targets.	Shipping, trending, mapping, sampling, drilling and down-hole geophysics. Initial mineral processing tests. Environmental and site surveys. Mineral resource estimation and inventory.	Detailed mapping, sampling and drilling on surface or from underground. Systematic mineralogy and mineral processing tests. Detailed environmental and site surveys. Pre-feasibility studies.	Pilot tests, engineering design and planning. Capital and operating costs for mining, mineral processing, infrastructure, environmental protection and restoration. Technical risk analysis. Pre-feasibility studies.	Market, product development and financial studies. Economic, financial, and socio-political analysis. Pre-feasibility studies.	Exhaustive due diligence review of all data, interpretations, plans and estimates. Evaluation of profitability, given the geological, technical, financial and qualitative risks, and the upside factors.	Project management methods in a quality assurance perspective. Training program for personnel and start-up plan to meet the requirements of this demanding period.	Production management methods to ensure continuous quality and efficiency improvements. Exploration, deposit appraisal and development of new zones or deposits on-mine-site and off-mine-site.	Mine closure and decommissioning. Environmental restoration and monitoring.
<b>RESULTS</b>	Maps, data bases, tools and models.	Exploration projects.	Regional anomalies.	Local anomalies.	Mineral showings.	Mineral deposit.	Deposit appraisal project.	Mineral deposit.	Mineral deposit.	Mineral deposit.	Mining complex.	Mineral production.	Restored site.
<b>MINERAL INVENTORY</b>	UNDISCOVERED MINERAL POTENTIAL					DELIMITED MINERAL RESOURCE					MINERAL RESERVE		
	SPECULATIVE					INDICATED					PROVEN AND PROBABLE		
<b>ESTIMATION ERROR</b> (targeted margin of error of tonnage/grade estimates at the 90% confidence level)						Indicated: ± 50 to ± 30% Measured: ± 20 to ± 10% (often several sample grid dimensions are used in each category)					Proven (feasibility: ± 10%; mining: ± 5%)		
<b>INVESTMENTS</b>	Moderate					Larger and increasing multiple investments.					Very large industrial investment		
<b>RISK LEVEL</b>	Low					High, but decreasing risk of failure.					Moderate to low industrial risk.		

Sources: Modified by D.A. Cramstone, A. Lemieux and M. Vallée, February 25, 1994, from M. Vallée, 1992, *Guide to the Evaluation of Gold Deposits*, CIM Special Volume 45, p. 4, and SOQUEM Annual Report, 1976-77, pp. 4 and 5. Revised by M. Vallée and G. Bouchard, January 2001.

For more information, please contact: Minerals and Mining Statistics Division, Programs Branch, Minerals and Metals Sector, Natural Resources Canada, 580 Booth Street, Ottawa, Ontario K1A 0E4; telephone (toll-free): 1-800-267-0452 or fax (toll-free): 1-877-336-3100.

**APPENDIX 1. METAL PRICES OF SELECTED COMMODITIES, 2003-05**

	U.S. Currency	2003 Annual Average	2004	% Change	2004 (see note below)	2005	% Change
Copper	¢/lb	80.70	130.00	61.09	127.60	160.10	25.47
Nickel	\$/lb	4.37	6.27	43.48	6.27	6.87	9.57
Zinc	¢/lb	37.54	47.53	26.61	46.70	59.60	27.62
Lead	¢/lb	23.36	40.21	72.13	39.40	43.30	9.90
Molybdenum	\$/lb	5.32	16.41	208.48	14.09	32.37	129.68
Gold	\$/troy oz	363.51	409.21	12.57	402.88	435.18	8.02
Silver	\$/troy oz	4.88	6.65	36.27	6.52	7.12	9.20
Platinum	\$/troy oz	691.87	845.21	22.16	843.71	882.30	4.57
Palladium	\$/troy oz	200.29	230.19	14.93	234.87	190.44	-18.91
Uranium (U <sub>3</sub> O <sub>8</sub> )	\$/lb (10 mo. avg.)	11.54	18.55	60.82	18.15	26.84	47.92
Coal	\$/t f.o.b.	46.25	58.00	25.41	58.00	126.90	118.79
Iron ore	¢/Fe unit	52.00	61.88	19.00	61.88	115.51	86.67

Sources: *Platts Metals Week*; Cameco Corporation; AME Mineral Economics.

Note: 2004/2005 comparisons are based on 10-month averages, except coal and iron ore, which is full year 2004 compared with AME Mineral Economics estimate for 2005.

Base metals - LME settlement

Molybdenum - MW mean

Precious metals - London Final or PM fix

Uranium - U.S. spot price - average of 12 months

Coal - Premium hard coking Japanese market

Iron ore - European CVRD benchmark - pellets

**APPENDIX 2. FEDERAL, PROVINCIAL AND TERRITORIAL TAX INCENTIVES FOR MINERAL EXPLORATION**

Jurisdiction	Incentive	Description	Date		Notes
			Introduced	End	
Federal	Mining exploration flow-through shares	Mechanism allowing the transfer of deductions related to Canadian Exploration Expenses (CEE) and Canadian Development Expenses (CDE) to investors.	1983	No sunset date	In fact, flow-through shares were introduced in 1954. However, they only became popular in 1983 when the depletion allowance associated with CEE became transferable to investors.
	Investment Tax Credit for Exploration (ITCE)	15% non-refundable investment tax credit for individual investors in flow-through shares (FTS) of qualifying companies. Eligible expenses relate to grass-roots exploration from or above surface.	Oct. 2000	Dec. 2005	End date is December 2004 for raising funds and December 2005 for spending these funds.
Quebec	Additional deduction program for flow-through shares	Maximum 50% deduction for surface exploration spending. Applies to flow-through-share investors paying taxes to the province.	1983	No sunset date	Was extended indefinitely in March 2004 budget.
	Tax credit relating to resources	Maximum 45% tax credit paid directly to corporations (refundable and non-refundable components).	2001	2008	Refundable and non-refundable tax credit rates vary according to type of company and location of exploration project.
Ontario	Flow-Through Tax Incentive	5% tax credit of eligible Ontario exploration expenses to be claimed by Ontario taxpayers.	Dec. 2000	No sunset date	Harmonized with federal ITCE, but refundable and no sunset date.
Manitoba	Manitoba Mineral Exploration Tax Credit (MMETC)	Non-refundable 10% personal income tax credit for resident investors in eligible flow-through shares of qualifying companies.	Apr. 2002	Dec. 2005	Harmonized with federal ITCE.
Saskatchewan	Mineral Exploration Tax Credit	Income tax credit of 10% for investors in eligible flow-through shares of qualifying companies. Applies to investors paying taxes to the province.	Mar. 2001	Dec. 2005	Harmonized with federal ITCE.
British Columbia	Mining Flow-Through Shares Tax Credit (BC MFTS)	Non-refundable 20% tax credit for investors in eligible flow-through shares of qualifying companies. Applies to investors paying taxes to the province.	July 2001	Dec. 2005	Harmonized with federal ITCE.
	Mining Exploration Tax Credit (METC)	20% refundable tax credit on eligible grass-roots mineral exploration. Paid directly to companies or individuals incurring the expenses.	Aug. 1998	July 2006	Cannot be used concurrently with BC MFTS. Partly harmonized with federal CEE rules.
Yukon	Yukon Mineral Exploration Tax Credit (YMETC)	Refundable corporate and personal income tax credit of 25% of eligible off-mine-site mineral exploration expenditures.	Apr. 1999	Mar. 2007	Individuals claiming the credit must be residents of the Yukon. Corporations must have a permanent establishment in the Yukon. The credit may be reviewed before 2007 if warranted by improved market conditions and increased expenditures.

Note: For more information on tax-related exploration incentives, please contact Robert Clark, Tax and Exploration Division, Minerals and Metals Sector, Natural Resources Canada, by telephone at (613) 996-3286 or by e-mail at rclark@nrca.gc.ca.