



MINISTRY OF ENERGY, MINES AND NATURAL GAS

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Provincial Summary EXPLORATION AND MINING IN BRITISH COLUMBIA 2012



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Ministry of Energy, Mines and Natural Gas

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HIGHLIGHTS FOR 2012

- Mineral and coal production estimated at \$7.4 billion
- Evaluation and advanced-stage projects drives expenditures to \$680 million
- New Afton mine opened; Red Chris and Mt. Milligan mines under construction
- Major expansions and upgrades at existing mines
- Environmental Assessment Office tracking of 28 mine projects

INTRODUCTION

The geological evolution of British Columbia, which spans over 2.3 billion years, has endowed the province with abundant mineral and coal resources. As a result, the exploration and development of these resources is a cornerstone of the provincial economy. With more than half of Canada's exploration and mining companies based in British Columbia, and the world's largest concentration of exploration companies and mining professionals, the province is recognized as a leader in raising venture capital, and as a centre of excellence in mining and related fields, such as metallurgy, environmental engineering, mine safety, and the geosciences.

British Columbia's transportation infrastructure provides ready access to world markets through expanding ports, and rail and highway networks. The province boasts attractive industrial electrical power rates; commitments to expand the power grid in the northwestern part of the province have the potential to increase exploration and development in a highly prospective region (Photo 1).

British Columbia has established GIS-based online geoscience database and mineral tenure systems. For example, *MapPlace* is an interactive map system that allows geoscientists free access to geology, mineral exploration, and mining resource information, and *Mineral Titles Online* permits explorationists to acquire and maintain mineral tenures remotely.

Attracting new investment to the exploration industry is a priority for the province and several incentives are available. The BC Mining Exploration Tax Credit Program and Exploration Investment Tax Credit for flow-through investors provide additional incentives to attract risk capital to the province. The Mining Exploration Tax Credit has been increased to 30% for qualified mineral



Photo 1. The Northwest Transmission Line will expand the power grid in the northwestern part of the province and increase potential exploration and development in a highly prospective region.

exploration undertaken in prescribed Mountain Pine Beetle affected areas of the province.

This document is a provincial-level summary of the industry and in sections divided by geographic regions (Figure 1). Readers seeking more detail should refer to a companion document prepared by the Regional Geologists: *Regional Geologist Summaries, Exploration and Mining in British Columbia 2012* (Photo 2).



Figure 1. The locations of the geographic regions referred to in this publication and the location of some of the cities and towns in the province.

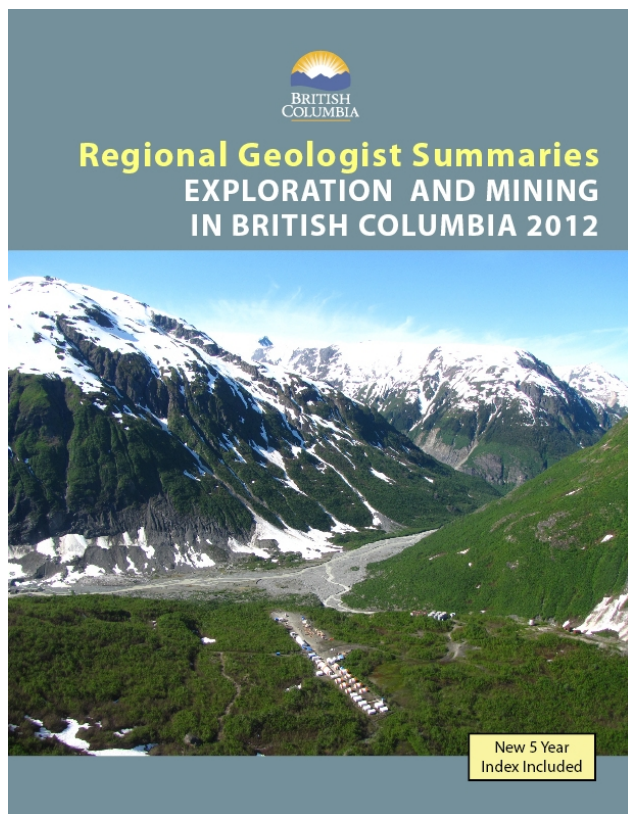


Photo 2. Readers seeking more detail should refer to a companion document prepared by the Regional Geologists: *Regional Geologist Summaries, Exploration and Mining in British Columbia 2012*.

OPERATING MINE HIGHLIGHTS

British Columbia is Canada's largest producer of copper, its only producer of molybdenum, and its largest exporter of coal. The province also produces gold, silver, lead, zinc, and over forty industrial minerals including gypsum, magnesite, limestone, and dimension stone. Numerous quarries produce sand and gravel or crushed aggregate.

The total value of mine production for British Columbia in 2012 is estimated at \$7.4 billion (Figure 2). Coal, copper, and molybdenum (in decreasing order) remain the most important solid mine products by value (Figure 3).

METAL MINES

Twelve mines produce metals in the province, ranging from major operations such as the Highland Valley Mine to seasonal producers that exploit small high-grade resources (Table 1 and centerfold map).

Copper remains the province's highest value metal output and most producers have undertaken modernizations and expansions in recent years as strong commodity prices and investment incentives have supported capital infusions. Several copper mines have

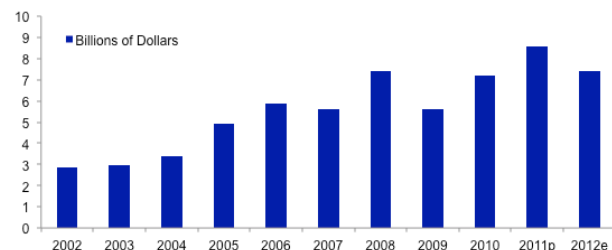


Figure 2. Mineral and coal production in British Columbia, 2002-2012.

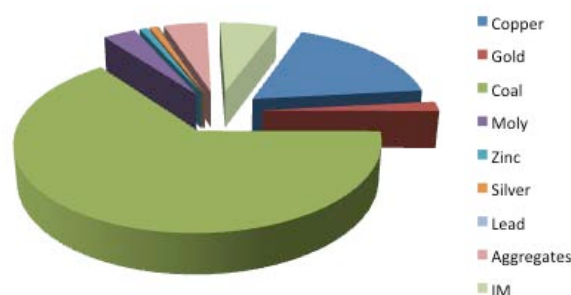


Figure 3. Pie chart showing the relative values of mineral and coal production by commodity for 2012.

co-product precious metals that boost production values: some of these could be considered gold mines.

Mines that are primary precious metals producers are attractive during times of elevated prices. They contribute less to the provincial metal output however, because achieving expected production tonnages, predicted metal recoveries, and effective cost control is challenging. Several advanced projects are addressing these challenges by applying proven "porphyry" deposit exploitation methods and scales to low-grade gold-silver systems.

The province's polymetallic (zinc, copper, lead, silver, gold) production comes from a single operation at Myra Falls, and its success in recent years showcases this deposit type.

Construction was completed this year at the **New Afton** gold-copper mine of New Gold Inc, which opened in June, ahead of schedule (Photo 3). The development cost of the mine is approximately \$765 million; in early 2013, it is expected to achieve a mill rate of 11 000 tonnes per day. This operation ushers in a new era of large tonnage underground mining, using block cave techniques that are anticipated to be closely studied by other British Columbia projects with high-grade resources at depth.

The largest base metal mine in Canada is the **Highland Valley Copper** copper-molybdenum mine operated by Teck Highland Valley Copper Partnership. Construction is underway on a \$475 million mill optimization project, which is part of a plan to extend mine life to 2026.

The **Gibraltar** copper-molybdenum mine, operated by of Taseko Mines Limited and Cariboo Copper Corp, is



Photo 3. The New Afton copper-gold mine opens with a blast! Pyrotechnical demonstration from New Gold's "Open Day" in September (Steve Rothman photo).

near the end of a recent \$325 million dollar investment in mine optimization and equipment procurement. Once completed, the mine is expected to be Canada's second largest copper producer.

Thompson Creek Metals and Sojitz Corp undertook a staged start up of a new mill at the **Endako** molybdenum mine; full production is targeted for the second quarter (Photo 4). Various property-scale and company-wide complications resulted in suspension of mining in July, and production guidance was lowered with the processing of stockpiled ore. Work continued in the fourth quarter to optimize plant operations: the new mill is designed to increase throughput levels to 52 000 tonnes per day with reduced operating costs. Mining is expected to resume in the second half of 2013.

At the **Mount Polley** copper mine of Imperial Metals Corporation, the search for resources outside its main producing Springer pit continued with success. Exploration efforts included drilling at the Springer and Cariboo pits, Quarry, and WX and C2 zones, and underground drilling from a decline into the Boundary zone.

Metal production at the **Huckleberry** copper-gold-silver-molybdenum mine decreased, as expected, as low-grade stockpiles were milled to allow maximum focus on the Main Zone Optimization (MZO) plan (Photo 5). The plan extends mine life to 2021. Near-mine exploration drilling and geophysics successfully identified copper-



Photo 4. Operations at the Endako molybdenum mine. Photo A. Mining in the West Denak pit to supply a low-grade stockpile; Photo B. New Semi-Autogenous Grinding (SAG) mill.

molybdenum mineralization in the Main Zone Deepes outside the MZO pit plan.

The **Copper Mountain** copper mine, in production since August 2011, is operated by a partnership of Copper Mountain Mining Corporation and Mitsubishi Materials Corporation. Increased mining rate optimized mill throughput closer to 35 000 tonnes per day and enhanced copper recovery. A multi-year exploration program is actively upgrading resources, testing ore depths, and examining mineralization outside the current mine plan.

Nyrstar NV's **Myra Falls Operations** was expected to mine and mill approximately 500 000 tonnes of zinc-copper-lead-silver-gold ore in 2012, similar to the previous year. Recently, the underground mine has replaced mined reserves through on-lease exploration. Exploration may increase next year as the company develops a long-term plan.

Sable Resources Ltd continued seasonal operation at the **Shasta** underground gold-silver mine. Production at less than 20 000 tonnes was enough to maintain the operation. The current estimated resource is enough to support two more years of mining.

Bralorne Gold Mines Ltd has been milling approximately 80 tonnes per day from stockpiled and



Photo 5. Overview of the Huckleberry copper-gold-silver-molybdenum mine site looking southwest. Mine geologist Justin Schroff points out site features: mill site is far left, stripping activities for the Main Zone Optimization are mid-left of centre, and active mining in the Main Zone Extension Pit is bottom center and mid-right of centre.

underground resources at its **Bralorne** gold mine. The company is targeting quartz veins in relatively undeveloped areas between three former mines (Bralorne, King and Pioneer) and actively developing the BK-3 zone through drifting and underground drilling. They are also evaluating an expansion of the operation to over 200 tonnes per day.

The **QR** mine of Barkerville Gold Mines Ltd has operated sporadically in recent years and was shut in November 2011 due to depletion of ore. Production was resumed in December this year, exploiting resources in the West zone, with the intention to produce gold late in the year. The mill awaits shipments of new ore from the Bonanza Ledge mine near Wells, which is under development.

Huldra Silver Inc has begun a small-scale, high-grade operation at its **Treasure Mountain** silver-lead mine near the Tulameen River. Vein material is mined underground and transported to the foot of the former Craigmont mine near Merritt for concentrating.

COAL MINES

Coal production in the province attained elevated levels of approximately 30.1 million tonnes this year despite changing short-term demand from Asian markets and price volatility. Most coal produced is of metallurgical grade (hard coking) coal, and is largely exported to Asia with lesser amounts going to Europe and South America (Photo 6).

Forecasts for coking-quality coal demand remain optimistic and many operations are expanding or extending mine lives through capital investments, new mine plans, and aggressive exploration. New interest in thermal coal has arisen as external governments explore clean technologies for power production and diversify their energy production.

The province exports coal from three regions: the East Kootenay coalfields, the Peace River Coalfield (both with several mines), and the Quinsam operation on Vancouver Island.



Photo 6. Expansion of the Ridley Island coal terminal near Prince Rupert is underway and receives fill material from nearby quarries. Increased coal shipments through this port from a variety of coal fields are anticipated.

East Kootenay Coalfields

Mining continued at five large open-pit coal mines operated by Teck Coal Limited in the Elk Valley area of the East Kootenay region. The **Fording River, Greenhills, Line Creek, Elkview and Coal Mountain** mines directly employ 3665 people and make major contributions to both the East Kootenay and provincial economies (Photo 7). Combined coal production is forecast at approximately 24.2 million tonnes of clean coal this year compared to the actual production total of 22.55 million tonnes last year.

Hard coking coal (HCC) is the predominant product at four of the five Elk Valley mines. A range of two or more products is marketed by each of these operations, based on variations in volatile matter and/or ash contents. The Coal Mountain Operations is the exception and produces mainly pulverized coal injection (PCI) coal.

In addition to hard coking coal, oxidized coal is marketed as thermal coal from some of the mines.

Peace River Coalfield

Mining operations continued at the four open-pit mines in the Peace Region: Trend, Perry Creek (Wolverine), Brule, and Willow Creek.

Hard coking coal (HCC) of low to medium bituminous rank is the main product. Ultra low-volatile



Photo 7. Mining continued at five large open-pit coal mines operated by Teck Coal Limited in the Elk Valley area of the East Kootenay region. View looking north of Burnt Ridge South pit highwall at Line Creek Operations.

pulverized coal injection (ULV-PCI) is also produced at the Brule and Willow Creek mines. Coal is shipped by rail to tidewater at Ridley Terminals in Prince Rupert.

Mining at Anglo American plc's **Trend** mine included ongoing development to the southeast and planned addition of the Roman Mountain expansion. Production is expected to increase to 2 million tonnes by 2013 and double to 4 million tonnes by 2014.

The **Perry Creek** mine (Wolverine Project) of Walter Energy Inc was the company's foremost revenue generator this year in the region. Mining operations progressed through several planned phases and a pushback of the highwall is being investigated as Phase-5. At the company's **Brule** mine, the 'Camp pit' phase was completed in September and Phase 2 continued to the northwest and north. Mining will resume in the Dillon and Blind pits for several months next year (Photo 8). Raw coal is trucked 60 kilometres to the processing plant and rail loadout at the Willow Creek mine. The third operation of Walter Energy Inc is the **Willow Creek** mine where production was limited in the first quarter by a wash plant outage to upgrade HCC processing efficiency, and a new rotary breaker was installed at the processing plant.

Vancouver Island Coal Mines

The Quinsam thermal coal mine near Campbell River is forecast to produce approximately 365 000 tonnes of clean coal this year. The underground mine employs 140 workers. It supplied local cement plants and the international energy market. A newly developed area, the 7 South is now contributing to production.

INDUSTRIAL MINERAL MINES

The contribution of industrial minerals and aggregate production is significant, estimated at approximately 10% of total mine product value. Industrial minerals are mined and processed from more than 30 active quarries and over



Photos 8. Mining coal at the Walter Energy Inc Brule mine – Top Photo. Visitors view the Hitachi EX8000 shovel on a tour of the mine as part of the Northeast BC Coal and Energy Forum, October 9, 2012; Bottom Photo. Hauling a load from Phase 2 of the Brule pit.

1000 aggregate operations. Cement and construction aggregates constitute the largest share of the products. The centerfold map in this publication shows the location of many of these mines, their names and primary product. Readers are referred to the companion document *Regional Geologist Summaries, Exploration and Mining in British Columbia 2012* (Photo 2) for details. Some commodities, such as the specialty metals, are commonly not considered industrial minerals, but are reported alongside more traditional programs because their discovery and development follow relatively similar paths.

MINE DEVELOPMENT STAGE PROJECTS

Metal Mines

Thompson Creek Metals Inc stayed on schedule with mine construction at the **Mt. Milligan** gold-copper project. By the end of September, almost \$500 million had been spent on mine development and processing plant construction. Mining equipment arrived at the site in January; haul trucks arrived in the summer (Photo 9a). Drilling and blasting started in July, with small shots and test patterns, and mined material was used in tailings dam

construction (Photo 9b). Less than \$600 million remains to be spent on the estimated \$1.5 billion project before completion in the fall of 2013. The mine will be an open-pit operation with a 60 000 tonne-per-day mill.

Construction of the **Red Chris** mine began shortly after May 4, when owner Imperial Metals received a *Mines Act* Permit. Mine site preparations included pouring concrete foundations and installing other infrastructure components. The mine is scheduled to open in early 2014. Exploration drilling indicated extensive mineralization outside the current pit design, but was suspended as construction started.

In early December 2011, the **Bonanza Ledge** project of Barkerville Gold Mines Ltd received approval under the *Mines Act* to develop an open-pit gold mine. The site has been prepared for a four-year operation that will see the ore trucked 100 km to the QR Mine for milling.

Coal Mines

Coalmont Energy Corp anticipates reopening the **Basin** thermal coal mine early next year, after being on care and maintenance since 2007. The proposed open-pit



Photos 9. Thompson Creek Metals Inc stayed on schedule with mine construction at the **Mt. Milligan** gold-copper project. Top Photo. Mining equipment arrived at the site in January while haul trucks arrived in the summer; Bottom Photo. Drilling and blasting started in July, with small shots and test patterns, and mined material was used in tailings dam construction.

area has been prepared for mining, oxidized coal has been stockpiled, and the road connection to the Coquihalla Highway was upgraded. Production is expected to increase to 500 000 tonnes per year upon permit amendments.

EXPLORATION STAGE PROJECTS

Exploration stage projects can include a spectrum of activities from grassroots-level searches for new mineral occurrences through to highly detailed social and environmental evaluations of proposed mines. This is consistent with definitions used by the province's Regional Geologists in their tracking of industry activities for summary and statistical purposes. Selected advanced or significant projects are summarized here and in Tables 2 and 3. More detailed information and additional projects can be found in companion publications.

The provincial Environmental Assessment Office indicated that, at year end, 28 mine proposals were in the process, with 2 currently under review and 26 at the pre-application stage (14 metal or industrial mineral, 11 coal and 3 aggregate). New to the process this year are the Bingay Main, Carbon Creek and Echo Hill coal projects, and the Blackwater gold-silver project.

Evaluation and advanced-stage metal and coal projects drove expenditures to \$680 million last year, shattering the standing record of \$463 million set in 2011 (Figure 4). A few of the metals projects were certainly candidates for largest exploration programs *globally* and gave an overall impression of a very healthy year. Regrettably, for many smaller companies and projects, a highly depressed equity market led to a virtual collapse of junior exploration. The province's two major coal fields attained record levels of exploration spending.

COPPER, GOLD AND MOLYBDENUM EXPLORATION PROJECTS (PORPHYRY-RELATED)

Mine Evaluation Stage

Resource definition drilling and geotechnical drilling were the main activities at the **Galore Creek** copper-gold

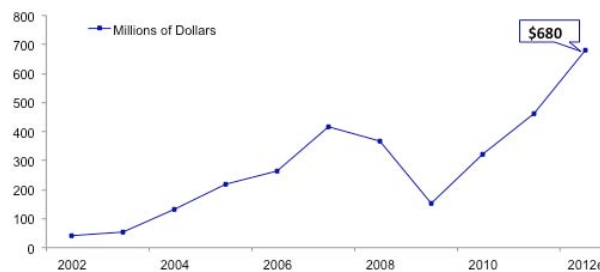


Figure 4. Estimated mineral and coal exploration expenditures in British Columbia, 2002-2012.

project, as site engineering was optimised and baseline data collection continued. Nova Gold seeks to sell their 50% interest in the project. Teck holds the other 50%.

A feasibility study is due for the **Schaft Creek** copper-gold project after Copper Fox Metals Inc released an updated resource estimate in May. Exploration drilling targeted geophysical anomalies in untested areas and extended the regional mineralized trend.

The environmental assessment process is in its final stages for the **Kitsault** molybdenum project. An updated resource estimate released in April included recoverable lead, in addition to the molybdenum and silver resources. The past producer is already served by a road and power line.

In October, the provincial government announced its rejection of Pacific Booker Minerals Inc's application for environmental certification of the **Morrison** copper-gold project. The company is studying the details of the decision to understand its implications for moving the project forward.

The proposed **New Prosperity** gold-copper porphyry mine of Taseko Mines Limited received an environmental certificate from the BC Environmental Assessment Office in January 2010. This year, Taseko submitted a revised environmental impact statement to the Canadian Environmental Assessment Agency, after the federal government's rejection of an initial design. The redesigned project has moved mine infrastructure in an effort to protect a water body of local significance.

KGHM Ajax Mining Inc's **Ajax** copper-gold porphyry proposed mine is undergoing environmental assessment. Its proximity to the city of Kamloops has necessitated extensive baseline studies on air and water quality, dust, and vibration, as well as traffic and socioeconomic impacts. The proposal would see a 60 000 tonne-per-day open-pit mine at the site of a former open-pit operation, part of the Afton mine that closed in the mid-1990s.

Early to Advanced Stage

Skeena Region Exploration results returned late in the season have positive implications for the **KSM** project (Photo 10). A drill intersection of over 470 metres grading 0.90% copper and 0.31 gram per tonne gold from 20 metres depth at the Deep Kerr zone could represent a higher grade core of a giant porphyry system. Seabridge Gold Inc is planning an aggressive follow up drill program next year, after submitting an environmental assessment application.

Surrounding the Red Chris copper-gold mine development, a number of projects have been targeting similar deposits. Colorado Resources Ltd and Victory Ventures Inc are exploring the **Eldorado** and **Capau** prospects, respectively. West Cirque Resources Ltd recognized a new copper-gold porphyry system at **Castle** project where they completed drilling and geophysical

surveys (Photo 11). Drilling at **Gnat Pass** (part of the greater **Galaxie** regional exploration program) commenced late in the year by Quartz Mountain Resources and Amarc Resources. A regional program conducted by Teck explored three project areas (**Eagle, McBride and Pitman**). Teck also drilled at **GJ**, where several targets northeast of the known Donnelly zone were tested.

Drilling at the **Ball Creek** project returned significant intercepts of gold-copper mineralization. A corporate merger for Blue Gold Mining Inc leaves the immediate future project plans uncertain for joint venture partner Paget Minerals Corp.

New Nadina Exploration Limited commenced exploration drilling at the past producing **Silver Queen** property but *not* for historical polymetallic veins. Geophysical surveys and drilling confirmed significant porphyry copper-gold-molybdenum mineralization at **Itsit**, subsequently followed up by a winter drill program.

Xstrata completed two drill programs on their past producing **Bell** and **Granisle** mines with resource definition, geotechnical, and metallurgical objectives. Since mining ceased in 1992 meteoric water has been filling the pits and this summer a pilot water treatment plant was trialed with positive results.

Gold Reach Resources completed over 45 000 metres of drilling at their **Ootsa** project. Several drillholes intercepted copper-gold-silver-molybdenum mineralization over lengths of up to ~820 metres. An updated resource estimate released early in the year will soon be revised to include this year's drilling.

Canadian Dehua International Mining Inc entered into an option agreement with Lions Gate Metals Inc to acquire the **Poplar** deposit. An updated resource estimate was released in February, which included the 2011 drilling results.

Romios Gold Resources Inc acquired additional tenures in the heart of the famed Golden Triangle; they now have continuous holdings from their **Trek** project to their **Newmont Lake** copper-gold projects. Drilling at Newmont Lake confirmed known mineralization in three prospective horizons.

Omineca Region AuRico Gold Inc awaited results of a feasibility study for a decision on the **Kemess Underground** copper-gold project.

Completion of the study is expected by late 2012 to early 2013. In the meantime, environmental baseline studies and negotiations with First Nations continued, as did reclamation and closure work on Kemess South.

In the Quesnel Terrane, Orestone Mining Corp ran a small drill program to further explore the East Target at **Captain** and to follow up previous drilling that had tested a large combined magnetic-induced polarization geophysical anomaly.



Photo 10. Looking east towards the Mitchell Glacier from the centre of the Mitchell deposit at the KSM copper-gold project. Malachite staining (left side) is precipitated from ground water flowing out of the Mitchell Fault. The Mitchell Glacier has retreated over 200 metres since 2006.



Photo 11. West Cirque Resources drilling at the newly recognised Castle copper-gold porphyry target.

Serengeti Resources Inc drilled at **Kwanika** to test an induced polarization anomaly extending north of the Central Zone area, and a strong induced polarization-magnetic anomaly 15 kilometres to the south. They have initiated a preliminary economic assessment on the higher grade copper-gold resource. Serengeti also drilled at copper-gold projects **Tchentlo** and **Choo**, financed by Freeport-McMoRan of Canada Ltd, to test coincident induced polarization-magnetic-soil anomalies and induced polarization targets (Photo 12).

In the Toodoggone Region, Gold Fields drilled at the **Mex**, part of the Toodoggone project under option from Cascadero Copper Corp, to test a magnetic anomaly and explore deeper into the known Mex copper-gold-molybdenum porphyry system.

**Thompson-Okanagan-
Cariboo Region** At the **Rateria** porphyry



Photo 12. Serengeti Resources Inc airlifting samples and supplies during a drilling program at the Tchentlo and Choo copper-gold projects.

copper-molybdenum property southeast of Highland Valley Copper mine, Happy Creek Minerals Ltd collected a bulk sample from drill core for metallurgical testing, and drilled two holes on a zone with anomalous rhenium. West of Rateria, the company flew a geophysical survey at their West Valley property.

Dundarave Resources Inc optioned the **Jesse Creek** property and flew an airborne magnetic gradiometer survey, followed by 69 line kilometres of induced polarization, mapping and geochemical surveys. They identify alkaline and calcalkaline porphyry environments.

Dundarave sub-optioned the claims to Ocean Park Ventures Corp who started a drilling program in November.

Gold Fields Horsefly Exploration Corp continued to explore the **Woodjam** property northeast of Williams Lake (Photo 13). In March, the company released a preliminary resource estimate for the Southeast zone and reported a new zone (Three Firs) where three of seven drillholes had disseminated copper and gold over drill lengths of 100 to 350 metres.

Fjordland Exploration Inc regained 100% interest on its **Tak** property and will focus on refining induced polarization targets to be followed by drilling.

GWR Resources Inc made progress at its large **Lac La Hache** project. Deposit types and exploration targets include skarns, veins, breccia replacements, porphyries, and epithermal disseminations. The company reported its first resource estimate for the Spout copper-magnetite-gold-silver skarn zone. It conducted grassroots work on the Murphy Block, and drilled the Aurizon South gold-copper-silver zone, extending the zone 200 metres south.

At the **Fox tungsten-molybdenum**, property northeast of 100 Mile House, Happy Creek Minerals Ltd reported encouraging results from follow up drilling of the Ridley Creek zone and step-out drilling on zones to the south and north of Ridley Creek prospect.

Approximately 4 kilometres south of the Copper Mountain mine, Anglo-Canadian Mining Corp drilled at its **Princeton Copper Gold** project, and reported positive results for copper-silver mineralization.

In January, Sego Resources Inc conducted a diamond drilling program on the Cuba zone at their **Miner Mountain** copper-gold porphyry project. The program confirmed results of previous percussion drilling.

Kootenay Region Altair Gold Inc conducted step-out and infill drilling on the **Kena** property south of Nelson. A 2012 resource estimate includes 10.85 million tonnes in measured and indicated categories, grading 0.71 gram per tonne gold in the Gold Mountain Zone and 14.68 million tonnes at 0.64 gram per tonne gold in the Kena Gold zone.

South/West Coast Regions As part of its **Island Copper** project, Northisle Copper and Gold Inc re-logged and re-sampled historical drill core and carried out new drilling on the Hushamu copper-molybdenum-gold project, which now has a new resource estimate (Photo 14).



Photo 13. Over 32 000 metres of drilling at the Woodjam copper-gold project this year by Gold Fields Horsefly Exploration Corp places it in the top few largest programs in the province.



Photo 14. Drilling in a snowstorm by Northisle Copper and Gold Inc at the Island Copper copper-molybdenum project (photo by J. Halle)

COAL EXPLORATION PROJECTS

Mine Evaluation Stage

East Kootenay Coalfields Mine evaluation activities continued at Teck Coal Limited's mine operations in the East Kootenays this year. Projects included the **Line Creek Phase 2 Expansion**, north of Line Creek Operations, and the **Swift Project** adjacent to Fording River Operations. Both are in the Environmental Assessment Process (application and pre-application stage, respectively).

Bingay Main, a new coal mine proposal of Centermount Coal Ltd, entered the pre-application stage of the Environmental Assessment process near the end of the year (Photo 15). Open-pit mining is proposed by for 15 years, to be followed by 5 years of underground mining. Production is anticipated to be 2 million tonnes per year of clean coal.

Skeena Region Fortune Minerals Limited and Posco Canada Ltd released a definitive feasibility study on the **Arctos Anthracite** coal project



Photo 15. Geotechnical exploration drilling on the Bingay Creek property, a new coal mine proposal of Centermount Coal Ltd that entered the Environmental Assessment process near the end of the year.

(formerly known as Mount Klappan). The project contains several high rank coal deposits, of which only Lost Fox was incorporated into the study.

Peace River Coalfield

Anglo American plc's expansion projects near the Trend mine are part of a development plan that would see an increase in washed coal production to 2.5 million tonnes by 2016. Trenching and drilling programs were conducted at **Roman Mountain** and **Horizon Ridge**. A decision on an Environmental Assessment Certificate is pending on the former, while the latter is in the pre-application stage of the process.

Restart of the Teck Coal's **Quintette** mine project remained on hold awaiting a *Mines Act* permit amendment and a First Nations third party review. The new operation would reopen the Windy and Window pits on Babcock Mountain and utilize existing infrastructure. A resource and geotechnical drilling program was carried out in late summer.

At the **Gething** project, Canadian Kailuan Dehua Mines Co Ltd conducted a geotechnical drilling program to identify ground conditions and geotechnical constraints for the engineering of mine surface facilities. An underground mining and coal processing operation is proposed.

South/West Coast Regions

Majority Partner Compliance Energy Corporation has taken the **Raven** underground coal project south of Comox through the pre-application phase of Environmental Assessment process, receiving the project's terms of reference in June (Photo 16). They may now submit the applications for the proposed 830 000 tonne per year (clean coal) semi soft coking coal mine.

Early to Advanced Stage

East Kootenay Coalfields

At the **Coal Creek** project, Crows Nest Pass Coal Mining Ltd conducted a drilling program to identify potentially underground-mineable reserves of hard coking coal in an area east of the historic Coal Creek and Elk River underground collieries. Baseline environmental studies were also carried out.

Teck Coal Limited continued to assess the **Marten-Wheeler** property as a possible open pit expansion area for Coal Mountain Operations. In addition to a large rotary drilling program, Teck carried out diamond drilling for mine design and coal sampling, as well as baseline environmental studies.

Jameson Resources Limited undertook a large drilling program on its **Crown Mountain** property, in order to define resources of surface-mineable hard coking coal.

Peace River Coalfield

Colonial Coal International Corp provided an updated resource estimate for the **Huguenot** project that includes 2011 drilling from the North Block, delineates and updates historical results for the Middle and South Blocks, and incorporates



Photo 16. In the upper right of the frame is the site of the Raven project where Compliance Energy Corporation proposes an 830 000 tonne per year (clean coal) semi-soft coking coal mine. The past producing Tsable River coal mine is in the foreground.

underground resources. This year's helicopter-supported exploration program included resource and coal-quality drilling.

HD Mining International Ltd undertook development work for surface facilities at the **Murray River** project, and prepared for the excavation of a 100 000 tonne bulk sample. The company plans to complete construction for an underground longwall mining operation by 2014. The project is in the pre-application stage of the Environmental Assessment process.

In January, Cardero Resources Corp (75%) and the Carbon Creek Partnership (25%) released a preliminary economic assessment of **Carbon Creek** project, followed by a prefeasibility study in September. This study significantly upgraded the project's resources, and proposed a combined surface and underground operation. First production is forecast in the fourth quarter of 2014. This year's exploration program was the last preceding a 2013 feasibility study and a *Mines Act* permit application. The project is in the pre-application phase of the Environmental Assessment process.

Canadian Dehua International Mines Group Inc continued exploration at the **Bullmoose River** project and commenced drilling at the **Wapiti River** project to better understand subsurface and coal characteristics. Drilling on both properties is planned to continue into 2013, and feasibility studies are planned for underground mine operations. Environmental baseline studies are underway.

Xstrata Coal expanded their coal holdings with the acquisition of the Sukunka project from Talisman Energy in March. It was subsequently announced that JX Nippon Oil and Energy of Japan would acquire a 25% stake in Xstrata's western Canadian operations, and that a prefeasibility study of the newly named **Suska** (formerly Lossan) project would be completed by 2013. Resource, coal quality, and exploratory drilling was completed at Suska this year as part of a program that includes a second phase at Sukunka in early 2013.

Walter Energy Inc continued drilling the **Brazion Group** expansion projects for coal characteristic and structural information. This includes the Mink Creek East, Mink Creek West, Hudette, Willow South and Willow West areas.

Skeena Region Atrum Coal conducted an initial drilling program at the **Groundhog** anthracite project. A cumulative thickness of coal averaged 20 metres over multiple seams intersected to 400 metres depth. A preliminary economic assessment is planned for completion in early 2013.

GOLD AND SILVER EXPLORATION PROJECTS (VEINS, BRECCIAS, DISSEMINATED)

Mine Evaluation Stage

The exploration program at **Blackwater** was the biggest in the province and included resource and geotechnical drilling of over 800 holes comprising about 236 606 metres. Drilling confirmed continuity of mineralization, a higher grade silver zone in the northwest, and extension to the north beyond the 1.1 square kilometre delineation grid (Photo 17). In March, New Gold Inc expanded their land position near the Blackwater project with the acquisition of Auro and Auro South from Gold Reach Resources Ltd. A preliminary economic assessment was completed in September, based on drilling to mid-May and a 60 000 tonne-per-day open-pit operation. The pre-application phase of the Environmental Assessment process was initiated late in 2012. A feasibility study is scheduled for completion in 2013.



Photos 17. The exploration program at the Blackwater gold-silver project was the biggest in the province and included resource and geotechnical drilling of about 236 606 metres. Vqr "Photo. Vj g" delineation drilling grid from above (Photo by Lori Borth); Bottom Photo. Bleached versus less altered lapilli tuff with garnet replacement of fragment.

Pretium Resources Inc completed 105 769 metres of drilling at the **Brucejack** gold-silver project, which increased confidence in estimated resources. This year 41 intercepts graded over 1000 grams per tonne gold including the highest grade intercept to date in hole SU-452: **0.5 m grading 41,582 grams per tonne gold plus 27,725 grams per tonne silver**, part of a broader intersection of **10.71 m grading 2393 grams per tonne gold plus 1605 grams per tonne silver** (Photo 18). Plans for 2013 include completing a feasibility study and taking an underground bulk sample from the Valley of the Kings zone.

Spanish Mountain Gold Ltd released a preliminary economic assessment of its flagship **Spanish Mountain** project, a low-grade, large tonnage gold-silver deposit in fine-grained sedimentary rocks; a relatively new class of deposits known provincially as shale-hosted gold deposits. Current resources support a 40 000 tonne-per-day mine for up to 15 years, at a capital cost of \$755.9 million. The project has entered the formal environmental assessment process where it is at a pre-application stage.

Sona Resources Corp has received a special use permit that authorizes construction of an access road to connect the **Elizabeth** gold project and the former **Blackdome** gold mine and mill. Ore from the Elizabeth project will be mined from underground resources and trucked to Blackdome for milling alongside ore from that operation.

Gavin Mines Inc needs a mill for the **Dome Mountain** gold mine because a long term agreement for off-site milling of the 11 gram per tonne gold resource has not materialized. A working group comprising government and industry experts has been established to facilitate permitting of an on-site mill.

Banks Island Gold Corp is procuring mining equipment and camp facilities to begin test mining at the **Yellow Giant** gold project in 2013 (Photo 19). The project includes four, defined, near-surface, gold resources.

Yellowjacket Resources Ltd completed a reverse circulation drill program at the **Yellowjacket** gold project in the Atlin Gold Camp. The project is permitted for an

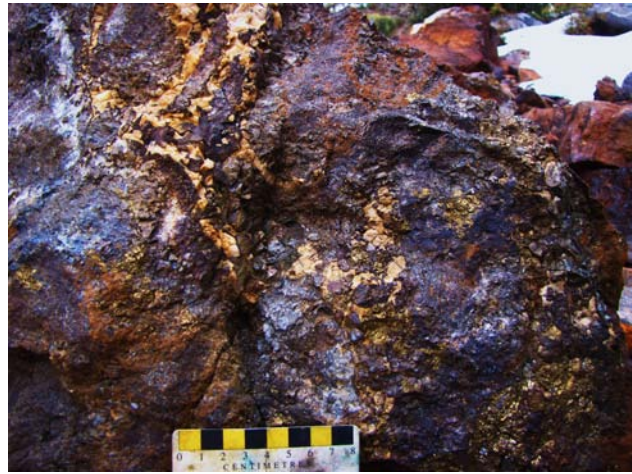


Photo 19. Banks Island Gold Corp is procuring mining equipment and camp facilities to begin test mining at the Yellow Giant gold project. Here the Tel zone of high-grade mineralization consists of quartz vein-hosted, massive, pyrite-pyrrhotite with interstitial sphalerite, galena and carbonate.

open-pit mine and onsite 400 tonne-per-day mill where gold may be recovered using a simple gravity concentrating recovery plant.

Early to Advanced Stage

Skeena Region

Ascot Resources released an initial bulk tonnage resource estimate for the **Big Missouri** gold-silver project. Drilling this year targeted the surrounding deposits (**Dilworth** and **Martha Ellen**) and returned significant gold and silver values. The project area is adjacent to the past producing Premier-Silback gold mine.

Mountain Boy Minerals Ltd, with joint venture partner Decade Resources Ltd, drilled the past producing **Red Cliff** property, focussing mainly on the Montrose zone. Results include multiple significant gold intercepts with minor visible gold.

Teuton Resources Corp completed a program at the **High** property and confirmed gold mineralization near the southern margin of Pretivm Resources' Brucejack project. At the **Clone** gold project, Canasia Industries collected 20 one tonne bulk samples that yielded an average of 53.1 grams per tonne gold.

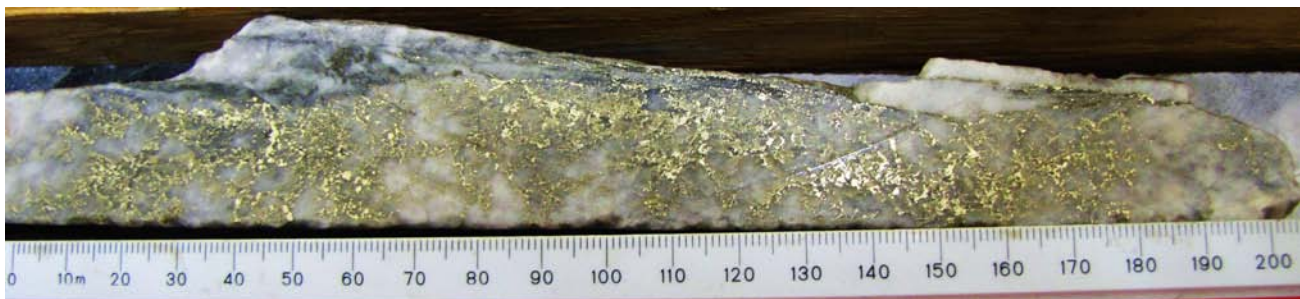


Photo 18. High-grade gold from the Valley of the Kings zone at the Pretium Resources Inc Brucejack gold-silver project. This sample graded 41,582 grams per tonne gold plus 27,725 grams per tonne silver across 0.5 metre in drillhole SU-452.

China Minerals Mining Corporation completed drilling at the Taurus and Table Mountain past producing gold deposits, now collectively known as the **Cassiar Gold** project. Infill drilling at Taurus confirmed bulk tonnage potential.

BC Gold Corp now owns 100% of the historic **Engineer** underground gold mine, and completed underground dewatering and rehabilitation. Access to deeper levels has not been possible since 1928. High-grade gold shoots were confirmed and extended to depth. Bulk sample material was milled and concentrated on site, producing 969 kilograms of concentrate that yielded 2112.2 grams of gold.

Brixton Metals Corporation completed a successful exploration drilling program at the **Thorn** project, returning highest grade results to date. Hole THN12-84 returned 123.0 metres grading 190.68 grams per tonne silver, 1.19 grams per tonne gold, 0.06% copper, 1.26% lead and 3.25% zinc from 44.0 metres depth. An aggressive follow up program is being planned to generate an initial resource estimate in 2013.

Argonaut Exploration Inc drilled at the Victor Vein, approximately 2.1 km south of the past producing **Columario** gold-silver mine. The program confirmed vein and mineralization continuity to the south. Argonaut has acquired mineral tenures covering several past producing precious metal mines, including Lucky Luke, Cordillera, and Dorreen.

Exploration conducted by Amarc Resources Ltd focussed on silver and copper mineralization around the MR showing; they refer to the project area as **Silver Vista**. The company has acquired tenure over approximately 720 square kilometres of surrounding ground, including geochemical anomalies.

Omineca Region To the northwest of the Blackwater project, New Gold's drilling at **Capoose** approached 11 000 metres in over 22 holes. Early assay results showed mineralization both within and beyond previously defined boundaries. Elsewhere in the Nechako Plateau, Independence Gold Corp updated the resource estimate for the Tommy, Ted, and Mint veins at the **3Ts** project. Drilling tested the Ted and Mint veins down dip and along strike, and a Mint Vein northern extension. RJK Explorations Ltd completed a Phase 1 drill program at **Blackwater East (Northeast)**. Two holes intersected pyritic intervals with elevated silver values, including 2710 grams per tonne silver over 3.3 metres. Venerable Ventures Ltd drilled at **Trout** to test three of seven targets generated by airborne geophysical and geochemical surveys designed to see through basalt cover. Parlane Resource Corp ran a late drill program at **Big Bear** to test five target areas following a geophysical survey and sampling program over nine gold-in-soil anomalies. Amarc Resources Ltd completed an induced polarization survey at **Galileo**, an extensive land package in what the company refers to as the Blackwater-Newton

gold belt. Amarc's program at **Hubble** included an airborne geophysical survey and small drill program to test an induced polarization anomaly. Troymet Exploration Corp's program at **Key** included an induced polarization survey across six target zones, and follow up drilling to test four coincident soil-induced polarization anomalies.

In the Toadoggone Region, Tower Resources Ltd drill tested the Finn Zone at their **JD** property. Near-surface mineralization was encountered that confirmed and extended historic results.

Thompson-Okanagan-Cariboo Region Continued drilling by Amarc Resources on the **Newton** gold and silver property has led to the release of an inferred resource estimate. The project is similar to other large epithermal-style projects being explored in the province, including the Blackwater project approximately 175 km to northwest. Manado Gold Corp drilled the South and Bari zones on their **Clisbako** property, to test the extent and tenor of mineralization in silica stockworks and breccias.

Last year Barkerville Gold Mines Ltd drilled their **Cariboo Gold** gold project (approximately 58 000 metres). This year they announced a new resource with an increase in contained gold, supplemented by a report substantiating the release. A regulatory review cited technical disclosure concerns and the company reported that it has been working to prepare a satisfactory report. The company has since drilled a further fourteen holes, many of which twinned previous holes, toward resolving this issue.

WestKam Gold Corp reached an Advanced Exploration Agreement with the Stk'emlupsemc te Secwepemc Nation to prepare for work next year on their **Bonaparte** gold property. Planet Mining Exploration Ltd drilled the **Golden Loon** gold property to test the distribution and tenor of disseminated mineralization. Nickel, cobalt, and PGE mineralization hosted in an ultramafic intrusion is also found on this property.

Gold Mountain Mining Corporation conducted an exploration program on their **Elk** gold vein project that included drilling, induced polarization surveying, and bulk sampling. Bulk sampling was in an area of previously delineated mineralization east of the past producing Siwash North open-pit (Photo 20). Late in the year, the company filed an application under the *Mines Act* to increase permitted extraction from 10 000 to 70 000 tonnes per year. Berkwood Resources Ltd regained control of the **Prospect Valley** gold property and reissued a mineral resource estimate from recent work. The companies trenching and sampling extended gold mineralization for one kilometre along the projected trend of the Discovery zone. Nearby, Westhaven Ventures Inc completed an induced polarization survey and drill program at the **Shovelnose** epithermal gold property.

Operating Mines and Selected Major Exploration Projects in British Columbia 2012

Jim Britton; Robin Chu; Dave Grieve; Paul Jago; Jeff Kyba;
Bruce Madu; and Bruce Northcote

Open File 2013 - 1

Coal

10 Mine

6 Proposed Mine

13 Significant Project

Metal

11 Mine

3 Mine Development

18 Proposed Mine

76 Significant Project

Infrastructure

Rail Line

Major Roads

Ports

Metal Mine Commodity Codes

Ag - Silver
Au - Gold
Cu - Copper
Mo - Molybdenum
Zn - Zinc

Industrial Minerals Commodity Codes

At - Aggregate
Ba - Barite
Bn - Bentonite
Bs - Basalt
Bu - Building Stone
Cy - Clay
Do - Dolomite
Fr - Fuller's earth
Gy - Gypsum
Jd - Jade
Ls - Limestone

Mg - Magnesium
Mt - Magnesite
Mw - Mineral Wool
Nb - Niobium
Op - Opal
Pm - Pumice
RE - Rare Earth
Sh - Shale
Si - Silica
Sy - Syenite
Ta - Tantalum

Industrial Minerals Producers and Exploration Projects*

1. Apple Bay (Si, Cy)
2. Benson Lake (Ls)
3. Orca (At)
4. De Cosmos Lagoon (Cy)
5. Blubber Bay (Ls, At)
6. Gillies Bay (Ls, At)
7. Van Anda (Ls)
8. K2 (Bu)
9. Earle Creek (At)
10. Sechelt Mine (At)
- *11. McNab Valley (At)
12. Mount Meager (Pm, At)
13. Pitt River Quarry (At)
14. Cox Station (At)
15. Sumas Shale (Sh, Cy, Si)
16. Pavilion Quarry (Ls)
17. Décor (Sh)
18. Ashcroft (Bs)
19. Red Lake (Fr)
20. Bud (Bn)
21. Harper Ranch (Ls)
22. Buse Lake (Si)
23. Falkland (Gy)
24. Klinker (Op)
25. Kettle Valley (Bu)
26. Winner (Mw)
27. Lime Creek (Ls)
28. Crawford Bay (Do)
29. 4J (Gy)
30. Elkhorn (Gy)
31. Mount Brussilof (Mt)
32. Moberly (Si)
- *33. Blue River (Ta, Nb)
- *34. Angus (Si)
- *35. Carbonatite Syndicate (RE)
- *36. Carbo (RE)
- *37. Aley (Nb)
- *38. Provencher, Kutcho, Cassiar (Jd)
39. Fireside (Ba)
- *40. Nonda (Si)
- *41. Hoof (Mg)
- * Exploration Projects



Notes

This map shows the coal, industrial mineral and metal mines, and major exploration projects of British Columbia that were active in 2012. Some sites were active for only part of 2012. Large exporting aggregate producers are shown but not the many aggregate quarries serving local markets around the Province. Not all exploration projects in the Province are shown on this map.

Information provided by the Province's regional geologists: Jim Britton, Dave Grieve, Paul Jago, Jeff Kyba, and Bruce Northcote. Information compiled by Bruce Madu and Robin Chu of the British Columbia Geological Survey.

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BC Geological Survey
www.empr.gov.bc.ca/geology



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Kilometers



Photo 20. Gold Mountain Mining Corporation conducted an exploration program at the Elk gold project that included a bulk sample in an area east of the past producing Siwash North open pit.

Kootenay Region

Grizzly Discoveries Ltd's work at the **Greenwood Gold** project included drilling in the Mount Attwood area targeting coincident geochemical and geophysical anomalies previously untested by drilling. Anglo Swiss Resources Inc conducted a step-out and infill program to test southerly extensions of veins at the **Kenville** property, location of the past producing Kenville Mine. They have intersected vein extensions as far as 800 metres to the south. A geophysical target west of the mine was also tested.

South/West Coast Regions

At its **Ladner Gold** project, New Carolin Mines had a regional exploration program as well as drilling. They updated resource estimates on the Carolin Mine area and McMaster zone this year and are working toward reprocessing the former Carolin Mine's tailings to generate early cash flow.

ZINC, COPPER, LEAD, SILVER, AND GOLD EXPLORATION PROJECTS (VMS, SEDEX, STRATIFORM/STRATABOUND, VEINS)

Mine Evaluation Stage

Chieftain Metals Inc is in the final permitting stages to resume mining at the **Tulsequah Chief** copper-zinc-lead-silver-gold project (Photo 21). China CAMC Engineering Co Ltd and Procon Holdings (Alberta) Inc have signed a Memorandum of Understanding with Chieftain to acquire a 30% interest in the project. A positive feasibility study completed this year precedes anticipated construction in 2013 and final commissioning by late 2015.

Capstone Mining Corporation continues to gather baseline data for their **Kutcho Creek** copper-zinc project submission to the Environmental Assessment process sometime in 2013. An updated mine design includes a



Photo 21. Chieftain Metals Inc is in the final permitting stages to resume mining at the Tulsequah Chief copper-zinc-lead-silver-gold project. The water treatment plant shown in the photo reduced metal loading into the environment by 98%.

starter open-pit at the Main zone, and underground mining at the Esso zone.

Yellowhead Mining Inc has completed a feasibility study at its **Harper Creek** copper-gold-silver project that contemplated a 70 000 tonne-per-day mine. Currently, a comprehensive baseline environmental study is underway, ongoing consultation with local communities and First Nations is occurring and an 11 000 metre drill program started in early winter 2012.

The **Ruddock Creek** zinc-lead project is in the pre-application stage of the Environmental Assessment process. The project is owned by Imperial Metals Corporation and joint venture partners Mitsui Mining and Smelting Co Ltd and Itochu Corporation. A preliminary economic analysis, which will include a mineral resource estimate that incorporates 2012 drilling results, is anticipated early in 2013. On-site activities included surface drilling at the V and Creek zones, and underground drilling and a bulk sample extraction from the E zone.

Early to Advanced Stage

Skeena Region

In December, Castle Resources released an updated resource estimate on the past producing **Granduc** copper deposit, based in part on 24 000 metre drill program (Photo 22). High-grade copper at the North and South zones continue to be validated and extended. A preliminary economic assessment is planned for release in early 2013.

Silvercorp Metals Inc continued evaluation of their **Silvertip** silver-lead-zinc-gold project, and is preparing a *Mines Act* permit application. A preliminary economic assessment outlines three underground mining scenarios of variable milling rates and seasonal operations.

Agnico-Eagle Mines Limited optioned the **Homestake Ridge** gold and silver-rich polymetallic



Photo 22. Looking west-northwest over the former Granduc mill site towards the Berendon Glacier. This is the portal entrance to the refurbished 17 km Tide Lake Tunnel which serviced the underground mine workings during past operation from 1970-1984.

project from Homestake Resource Corporation. They drilled the South Reef zone, which follows the centre of a 4 kilometre mineralized trend that hosts defined resources in the Main zone. Regional groundwork at **Kinskuch** project has identified geology that is similar to the adjacent past producing Dolly Varden silver property.

The **Red Mountain** property was reactivated when Banks Island Gold Ltd entered into an option agreement with Seabridge Gold Inc to acquire 100% of the property. An updated preliminary economic assessment using historical data updated a resource estimate for four zones (Marc, AV, JW and 141).

Omineca Region Canada Zinc Metals Corp updated the resource estimate for the Cardiac Creek deposit on its **Akie** property. For the Kechika Regional program, results from 2011 were followed up at **Pie** and **Mt. Alcock**, with additional geochemistry and mapping on several prospects. An airborne VTEM survey was flown over the properties, including Akie.

Kootenay Region PJX Resources Inc drilled the **Eddy** property southwest of Cranbrook, along the Kimberley Gold Trend, targeting geophysical anomalies that overlap historical showings of gold, copper, lead, zinc, and silver.

At the **Findlay** property MMG Limited targeted the horizon that hosted the past producing Sullivan lead-zinc-silver ore body with a helicopter-supported drill program.

Rainbow Resources Inc undertook an initial drill program on the **Gold Viking** silver-gold-lead-zinc past producer. The Gold Viking property is part of their larger Big Strike Project. Also part of the project is the **International Silver** property, where the target was the International silver-lead-zinc vein, which was intersected in fifteen holes.

Providence Capital Corp and Eagle Plains Resources Ltd continued their drill program at the **Iron Range**

project. Both SEDEX and possible IOCG mineralization types are known on the property. Recent exploration focused on potential SEDEX targets, specifically the Talon zone, where gold is associated with base metals.

Huakan International Mining Inc carried out an underground drilling program at the **J&L** gold-silver-zinc-lead deposit. Recent results have given this project an updated resource estimate at both the Main and Yellowjacket zones.

Silver Mountain Mines Inc drilled the **Ptarmigan** polymetallic property focussing on the past-producing Ptarmigan silver-gold-copper-zinc mine and Upper Ptarmigan and East Ptarmigan zones.

Emgold Mining Corporation carried out exploration diamond drilling on the **Roza** property where known mineralization is mainly polymetallic, but the current focus of exploration is vein and disseminated gold.

Klondike Silver Corp carried out underground rehabilitation at its **Slocan Silver** project, specifically at the 4000 level in the Silvana past producing mine. They also mined and milled approximately 6000 tonnes of remnant ore recovered in the Silvana and Hinkley, another past producer.

East of the Rocky Mountain Trench, Omineca Mining and Metals Ltd drilled the **Sully** property, targeting a gravity anomaly that suggests potential for mineralization at the stratigraphic horizon that hosted the Sullivan lead-zinc-silver deposit. The hole deviated and missed its target; it was followed by down-hole and surface geophysics.

NICKEL AND MAGNESIUM EXPLORATION PROJECTS (ULTRAMAFIC ASSOCIATED)

Early to Advanced Stage

Skeena Region First Point Minerals Corp completed exploration drilling and geophysical surveys for nickel-iron-alloy at the **Wale** and **Orca** prospects. Drilling identified over 260 metres grading 0.127% nickel in alloy from 4.3 metres depth in hole 12DH-06. A five tonne bulk sample was extracted for metallurgical testing.

Omineca Region First Point Minerals Corp provided an initial resource estimate for the Baptiste deposit at the **Decar** nickel-alloy project (Photo 23). The project is under option to Cliffs Natural Resources Exploration Canada Inc, an affiliate of Cliffs Natural Resources Inc. This year's exploration program extended near-surface mineralization in the south-central area, and further defined the volume of an east-west trending higher grade zone. A preliminary economic assessment is underway, with completion expected for March 2013.



Photo 23. Cliffs Natural Resources Exploration Canada Inc produced an initial resource estimate for the Baptiste deposit at the Decar nickel-alloy project. Photo. Field staff at work in the core shack; Photo. Serpentine speckled with cyanite grading 0.136% DTR Ni in hole 12-BAP-041 at 215 metre depth.

First Point Minerals Corp drilled the **Klow** project to test a northwest-trending corridor in the main zone that hosts elevated nickel-alloy values at surface. A ground magnetic survey for target development preceded the drilling.

Thompson-Okanagan-Cariboo Region

Planet Mining Exploration Ltd continued work on their **Golden Loon** property, where one target is nickel, cobalt, and platinum group

elements in a large, zoned, Alaskan-type ultramafic intrusion.

SPECIALTY METAL (REE, TANTALUM, NIOBIUM) EXPLORATION PROJECTS (CARBONATITE OR ALKALINE INTRUSIVE-RELATED) PROJECTS

Early to Advanced Stage

Omineca Region

In March, Taseko Mines Ltd announced a 170% increase to the inferred resource at the **Aley** niobium project, making it the largest undeveloped niobium project in the world (Photo 24). With the resource able to support twenty five years of operation, the company focused on advancing preliminary engineering and site planning in support of a feasibility study expected in 2013.

Thompson-Okanagan-Cariboo Region

Commerce Resources Corp reported progress on its **Blue River** project, a tantalum and niobium-bearing carbonatite. The company completed metallurgical studies, structural geology reviews, and re-logged selected drillholes. Further mineral resource updates are expected in early 2013.



Photo 24. Taseko Mines Ltd announced a major increase to the inferred resource at the Aley niobium project, making it the largest undeveloped niobium project in the world. Photo shows geologist Mercedes Rich at the carbonatite contact in the Saddle zone with syenite-bearing fenite breccias.

IRON PROJECTS (SKARNS, MAGMATIC CUMULATES)

Early to Advanced Stage

South/West Coast Regions Near Sayward, Canadian Nexus Ventures Ltd. and Canadian Dehua International Mines Group Inc are planning to reopen a magnetite operation at the **Iron Ross** property with a proposed 70 000 tonne-per-year operation (Photo 25). Permitting and environmental studies are ongoing.

Thompson-Okanagan-Cariboo Region Private company Magnetite Ridge Metals and Minerals Ltd of Kamloops, continued to investigate its large magnetite deposit at its **Magnetite Ridge** project in the Tulameen Ultramafic Complex. The company reports that metallurgical studies on a large composite sample, grading 30% magnetite, indicate its suitability as both steel smelter feed and a coal cleaning heavy medium.

INDUSTRIAL MINERALS AND AGGREGATES

Mine Evaluation Stage

South/West Coast Regions The **BURNCO** Aggregate Project on Howe Sound is in the Pre-application stage of the Environmental Assessment process of both provincial and federal agencies. BURNCO Rock Products Ltd proposes a one million tonne-per-year sand and gravel operation. The product is to be shipped by barge.



Photo 25. Old quarry site with massive magnetite at the Iron Ross project on Vancouver Island. A new 70 000 tonne-per-year operation is proposed by partners Canadian Nexus Ventures Ltd and Canadian Dehua International Mines Group Inc.

Early to Advanced Stage

Kootenay Region Noram Ventures Inc drilled the Kokanee flake graphite property northeast of Nelson. Previously explored for base metals, this was the property's first graphite exploration. The target was a 2 kilometre by 200 to 300 metre zone of graphite surface occurrences that coincide with an electromagnetic anomaly.

THE BRITISH COLUMBIA GEOLOGICAL SURVEY

The British Columbia Geological Survey (BCGS) continues to play a leading role in supporting a sustainable mining and mineral exploration industry. A priority of the survey is to generate new geoscience information to enhance the understanding of British Columbia's geology. The Survey is committed to the public dissemination of applied, impartial scientific investigations, and geoscience data. This leads to attracting investment, reducing market risk, and enabling responsible management of British Columbia's resources. This is commonly completed through cooperative partnerships with the federal government, universities, industry, and other public geoscience agencies.

MapPlace continues to provide clients with efficiencies in research time, data costs, and analysis. Improvements continue to be made to the province's digital geological map, BCGeologyMap. Property File continues to grow with more than 35 000 unique industry documents and maps available online. MINFILE contains geological, location, and economic information on more than 13 000 metallic, industrial mineral and coal mines, deposits and occurrences in British Columbia. This year, the MINFILE database had an update of over 1600 occurrences and addition of 684 new occurrences. Users can now access more than 32 300 company mineral assessment reports using the online ARIS database. All geoscience publications and digital data are available online at the BCGS website: www.empr.gov.bc.ca/geology.

GEOSCIENCE BC - PUBLIC GEOSCIENCE DELIVERY OUTSIDE OF GOVERNMENT

Geoscience BC (GBC) is an industry-led, not-for-profit, applied geoscience organization. Established in 2005, its mandate includes the collection, interpretation, and delivery of geoscience data and expertise in order to attract investment in mineral and oil & gas exploration and development in the province. To accomplish this, GBC works in partnership with industry, academia, government, First Nations, and communities to identify and fund applied geoscience projects.

Project highlights from 2012 include:

- Launch of the Northern Vancouver Island Exploration Geoscience Project in July to stimulate exploration interest and investment on Northern Vancouver Island. The project currently includes two separate technical activities: a high-resolution airborne magnetic survey and a regional ground geochemical program. In addition, the project has supported two community workshops aimed at local First Nations and community members in the project area.
- Continued work on the QUEST-Northwest Project in northwest British Columbia, supporting a third high-resolution airborne magnetic survey in the region, which includes the Red Chris deposit.
- Launch of a collaborative regional seismic program in northeast British Columbia, to study the effect of induced seismicity from unconventional gas development.
- Release of fourteen reports and an annual Summary of Activities, containing fifteen technical reports.

For more information on GBC, its activities and project results go to www.geosciencebc.com

FOREIGN INVESTMENT INITIATIVES

Throughout the year, the province's Regional Geologists and the Mineral Development Office in Vancouver provide information to potential investors, both domestically and abroad. This is commonly coordinated with industry associations, exploration and

mining companies, and other government agencies. The Ministry of Jobs, Tourism and Skills Training (JTST) is a key agency in coordinating foreign investment initiatives and provides much of the technical information. Each year, the province conducts a major investment mission to Asia, showcasing mineral and coal opportunities. This year, the mission included China and South Korea.

Opportunities exist for British Columbia companies to attract foreign investment using government assistance. If your company is interested in profiling your projects or investment opportunities in upcoming investment missions, contact the BC Mineral Development Office in Vancouver at the address below.

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TABLE 1. FORECAST MINE PRODUCTION 2012

Mine	Operator	Deposit Type/Commodity	Forecast 2012 Production	Proven and Probable Reserves (on Dec 31, 2012/Jan 1, 2013 or as indicated)	Region
Metals					
Bralorne	Bralorne Gold Mines Ltd	Vein Au	200 kg Au	N/A	Thompson-Okanagan Cariboo
Copper Mountain Mining Corporation / Mitsubishi Materials Corporation	Copper Mountain Mining Corporation / Mitsubishi Materials	Alkalic porphyry, Cu	26 000 t Cu; 540 kg Au, 11 900 kg Ag	211 Mt at 0.36% Cu, 0.1 g/t Au, 1.38 g/t Ag (July 2009)	Thompson-Okanagan Cariboo
Endako	Thompson Creek Metals Company	Porphyry Mo	3164 t Mo (2011)	333.1 Mt at 0.046% Mo	Omineca
Gibraltar	Taseko Mines Limited / Cariboo Copper Corp	Calc-alkalic porphyry / Cu-Mo	40 300 t Cu, 660 t Mo	802 Mt at 0.30% Cu and 0.008% Mo (March 2011)	Thompson-Okanagan Cariboo
Highland Valley Copper	Teck Highland Valley Copper Partnership	Calc-alkalic porphyry / Cu-Mo	105 000 t Cu; 4300 t Mo	673.3 Mt at 0.29% Cu and 0.008% Mo	Thompson-Okanagan Cariboo
Huckleberry	Huckleberry Mines Ltd (50% Imperial Metals Corp)	Porphyry Cu-Mo	19 427 t Cu, 3.14 t Mo, 109.48 kg Au, 6785 kg Ag (2011)	39.7 Mt at 0.343% Cu, 0.009% Mo (Nov 22, 2011)	Skeena
Mount Polley	Imperial Metals Corp	Alkalic porphyry / Cu-Au-Ag	15 400 t Cu, 1460 kg Au, 2 800 kg Ag	87.3 Mt at 0.29% Cu, 0.3 g/t Au and 0.41 g/t Ag (March 2012)	Thompson-Okanagan Cariboo
Myra Falls	NVI Mining Ltd (Nyrstar N.V.)	Zn-Cu-Pb-Au-Ag	~ 0.5 Mt mill throughput (head grades 7.26% Zn, 0.55% Pb, 1.03% Cu, 1.29 g/t Au, 48.49 g/t Ag)	6.25 Mt at 4.75% Zn, 0.46% Pb, 0.87% Cu, 1.35 g/t Au, 43.87 g/t Ag	Coast
New Afton	New Gold Inc	Alkalic porphyry / Cu-Au-Ag	13 600 - 15 875 t Cu, 1100 - 1400 kg Au (2012 guidance)	47.9 Mt at 0.64 g/t Au, 2.0 g/t Ag, 0.9% Cu (Dec 2011)	Thompson-Okanagan Cariboo
QR (restarted selective mining Dec 2012)	Barkerville Gold Mines Ltd	Skarn / Au		N/A	Thompson-Okanagan Cariboo
Shasta	Sable Resources Ltd	Low Sulphidation Epithermal / Au, Ag	<85.5 kg AuEq (2011)	5000 t	Omineca
Coal					
Basin	Coalmont Energy Corp	Thermal coal	0 (mining to resume in 2013)		Thompson-Okanagan Cariboo
Brule	Walter Energy Inc	ULV-PCI coal	1.8 Mt	21.1 Mt	Northeast
Coal Mountain	Teck Coal Limited	PCI and thermal coal	2.687 Mt	15.9 Mt	Kootenay
Elkview	Teck Coal Limited	Metallurgical coal	4.653 Mt	215 Mt	Kootenay
Fording River	Teck Coal Limited	Metallurgical and thermal coal	8.915 Mt	626.5 Mt	Kootenay
Greenhills	Teck Coal Limited	Metallurgical, PCI and thermal coal	4.544 Mt	75.3 Mt	Kootenay
Line Creek	Teck Coal Limited	Metallurgical, PCI and thermal coal	3.4 Mt	67.2 Mt	Kootenay
Quinsam	Quinsam Coal Corp (Hillsborough Resources Ltd)	Thermal coal	365 000 t clean coal	N/A (Developing 5,10,15 year plans)	Coast
Trend	Walter Energy Inc	Hard coking coal (HCC)	1.0 Mt	22.6 Mt	Northeast
Willow Creek	Walter Energy Inc	ULV-PCI, HCC	0.9 (0.6 PCI, 0.3 HCC)	19.9 Mt	Northeast
Wolverine (Perry Creek)	Peace River Coal Inc (Anglo American plc)	Hard coking coal (HCC)	1.8 Mt	12.9 Mt	Northeast
				Resource/Project mine life	
Industrial Minerals (selected)					
4J	Georgia-Pacific Canada Inc	Gypsum			Kootenay
Ashcroft	IG Machine and Fiber Ltd (IKO Industries Ltd)	Basalt (Roofing granules)	~350 000 t		Thompson-Okanagan Cariboo
Apple Bay (PEM 100)	Electra Gold Ltd	Chalky geyserite	~50 000 t	~5 Mt	Coast
Benson Lake	Imasco Minerals Inc	White marble	36 300 t	100+ years	Coast
Blubber Bay	Ash Grove Cement Company	Limestone aggregate, dolomitic limestone		100+ years	Coast
Bud	Absorbent Products Ltd	Bentonite			Thompson-Okanagan Cariboo
Buse Lake	Lafarge Canada Inc	Volcanic ash (alumina-silica)			Thompson-Okanagan Cariboo
Craigmont	Craigmont Mines Joint Venture	Magnetite tailings	60 - 70 000 t		Thompson-Okanagan Cariboo
Crawford Bay	Imasco Minerals Inc	Dolomite			Kootenay
Decor	Pacific Bentonite Ltd	Alumina, landscape rock			Thompson-Okanagan Cariboo
Elkhorn	CertainTeed Gypsum Canada	Gypsum	429 kt		Kootenay
Falkland	Lafarge Canada Inc	Gypsum	6 000 t		Thompson-Okanagan Cariboo

TABLE 1. CONTINUED

Mine	Operator	Deposit Type/Commodity	Forecast 2012 Production	Resource/Project mine life	Region
Industrial Minerals (selected)					
Fireside	Fireside Minerals Inc	Barite	25 000 t	120 400 t (not NI 43-101 compliant)	Skeena
Garibaldi Pumice	Garibaldi Pumice Ltd	Pumice	21 500 m3	100+ years	Coast
Gillies Bay	Texada Quarrying Ltd. (Lafarge North America Inc)	Limestone, aggregate	4.2 Mt	100+ years	Coast
Giscome	Graymont Western Canada Inc	Limestone			Omineca
Harper Ranch	Lafarge Canada Inc	Limestone	~220 000 t		Thompson-Okanagan Cariboo
Kettle Valley quarries	Kettle Valley Stone Company	Ashlar, flagstone, thin veneer			Thompson-Okanagan Cariboo
K2	K2 Stone Quarries Inc	Building stone	16 000 - 18 000 t		Coast
Lime Creek	Imasco Minerals Inc	Limestone			Kootenay
Moberly Silica	HCA Mountain Minerals (Moberly) Ltd	Silica sand		13.5 Mt 64% frac sand (June 30 2012)	Kootenay
Mount Brussilof	Baymag Inc	Magnesite	180 kt		Kootenay
Mount Meager	Great Pacific Pumice Inc	Pumice		100+ years	Coast
Nazko	Lightweight Advanced Volcanic Aggregates Inc	Lava rock			
Pavilion	Graymont Western Canada Inc	Limestone	190 000 t		Thompson-Okanagan Cariboo
Red Lake	Absorbent Products Ltd	Diatomaceous earth			Thompson-Okanagan Cariboo
Sumas Mountain	Sumas Shale Ltd (Clayburn Industrial Group and cement manufacturer partners)	Sandstone and shale	~400 000 t	~70 years	Coast
Van Anda	Imperial Limestone Company Ltd (JA Jack and Sons Inc)	Limestone	~250 000 t	50+ years	Coast
Winner	Roxul Inc	Gabbro (mineral wool)	150 kt		Kootenay
Zeotech Bromley Creek	Heemskirk Canada Ltd	Zeolite			Thompson-Okanagan Cariboo

TABLE 2. RESOURCE ESTIMATES 2012

Property	Region	Operator	Resource Category	Resources	Source
Acton (Last Fox Area)	Sikena	Futura Minerals Limited	P+P	129.4 Mt run-of-mine coal	Co web page Dec 19 2012
Bell-Granite	Sikena	Xstrata Copper Canada	Hit	70 Mt 0.46% Cu, 0.23 g/t Au, 0.48 g/t - 119 Mt 0.41% Cu, 0.15 g/t Au	Noranda Mines Ltd Annual Reports 1980-1990
Big Muskrat	Sikena	Ascor Resources Ltd	Ind	25.19 Mt 1.224 g/t Au, 5.8 g/t Ag	Company web pages Dec 19 2012
Brucial	Sikena	Pretium Resources Inc	Ind	16.2 Mt 16.4 g/t Au, 14.2 g/t Ag	Company web pages Dec 19 2012
Engineer	Sikena	BC Gold Corp	Inf	41 000 19 g/t Au	April 6 2011 resource estimate
Gabon Creek	Sikena	Teck Resources Ltd/NovaGold Resources Inc	P+P	528 Mt 0.59% Cu, 0.32 g/t Au, 6.02 g/t Ag	NovaGold web pages Dec 19 2012/2011 AMEC technical report
Granville	Sikena	Castle Resources Inc	Ind	11.37 Mt 1.47% Cu, 0.17 g/t Au, 12.4 g/t Ag	Castle Resources Dec 12 2012 News Release
Homestake Ridge	Sikena	Homestake Resource Corporation	Ind	0.88 Mt 6.7 g/t Au and 47 g/t Ag	Company web pages Dec 19 2012
KSM	Sikena	Aurifer Mining Corp	M+I	321 Mt 0.071% Mo, 4.8 g/t Ag, 236 g/t Pb	April 14 2012 News Release
Kutcho Creek	Sikena	Seabridge Gold Inc	P+P	2164 Mt 0.55 g/t Au, 0.25% Cu, 2.74 g/t Ag, 44.7 ppm Mo	Seabridge May 14 2012 News Release
Kutcho Creek	Sikena	Capstone Mining Corporation	Prob	10.44 Mt 2.01% Cu, 3.19% Zn, 34.61 g/t Ag, 0.37 g/t Au	Company web pages Dec 19 2012
Proflin	Sikena	Pacific Boulder Minerals Inc	P+P	224.25 Mt 0.339% Cu, 0.163 g/t Au, 0.040% Mo	Company web pages Dec 19 2012
Red Chris	Sikena	Lion-Gold Metals Inc	Ind	171.3 Mt 0.28% Cu, 0.09 g/t Au, 2.3 g/t Ag, 0.008% Mo	Lion-Gold Feb 5 2012 News Release
Red Chris	Sikena	Imperial Metals Corporation	P+P	302.3 Mt 0.359% Cu, 0.27 g/t Au	Company web pages Dec 19 2012
Red Mountain	Sikena	Banks Island Gold Ltd	M+I	1.61 Mt 8.4 g/t Au and 38 g/t Ag	Company web pages Dec 19 2012
Sagitt Creek	Sikena	Copper Fox Metals Inc	M+I	1293 Mt 0.35% Cu, 0.017% Au, 0.19 g/t Au, 1.69 g/t Ag	Company web pages Dec 19 2012
Sagitt Creek	Sikena	Gold Road Resources Ltd	Ind	28.13 Mt 0.22% Cu, 0.21 g/t Au, 1.1 g/t Ag, 0.007% Mo	Company web pages Dec 19 2012
Sell	Sikena	Gold Road Resources Ltd	Ind	2.45 Mt 35 g/t Ag, 5.86% Pb, 6.28% Zn and 0.415 g/t Au	Company web pages Dec 19 2012
Silverip (lower Zone)	Sikena	Silvercorp Metals Inc	Prob	6.45 Mt 1.12% Cu, 1.04% Pb, 3.59% Zn, 2.39 g/t Au, 81.38 g/t Ag	Chiefman Dec 12 2012 News Release
Tubaro Chief	Sikena	Chiefman Metals Inc	Ind	78 000 13.0 g/t Au, 44 g/t Ag	Company web pages Dec 19 2012
Yellow Giant	Sikena	Banks Island Gold Ltd	M+I	86.4 Mt in situ coal	2009 technical report for Peace River Coal
Baldcourt North and South	Northeast	Peace River Coal Inc	P+P	28.5 Mt recoverable reserves (coal)	Walker Energy 2011 Annual Report
Baldcourt South	Northeast	Walker Energy Inc	P+P	121 Mt (coal)	Company web pages Dec 27 2012
Carbon Creek	Northeast	Walker Energy Inc	Prov	9.9 Mt (coal)	Walker Energy 2011 Annual Report
EB	Northeast	Canadian Kalium Dehua Mines Co	Inf	98 Mt (coal)	Company web pages Dec 2 2012
Goodrich Central South	Northeast	Xstrata Coal	P+P	9.1 Mt (coal)	Xstrata Mineral Resources and Reserves as at 31 December 2011
Herrmann	Northeast	Walker Energy Inc	M+I	41 Mt (coal)	Walker Energy 2011 Annual Report
Horizon Ridge	Northeast	Anglo American PLC	M+I	45.6 Mt in situ coal	Hillsborough Resources Limited Feb 9 2006 News Release
Huguenot	Northeast	Colonial Coal International Corp	M+I	189.4 Mt (coal)	Walker Energy 2011 Annual Report
Murray River	Northeast	HD Mining International Ltd	n/a	688 Mt (coal)	Company web pages Dec 27 2012
Quintette	Northeast	Teck Coal Limited	M+I	180.5 Mt raw coal	Company web pages Dec 27 2012
Roman Mountain	Northeast	Anglo American PLC	M+I	26.7 in situ coal	2010 Feasibility study
Sukka	Northeast	Xstrata Coal	M+I	236 Mt (coal)	Anglo American Met Coal Fact Book 2012
Sukka	Northeast	Xstrata Coal	M+I	185 Mt (coal)	Xstrata Mineral Resources and Reserves as at 31 December 2011
Wapiti	Northeast	Canadian Dehua International Mines Group Inc	n/a	7000 Mt (coal)	Company web pages Dec 27 2012
3TIs	Omineca	Independence Gold Corp	Inf	3.61 Mt 3.39 g/t Au 85.15 g/t Ag	Company web pages Dec 27 2012
Aile	Omineca	Canada Zinc Metals Corp	Ind	12.7 Mt 8.4% Zn, 1.7% Pb 13.7 g/t Ag	Company web pages Dec 27 2012
Aley	Omineca	Taseko Mines Ltd	M+I	258.8 Mt 0.37% Nb2O5	Company web pages Dec 27 2012
Argus	Omineca	Sokine Energy Corp	Inf	726 Mt meta-sandstone (for frac sand)	Sokine Dec 12 2011 News Release
Blackwater	Omineca	New Gold Inc	Ind	267.1 Mt 0.88 g/t Au, 4.3 g/t Ag	Company web pages Dec 27 2012
Decar	Omineca	First Point Minerals Corp/Cliffs Natural Resources Canada Inc	Inf	1197 Mt 0.113% Ni	Company web pages Dec 27 2012 (First Point)
Groundhog	Omineca	Atrium Coal NL	Ind	57.1 Mt (coal)	Company web pages Dec 27 2012
Kemess Underground	Omineca	Aurico Gold Inc	Ind	136.5 Mt 0.56 g/t Au, 0.29% Cu, 2.11 g/t Ag	August 2011 Preliminary Economic Assessment for Northgate Minerals (www.sedar.com)
Kwanika	Omineca	Serengiti Resources Inc	Ind	243.6 Mt 0.23% Cu, 0.21 g/t Au	March 2011 technical report
Lorraine	Omineca	Lorraine Copper Corp	Ind	6.4 Mt 0.61% Cu, 0.23 g/t Au	Lorraine Copper May 30 2012 News Release
Mt Milligan	Omineca	Thompson Creek Metals Co Inc	P+P	531.8 Mt 0.31 g/t Au, 0.20% Cu	Company web pages Dec 27 2012
Ajax	Thompson - Okanagan	Abacus Mining and Exploration Corporation/NGHM Polska Miedzi S.A.	P+P	503 Mt 0.27% Cu, 0.17 g/t Au	Company web pages Dec 27 2012
Blackdome	Cariboo	Sona Resources Corporation	Ind	144.5 Mt 11.29 g/t Au, 50.01 g/t Ag	Sona News release May 4 2010
Bonanza Ledge	Cariboo	Barkerville Gold Mines Ltd	P+P	130.7 Mt 10.2 g/t Au + 166.9 Mt 8.1 g/t Au	Barkerville Gold Sept 10 2009 News Release
Cariboo Gold Quartz	Cariboo	Barkerville Gold Mines Ltd	Ind	602 Mt 2.02 g/t	2006 technical report for International Wayside Gold Mines Ltd
Elizabeth	Thompson - Okanagan	Thompson Okanagan	Inf	522.9 Mt 12.3 g/t Au	Sona News release May 18 2010
Harper Creek	Thompson - Okanagan	Sona Resources Corporation	P+P	704.4 Mt 0.26% Cu, 0.029 g/t Au, 1.14 g/t Ag	Company web pages Dec 27 2012
New Prosperity	Cariboo	Taseko Mines Limited	P+P	831 Mt 0.41 g/t Au, 0.23% Cu	Company web pages Dec 27 2012
Newton	Cariboo	Amarc Resources Ltd	Inf	111.5 Mt 0.44 g/t Au, 2.1 g/t Ag	Amarc Sept 26 2012 News Release
Prospect Valley	Thompson - Okanagan	Berkwood Resources Ltd	Ind	10.1 Mt 0.511 g/t Au	Company web pages Dec 27 2012
Ruddock Creek	Thompson - Okanagan	Imperial Metals Corporation	Ind	4.65 Mt 6.77% Zn, 1.38% Pb	Company web pages Dec 27 2012
Ruddock Creek	Thompson - Okanagan	Spanish Mountain Gold Ltd	M+I	216.2 Mt 0.46 g/t Au, 0.68 g/t Ag	Spanish Mountain Nov 14 2012 News Release
Spout	Cariboo	GWR Resources Inc	Ind	7.6 Mt, 0.28% Cu, 0.05 g/t Au, 1.26 g/t Ag, 11.4% Magnetite	GWR April 19 2012 News Release
Spout	Cariboo	GWR Resources Inc	Ind	33 Mt 828 g/t Ag, 4.16% Pb, 3.8% Zn	June 7 2012/ July 9 2009 technical reports for Huidra (www.sedar.com)
Treasure Mountain	Thompson - Okanagan	Goldfields Horsely Exploration Corporation / Consolidated Woodjam Copper Corp	Inf	146.5 Mt 0.33% Cu, 0.06 g/t Au	Consolidated Woodjam Copper March 1 2012 News Release
Woodjam South (Southeast Zone)	Cariboo	Goldfields Horsely Exploration Corporation / Consolidated Woodjam Copper Corp	Inf	12.352 Mt 1.52 g/t Au	New Carolin Gold May 17 2012 News Release
Carolin Mine	South Coast	New Carolin Gold Corp	Ind	304 Mt 0.21% Cu, 0.29 g/t Au, 0.010% Mo, 0.55 ppm Re	Company web pages Dec 27 2012
Husham	West Coast	Northshore Copper and Gold Inc	Ind	30 Mt+ sand and gravel	Goldier Associates BC EAO Project Description - Dec. 16 2011
McNab Valley	West Coast	Burnco Rock Products Ltd	n/a	29.9 Mt run-of-mine coal	Compliance Energy Oct 11 2012 Fact Sheet
Raven	West Coast	Compliance Energy Corporation	P+P	3.953 Mt 5.68 g/t Au, 56.5 g/t Ag, 1.94% Pb, 3.56% Zn	Huakani Sept 18 2012 News Release
J&L	Kootenay-Boundary	Huakani International Mining Inc	M+I	14.68 Mt 0.64 g/t Au + 10.85 Mt 0.71 g/t	Company web pages Dec 27 2012
Kena	Kootenay-Boundary	Altair Gold Inc	M+I	13.5 Mt 64% Frac sand	November 15, 2012 Heemskirk News Release
Moberly Silica	Kootenay-Boundary	HCA Mountain Minerals (Moberly) Ltd	P+P		

TABLE 3. SELECTED PROJECTS 2012

Property name	Operator name	MINFILE	Commodity	Deposit type	Work Program	Region
3Ts	Independence Gold Corp	093F 055, 068	Ag, Au	Low-sulfidation epithermal / Vein	DD (3500m), G, GC (rock), P	Omineca
Ajax	KGHM Ajax Mining Inc	092INE 012, 013, 028, 030	Cu, Au, Ag, Pd	Porphyry	FS, ES, DD AB-EM (355 line-km), EN, GC (hyd)	Thompson-Okanagan-Cariboo
Akie	Canada Zinc Metals Corp	094F 031	Zn, Pb, Ag	SEDEX	BU (600 kg), GD (1600 m), EN, FS, MS, TP (15 pits)	Omineca
Aley	Taseko Mines Ltd	094B 027	Nb	Carbonate-hosted	DD (1620), GC (soil, silt, rock), IP (14 line-km), MG	Omineca
Arctos Anthracite	Fortune Minerals Limited	104H 022	Anthracite	Sedimentary	RC (2836 m), TR, G, GP, GC, GD, EN, CQ	Skeena
Ball Creek	Blue Gold Mining	104G 018	Cu, Au	Porphyry	A	Skeena
Basin	Coalmont Energy Corp	092HSE157	Thermal Coal	Sedimentary	DD, GP, GD, MS, DD (1620), GC (soil, silt, rock), IP (14 line-km), MG	Thompson-Okanagan-Cariboo
Bell Copper	Xstrata Copper Canada Ltd	093M 001	Cu, Au	Porphyry	A	Skeena
Big Bear	Parlane Resource Corp		Au, Ag	Low-sulfidation epithermal	DD (1620), GC (soil, silt, rock), IP (14 line-km), MG	Omineca
Bingay Main	Centremount Coal Ltd	082JSE011	Coal	Sedimentary	RC (2836 m), TR, G, GP, GC, GD, EN, CQ	Kootenay
Blackdome Mine	Sona Resource Corp	092O 053, 051, 052	Au, Ag	Vein / Breccia	A	Thompson-Okanagan-Cariboo
Blackwater	New Gold Inc	093F 037	Au, Ag	Low-sulfidation epithermal	A, DD (196 606 m), CD/GD (40 000 m), EN, FS, G, GC (soil, till), TP	Omineca
Blackwater East (Northeast)	RJK Explorations Ltd	093F 037	Ag	Low-sulfidation epithermal	A, DD (2370 m), GC (soil), IP (18.5 line-km), MG, P	Omineca
Blue River	Commerce Resources Corp	083D 005, 035	Ta, Nb	Magmatic	MS, G, DD (105 769 m 298 holes), GD, G, GC, UG (500 m slash)	Thompson-Okanagan-Cariboo
Brucejack	Pretium Resources Inc.	104B 193	Au, Ag	Porphyry/Epithermal		Skeena
Bulmoose River	Canadian Dehua International Mines Group Inc / Canadian Bulmoose Mines Co Ltd		Metallurgical coal	Sedimentary	A, DD (51 000 m), EN, FS	Northeast
BURNCO Aggregate (McNab Valley)	BURNCO Rock Products Ltd		Aggregate	Sand and Gravel	EN; FS	Coast
Capoose	New Gold Inc	093F 040	Ag, Au	Low-sulfidation epithermal	A, DD (10 894 m), TR	Omineca
Captain	Orestone Mining Corp	093J 026	Cu, Au	Alkalic Porphyry	DD (1500 m)	Omineca
Carbon Creek	Cardero Resources Corp	093O 028, 094B 022	Metallurgical coal	Sedimentary	A, CQ, CT, DD (5600 m), EN, RC (3335 m), PEA, PF, FS	Northeast
Cariboo Gold Quartz	Barkerville Gold Mines Ltd	093H 019	Au	Vein / Breccia	DD; resource estimate	Thompson-Okanagan-Cariboo
Cassiar Gold	China Minerals Mining Corp	104P 012	Au	Vein / Breccia	DD (8 197 m, 53 holes)	Skeena
Castle	West Cirque Resources	104G 076	Au, Cu	Porphyry	DD (1 777 m, 6 Holes), IP, MG, G, GC (rock, soil, silt)	Skeena
Cathedral	Thane Minerals Inc	094C 018, 048	Cu, Au	Alkalic Porphyry	DD	Omineca
Clisbako	Manado Gold Corp	093C 016	Au, Ag	Vein/Breccia		Thompson-Okanagan-Cariboo
Clone	Teuton Resources Corp & Canasia Industries Corp	103P 251	Au	Vein / Breccia	OP-BU	Skeena
Coal Creek	Crownsnest Pass Coal Mining Ltd		Coal	Sedimentary	RC (6558 m), CQ, EN	Kootenay
Crown Mountain	Jameson Resources Limited	082GNE018	Coal	Sedimentary	TR, RC (5707 m), CQ	Kootenay
Decar	Cliffs Natural Resources Inc	093K 041	Ni	Ultramafic	A, DD (15 205 m), EN, GD (1473 m), MS, PEA	Omineca
Dilworth / Big Missouri	Ascot Resources Ltd.	104B 044	Au, Ag	Vein / Breccia	DD (36 942 m, 166 holes), G	Skeena
Dome Mountain	Gavin Mines Ltd	093L 022	Au	Vein / Breccia	DD, EN, UG, DD (1077 m)	Skeena
Eddy	PIX Resources Inc	082FSE029, 095, 116, 118	Au (Cu, Pb, Zn, Ag)	Vein		Kootenay
Elizabeth	Sona Resources Corp	092O 012	Au, Ag, Cu, Mo	Vein / Breccia	A	Thompson-Okanagan-Cariboo
Elk (Siwash North)	Gold Mountain Mining Corporation	092HNE 096	Au, Ag	Vein / Breccia	IP, DD, BU	Thompson-Okanagan-Cariboo
Engineer	BC Gold Corp.	104M 014	Au	Vein / Breccia	M, UG (dewatering) G,	Skeena
Findlay	MMG Limited	082KSE041, 053, 060, 075	Pb, Zn, Ag	SEDEX, Vein	DD (1800 m planned)	Kootenay
Fox	Happy Creek Minerals Ltd	093A 259	W, Mo, Ag	Skarn	DD	Thompson-Okanagan-Cariboo
Galileo	Amarc Resources Ltd		Au, Ag, Cu	Low-sulfidation epithermal, Porphyry	AB-MG (600 line-km), G, GC (soil), IP (86 line-km)	Omineca
Galore Creek	Galore Creek Mining Corp.	104G 090	Cu, Au	Porphyry	DD (25 000 m), EN, G, GD	Skeena
Getthing	Canadian Kailuan Dehua Mines Co Ltd	093O 030	Metallurgical coal	Sedimentary	A, GD (1770 m), EN, FS	Northeast
GJ(Kiniskan)	Teck Resources Limited	104G 034	Cu, Au	Porphyry	IP-Mag, 100 km, DD)	Skeena
Gold Viking	Rainbow Resources Inc	082FNW193	Ag, Au, Pb, Zn	Vein	DD (1077 m), AB-EM	Kootenay
Golden Loon	Planet Mining Exploration Inc	092P 141	Au, Ag	Vein / Breccia	DD, MS	Thompson-Okanagan-Cariboo
Granduc	Castle Resources Inc.	104B 021	Cu, Au, Ag	Massive Sulphide	DD (24 000 m), UG, EN	Skeena
Greenwood Gold	Grizzly Discoveries Ltd	082ESE034, 147, 174, 255,	Au, Cu, Ag, Mo, Zn, Pt	Vein, Skarn, Intrusion-related, Porphyry	DD (1364 m)	Kootenay
Groundhog	Atrum Coal	082ESW022, 210, 231	Anthracite	Sedimentary	CQ, DD (4580), PEA	Omineca
Harper Creek	Yellowhead Mining Inc	104A 087	Cu, Ag, Au, Zn, Mo	Stratiform Sulphide	EN, DD, FS	Thompson-Okanagan-Cariboo
Homestake Ridge	Agnico-Eagle Mines Limited	082M 008, 009	Au, Ag, Zn	Vein / Breccia	DD (4 743 m, 13 holes), EN, G	Skeena
Horizon Ridge	Peace River Coal Inc (Anglo American plc)	103P 216	Metallurgical coal	Sedimentary	A, DD (7040 m), TR	Northeast
Hubble	Amarc Resources Ltd	093I 032	Au, Ag, Cu	Low-sulfidation epithermal, Porphyry	A, AB-EM/AB-MG (33 line-km), DD (700 m)	Omineca
Huguenot	Colonial Coal International Corp	093I 014	Metallurgical coal	Sedimentary	CQ, DD (1900 m), EN,	Northeast
International Silver	Rainbow Resources Inc	082KNE058	Ag, Pb, Zn	Vein	RC (500 m)	Kootenay
Iron Range	Providence Resources Corp/Eagle Plains Resources Ltd	082FSE014 to 028	Au, Zn, Pb, Ag, Fe, Cu	SEDEX, IOCG	DD (2435 m), G, P	Kootenay
Iron Ross	Canadian Nexus Ventures Ltd/Canadian Dehua International Mines Group Inc	092K 043	Magnetite, Fe	Skarn	EN, PF	Coast
Island Copper	Northisle Copper and Gold Inc.	092L 173, 177 200, 240, 273	Cu, Mo, Au, Re	Porphyry Cu-Mo-Au	DD (18 holes), IP (70 km), G	Coast
J & L	Huakan International Mining	082M 003	Au, Ag, Pb, Zn	Replacement	UG (275m), UG-DD (9725 m)	Kootenay
JD	Tower Resources Ltd	094E 171	Au, Ag, Zn, Pb	Low-sulfidation epithermal	DD (3000 m), G, GC (soil)	Omineca
Jesse Creek	Dundarave Resources Inc		Cu, Au	Porphyry	AB-EM, GP-IP, G, GC	Thompson-Okanagan-Cariboo
Kemess Underground	AuRico Gold Inc	094E 021	Cu, Au	Porphyry	EN, FS, R	Omineca
Kena	Altair Gold Inc	082FSW237, 332, 379	Au, Cu	Porphyry	DD (7429 m), GC, MG, P	Kootenay
Kenville	Anglo Swiss Resources Inc	082FSW086	Au, Ag, Cu	Vein	DD (2776 m)	Kootenay
Key	Troyment Exploration Corp	093F 069	Au, Ag, Zn, Pb, Cu, Mo	Low-sulfidation epithermal, Porphyry	A, DD (867 m), G, GC (soil), IP (9.6 line-km), P	Omineca
Kitsault	Avanti Mining Inc	103P 120	Mo	Porphyry	EN	Skeena
Klow	First Point Minerals Corp	093N 245	Ni	Ultramafic	DD (1579 m), MG	Omineca
Kokanee Graphite	Noram Ventures Inc	082FNE129	Flake graphite	Metamorphic	DD (1355 m)	Kootenay
KSM	Seabridge Gold Inc.	104B 103	Au, Cu	Porphyry	DD (23 442 m), GD, EN, G	Skeena
Kutcho Creek	Capstone Mining Corp.	104I 060	Cu, Zn, Ag, Au	Massive Sulphide	EN	Skeena
Kwanika	Serengeti Resources Inc	093N 073	Cu, Au	Alkalic Porphyry	DD (1472 m), IP (3 line-km), PEA	Omineca
Lac La Hache	GWR Resources Inc	092P 001, 002, 034, 035	Cu, Au, Fe, Ag	Skarn / Porphyry	DD, GP	Thompson-Okanagan-Cariboo

TABLE 3. CONTINUED

Property name	Operator name	MINFILE	Commodity	Deposit type	Work Program	Region
Ladner Gold	New Carolin Gold Corp	092HNV007, 003, 018	Au	Veins	DD (15 holes), MS, GC, AB (434 line km), PF	Coast
Marten-Wheeler	Teck Coal Limited	082GNE006	Coal	Sedimentary	RC (13067 m), GD, A, CQ, EN	Kootenay
Mex	Gold Fields	094F 057	Cu, Au	Alkalic Porphyry	DD (2200 m)	Omineca
Miner Mountain	Sego Resources Inc	092HSE 078, 203	Cu, Au, Ag	Porphyry	DD	Thompson-Okanagan-Cariboo
Morrison	Pacific Booker Minerals Inc.	093M 007	Cu	Porphyry	EN	Skeena
Mt. Alcock	Canada Zinc Metals Corp	094F 023	Zn, Pb, Ag	SEDEX	GC, G, AB-EM A, BU (100 000 tonnes), DD (375 m), EN	Omineca
Murray River	HD Mining International Ltd	0931 010	Metallurgical coal	Sedimentary	FS, EN, GD	Northeast
New Prosperity	Taseko Mines Ltd	092O 041	Cu, Mo, Au	Porphyry	DD (2 613 m, 15 holes), G, GP (AMT)	Thompson-Okanagan-Cariboo
Newmont Lake	Romios Gold Resources Inc.	1048 281	Au, Ag	Skarn	DD	Skeena
Newton	Amarc Resources Ltd	092O 050	Au, Ag	Vein / Breccia	DD (45 147 m, 67 holes), G, IP, TR	Thompson-Okanagan-Cariboo
Ootsa	Gold Reach Resources Ltd.	093E 105	Cu, Au	Porphyry	GC, G, AB-EM	Skeena
Pie	Canada Zinc Metals Corp	094F 023	Zn, Pb, Ag	SEDEX	Resource Estimate	Omineca
Poplar	Lions Gate Metals Inc.	093L 239	Cu, Mo	Porphyry	DD	Skeena
Princeton Copper Gold	Anglo-Canadian Mining Corp		Cu, Au	Porphyry	DD	Thompson-Okanagan-Cariboo
Prospect Valley	Berkwood Resources Ltd		Au, Ag	Vein / Breccia	TR, GC	Thompson-Okanagan-Cariboo
Ptarmigan	Silver Mountain Mines Inc	082KSE030, 036	Ag, Au, Cu, Zn	Vein, Manto	DD (4050 m), G, GC	Kootenay
Quinsam East	Hillsborough Resources Ltd	092F 319	Coal (thermal)	Sedimentary	DD, PD (15 holes)	Coast
Quintette-Babcock	Teck Coal Limited	0931 011	Metallurgical coal	Sedimentary	DD, RC	Northeast
Rateria	Happy Creek Minerals Ltd	092ISE092, 150, 060, 018	Cu, Mo	Porphyry	BS, DD, AB-GP	Thompson-Okanagan-Cariboo
	Comox Joint Venture (Compliance Energy Corporation, Tochu Corporation, LG International Corp)	092F 333	Coal (met +/- thermal)	Sedimentary	EN, FS	Coast
Raven	Banks Island Gold	103P 086	Au	Subvolcanic	PEA, G	Skeena
Red Mountain	Peace River Coal Inc (Anglo American plc)	0931 030	Metallurgical coal	Sedimentary	A, DD (9282 m), TR	Northeast
Roman Mountain	Emgold Mining Corporation	082FSW179	Au (Ag, Cu, Pb, Zn)	Vein, Skarn, Porphyry	DD (1500 m), GC	Kootenay
Rozan	Imperial Metals	082M 082	Zn, Pb, Ag	Massive sulphide	DD, PEA	Thompson-Okanagan-Cariboo
Ruddock Creek	Copper Fox Metals Inc.	104G 015	Cu, Mo, Au	Porphyry	DD (2 263 m), GP, GC, G, FS	Skeena
Schaft Creek	Westhaven Ventures Inc	092HNE 309	Au	Vein / Breccia	DD	Thompson-Okanagan-Cariboo
Shovelnose					DD (2 400 m, 3 holes), DCIP / MT	
Silver Queen	New Nadina Explorations Limited	093L 002	Cu, Mo	Porphyry	(21.6 km), G	Skeena
Silvertip	Silvercorp Metals Inc.	104O 038	Ag, Pb, Zn, Au	Sedimentary Replacement	PF, PEA	Skeena
Slocan Silver	Klondike Silver Corp	082FNW050	Ag, Pb, Zn	Vein	UG, P	Kootenay
Spanish Mountain	Spanish Mountain Gold Ltd	093A 043	Au, Ag	Vein / Breccia	DD, PFS, MS	Thompson-Okanagan-Cariboo
Sully	Omineca Mining and Metals Ltd		Pb, Zn, Ag	SEDEX	DD, GP	Kootenay
					A, CQ, DD (5000 m), EN,	
Suska	Xstrata Coal	0930 050	Metallurgical coal	Sedimentary	GD (600 m), RC (16 000 m)	Northeast
Table Mountain	China Minerals Corp.	104P 029	Au	Vein / Breccia	DD (1 340 m, 10 holes)	Skeena
Tasu Aggregate	Coastal Construction Aggregates Ltd	103C 003		Crushed Rock	EN, PF	Coast
Tchentlo (Choo)	Serengeti Resources Inc	093N 235	Cu, Au	Porphyry	DD (1513 m)	Omineca
Thorn	Brixton Metals Corp	104K 031	Au, Cu	Vein / Breccia	DD (2 890 m), GC, G	Skeena
					DD (2200 m), G, GC (rock, soil),	
Trout	Venerable Ventures Ltd	093F 044	Au, Ag	Low-sulfidation epithermal	IP (75 line-km), P	Omineca
Tulsequah Chief	Chieftain Metals Inc	104K 002	Cu, Zn, Ag, Au	Massive Sulphide	EN	Skeena
					DD (2 764 m, 10 holes) OP-BU,	
Wale	First Point Minerals Corp	104I 128	Ni, Fe	Serpentine UM	GP (69 km), G, BS	Skeena
Wapiti River	Canadian Dehua International Mines Group Inc	0931 013	Metallurgical coal	Sedimentary	A, DD (55 000 m), EN	Northeast
Woodjam	Gold Fields Horsefly Exploration Corporation	093A 019	Cu, Au	Porphyry	DD	Thompson-Okanagan-Cariboo
Yellow Giant	Banks Island Gold	103G 021	Au, Ag	Vein / Breccia	DD (3 801 m, 30 holes), M, G	Skeena
Yellowjacket	Yellowjacket Resources Ltd	104N 043	Au	Vein / Breccia	G, RC	Skeena

Work Program Abbreviations:

A = access (trail, road construction on claims); AB-EM = airborne electromagnetics; AB-MG = airborne magnetics; AB-RD = airborne radiometrics; BU (X tonnes) = bulk sample (weight in tonnes if known); CD = condemnation drilling; CQ = coal quality testing; CT = carbonization test (coal); DD (Xm) = diamond drilling totalling X metres; EN = environmental baseline studies/monitoring, remediation work; FS = feasibility studies; G = geology, mapping etc.; GC = geochemical sampling (rock, soil, silt etc.); GD = geotech drilling; GP = geophysics (general); IP = Induced Polarization; 3D-IP; MG = magnetics; MK = marketing (primarily for industrial mineral products); MS = metallurgical studies; OB = overburden drilling; OP-BU = open-pit bulk sample; P = prospecting; PD = percussion drilling; PF = pre-feasibility studies; R = reclamation; RC = reverse circulation drilling; TR = trenching; UG (Xm) = X metres of underground development; UG-BU = underground bulk sample; UT = UTEM; VLF; WT = washability test (coal)

