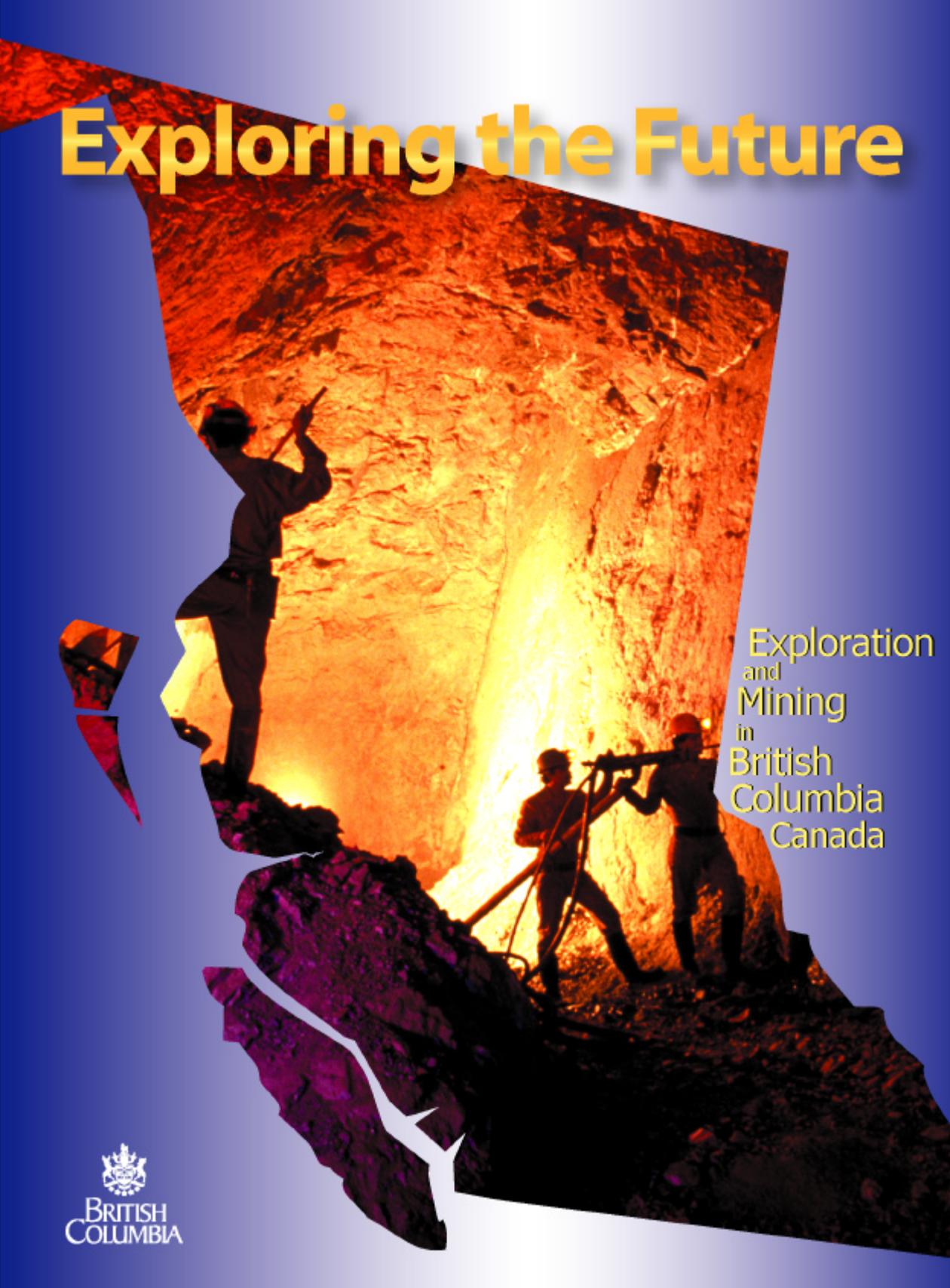


# Exploring the Future



Exploration  
and  
Mining  
in  
British  
Columbia  
Canada

# Operating Mines and Exploration Highlights in British Columbia, Canada



## Exploration and Mining Opportunities

British Columbia is one of the world's major mining regions and holds great potential for more exploration and development. World renowned for its expertise, the industry generates about \$4 billion in revenues each year and provides direct and indirect jobs for up to 45,000 British Columbians.

British Columbia has abundant and widely varied, untapped mineral and coal resources. The provincial government is committed to developing these resources — the goal is to make British Columbia the most attractive jurisdiction in Canada for exploration and mining.

Government is working to increase mineral exploration and mining by streamlining regulation, establishing a single-window, full-authority provincial permitting agency, and creating new incentives for investors. New land use and access policies assure mineral lands are open to exploration and development.

### Strong Mineral Potential

British Columbia's mineral potential is among the best worldwide with over 14,000 known mineral occurrences. The province is an important producer and exporter of copper, gold, silver, lead, zinc, molybdenum, coal and industrial minerals. The goal is to improve on this and expand the sector significantly.

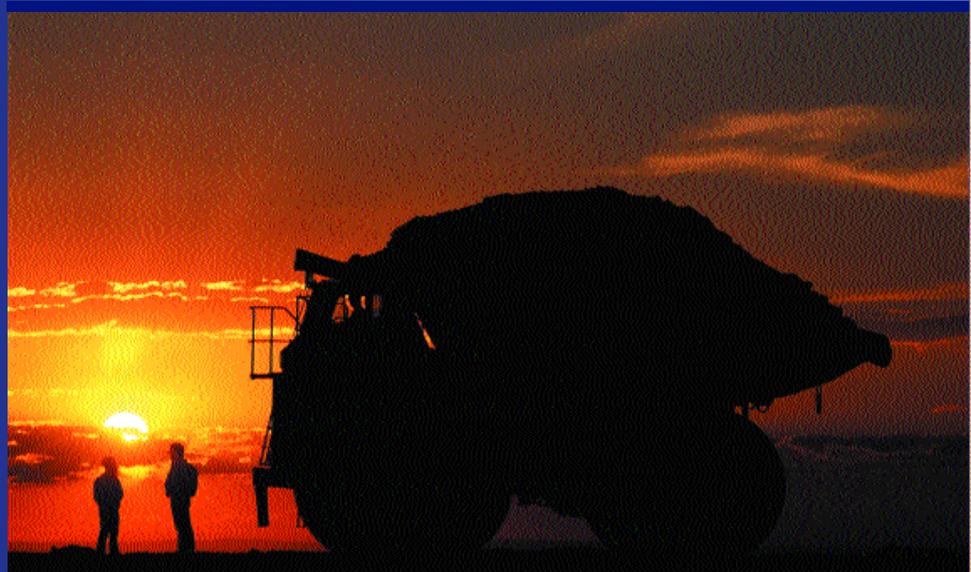
Most of the coal, coalbed methane and industrial minerals resources, such as barite and magnesite, formed by sedimentary processes are located along the eastern margin of the Cordillera. Older sedimentary rocks, just west of the younger sediments, are rich in zinc, lead and silver. In the central and western portion of the province, rocks are predominantly volcanic and intrusive, and known to contain large deposits, particularly of copper, gold and molybdenum.

World-class mines in British Columbia include the Eskay Creek volcanic massive sulphide (VMS) silver deposit in the Northwest, sedex properties such as Sullivan's historic lead-zinc mine in the Southeast, Highland Valley's porphyry copper deposit in the South-Central district and Myra Falls' large polymetallic VMS zinc and copper deposit on Vancouver Island. Potential exists throughout British Columbia for similar large deposits.

In 2000 alone, British Columbia was home to five new massive sulphide discoveries, three porphyry discoveries and a handful of vein and magmatic discoveries. The provincial government is making key changes to enhance the minerals industry. Exploration levels are expected to increase strongly in the years ahead.



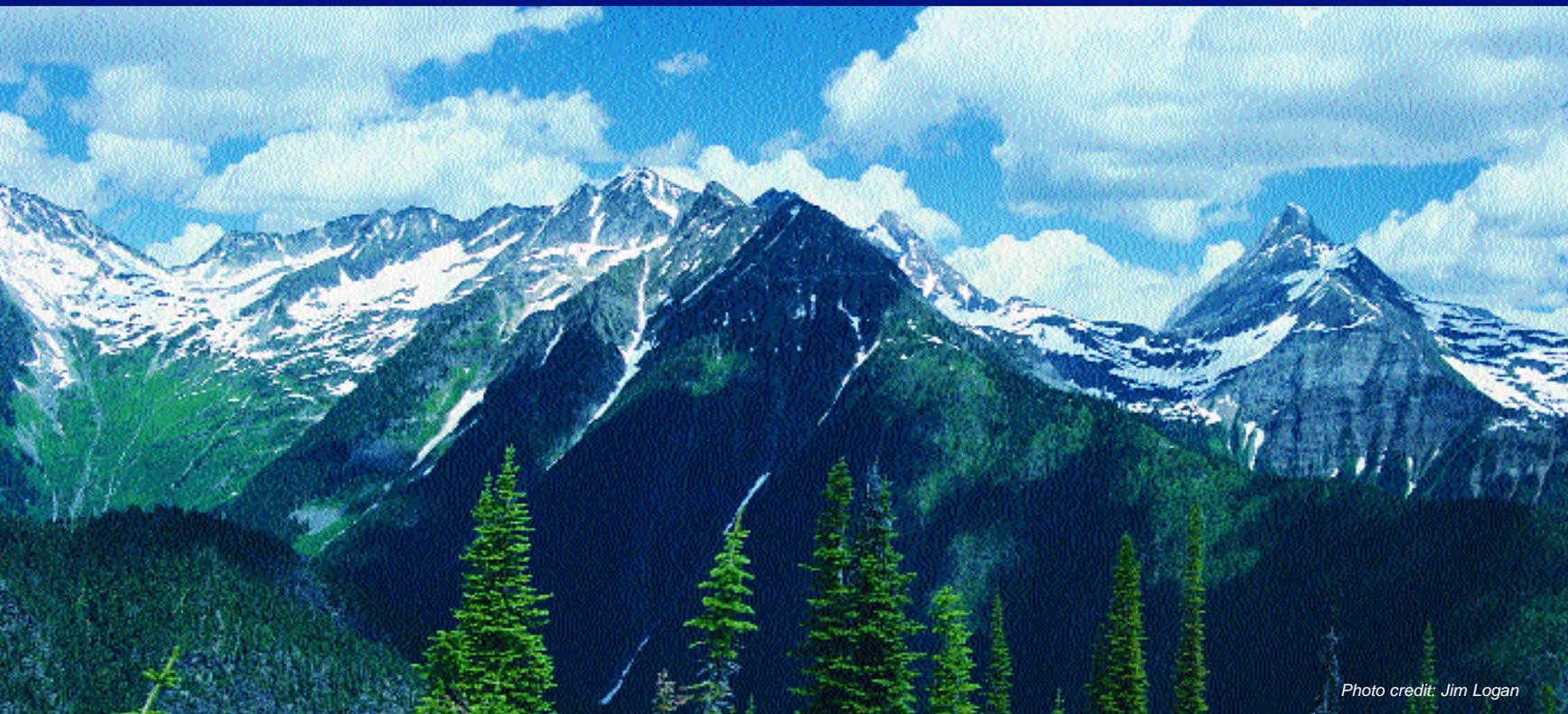
Photo credit: Brian Grant



# Investing Opportunities

## British Columbia is now a more attractive place to invest and do business:

- A new government was elected in 2001, and is committed to expanding the mining and mineral exploration sector in British Columbia.
- A 20 per cent “super” flow-through share tax credit for new mineral exploration in British Columbia is now available. This is in addition to the federal 15 per cent share tax credit and the existing 100 per cent deduction of Canadian Exploration Expense.
- The provincial sales tax on production machinery and equipment has been eliminated.
- As of January 1, 2002, British Columbia’s corporate income tax rate is 13.5 per cent, a decrease of 3 per cent.
- The corporate capital tax was reduced by 50 per cent in 2001 and will be eliminated on September 1, 2002.
- Personal income tax rates have been cut by 25 per cent.
- The regulatory burden on business will be reduced by one third within three years.
- MapPlace — on the ministry’s Web site — offers interactive exploration data.
- The British Columbia mining and mineral exploration industry has a highly skilled workforce, including mine and mill employees, engineers, geoscientists, managers and technical experts.
- New land use and access policies assure mineral lands are open to exploration and development.
- Electricity rates in British Columbia are among the lowest in North America. Hydroelectric resources are abundant, reliable and secure.
- Vancouver is a major financial and technical centre for global mineral exploration and mining.
- British Columbia’s strategic location offers tidewater access and close proximity to U.S. and Asian markets.



# BRITISH COLUMBIA, CANADA



Ministry of  
Energy and Mines



Photo credit: Forging Coal

## The History

British Columbia has a rich history of mining and mineral exploration. The Hudson's Bay Company first started producing coal on Vancouver Island in the 1840s. In the 1850s, gold was discovered along the Fraser River in the interior of British Columbia, which sparked a major gold rush that was ultimately responsible for the settlement of many parts of the area. As the province grew, road networks expanded and technology improved, and miners began to explore other mineral deposits.

Mining in British Columbia was underground through the 1950s, but in the early 1960s open-pit production became feasible. As a result, several huge copper mines opened, including Highland Valley Copper — the largest open-pit operation in North America.

Today, British Columbia's mining industry is recognized as a world leader with revenues of about \$4 billion a year. Mining is among the province's largest resource industries. Government aims to build on this legacy to revitalize the mining and mineral exploration sector in British Columbia.



# Exploring the FUTURE

## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

Coal is the most valuable mineral produced in British Columbia. In 2000, the province produced 26 million tonnes from eight mines, with a value of approximately \$1.4 billion. British Columbia's active coal mines are on Vancouver Island, in the East-central Interior and in the Southeast Kootenay region, providing about 40 per cent of British Columbia's mining employment. Billions of tonnes of coal remain to be extracted from areas such as Comox, Telkwa, Tulameen and the Peace River region near the Alberta border.

## COAL

### The Coal Resource

British Columbia's total coal resource is estimated at more than 20 billion tonnes, varying in rank from lignite to anthracite. The province has an abundance of undeveloped coal deposits.

The Kootenay and Peace River coal fields have measured resources in excess of 2 billion tonnes. These are composed mainly of medium-volatile bituminous coking coal, with significant amounts of high-volatile and low-volatile bituminous coal.

The Comox coal field on Vancouver Island has a measured resource of over 85 million tonnes of high-volatile coal.

The Klappan and Groundhog fields have extensive undeveloped anthracite resources while the Hat Creek and Coal River areas are rich in undeveloped lignite to sub-bituminous rank coal.

### Markets and Transportation

Most of the coal produced in British Columbia is exported. Approximately half goes to Japan. Most of the balance is sold in Europe, Korea and South America.

The province has three major coal ports: Roberts Bank, Vancouver and Prince Rupert. These ports are served by an efficient and highly developed railway transportation system.

### Coalfields in British Columbia

To view a map on the Internet of the coalfields and coalbed methane potential in British Columbia go to:  
[www.em.gov.bc.ca/Mining/Geology/  
EconomicGeology/coal/coalinbc/fig1.htm](http://www.em.gov.bc.ca/Mining/Geology/EconomicGeology/coal/coalinbc/fig1.htm)

### For more information, contact:

Ministry of Energy and Mines, Geological Survey Branch  
PO Box 9320, Stn Prov Govt, 5th Floor, 1810 Blanshard Street  
Victoria, British Columbia V8W 9N3  
Phone: 250 952-0418 Fax: 250 952-0381  
[www.gov.bc.ca/em](http://www.gov.bc.ca/em)



Ministry of Energy  
and Mines

# FACT SHEET

# Exploring the FUTURE

## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

### MINISTRY CONTACTS

#### Deputy Minister - Sheila Wynn

tel: (250) 952-0504 fax: (250) 952-0269  
e-mail: Sheila.Wynn@gems9.gov.bc.ca

#### Mining and Minerals Division

Assistant Deputy Minister - Geoff Freer  
tel: (250) 952-0715 fax: (250) 952-0491  
e-mail: Geoff.Freer@gems3.gov.bc.ca

#### Oil and Gas Division

Assistant Deputy Minister - Ross Curtis  
tel: (250) 952-0227 fax: (250) 952-0269  
e-mail: ross.curtis@gems9.gov.bc.ca

#### External Relations Division

Assistant Deputy Minister - Chris Nelson  
tel: (604) 660-3238 fax: (604) 660-3225  
e-mail: Chris.Nelson@gems9.gov.bc.ca

#### Chief Geologist - Dave Lefebure

tel: (250) 952-0374 fax: (250) 952-0381  
e-mail: Dave.Lefebure@gems8.gov.bc.ca

#### Chief Inspector of Mines - Fred Hermann

tel: (250) 952-0494 fax: (250) 952-0491  
e-mail: fred.hermann@gems9.gov.bc.ca

#### Chief Gold Commissioner - Gerald German

tel: (250) 952-0334 fax: (250) 952-0331  
e-mail: Gerald.German@gems7.gov.bc.ca

#### 20% 'Cash Back' Tax Credit

- Eligible exploration expenditures qualify for the Mining Exploration Tax Credit  
Duane Anderson  
tel: (250) 952-0516 fax: (250) 952-0271  
e-mail: Duane.Anderson@gems5.gov.bc.ca  
www.rev.gov.bc.ca/itb

#### Mineral Tenure

Gerald German  
tel: (250) 952-0334 fax: (250) 952-0331  
e-mail: Gerald.German@gems7.gov.bc.ca  
www.em.gov.bc.ca/mining/titles

#### Environmental Assessment Process

Bob Hart  
tel: (250) 387-9644 fax: (250) 356-6448  
e-mail: Bob.Hart@gems4.gov.bc.ca  
www.eao.gov.bc.ca

#### One-Stop Permitting

• New Mineral Exploration Code creates one-agency window for permit approvals  
Fred Hermann  
tel: (250) 952-0494 fax: (250) 952-0491  
e-mail: fred.hermann@gems9.gov.bc.ca  
www.em.gov.bc.ca/mining/healsafe

#### Mine Reclamation & Mine Permitting Enquiries

John Errington  
tel: (250) 952-0470 fax: (250) 952-0481  
e-mail: john.errington@gems2.gov.bc.ca  
www.em.gov.bc.ca/mining/mineper

#### Aboriginal Relations

Norm Marcy  
tel: (250) 952-0685 fax: (250) 952-0111  
e-mail: norman.marcy@gems6.gov.bc.ca  
www.em.gov.bc.ca/Aboraffa

#### Vancouver Mineral Development Office

- Provides geological and tenure registration services to the Vancouver-based mineral exploration industry  
Tom Schroeter  
Senior Regional Geologist  
tel: (604) 660-2812 fax: (604) 775-0313  
e-mail: tom.schroeter@gems6.gov.bc.ca

#### REGIONAL GOLD COMMISSIONERS

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e-mail: Peter.Lee@gems1.gov.bc.ca

Deborah Lipscombe (Kamloops)  
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e-mail: Barbara.Henry@gems2.gov.bc.ca

Perry Slump (Quesnel)  
tel: (250) 992-4313 fax: (250) 992-4314  
e-mail: Perry.Slump@gems5.gov.bc.ca

Don McMillan (Smithers)  
tel: (250) 847-7207 fax: (250) 847-7232  
e-mail: Don.McMillan@gems6.gov.bc.ca

**For more information, contact:**

Ministry of Energy and Mines  
[www.gov.bc.ca/em](http://www.gov.bc.ca/em)

# FACT SHEET



BRITISH  
COLUMBIA

Ministry of Energy  
and Mines

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e-mail: Kim.Stone@gems9.gov.bc.ca

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## REGIONAL GEOLOGISTS

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**Northeast Regional Office**  
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Prince George, BC  
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e-mail: bob.lane@gems4.gov.bc.ca

**South-Central Regional Office**  
Mike Cathro  
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e-mail: mike.cathro@gems2.gov.bc.ca

**Kootenay Regional Office**  
David Terry  
Cranbrook, BC  
tel: (250) 426-1658 fax: (250) 426-1652  
e-mail: david.terry@gems2.gov.bc.ca

## GEOLOGICAL INFORMATION

**The MapPlace & Mineral Potential**  
• The MapPlace provides powerful, interactive map-based access to Ministry databases including mineral tenure information  
<http://www.mapplace.ca/>

**MINFILE**  
• Searches and mineral occurrence information for over 12,000 sites in B.C.  
<http://www.minfile.ca/>

Larry Jones (MapPlace and Minfile)  
tel: (250) 952-0386 fax: (250) 952-0381  
e-mail: larry.jones@gems5.gov.bc.ca

Gib McArthur (Mineral Potential)  
tel: (250) 952-0394 fax: (250) 952-0381  
e-mail: Gib.McArthur@gems1.gov.bc.ca

## ARIS (Assessment Reports)

- 50+ Years of exploration records and searchable data on over 26,000 reports  
[www.em.gov.bc.ca/mining/geolsurv/aris](http://www.em.gov.bc.ca/mining/geolsurv/aris)  
Allan Wilcox  
tel: (250) 952-0390 fax: (250) 952-0381  
e-mail: allan.wilcox@gems3.gov.bc.ca

## Coalbed Methane

Derek Brown  
tel: (250) 952-0432 fax: (250) 952-0381  
e-mail: derek.brown@gems6.gov.bc.ca  
<http://www.em.gov.bc.ca/subwebs/oilandgas/resource/cbg/cbg.htm>

## Regional Geochemical Survey Program

- The RGS database contains analytical, field and sample location information for over 45,000 sample sites and covers 70 per cent of the province  
[www.em.gov.bc.ca/mining/geolsurv/geochinv](http://www.em.gov.bc.ca/mining/geolsurv/geochinv)  
Ray Lett  
tel: (250) 952-0396 fax: (250) 952-0381  
e-mail: Ray.Lett@gems7.gov.bc.ca

## Mineral Deposits & Geological Mapping

Brian Grant  
tel: (250) 952-0454 fax: (250) 952-0381  
e-mail: Brian.Grant@gems8.gov.bc.ca  
[www.em.gov.bc.ca/mining/geolsurv/bedrock](http://www.em.gov.bc.ca/mining/geolsurv/bedrock)

## Ministry Publications Crown Publications

tel: (250) 386-4636 fax: (250) 386-0221  
e-mail: crown@pinc.com  
[www.crownpub.bc.ca](http://www.crownpub.bc.ca)

## Exploration Geochemistry

Ray Lett  
tel: (250) 952-0396 fax: (250) 952-0381  
e-mail: ray.lett@gems7.gov.bc.ca  
[www.em.gov.bc.ca/mining/geolsurv/geochinv/geochem.htm](http://www.em.gov.bc.ca/mining/geolsurv/geochinv/geochem.htm)

## Industrial Minerals

[www.em.gov.bc.ca/mining/geolsurv/economicgeology/industrialminerals](http://www.em.gov.bc.ca/mining/geolsurv/economicgeology/industrialminerals)  
George Simandl  
tel: (250) 952-0413 fax: (250) 952-0381  
e-mail: george.simandl@gems2.gov.bc.ca  
[www.em.gov.bc.ca/mining/geolsurv/economicgeology/industrialminerals](http://www.em.gov.bc.ca/mining/geolsurv/economicgeology/industrialminerals)

## Coal Deposits

Barry Ryan  
tel: (250) 952-0418 fax: (250) 952-0381  
e-mail: barry.ryan@gems4.gov.bc.ca  
[www.em.gov.bc.ca/mining/geolsurv/economicgeology/coal](http://www.em.gov.bc.ca/mining/geolsurv/economicgeology/coal)

**For more information, contact:**

Ministry of Energy and Mines

[www.gov.bc.ca/em](http://www.gov.bc.ca/em)



BRITISH  
COLUMBIA

Ministry of Energy  
and Mines

# Exploring the FUTURE

## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

Mining and electrical power have gone hand in hand since the earliest days of British Columbia's history. The province's first power company, West Kootenay Power and Light, was formed to provide electrical power to mines in the Kootenay region, and British Columbia's first hydroelectric dam, on the Kootenay River, began operation in 1898. Today, hydro electricity makes up more than 90 per cent of the province's electricity, providing dependable power at some of the lowest rates anywhere.

Government's goal is to see the industry opened up to independent power producers to bring more new capacity on line. This will help ensure British Columbians continue to have access to a secure supply of reliable, low-cost electricity and export markets are expanded.

## ELECTRICITY

### Affordable rates

Around the world, electricity rates range from a low of 2.2 cents US per kilowatt-hour in Iceland to a high of 43 cents per kilowatt-hour in Russia. British Columbia's business rates are clearly at the low end. Light industrial and commercial users pay about 3.6 cents US per kilowatt-hour. Large industrial users pay the equivalent of 2.2 cents US per kilowatt-hour.

### Incentives for industry

Electricity rates in British Columbia are set by an independent utilities commission — the British Columbia Utilities Commission — and based on production costs. The province's major suppliers also offer various incentives to business and industrial customers.

For example, BC Hydro (responsible for 90 per cent of utility sales in British Columbia) offers options, such as:

- real-time pricing, which gives large power users access to market prices for incremental energy;

- time-of-use pricing, which encourages the use of power during low-load hours; and,
- price dispatched curtailment in interruptible power rate.

These flexible rate plans can help reduce the cost of doing business in British Columbia.

### Major electricity suppliers

BC Hydro is the province's leading energy company, serving approximately 1.4 million customers. UtiliCorp Networks Canada — formerly West Kootenay Power and Light — is the second largest, serving about 125,000 customers in South-central British Columbia. British Columbia also has a number of municipal utilities and industrial power generators.

### For more information, contact:

Ministry of Energy and Mines, Electricity Development Branch  
PO Box 9327, Stn Prov Govt, 4th Floor, 1810 Blanshard Street  
Victoria, British Columbia V8W 9N3

Phone: 250 952-0264 Fax: 250 952-0258

[www.gov.bc.ca/em](http://www.gov.bc.ca/em)



Ministry of Energy  
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# FACT SHEET

# Exploring the FUTURE

## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

Mining is one of British Columbia's most important industries and the provincial government is actively supporting its expansion. The Province is taking steps to streamline regulation, accelerate permitting and improve the investment climate, with key changes specifically designed to increase mineral exploration and mining in the province. Leading the way is a new, 20 per cent flow-through share tax credit, introduced in July, 2001.

## FLOW-THROUGH SHARES

### Super Flow-through Shares

British Columbia's new "super" 20 per cent flow-through share is a non-refundable tax credit for qualifying investments made in new British Columbia mineral exploration. It is in addition to the federal 15 per cent tax credit and the existing 100 per cent deduction of Canadian Exploration Expense (CEE).

For British Columbia taxpayers at the highest marginal tax rate, the British Columbia and federal tax credits plus the CEE deduction are equivalent to a 139 per cent tax deduction — superior to the 133 per cent deduction that fuelled the 1980s flow-through boom.

A 20 per cent refundable British Columbia Mining Exploration Tax Credit is also available for eligible grassroots exploration that is not funded by flow-through shares.

### British Columbia's Investment Advantage

The British Columbia 20 per cent flow-through share tax credit is harmonized with the federal 15 per cent tax credit to provide tax savings and credits worth up to 63

per cent of share investments — a clear investment advantage.

For taxpayers in British Columbia, the net cost of a \$1,000 investment in mining flow-through shares can be as low as \$383.

Features of the British Columbia and Federal Flow-through Shares

- federal tax credits apply to eligible expenditures incurred after October 17, 2000 and before January 1, 2004;
- British Columbia tax credits apply to eligible expenditures incurred between after July 30, 2001 and before January 1, 2004;
- available in the year the expenses are renounced;
- British Columbia tax credits reduce CEE in the year of the claim and federal tax credits reduce CEE in the year following;
- if the tax credits claimed exceed the amount in the CEE pool, the excess is taxed as income; and
- provincial tax credits received reduce the pool of costs subject to the federal tax credit; and,
- unused tax credits may be carried back three years or forward up to 10 years.

### For more information, contact:

Ministry of Provincial Revenue, Income Taxation Branch  
PO Box 9434, Stn Prov Govt, 5th Floor, 1802 Douglas Street  
Victoria, British Columbia V8W 9V3

Phone: 250 387-5754 Fax: 250 356-9243

[www.rev.gov.bc.ca/itb](http://www.rev.gov.bc.ca/itb)

or visit the Ministry of Energy and Mines Web site [www.gov.bc.ca/em](http://www.gov.bc.ca/em)



Ministry of  
Provincial Revenue

# FACT SHEET

# Exploring the FUTURE

## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

Mining has been a cornerstone of British Columbia's economy for over 150 years. Beginning with coal mines on Vancouver Island and placer gold camps along the Fraser River, the province's development has historically been tied to resource exploration and extraction. Today, British Columbia is recognized world wide for its mining and mineral potential with abundant mineral resources, a highly skilled workforce, a recently improved investment climate and a comprehensive geoscience database. These factors combine to make British Columbia an excellent choice for mining investors.

## GEOLOGICAL POTENTIAL

### Geological Potential

British Columbia encompasses the largest part of the Canadian Cordillera, a mountainous region rich in a variety of minerals. It includes belts of distinctive rock which vary markedly from east to west.

Most of the coal, coalbed methane and industrial minerals resources, such as barite and magnesite, formed by sedimentary processes are located along the eastern margin of the Cordillera. Older sedimentary rocks, just west of the younger sediments, are rich in zinc, lead and silver. In the central and western portion of the province, rocks are predominantly volcanic and intrusive, and known to contain large deposits, particularly of copper, gold and molybdenum.

The potential for finding deposits of these commodities is enhanced by a steady stream of new information from geological mapping and economic geology research. This information is available to the public through the British Columbia Ministry of Energy and Mines. It includes detailed records on approximately 12,000 mineral occurrences.

### New Directions for Exploration and Development

British Columbia produces coal, copper, gold, silver, zinc and a growing list of industrial minerals and structural materials valued at more than \$2.8 billion a year. Strong potential exists for developing metallic and non-metallic minerals not previously produced in the province, including platinum, palladium, diamonds and metallic and industrial minerals used for space-age composites.

Currently, the province's most important mineral resource types are:

- porphyry copper-gold and copper-molybdenum deposits;
- sedimentary coal and coal-related deposits;
- zinc-copper-gold-silver-bearing volcanogenic massive sulphide deposits;
- zinc-lead-silver-gold-bearing sedimentary exhalative deposits; and,
- precious metal, gold-silver vein and placer deposits.

### For more information, contact:

Ministry of Energy and Mines, Geological Survey Branch  
PO Box 9320, Stn Prov Govt, 5th Floor, 1810 Blanshard Street  
Victoria, British Columbia V8W 9N3  
Phone: 250 952-0374 Fax: 250 952-0381  
[www.gov.bc.ca/em](http://www.gov.bc.ca/em)



Ministry of Energy  
and Mines

# FACT SHEET

# Exploring the FUTURE

## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

British Columbia's mining industry is recognized as a world leader, with world class support from both the public and private sectors. Private sector support includes a highly skilled workforce. Public sector support includes a comprehensive inventory of mineral, coal and aggregate reserves and resources, developed and maintained by the Geological Survey Branch of the Ministry of Energy and Mines. The inventory provides an excellent starting point for anyone planning mineral exploration in the province.

## GEOLOGICAL SURVEY SERVICES

### Surveys, Mapping and Research

Regional Geochemical Surveys (RGS) cover more than 70 per cent of British Columbia's land base, with more than 45,000 samples collected and 52 element determinations recorded in the RGS database.

These surveys help identify new exploration targets and mineral discoveries. Geochemical surveys also help to reveal the characteristic signatures of certain types of mineral deposits in different physiographic settings.

Regional Geological Mapping is done on a scale of 1:50:000 to identify environments where mineral deposits are likely to be discovered. Geology maps are published both in digital and paper formats.

Surficial Geological Mapping of overlying bedrock supports studies in areas such as till geochemistry, placer deposit origins, aggregate inventories and earthquake hazard assessments.

Economic Geology Research is carried out on varying scales, from single mineral deposits to mining camps to

province-wide surveys. The information is used to develop mineral deposit models, supporting mineral exploration activities.

### Accessing Information

All maps and reports produced by the Geological Survey Branch are available for purchase through Crown Publications, [www.crownpub.bc.ca](http://www.crownpub.bc.ca)

Most of the branch's geoscience data are available on the Internet, including:

- digital geoscience maps and data in interactive GIS formats;
- theme maps and data sets focusing on specific subjects such as coal, oil and gas, and aggregate potential;
- a detailed database of approximately 12,000 mineral deposits across British Columbia; and,
- a library of more than 25,000 mineral assessment reports.

### For more information, contact:

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PO Box 9320, Stn Prov Govt, 5th Floor, 1810 Blanshard Street  
Victoria, British Columbia V8W 9N3  
**Phone:** 250 952-0132 **Fax:** 250 952-0121  
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Ministry of Energy  
and Mines

# FACT SHEET

# Exploring the FUTURE

## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

Mining is British Columbia's third largest industry, and the safest of all heavy industries in the province. Injury rates in both metal and coal mining fell steadily through the 1990s to a rate of two injuries per 100 man-years of employment. Health and safety measures for workers, as well as the public, are administered by the Ministry of Energy and Mines. The Mines Branch works closely with companies to help ensure a safe, healthy workplace.

## HEALTH AND SAFETY

### The Mines Branch

The Mines Branch is staffed by qualified, experienced health and safety inspectors whose work is augmented by specialist inspectors with particular expertise in areas such as mechanical and electrical engineering, emergency preparedness, ergonomics and industrial hygiene.

The branch administers and regulates health and safety through the full mining cycle – including exploration, development, production, reclamation and closure – for metal, placer, industrial mineral and coal mines, as well as for sand and gravel operations. These activities are governed by the Mines Act and the Health, Safety and Reclamation Code for Mines in British Columbia, commonly known as the Code.

### Activities

Health and safety inspectors work with operating mines to ensure compliance with the Code. They also work in collaboration with mine-site health and safety committees to minimize risk to workers and the public. Other activities include:

- issuing permits for explosive use and storage;
- certifying supervisors, shift bosses and blasters under the *Mines Act*;
- monitoring mine activity;
- approving health and safety components of mine plans;
- collecting data and keeping records on accidents, dangerous occurrences, inspection frequencies and audiometric activity; and, participating in health and safety research.

The ministry also organizes annual mine rescue and first aid competitions, as well as a Safety Awards Competition to recognize outstanding safety efforts by mine managers and workers. In addition, the provincial government is the major

contributor to the semi-annual Western Regional Mine Rescue competitions.

### Fees

Mines in British Columbia pay a health and safety inspection fee to finance the health and safety section of the Mines Branch. Fees are also paid to the Workers Compensation Board to offset the cost of compensating injured workers.

Health and safety inspection fees are applied based on the following formula:

**Major Mines** including coal (surface and underground), metal (surface and underground), exploration, industrial minerals, custom mill, metal leach and placer pay fees at a rate of \$0.52 per \$100 of assessable earnings.

**Sand and Gravel, Quarry and Limestone Operations** have fees assessed based on tons of total production per year as outlined in the chart below:

Tons per year	Annual Fee
less than 10,001	\$ 100
10,001 - 25,000	\$ 300
25,001 - 50,000	\$ 600
50,001 - 100,000	\$1,300
more than 100,000	\$2,500

These fees do not apply to sand and gravel, and quarry and limestone operations owned and operated by provincial, regional and municipal governments. The fees do apply to government-owned pits operated by subcontractors.

### For more information, contact:

Ministry of Energy and Mines, Mines Branch  
PO Box 9320, Stn Prov Govt, 4<sup>th</sup> floor, 1810 Blanshard St.,  
Victoria, British Columbia V8W 9N3

Phone: 250 952-0462 Fax: 250 952-0491

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# Exploring the FUTURE

## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

British Columbia is well known as a leading producer of coal and metals such as copper, gold, silver, zinc and lead. A lesser known but growing part of the province's mining industry produces industrial minerals for the ceramic, chemical, construction, fertilizer and glass making industries, among others. British Columbia's industrial mineral production was valued at \$51.4 million in 2000; structural material and aggregate production was worth more than \$500 million. With approximately 12,000 known mineral occurrences, the province is poised for new growth and development in this sector.

## INDUSTRIAL MINERALS

### Industrial Mineral Production

British Columbia has more than 40 active industrial mineral mines, most of which operate in the southern half of the province. Some of the mines produce high value minerals, including magnesite, gypsum, limestone, shale, silica, sulphur, white calcium carbonate, basalt, dimension stones, such as granite and marble, construction aggregates and crushed rock.

These and other industrial minerals support more than 20 value-added and downstream industries in British Columbia, generating products worth more than \$100 million a year.

### Potential for Future Development

British Columbia has an abundance of undeveloped industrial minerals, located throughout the province. A publicly accessible inventory database includes detailed descriptions of 12,000 mineral occurrences and a library of over 25,000 mineral assessment reports.

Industry development is currently focused on:

- developing new export markets for products such as graphite, magnesite, hydromagnesite, gem stones, wollastonite, asbestos and rare earths;
- developing domestic supplies of minerals such as talc, kaolin, garnet, phosphate, perlite and peat to reduce reliance on imports;
- increasing value-added processing of minerals such as magnesium metal; and,
- developing environmentally-friendly applications using "green" industrial minerals such as zeolites for absorbing heavy metals, pozzolans as a substitute for limestone in cement, and olivine for zero-emission coal power plants.

### For more information, contact:

Ministry of Energy and Mines, Geological Survey Branch  
PO Box 9320, Stn Prov Govt, 5th Floor, 1810 Blanshard Street  
Victoria, British Columbia V8W 9N3  
**Phone:** 250 952-0418 **Fax:** 250 952-0381  
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## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

A certain amount of mining activity in British Columbia takes place on private land. In most cases, the property owners have surface title. The Province retains the rights to subsurface minerals and may transfer them to free miners – defined under provincial law as any person who holds a valid free miner certificate.

Occasionally, miners and land owners disagree on the details and processes of mining-related activities. When this happens, the Mediation and Arbitration Board can help. Its mandate is to balance both parties' interests, allowing resource development to occur while ensuring the consideration of private rights and concerns.

## MEDIATION AND ARBITRATION PROCESS

### Steps in the Mediation and Arbitration Process

When an individual or company with a valid free miner certificate needs access to private land, the first step is to contact the local Gold Commissioner. The commissioner will contact the land owner and provide details of the miner's plans. In many cases, the Gold Commissioner is able to resolve any issues that arise between the parties.

If this approach is not successful, either the land owner or the miner may apply to the Mediation and Arbitration Board. The process works as follows:

- The Gold Commissioner prepares a report, detailing mineral and placer issues and the consultation required to reach a settlement. The parties submit the report as part of their application to the board.
- The Board Administrator reviews the application, holds discussions with the parties and encourages them to reach a settlement. If this approach is not successful, the case proceeds to mediation.
- The parties present their respective cases at a mediation hearing. Depending on the situation, the mediator may dismiss the case, order additional hearings, refuse additional hearings or issue an order granting the miner access to the land.
- If an order is granted, the miner will pay an agreed-upon amount to the land owner and a security deposit, which is held by the board. The miner will also comply with any stated conditions for entry, which may include such things as hours of operation or the use of specific equipment. The parties may continue to negotiate any outstanding issues.
- If the parties cannot reach a mediated agreement, either may request that the case go to arbitration. The case is heard by a panel, including at least two members of the Mediation and Arbitration Board. Witnesses may be called and either party may choose to involve legal counsel. After reviewing the evidence, the arbitrator issues a final decision which is binding on both parties.

### For more information, contact:

Ministry of Energy and Mines, Mineral Titles Branch  
302 - 865 Hornby Street, Vancouver, British Columbia V6Z 2G3  
Phone: 604 660-2672 Fax: 604 660-2653  
[www.gov.bc.ca/em](http://www.gov.bc.ca/em)



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## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

The British Columbia government maintains a mineral title system designed to provide an orderly and secure transfer of coal, mineral and placer mining rights from the Province to qualified individuals and companies.

The Province maintains an effective and efficient title management system, a fundamental prerequisite to attracting investment in the mining sector.

## MINERAL TITLES

### Mineral Titles Branch

The branch administers the title recording system, which allows industry to acquire and maintain mining rights in British Columbia. The mineral titles system is delivered using three partners:

- the Mineral Titles Branch provides legal and administrative direction for the title system;
- the Government Agents Branch appoints qualified individuals as Gold Commissioners and sub recorders, offering title recording services in communities throughout the British Columbia; and,
- the Subsurface Tenure Registry Unit maintains and integrates mineral title record and map data into the newly established consolidated resource registry for the Province.

### Services

Gold Commissioner offices in Vancouver, Victoria, Kamloops, Nelson, Cranbrook, Quesnel and Smithers provide title recording services as well as real-time information on the status and location of existing mineral and placer titles in British Columbia. Coal title recording and status information is available from Victoria.

Mineral Title offices in Victoria and Vancouver provide comprehensive services on title policy, procedures, title mapping and dispute resolution between mineral title holders and other resource title holders.

### For more information, contact:

Ministry of Energy and Mines, Mineral Titles Branch

In Victoria:

PO Box 9322, Stn Prov Govt, 3rd Floor, 1810 Blanshard Street  
Victoria, British Columbia V8W 9N3

**Phone:** 250 952-0542 **Fax:** 250 952-0541

In Vancouver:

300 - 865 Hornby Street  
Vancouver, British Columbia V6Z 2G3

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## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

Mining is British Columbia's third largest industry, directly employing more than 11,000 people. The province provides more than half of Canada's coal production, along with a growing range of metals, industrial minerals and structural materials used domestically and exported around the world. Along with coal, British Columbia is a major producer of copper, gold, zinc, silver, lead and non-metallic minerals. The total output of British Columbia mines in 2000 was valued at over \$2.8 billion.

## MINING PRODUCTION

### Coal

British Columbia is Canada's number one coal producer. In 2000, the province produced 26 million tonnes from eight mines with a value of approximately \$1.4 billion. About 97 per cent is metallurgical coal, exported to steel makers in Asia, Europe and South America. British Columbia also produces small amounts of thermal coal, used for thermal power generation.

### Copper

British Columbia leads the country in copper production, accounting for over 40 per cent of Canada's total output. In 2000, copper mined in British Columbia was valued at \$730 million and used largely for electrical wiring, plumbing fixtures and roofing.

### Gold and Silver

British Columbia produces about 50 per cent of Canada's silver and a significant amount of the country's gold. In 2000, gold from British Columbia mines was valued at \$335 million, with silver production valued at \$140 million. These precious metals are used in jewelry and electronics. Silver is also widely used in photographic film.

### Zinc and Lead

British Columbia produced \$247 million worth of zinc and \$30 million worth of lead in 2000, placing the province in the top three in Canada for production of these commodities. One British Columbia mine alone — the world-renowned Sullivan mine in southeastern British Columbia — has produced, in its lifetime, enough zinc to make 160 million cars and enough lead for 500 million car batteries.

### Molybdenum

British Columbia is the only province in Canada mining this mineral, which is valued as an additive in steel alloys. In 2000, British Columbia molybdenum production was valued at \$64 million.

### Non-metallic minerals and structural materials

These include sulphur, gypsum, limestone, magnesite, volcanic pumice, basalt, silica, gem stones, clay, fuller's earth, sand, gravel and rip rack rock used in construction. In 2000, British Columbia produced over \$51 million worth of non-metallic minerals and \$448 million worth of structural materials.

### For more information, contact:

Ministry of Energy and Mines  
PO Box 9320, Stn Prov Govt, 5th Floor, 1810 Blanshard Street  
Victoria, British Columbia V8W 9N3  
**Phone:** 250 952-0132 **Fax:** 250 952-0121  
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## MINING AND MINERAL EXPLORATION IN BRITISH COLUMBIA

The British Columbia government works with mining companies to support responsible environmental stewardship during exploration, operation and when mines are closing. The *Mines Act* sets out specific requirements for reclamation and closure. These requirements help to ensure that the industry and the environment will be viable and sustainable for the long term.

## RECLAMATION AND CLOSURE

### Mine Closure and Reclamation

To operate in British Columbia, mining companies must obtain a permit under the *Mines Act*. Companies are also required to post a security bond to ensure they:

- salvage and store soils, and make provision for replacing them after mining;
- provide the means to meet environmental protection and quality control standards through all stages of reclamation, including predicting, preventing, treating and controlling any drainage leaving a mine and managing trace element release under neutral and alkaline drainage;
- take steps to prevent or minimize erosion during construction and throughout the life of the mine, demonstrating how any detached sediment will be contained within the mine site; and,
- undertake reclamation when or before the mine closes.

Reclamation of a mine site generally includes returning the land to an acceptable state of use, with land

productivity at least as high as what existed prior to mining. Other key aspects of reclamation include:

- revegetating land to a self-sustaining state that satisfies land use, productivity and water quality objectives;
- removing buildings, equipment and machinery;
- ensuring waste dumps are stable and erosion is controlled;
- stabilizing and revegetating tailings ponds and impoundment structures to an approved standard of land use;
- properly closing pits and underground workings;
- returning watercourses to their original condition, or to a stable configuration that ensures water quality;
- decommissioning roads as needed;
- monitoring trace elements in soils and uptake in vegetation;
- properly disposing of toxic chemicals; and,
- monitoring the site after the closure to demonstrate that reclamation objectives are met, including those affecting land use, productivity, water quality and site stability.

### For more information, contact:

Ministry of Energy and Mines, Mines Branch  
PO Box 9320, Stn Prov Govt,  
5th Floor, 1810 Blanshard Street, Victoria, British Columbia V8W 9N3  
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