

Exploration and Mining in British Columbia, 2016: A summary



Gordon Clarke^{1, a}, Jim Britton², Paul Jago³, Fiona Katay⁴, and Bruce Northcote¹

¹ British Columbia Geological Survey, Ministry of Energy and Mines, Vancouver, BC, V6Z 2G3

² British Columbia Ministry of Energy and Mines, 441 Columbia Street, Kamloops, BC, V2C 2T3

³ British Columbia Ministry of Energy and Mines, Fourth Avenue, Prince George, BC, V2L 3H9

⁴ British Columbia Ministry of Energy and Mines, 100 N Cranbrook Street, Cranbrook, BC, V1C 7G1

^a corresponding author: Gordon.Clarke@gov.bc.ca

Recommended citation: Clarke, G., Britton, J., Jago, P., Katay, F., and Northcote, B. 2017. Exploration and Mining in British Columbia, 2016: A summary. In: Provincial Overview of Exploration and Mining in British Columbia, 2016. British Columbia Ministry of Energy and Mines, British Columbia Geological Survey, Information Circular 2017-1, pp. 1-29.

1. Introduction

Reflecting its complex geological history, British Columbia is endowed with diverse minerals and deposit types. British Columbia is Canada's largest exporter of coal, leading producer of copper, and only producer of molybdenum. Also produced are significant amounts of gold and silver, and more than 30 industrial minerals including gypsum, magnesite, limestone, and dimension stone. Numerous quarries produce sand and gravel or crushed aggregate.

Despite continued difficulties securing venture capital, mine development projects and numerous mineral exploration projects remained active in 2016 (Fig. 1).

Flanked by the Pacific Ocean, British Columbia offers easy access to global markets. Mine operations benefit from tax incentives and a well-developed infrastructure, including low-cost electricity, an integrated road and rail network, and large deep-water ports. Exploration benefits from an extensive geoscience database, a web-based mineral tenure system, and investment incentives such as the British Columbia Mining Exploration Tax Credit and the British Columbia Mining Flow-Through Share Tax Credit.

This summary uses information from the British Columbia Coal Industry Overview (British Columbia Geological Survey Information Circular 2017-2) and incorporates reports, presented in this volume from Regional Geologists. The Regional Geologists (Fig. 2; Table 1) represent the provincial government on geological matters at a regional level. Within their communities, they provide information on exploration trends, possible investment opportunities, land use processes, First Nation capacity building, and public outreach.

2. Mine production

The Ministry of Energy and Mines forecasts total value of mine production for 2016 at \$7.15 billion (Fig. 3), including coal, copper, industrial minerals, aggregate, gold, molybdenum and silver. This is an increase of \$1.25 billion over the 2015 preliminary NRCAN production value of \$5.90 billion (Fig. 4). For 2016, coal was the highest value mine product from British

Columbia, comprising about 46% of the total output, followed by copper (about 31%).

In 2016, eight metal mines operated during at least part of the year (Table 2). One metal mine went on care and maintenance during 2016. Coal was produced at five large open pit operations in the southeastern part of the province, one open pit operation in the northeastern part of the province and one underground mine on Vancouver Island (Table 3). The underground coal operation went on care and maintenance early in 2016. The open-pit operation in the northeast is a former mine that restarted in the fall. About 30 industrial mineral mines and more than 1000 aggregate mines/quarries were in operation.

3. Mining highlights

3.1. Metal mines

Metal mines accounted for an estimated \$3.02 billion of all mine production in 2016, representing about 42% of all mine production in the province (Table 2). Eight metal mines were in production at the start of 2016. This number dropped to seven as the **Huckleberry** mine went on care and maintenance in August.

In the Northwest Region, Imperial Metals Corporation's **Red Chris** copper-gold mine reached its first year of full production. In the North Central Region, the **Mt. Milligan** open-pit copper-gold mine was in its third year of production and completed its ramp-up phase at the start of the year. Mill throughput averaged about 52,800 tonnes per day over the first three quarters of the year.

An important development in the North Central Region was the purchase of Thompson Creek Metals Company Inc. by Centerra Gold Inc. The purchase price, which included a nearly US\$900 million debt, allowed creditors to be paid and helped ensure continued production at the **Mt. Milligan** mine.

In the South Central Region, Copper Mountain Mining Corporation reported in December that production was slightly ahead of planned for the year. Teck Resources Ltd's **Highland Valley** mine achieved throughputs exceeding its rated capacity of 130,000 tonnes per day. In September, Taseko Mines Limited

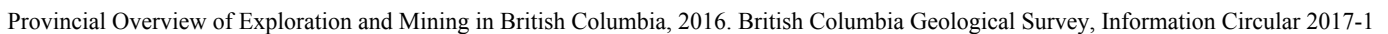
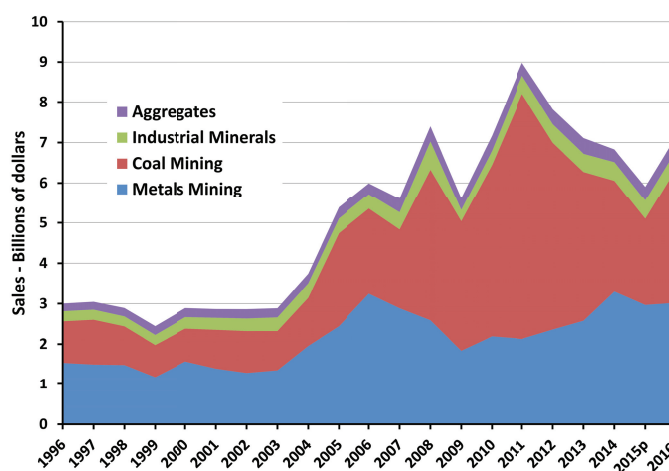
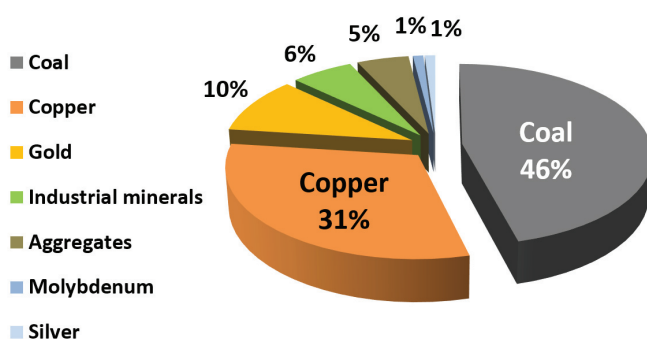


Fig. 1. Mines, mine development, selected proposed mines, and selected exploration projects in British Columbia, 2016. Terranes from the BC digital geology map (Cui et al., 2015).

Table 1. Regional Geologists contact information.

Region	Community	Regional Geologist	Phone	email
Northwest	Smithers	vacant	-	-
Northeast and North Central	Prince George	Paul Jago	250-565-4316	Paul.Jago@gov.bc.ca
South Central	Kamloops	Jim Britton	250-371-3903	Jim.Britton@gov.bc.ca
Southeast	Cranbrook	Fiona Katay	250-417-6010	Fiona.Katay@gov.bc.ca
Southwest	Vancouver	Bruce Northcote	604-660-2713	Bruce.Northcote@gov.bc.ca
Mineral Development Office	Vancouver	Gordon Clarke	604-660-2094	Gordon.Clarke@gov.bc.ca

**Fig. 2.** Geographic regions and Regional Geologist offices.**Fig. 4.** Value of British Columbia mineral production by year 1996-2016 (p=NRCAN preliminary estimate, f=NRCAN and MEM forecast).**Total 2016 Estimated Value of BC Mineral Production ~ 7.15 Billion****Fig. 3.** Estimated value of British Columbia mineral production for 2016.

reopened a molybdenum circuit at their **Gibraltar** mine, which was shut down in 2015. New Gold Inc. continued to advance their **New Afton** mine, and their new mill, which was installed in 2015, produced throughputs ranging between 15,250 and 15,900 tonnes per day. Imperial Metals Corporation's **Mount**

Polley operation completed its first full year of production after being shut down after a tailings dam breach in 2014.

3.2. Coal mines

Seven operating coal mines (Table 3) accounted for a forecast \$3.32 billion of production for 2016, representing about 46% of all mineral production in the province. Coal was produced at five large open pit operations of Teck Coal Limited in southeastern British Columbia, the Brule open pit operation of Conuma Coal Resources Limited in northeastern British Columbia, and the Quinsam underground operation of Hillsborough Resources Ltd. on Vancouver Island. The Quinsam operation went on care and maintenance in early 2016. The Brule operation is a former mine that restarted operations in the fall of 2016.

In the second half of 2016, coal prices rebounded significantly. Teck received \$92 USD/tonne as a quarterly benchmark price in Q3 of 2016, negotiated in late June. Since the middle of the year prices on the spot market rose sharply and exceeded \$200 USD/tonne by mid-September. The Q4 quarterly benchmark price was negotiated at around \$200-\$205 USD/tonne. This has

Table 2. Operating metal mines, 2016, forecast mine production, reserves, and resources.

Mine	Region	Operator	Commodity; deposit type; MINFILE	Forecast 2016 Production (based on Q1- Q3)	Reserves (Proven + Probable)	Resource (Measured and Indicated)	Comments
Huckleberry	Northwest	Huckleberry Mines Ltd.	copper, gold, silver, molybdenum; Porphyry Cu- Mo-Au; 093E 037	9,270 t (20.4 Mlbs) Cu,	Approx., 37 Mt at 0.3% Cu		Mining ceased Jan 6. Stockpiles provided mill feed until Aug. 31. Now on care and maintenance.
Red Chris	Northwest	Red Chris Development Company Ltd.	copper, gold, silver; Porphyry Cu- Au; 104H 005	31,277 t (68.95 Mlbs) Cu, 1,319 kg (42,426 oz) Au	294 Mt at 0.36% Cu and 0.27% Au	1,027 Mt at 0.35% Cu, 0.35 g/t Au, 1.14 g/t Ag.	Depletion of near-surface high- grade at the East zone reduced head grade; increased clay minerals from near surface Main zone reduced recoveries.
Mt. Milligan	North Central	Centerra Gold Inc. (Centerra B.C. Holdings Inc.)	copper, gold, silver; Alkalic porphyry Cu- Au; 093N 194, 093N 191	27 Kt (60 Mlbs) Cu; 6.22 t (200,000 oz) Au	506.4 Mt at 0.196% Cu and 0.349 g/t Au; containing 991.1 Kt (2,185 Mlbs) Cu and 177 t (5.69 Moz) Au	118.5 Mt at 0.16% Cu and 0.320 g/t Au (additional to reserves).	Ramp-up completed by January. Permanent secondary crusher was constructed and commissioned in October. Annual CAPEX estimated at \$72 million ± 10%. Closing of an Arrangement Agreement with Centerra Gold Inc. for the US\$1.03 billion acquisition of Thompson Creek Metals Company Inc. was finalized in late October.
Copper Mountain	South Central	Copper Mountain / Mitsubishi Materials	copper, gold, silver; alkalic porphyry; 092HSE 001	82.8 Mlb Cu; 29,200 oz Au; 294,400 oz Ag	Proven and Probable as of 2014-12-31; 0.18% Cu cut- off): 146 Mt grading 0.35% Cu, 1.47 g/t Ag, 0.12 g/t Au (containing 1.1 Blb of Cu; 6.9 Moz Ag; 560,000oz Au)	Measured and Indicated resources (as of 2014- 12-31; 0.18% Cu cut- off): 265 Mt grading 0.33% Cu, 1.33 g/t Ag, 0.40 g/t Au (containing 1.9 Blb Cu; 11.35 Moz Ag; 930,000 oz Au).	Drilling carried out at Pit 2 to convert inferred resources into Measured/Indicated.
Gibraltar	South Central	Taseko Mines Ltd.	copper, molybdenum; calc-alkalic porphyry; 093B 012	123 Mlb Cu; 740,000 lb Mo.	Proven and Probable (as of 2014-12-31; 0.15% Cu cut- off): 749 Mt grading 0.26% Cu and 0.008% Mo. (Recoverable metal: 3.3 Blb Cu)	Measured and Indicated resources (as of 2014- 12-31; 0.15% Cu cut- off): 1,092 Mt grading 0.25% Cu and 0.008% Mo.	Gibraltar's molybdenum circuit resumed operation in September 2016.
Highland Valley Copper	South Central	Teck Highland Valley Copper Partnership	copper, molybdenum; calc-alkalic porphyry; 092ISW 012	129,100 t Cu; 4.2 Mlb Mo	Proven and Probable (as of 2015-12-31; cut- off not stated): 577.2 Mt grading 0.29% Cu; 0.007% Mo. (Recoverable metal: 1,450,000 t Cu; 30,000 t Mo.)	Resources (as of 2015- 12-31; cut-off not stated): Measured: 412.1 Mt grading 0.34% Cu; 0.008% Mo; Indicated: 709.2 Mt grading 0.23% Cu; 0.010% Mo.	

Table 2. Continued.

Mount Polley	South Central	Imperial Metals Corporation	copper; gold; silver; alkalic porphyry; 093A 008	27.1 Mlb Cu; 46,900 oz Au; 105,200 oz Ag	Proven and Probable (as of 2016-01-01; variable mill head values for cut-off): 73.6 Mt grading 0.274% Cu, 0.293 g/t Au, 0.562 g/t Ag	Measured and Indicated resources (as of 2016-01-01; variable mill head values for cut-off): 247 Mt grading 0.266% Cu, 0.262 g/t Au, 0.667 g/t Ag.
New Afton	South Central	New Gold Inc.	copper, gold; alkalic porphyry; 092INE 023	405,000 oz Au; 1.8 Moz Ag; 95 Mlb Cu.	Proven and Probable (as of 2014-12-31; cut-off NSR US\$21/t or US\$24/t depending on block): 42 Mt grading 0.56 g/t Au, 2.3 g/t Ag, 0.84% Cu; (containing 760,000 oz Au, 3.1 Moz Ag, 781 Mlb Cu)	Measured and Indicated resources (as of 2014-01-01; cut-off 0.40% CuEq): 73 Mt grading 0.75 g/t Au, 2.2 g/t Ag, 0.87% Cu; (containing 1.75 Moz Au, 5.2 Moz Ag, 1.4 Blb Cu).

contributed to increased production by Teck and the restart of the Brule operation by Conuma.

3.3. Industrial minerals, aggregates, and jade

About 30 industrial mineral mines and over 1000 aggregate operations are active in British Columbia. Selected operations are listed in Table 4. With estimated production figures for industrial minerals of \$457 million (6% of total mineral production) and for aggregates of \$348 million (5% of total mineral production), these operations are important to the economy of the province. British Columbia produces the world's best quality nephrite jade, with demand close to a few hundred tonnes per year.

The Northwest Region was the most active for jade producers. In the Northeast Region, Fireside Minerals Ltd. mines veins of massive white barite. Mined barite is crushed and bagged on site and trucked to Fort St. John, BC and Alberta for use in the drilling industry as a weighting additive in drilling fluids. In the South Central Region, industrial mineral commodities produced include roofing granules (from basalt), limestone, dimension stone, opal, railway ballast, diatomaceous earth, and zeolite. The Southeast Region hosts several industrial mineral mines, the largest of which are in the Rocky Mountain foreland belt. Commodities produced include magnesite, silica, gypsum, graphite, mineral wool, and abrasives. Heemskirk Canada Limited continued redeveloping their Moberly Silica operation to produce frac sand. Plant engineering is progressing, and plant commissioning is expected by early 2017. In the Southwest Region a number of operations remained in steady production and continue to be a major employer.

4. Mine development projects

As used herein, the term 'mine development projects' refers to those where the decision to produce has been made, necessary

permits have been acquired, financing has been secured, and on-site construction has started. Both 2016 mine development projects are in the Northwest Region (Table 5).

Pretium Resources Inc.'s **Brucejack** high-grade gold project continues with full-scale construction underway and a mine startup planned for 2017. JDS Silver's **Silvertip** silver-zinc-lead project has entered the commissioning stage and full-scale production is planned for 2017.

5. Selected proposed mine projects

Projects at the proposed mine (or mine evaluation) stage have a resource defined or largely defined, and are at least preparing to submit a project description to initiate the Environmental Assessment process, or are waiting on permit amendments. Projects that have permits in place but have yet to obtain financing to begin site construction are also considered to be at the proposed stage. Selected projects (Table 6) discussed below are grouped by region.

5.1. Northwest Region

5.1.1. Proposed metal mines

The Northwest Region has a number of proposed metal mine projects. Gavin Mines Inc. continues to work towards restarting the historic **Dome Mountain** gold and silver mine. The project has current Mines Act and Environmental Management Act permits in good standing and is allowed to excavate up to 75,000 t per year. In early 2013, the project submitted applications to amend their existing Mines Act and Environmental Management Act permits, which would allow for onsite milling and tailings storage. Due to various delays, including regulatory changes arising from the 2014 Mount Polley tailings breach, the permit amendments remain outstanding.

The **Galore Creek** copper-gold-silver project is owned by the

Table 3. Operating coal mines, 2016, forecast mine production, and reserves.

Mine	Region	Operator	Commodity; deposit type; MINFILE	Forecast 2016 Production (based on Q1-Q3)	Reserves (Proven + Probable; Reported Dec 31, 2015)	Resource (Measured and Indicated; Reported Dec 31, 2015)	Comments
Brule	Northeast	Conuma Coal Resources Limited	PCI; Bituminous coal; 093P 007	250,000 t	16.3 Mt saleable; Proven	n/a	Restart activities began in Sept. 2016. Operating under contract with Walter Energy Holdings, Inc. until ownership transition is complete.
Coal Mountain	Southeast	Teck Coal Ltd. (100%)	PCI, TC; Bituminous coal	2.3 Mt	Proven + Probable 4.5 Mt PCI	CMO: Measured + Indicated: 78.4 Mt; Inferred: 4.7 Mt	Mineable resource at CMO is nearing depletion and expected mine shut down in late 2017; Coal Mountain Phase II (CMO2/Marten Wheeler) would use facilities from CMO, but currently remains on hold.
Elkview	Southeast	Teck Coal Ltd. (95%); Nippon Steel & Sumimoto Metal Corp. (2.5%), POSCO (2.5%)	HCC; Bituminous coal	7.0 Mt	Proven + Probable: 273.2Mt HCC	Measured + Indicated: 580.1 Mt HCC; Inferred: 224.6 Mt HCC	Baldy Ridge Extension (BRE) received an Environmental Assessment Certificate in September, 2016; pre-stripping at BRE; exploration drilling in active pits; development progressing in new approved mining areas.
Fording River	Southeast	Teck Coal Ltd. (100%)	HCC, TC; Bituminous coal	8.2 Mt	Proven + Probable: 434.9 Mt HCC + 5.0 Mt TC	Measured + Indicated: 1322.8 Mt HCC + 13.4 Mt TC; Inferred: 787.2 Mt HCC + 7.5 Mt TC	EA approval of Swift expansion (2015); permit amendments to align mine design with improved efficiencies; exploration drilling in active pits; construction of Fording River water treatment plant begun.
Greenhills	Southeast	Teck Coal Ltd. (80%); POSCAN (20%)	HCC, PCI, TC; Bituminous coal	5.2 Mt	Proven + Probable: 201.3Mt HCC + 5.0 Mt PCI + 2.7 Mt TC	Measured + Indicated: 304.5 Mt HCC + 7.9 Mt PCI + 1.1 Mt TC; Inferred 148.5 Mt HCC + 4.3 Mt PCI + 0.3 Mt TC	Cougar Pit Expansion (CPX) is preparing for pre-application of EA; environmental baseline.
Line Creek	Southeast	Teck Coal Ltd. (100%)	HCC, TC; Bituminous coal	3.3 Mt	Proven + Probable: 66.6 Mt HCC + 11.1Mt TC	Measured + Indicated: 756.1 Mt HCC + 19.3 Mt TC; Inferred 414.45 Mt HCC + 3.1 Mt TC	Burnt Ridge Extension (BRX) in pre-application of EA (2014); pre-stripping at Line Creek Phase II (2013 EA approval); Commissioning of West Line Creek water treatment facility in February, 2016.
Quinsam	Southwest	Hillsborough Resources Ltd.	TC; A04: Bituminous coal; 092F 319	n/a	n/a	n/a	On Care and Maintenance. Production suspended Jan. 2016. Reserves and resources are unpublished.

HCC = hard coking coal; PCI = pulverized coal injection; TC = thermal coal

Galore Creek Partnership, in which a wholly owned subsidiary of Novagold Resources Inc. and Teck Resources Ltd. are equal partners. In 2016, work was limited to baseline monitoring and targeted engineering studies. Alloycorp Mining Inc.'s past producing **Kitsault** molybdenum-silver mine is fully permitted, but requires project financing. Financing is dependent upon an increase in the market price for molybdenum.

Seabridge Gold Inc. continued work on their **KSM** copper-gold porphyry deposit. Seabridge received federal and provincial approval of the project Environmental Assessment

(EA) in 2014 and is actively seeking partnership to advance into construction. In 2016, Seabridge delivered two comprehensive technical reports: 1) a Preliminary Feasibility Study (PFS) based on updated Mineral Reserves; and 2) a Preliminary Economic Assessment (PEA) that incorporated Inferred Mineral Resources into a conceptual project design. The PEA envisions a milling rate of 170,000 tpd for the initial 20 years followed by 130,000 tpd for 15 years, reduced to 77,000 tpd for 12 years and finally reduced to 28,000 tpd for 3 years. Total mine life would be 51 years.

Table 4. Selected industrial mineral mines and quarries, 2016, forecast mine production, reserves, and resources.

Mine	Region	Operator	Commodity; deposit type; MINFILE	Forecast 2016 Production (based on Q1- Q3)	Reserves (Proven + Probable)	Resource (Measured and Indicated)	Comments
Burning Daylight	Northwest	Stone Ridge Quarries Ltd.	Columnar Basalt; dimension stone	unknown	n/a	n/a	Basalt quarry, bulk sampling.
Cassiar Jade	Northwest	Dynasty Jade Ltd.	Jade; Gems and semi-precious stones; 104P 005	unknown	n/a	n/a	Trenching, quarrying, placer production.
Dean Kutcho	Northwest	Cassiar Jade Contracting Inc.	Jade; Gems and semi-precious stones;	unknown	n/a	n/a	Drilling, trenching, quarrying, up to 200 tonnes.
Jade Valley	Northwest	United Oriental Mining Ltd.	Jade; Gems and semi-precious stones; 104I 048	unknown	n/a	n/a	Drilling, trenching, quarrying, placer production.
Kistumkalum	Northwest	Kalum Quarry Ltd. Partnership	Industrial rock; crushed rock	unknown	n/a	n/a	Drilling, blasting, crushing, production for CN railway bed.
Kutcho Creek Jade	Northwest	Continental Jade Ltd.	Jade; Gems and semi-precious stones; 104I 078	unknown	n/a	n/a	Mining, trenching, auger drilling.
Letain	Northwest	Cassiar Jade Contracting Inc.	Jade; Gems and semi-precious stones; 104I 079	unknown	n/a	n/a	Drilling, trenching, mining up to 200 t.
Provencher	Northwest	Glenpark Enterprises Ltd.	Jade; Gems and semi-precious stones; 104I 092	unknown	n/a	n/a	Mining, trenching, auger drilling.
Wolverine	Northwest	Cassiar Jade Contracting Inc.	Jade; Gems and semi-precious stones;	unknown	n/a	n/a	Drilling, trenching, < 2,000 tonnes of material mined.
Fireside	Northeast	Fireside Minerals Ltd.	Barite; Vein barite; 094M 003, 094M 019	10,000 t	475,000 t (non NI 43-101 compliant)	n/a	Mined from the Moose Pit. Overburden stripping revealed two 96% to 99.4% barite veins with a combined true thickness of 6.5 m.
Ogden Mountain	North Central	Green Mountain Jade Inc.	Nephrite jade; Jade; 093N 156, 093N 157, 093N 165	35 t	n/a	n/a	Exploration and placer mining of alluvial jade boulders, excavation of in situ jade.
Ashcroft	South Central	IG Machine and Fibers Ltd. (IKO Industries Ltd.)	Basalt (roofing granules); 092INW 104	350,000 tons	n/a	n/a	
Bromley Creek (Zeotech)	South Central	Canadian Mining Company Inc.	Zeolite; 092HSE 243	On care and maintenance since 2015	n/a	M+I (as of 2013-06-30): 550,000 t	
Bud	South Central	Absorbent Products Ltd.	Bentonite; 092HSE 162	30,000 tons	n/a	n/a	Combined production from Bud and Red Lake quarries.
Decor	South Central	Pacific Bentonite Ltd.	Alumina, landscape rock; 092INW 084	100,000 tons	n/a	n/a	Production likely to be affected by shut down of Lafarge's Kamloops Cement Plant.

Table 4. Continued.

Falkland	South Central	Lafarge Canada Inc.	Gypsum; 082LNW 001	6,000 tons	n/a	n/a	Production likely to be affected by shut down of Lafarge's Kamloops Cement Plant.
Harper Ranch	South Central	Lafarge Canada Inc.	Limestone; 092INE 001	220,000 tons	n/a	n/a	On care and maintenance as of November 2016.
Kettle Valley quarries	South Central	Kelowna Sand and Gravel Ltd / Kettle Valley Stone Ltd.	Ashlar, flagstone, thin veneer; 082ENW 109; 111; 112	n/a	n/a	n/a	
Klinker	South Central	Opal Resources Canada Inc.	Opal; 082LSW 125	Intermittent operation	n/a	n/a	
Lady King Basalt	South Central	Spectral Gold Corp.	Basalt columns; n/a	Intermittent operation	n/a	n/a	
Mount Polley Magnetite	South Central	Craigmont Industries Ltd.	Magnetite (recovered from tailings); 093A 008	3,000 tons.	n/a	n/a	Plant operated part time in 2016 due to weak demand.
Pavilion	South Central	Graymont Western Canada Inc.	Limestone; 092INW 081	20,000 tons	n/a	n/a	On care and maintenance as of June 2016.
Red Lake	South Central	Absorbent Products Ltd.	Diatomaceous earth; 092INE 081	30,000 tons	n/a	n/a	Combined production from Bud and Red Lake quarries.
Mount Brussilof	Southeast	Baymag Inc.	Magnesite; hydrothermal sparry magnesite; 082JNW001	220,000 t annually	50 Mt proven		MgO, and MgOH; sediment-hosted sparry magnesite.
Moberly Silica	Southeast	Heemskirk Canada Ltd.	Silica; industrial use silica, frac sand; 082N001		20 to 140 mesh frac sand (dry): Proven 8.9 Mt of 64% frac sand + Probable 4.6 Mt of 64% frac sand; OR Silica for industrial (dry): 12.8 Mt Proven + 0.7 Mt Probable	20 to 140 mesh frac sand (dry): 32.4 Mt at 64% frac sand Measured and Indicated + 11.7 Mt silica as frac sand residues; OR Silica for industrial (dry): 43.2 Mt Measured + Indicated	\$26M capital cost for plant construction and upgrades to existing facility (for frac sand operation); 300,000 tonne per year capacity. Construction started on frac sand processing plant in 2014, commissioning expected in 2017.
Horse Creek Silica	Southeast	HiTest Sand Inc.	Silica; industrial use, aggregate; 082N 043			Estimated: 3 Mt at 99.5% Silica (1987)	Variety of aggregate and industrial use products.
Elkhorn	Southeast	CertainTeed Gypsum Canada Inc.	Gypsum; evaporitic bedded gypsum; 082JSW021	400,000 t annually			4 years of mine life remaining; the company will replace production by developing the Kootenay West mine (in EA).
4J	Southeast	Georgia-Pacific Canada Limited	Gypsum; evaporitic bedded gypsum; 082JSW009	n/a; Processing stockpiled ore		20 Mt	Processing stockpiles; updating mine expansion plans.
Black Crystal	Southeast	Eagle Graphite Corp.	Graphite; metamorphic hosted flake graphite; 082FNW260, 082FNW283	n/a; Quarry on Care and Maintenance; company focused on process optimization and exploration		Regolith: Measured + Indicated: 0.648 Mt at 1.83% fixed carbon; Calc-silicate: Indicated: 4.765 Mt at 1.21% fixed carbon	Process optimization at plant; produced sample of 99.995% pure spherized graphite from flake graphite; product suitable for Li-Ion battery specifications; research and development.
Winner; Friday Quarry	Southeast	Roxul Inc.	Gabbro/basalt; crushed rock for mineral wool; 082ESE265	Quarrying to supply feed stock for mineral wool plant			Crushing, screening, stockpiling; environmental.

Table 4. Continued.

Grand Forks Slag	Southeast	Granby River Mining Company Inc.	Slag/Silica; tailings from Grand Forks smelter dumps; 082ESE264	Quarrying for abrasives and roofing granules			Crushing, screening; environmental.
Apple Bay (PEM 100)	Southwest	Electra Stone Ltd.	Silica+alumina; R12: Volcanic glass-perlite; 092L 150	n/a	n/a	n/a	Continuation of 2015 drilling to assess resources.
Benson Lake	Southwest	Benson Lake Carbonates ULC	High brightness carbonate; R09: Limestone; 092L 295	19,000 t		n/a	New owner 2016. Possible exploration to come.
Blubber Bay	Southwest	Ash Grove Cement Company	Limestone, dolostone; R09: Limestone; 092F 479	43,240 t +	n/a	100+ years	Dolostone is shipped to Ash Grove in Oregon.
Garibaldi Pumice	Southwest	Garibaldi Pumice Ltd.	Pumice; R11: volcanic ash; 092JW 039	16,000 m ³	n/a	11,396,000 m ³ pumice 4,990,000 m ³ pumicite (fines)	2014 resource estimate.
Imperial Limestone	Southwest	Imperial Limestone Co. Ltd.	Limestone; R09: Limestone; 092F 394	250,000 t high grade CaCO ₃ , 317,500 t lower grade limestone	n/a	50+ years	Production to December 2016.
K2	Southwest	K2 Stone Quarries Inc.	Dimension stone, flagstone; R08: flagstone; 092C 159	20,400 t	n/a	n/a	Material extracted from quarry is cut to size.
Mount Meager Pumice	Southwest	Great Pacific Pumice Inc.	Pumice; R11: volcanic ash; 092JW 039	1850 t	n/a	n/a	Shipped 5964 t.
Sumas Shale	Southwest	Sumas Shale Ltd. (Clayburn Industries Ltd., Lafarge Canada Inc.)	Shale, clay, sandstone; B05: Residual kaolin; 092GSE024	500,000 t	n/a	50+ years	Product for cement production.
Texada Quarry	Southwest	Texada Quarrying Ltd. (Lafarge Canada Inc.)	Limestone, aggregate; R09: Limestone; 092F 395	n/a	n/a	100+ years	Mostly limestone for cement production.

Table 5. Mine development projects.

Project	Region	Operator	Commodity; deposit type; MINFILE	Reserves (Proven + Probable)	Resource (Measured and Indicated)	Work Program	Comments
Brucejack	Northwest	Pretium Resources Inc.	Au, Ag; Au-quartz veins; quartz stockwork breccia; epithermal; 104B 193	16.5 Mt at 14.1 g/t Au, 57.7 g/t Ag	15.3 Mt at 17.6 g/t Au, 14.3 g/t Ag	40,000 m underground infill drill program, underground mine development: 1,573 m of lateral workings and 239 m of raise workings.	Mine construction underway; aiming for commercial production by 2017.
Silvertip	Northwest	JDS Silver	Ag, Pb, Zn, Au; Polymetallic manto; 104O 038	n/a	2.455 Mt at 315 g/t Ag, 5.88% Pb, 6.28% Zn, 0.413 g/t Au	Road reconditioning, pre-construction earthworks, mill and process plant acquisition.	In the commissioning stage. Production to be announced in 2017.

Table 6. Selected proposed mine projects.

Project	Region	Operator	Commodity; deposit type; MINFILE	Reserves (Proven + Probable)	Resource (Measured and Indicated)	Work Program	Comments
Dome Mountain	Northwest	Gavin Mines Inc. (subsidiary of Metal Mountain Resources Inc.)	Au, Ag; Vein breccia and stockwork; 093L 022	135,131 t at 11.2 g/t Au	144,144 t at 17.7 g/t Au	Diamond drilling, mine rehabilitation.	Trucked ore to Nicola custom mill in Merritt.
Galore Creek	Northwest	Galore Creek Mining Corp.	Au, Cu; Alkalic porphyry; 104G 090	528 Mt at 0.59% Cu, 0.32 g/t Au, 6.02 g/t Ag	814.7 Mt at 0.50% Cu, 0.31 g/t Au, 5.2 g/t Ag	Baseline monitoring.	Reduced environmental baseline monitoring.
Kitsault	Northwest	Alloycorp Mining Inc.	Mo, Ag, Pb; Porphyry Mo (low F type); 103P 120	228.2 Mt at 0.083% Mo, 5.0 g/t Ag	321.8 Mt at 0.071% Mo, 4.8 g/t Ag	Baseline monitoring, removed mine camp.	Waiting for improved Mo price.
KSM	Northwest	Seabridge Gold Inc.	Au, Cu, Ag, Mo; Calc-alkalic porphyry; 104B 191	2,198 Mt at 0.55 g/t Au, 0.21% Cu, 2.6 /t Ag, 42.6 g/t Mo	M+I: 2,902.5 Mt at 0.54 g/t Au, 0.21% Cu, 2.7 g/t Ag, 44 g/t Mo; Inf: 2,719.2 Mt at 0.35 g/t Au + 0.32% Cu + 2.0 g/t Ag + 20 g/t Mo	Preliminary Feasibility Study, Underground Preliminary Economic Assessment, Deep Kerr exploration portal permitted, exploration drilling at Lower Deep Kerr (7110.4 m) and Iron Cap (1038.4 m).	Significant advantages detailed in PEA by integrating more underground mining.
Morrison	Northwest	Pacific Booker Minerals Inc.	Cu, Mo; Calc-alkalic porphyry; 093M 007	224.2 Mt at 0.33% Cu, 0.163 g/t Au, 40 g/t Mo	265.9 Mt at 0.35% Cu, 0.17 g/t Au, 50 g/t Mo	Baseline monitoring, EA permitting ongoing.	Entered EA in 2010.
Red Mountain	Northwest	IDM Mining Ltd.	Au, Ag; Porphyry related gold; 103P 086	n/a	1.641 Mt at 8.36 g/t Au, 26 g/t Ag	PEA, resource update, underground rehabilitation, infill resource drilling, metallurgical, geotechnical, environmental baseline, EA submission preparation.	Preparing EA application submission.
Schaft Creek	Northwest	Teck Resources Limited	Cu, Au; Calc-alkalic porphyry; 104G 015	940.8 Mt at 0.27% Cu, 0.018% Mo, 0.019 g/t Au, 1.72 g/t Ag	1,228.5 Mt at 0.26% Cu, 0.017% Mo, 0.19g/t Au, 1.69 g/t Ag	Baseline monitoring, in-house engineering, evaluating and reinterpreting, re-logged core (43,000 m) for possible resource update.	
Tulsequah Chief	Northwest	Chieftain Metals Inc	Au, Ag, Cu, Zn, Pb; Noranda / Kuroko massive sulphide; 104K 002	4.435 Mt at 2.85 g/t Au, 104 g/t Ag, 1.46% Cu, 1.29% Pb, 6.94% Zn	6.575 Mt at 2.82 g/t Au, 104.76 g/t Ag, 1.34% Cu, 1.33% Pb, 6.71% Zn	Corporate, company entered receivership.	Seeking buyer for project.

Table 6. Continued.

Murray River	Northeast	HD Mining Int'l Ltd.	HCC; Bituminous coal; 093I 010	261.6 Mt mineable; proven	314.2 Mt in situ	Mines Act permit and federal EA (under review), drilling (hydro-geological, geotechnical) hand trenching, 2D seismic survey, engineering and environmental studies.	Proposed underground longwall mining operation with average annual production of 4.8 Mt of saleable coal over a 25 year mine life.
Sukunka	Northeast	Glencore plc	HCC; Bituminous coal; 093P 012, 093P 014	n/a	145 Mt in situ	EA (under review), engineering and environmental studies.	Proposed open-pit mine with initial annual production of 1.5 - 2.5 Mt of saleable coal over a 20+ year mine life.
Wapiti East	Northeast	Fertoz Int'l Inc.	P ₂ O ₅ ; Sedimentary phosphate deposits; 093I 039, 093I 022, 093I 008	n/a	0.81 Mt at 22.3% P ₂ O ₅ ; Indicated	Mines Act permit application, bulk sample (17,500 t permitted), trenching, temporary road (2.2 km).	Proposed seasonal shallow open-pit mine with average annual production of less than 75,000 t phosphate rock over a 20+ year mine life; organic certification obtained.
Aley	North Central	Taseko Mines Limited (Aley Corporation)	Nb; Carbonatite-hosted deposit; 094B 027	83.8 Mt at 0.50% Nb ₂ O ₅ ; containing 293 Kt* Nb *calculated by author	285.8 Mt at 0.37% Nb ₂ O ₅ ; containing 739.2 Kt* Nb (including reserves) *calculated by author	EA (pre-app), geochemical characterization studies, environmental baseline monitoring.	Proposed open-pit mine with 10,000 t/d ore processing rate and average annual production of 9,000 t niobium over a 24 year mine life.
Blackwater	North Central	New Gold Inc.	Au, Ag; Epithermal Au-Ag-Cu (intermediate sulphidation); 093F 037	344.4 Mt at 0.74 g/t Au, 5.5 g/t Ag; containing 254 t (8.17 Moz) Au, 1,890 t (60.8 Moz) Ag	55.49 Mt at 0.72 g/t Au, 4.4 g/t Ag; containing 40.2 t (1.29 Moz) Au, 243 t (7.82 Moz) Ag; additional to reserves	EA (under review), engineering and environmental studies.	Proposed open-pit mine with 60,000 t/d ore processing rate and life-of-mine average annual production of 12.8 t (413 Koz) Au and 54.2 t (1.74 Moz) Ag over a 17 year mine life.
Giscome	North Central	Graymont Western Canada Inc.	CaCO ₃ ; Limestone; 093J 041, 093J 025	n/a	>100 Mt of limestone (>95% calcium carbonate, <5% magnesium carbonate) in situ; Indicated	EA (under review), hand auguring, baseline studies.	Proposed 600,000 t/y limestone quarry to feed a vertical lime kiln producing 198,000 t of lime annually over a 50+ year mine life.
Kemess Underground (KUG)	North Central	AuRico Metals Inc.	Cu, Au, Ag; Porphyry Cu±Mo±Au; 094E 021	107.38 Mt at 0.27% Cu, 0.54 g/t Au, 1.99 g/t Ag; containing 285.6 Kt (629.6 Mlbs) Cu, 58.1 t (1.87 Moz) Au, 214 t (6.88 Moz) Ag; Probable	246.4 Mt at 0.22% Cu, 0.42 g/t Au, 1.75 g/t Ag; containing 542.2 Kt (1195 Mlbs) Cu, 103 t (3.33 Moz) Au, 431.3 t (13.87 Moz) Ag; inclusive of reserves; Indicated	Feasibility study update, EA (under review), engineering and environmental studies.	Proposed underground panel cave mine with 24,600 t/d ore processing rate and life-of-mine average annual production of 3.30 t (106,000 oz) Au and 21 Kt (47 Mlbs) Cu over a 12 year mine life.

Table 6. Continued.

Ajax	South Central	KGHM Ajax Mining Inc.	Cu, Au; Alkalic porphyry 092INE 012, 013	Reserves (P+P; NSR cut-off US\$7.10/t): 426 Mt grading 0.29% Cu; 0.19 g/t Au; 0.39 g/t Ag (containing 2.7 Bt Cu; 2.6 Moz Au; 5.3 Moz Ag)	Resources (M+I; ; NSR cut-off US\$7.10/t): 568 Mt grading 0.26% Cu; 0.18 g/t Au; 0.35 g/t Ag	Environmental monitoring; Public and First Nations engagement. Compiling comments received during public review periods, and drafting responses.	Project at application review stage. Company temporarily suspended review to respond to comments received.
Bethlehem	South Central	Teck Resources Ltd.	Cu, Mo; Calc-alkalic porphyry 092ISE 001	n/a	n/a	Formal review under a Minister's permit process started in September; engineering studies.	Project at application review stage. Resource informally stated as 100 Mt, but without grades.
Bonanza Ledge	South Central	Barkerville Gold Mines Ltd.	Au; Pyrite replacement; 093H 140		Resource (as of 2015-03-31; cut-off 1.7 g/t Au): Measured: 170,000 t grading 8.74 g/t Au (containing 48,000 oz Au); Indicated: 240,000 t grading 6.86 g/t Au (containing 54,000 oz Au); M+I: 420,000 t grading 7.63 g/t Au (containing 102,000 oz Au)	Formal review under a Minister's permit process started in December; engineering studies.	Project at application review stage.
Harper Creek	South Central	Yellowhead Mining Inc.	Cu, Au, Ag; Stratiform, volcanic-hosted 082M 008, 009	Reserves (P+P; cut-off 0.14% Cu): 716 Mt grading 0.26% Cu; 0.029 g/t Au; 1.18 g/t Ag	n/a	Project on hold.	Project at application review stage. Company suspended review in October 2015 for economic reasons.
New Prosperity	South Central	Taseko Mines Ltd.	Cu, Au; Calc-alkalic porphyry; 092O 041	Reserves (P+P; NSR cut-off \$5.50/t): 831 Mt grading 0.23% Cu and 0.41 g/t Au; containing (recoverable) 3.6 Blb Cu; 7.7 Moz Au	Resources (M+I; ; cut-off 0.14% Cu): 1,010 Mt grading 0.24% Cu; 0.41 g/t Au	Preparations for site investigation of proposed mine facilities. Company is seeking judicial review of federal EA decision. Results pending.	Project at post-decision stage. Granted provincial certificate but denied federal approval.
Ruddock Creek	South Central	Ruddock Creek Mining Corporation	Pb, Zn, Ag; Monashee-type sediment-hosted massive sulphide; 082M 082	n/a	Resources (M+I; cut-off 4.0% Pb+Zn): 6.2 Mt grading 6.50% Zn, 1.33% Pb	Environmental monitoring; permitting work.	Project at pre-application stage.
Spanish Mountain	South Central	Spanish Mountain Gold Ltd.	Au, Ag; Sediment-hosted gold; 093A 043	n/a	Resources (M+I; cut-off 0.20 g/t Au): 237.8 Mt grading 0.46 g/t Au; 0.69 g/t Ag; containing 3.5 Moz Au; 5.28 Moz Ag	Environmental monitoring. Technical studies to evaluate different scenarios for mining.	Project at pre-application stage.

Table 6. Continued.

Bingay Creek	Southeast	Centremount Coal Ltd.	Coal (HCC); open pit and underground; 082JSE011		42.43 Mt Measured + 52.9 Mt Indicated (2012)	Drilling; environmental baseline studies; engineering and geotechnical evaluation for mine design; permitting.	Pre-application of EA (2012), on hold; 20-year proposed mine life.
Coal Mountain Phase II (Marten Wheeler)	Southeast	Teck Coal Limited.	Coal (PCI and TC); open-pit and underground; 082GNE006		Measured + Indicated: 173.9 Mt HCC + 6.5 Mt PCI; Inferred: 7.9 Mt HCC + 0.9 Mt PCI (2015)	On hold.	Pre-application of EA (2014); Potential of 76.5 Mt; proposed 34-year mine life at 2.25 Mt/yr production. EA withdrawn in late 2015; project on hold.
Crown Mountain	Southeast	NWP Coal Canada Ltd. (Jameson Resources Ltd.)	Coal (HCC and PCI); open-pit; 082GNE018	HCC: 42.60 Mt Proven + 4.91 Mt Probable; PCI: 7.13 Mt Proven + 1.19 Mt Probable (2014)	HCC + PCI: 68.9 Mt Measured + 6.0 Mt Indicated (2014)	Prefeasibility studies; environmental and baseline work; mine design; permitting.	Pre-application of EA (2014); proposed 16-year mine life at 1.7 Mt /yr production; review of pre-feasibility study identified upside in lower capital costs for contract mining and additional resources in Southern Extension.
Driftwood Magnesite	Southeast	MGX Minerals Inc.	Magnesite; hydrothermal sparry magnesite; quarry; 082KNE 068		Measured + Indicated: 8.028 Mt grading 43.3% MgO (2016; using cutoff grade of 42.5% MgO)	20 year mine lease acquired; drilling; 100t bulk sample; metallurgical test work; acquisition of a pilot test mill; resource estimate.	Preliminary test work indicates recovery rates of 93.4% reverse flotation and removal of up to 70% silica and 30% calcium oxides; bulk of resource is within 100m of surface; working on Preliminary Economic Assessment; drilling to extend the zone.
Michel Creek (Loop Ridge)	Southeast	CanAus Coal Ltd.	Coal (HCC and PCI); open-pit and underground; 082GSE050		HCC: 44.6 Mt Measured + 42.5 Mt Indicated; open-pit and underground (2015)	Drilling; trenching; environmental and baseline work; mine design; coal quality; permitting.	Pre-application of EA (2015); Coal quality testing; updated geological model; drilling has identified 20 coal seams with cumulative thickness of 70m (14% of a 504 m section in the Mist Mountain Fm); PEA model indicates potential production of 3.4Mt/y (~2.1 Mt/y saleable).
Driftwood Magnesite	Southeast	MGX Minerals Inc.	Magnesite; hydrothermal sparry magnesite; quarry; 082KNE 068		Measured + Indicated: 8.028 Mt grading 43.3% MgO (2016; using cutoff grade of 42.5% MgO)	20 year mine lease acquired; drilling; 100t bulk sample; metallurgical test work; acquisition of a pilot test mill; resource estimate.	Preliminary test work indicates recovery rates of 93.4% reverse flotation and removal of up to 70% silica and 30% calcium oxides; bulk of resource is within 100m of surface; working on Preliminary Economic Assessment; drilling to extend the zone.
Kootenay West	Southeast	CertainTeed Gypsum Canada Inc.	Gypsum; evaporitic bedded gypsum; quarry; 082JSW005, 082JSW020		North and South Quarries: Total 18.7 Mt (at average quality of 83-85%)	Environmental baseline work; mine design.	Pre-application of EA (2014); proposed 400,000 t/yr operation with a 42-year mine life. Would produce a blended product to market specifications.

Table 6. Continued.

BURNCO Aggregate	Southwest	BURNCO Rock Products Ltd.	Aggregate; B12: Sand and Gravel; n/a	n/a	Approx. 20 Mt	Permitting.	Environmental Assessment Review. Resource not represented as NI 43-101 compliant.
Sechelt Carbonate	Southwest	Ballinteer Management Inc.	Limestone, dolostone, aggregate; R09: Limestone; R10: dolomite; R15: Crushed rock; 093GNW031	n/a	Carbonate Rock: 76.1 Mt Gabbro: >700 Mt	Baseline monitoring, archaeological studies.	Environmental Assessment pre-application. Resource not represented as NI 43-101 compliant.

Exploration activities focussed at the Deep Kerr and Lower Iron cap zones. Proven plus Probable reserves were updated in July 2016 and now total 2.198 Bt grading 0.55 g/t Au, 0.21% Cu, 2.6 g/t Ag and 42.6 g/t Mo. An updated measured plus indicated resource estimate completed in May (inclusive of reserves) total 2.903 Bt grading 0.54 g/t Au, 0.21% Cu, 2.7 g/t Ag and 44 g/t Mo. Additional Inferred resources total 2.719 Bt grading 0.35 g/t Au, 0.32% Cu, 2 g/t Ag and 29 g/t Mo.

Pacific Booker Minerals Inc.'s **Morrison** copper- gold-molybdenum-silver porphyry project has Measured and Indicated resources reported as 265.9 Mt at 0.35% Cu, 0.17 g/t Au, and 0.005% Mo (at a 0.20% Eq copper cutoff). Proposed is an open pit operation with a 30,000 t per day mill, equating to a 21 year mine life. After the Mount Polly tailings breach in 2014, the Morrison EA review was suspended and then resumed in June 2015. In July 2015, a letter from the British Columbia Minister of Environment and Minister of Energy and Mines stated that concerns still remained regarding the project design. The project continues to undergo further review.

In 2016, IDM Mining Ltd. continued to move forward with their **Red Mountain** gold project. In the spring an updated NI 43-101 resource was released. Measured plus Indicated resources increased 16% to 1.64 Mt grading 8.36 g/t Au and 26 g/t Ag. Inferred resources increased by 33% to 0.55 Mt grading 6.1 g/t Au and 9 g/t Ag. Resource grade cut-off is 3 g/t Au.

In early 2016, IDM received their Section 11 Order for the project from the British Columbia Environmental Assessment Office. The order sets out the scope, requirements, processes, and methods of the provincial Environmental Assessment, as well as the public and Aboriginal consultation procedures. In July, IDM announced the results of an updated Preliminary Economic Assessment ('PEA') authored by JDS Energy and Mining Ltd. The PEA outlines the anticipated low capital and operating costs, robust economic potential and near-term production profile of the Red Mountain underground gold project. Exploration, including diamond drilling, continued throughout 2016, and in 2017 the permitting process will continue. An updated resource and a feasibility study are planned.

At the **Schaft Creek** copper-molybdenum-gold-silver porphyry project, Teck Resources Ltd. (75%) and Copper

Fox Metals Inc. (25%) re-logged 43,000 m of legacy core; the results might contribute to an update of the project's mineral resource estimate. The project has been in the pre-application phase of Environmental Assessment since 2006. In 2016, the collection of baseline environmental data continued.

The **Tulsequah Chief** zinc-copper-gold project of Chieftain Metals Corp. has an Environmental Assessment certificate in place and Chieftain was actively seeking financing for the proposed mine. In 2016, Chieftain Metals Corp. and its wholly owned subsidiary Chieftain Metals Inc., (collectively Chieftain), were served with a receivership application by West Face Capital Inc., as agent for West Face Long Term Opportunities Global Master L.P., seeking the appointment of Grant Thornton Limited as receiver of all of the assets, undertakings and properties of Chieftain.

5.2. Northeast Region

5.2.1. Proposed coal mines

In 2016, HD Mining continued work on their **Murray River** project. A bulk sampling program was completed and engineering and environmental studies continued in support of a Mines Act permit application. At their **Sukunka** project, Glencore plc (75% interest) and JX Nippon Oil & Energy Corporation (25% interest), continued with engineering and environmental studies in support of a substituted Environmental Assessment application, which is under review. An open-pit mining operation is proposed with initial production of 1.5-2.5 Mt of saleable metallurgical coal per year, and a mine life of at least 20 years. Addition of a room-and-pillar underground mining component in a future mine plan would increase production to 6 Mt per year. Workforce requirements are estimated at about 250 jobs during construction, and 543 direct employees during operations (Jago, this volume).

5.2.2. Proposed industrial mineral mines

At the **Wapiti East** phosphate project, Fertoz International Inc. continued trenching to collect a permitted 17,500 t bulk sample. Refinement of the project design and a scoping study continued, as did compiling of information requirements for a Mines Act permit application.

5.3. North Central Region

5.3.1. Proposed metal mines

Taseko Mines Limited and subsidiary Aley Corporation Limited continued collecting environmental baseline data and geochemically characterizing ore, waste, and tailings for the **Aley** niobium project. This work is to support a substituted Environmental Assessment that remained in pre-application status throughout the year. Metallurgical test work continued with the aim of improving efficiency to help reduce projected costs. Capital expenditure, cumulative for the first three quarters, was \$600,000.

At New Gold Inc.'s **Blackwater** gold and silver project, engineering and environmental studies continued in support of their Environmental Assessment which is under review. The project is proposed as an open-pit mining operation, with a 60,000 tonnes per day processing plant and a mine life of 17 years.

AuRico Metals Inc. continued to advance its proposed **Kemess Underground** (KUG) copper-gold-silver block cave mine project. In March, AuRico announced the results of an updated feasibility study for the proposed underground panel cave mine with a single extraction level. An average production rate of nearly 25,000 tonnes per day would generate 4.01 t (129,000 ounces) gold and 23 Kt (52 million pounds) copper annually over the first five years. Total production during a 12-year mine life would be 43 t (1.4 million ounces) gold and 260 Kt (573 million pounds) copper and 140 t (4.5 million ounces) of silver (Jago this volume). The project entered the review stage of a Substituted (federally and provincially harmonized) Environmental Assessment in May and a certification decision is anticipated in early 2017.

5.3.2. Proposed industrial mineral mines

At their **Giscome** limestone property, Graymont Western Canada Inc. continues with the environmental review process. The Environmental Assessment application review process for the proposed quarry and lime plant was suspended in March to allow for consideration of proposed changes to the project. In July the process recommenced with the original project design. The initial phase of operations would comprise a 600 Kt per year limestone quarry and conveyor system that would feed a vertical lime kiln producing 600 tonnes of lime daily and 198 Kt annually.

5.4. South Central Region

5.4.1. Proposed metal mines

The **Ajax** copper-gold porphyry project is owned by KGHM Ajax Mining Inc., which is an 80:20 joint venture between KGHM Polska Miedź S.A. (KGHM SA) and Abacus Mining and Exploration Corporation. In 2016, formal Environmental Review of the project continued. A revised feasibility study released at the start of 2016 modelled the project as a 65,000 tonne per day open-pit mine with a projected 18-year life.

Teck Resources Ltd. submitted plans to reopen the past-producing **Bethlehem** mine, which is two kilometres east of its

Highland Valley Copper operations. In the past few years, Teck has defined 100 million tonnes of new ore at Bethlehem. If approved, the mine would produce additional feed its 140,000 tonne per day mill. A Mine Development Review Committee commenced formal review of the Bethlehem Phase 1 proposal in September. Engineering and feasibility studies continue.

The **Bonanza Ledge** mine saw limited production as an open-pit mine between March 2014 and June 2015. In December 2016, Barkerville Gold Mines Ltd. applied for a permit to mine the remaining resource by underground methods. The company hopes production can resume in 2017. The plan is to mine at a rate of ~500 tonnes per day (~150,000 tonnes per year) using a long-hole method with cemented rock fill.

The **Harper Creek** copper-gold-silver project is owned by Yellowhead Mining Inc. In 2015, the company suspended work on the project due to a lack of funds. The project remained on hold in 2016 while the company sought financing to complete the review.

The **New Prosperity** gold-copper porphyry project of Taseko Mines Limited has defined Proven and Probable reserves of 830 Mt grading 0.42 g/t Au and 0.23% Cu. Taseko continues to seek a judicial review of the February 2014 Federal decision not to authorize the project. British Columbia granted Taseko a project certificate in November 2013 and has extended its expiry date by five years. In the fall, Taseko submitted plans for a detailed site investigation of proposed mine infrastructure. If approved, work will start in 2017.

Ruddock Creek Mining Corporation (Imperial Metals Corporation (50%) and joint venture partners Mitsui Mining and Smelting Co Ltd. (30%) and Itochu Corporation (20%)), continued environmental baseline studies at its **Ruddock Creek** zinc-lead project. A mineral resource estimate, released in March 2012, reported 4.65 million tonnes grading 6.77% Zn and 1.38% Pb (Indicated) and 5.38 million tonnes grading 6.69% Zn and 1.31% Pb (Inferred), using a 4.0% combined Pb+Zn cut-off.

Spanish Mountain Gold Ltd. continued baseline environmental studies at its **Spanish Mountain** gold project as the company prepares for formal environmental review. In 2016, the company commissioned engineering studies to evaluate if higher grade zones could support an alternative mine model with a 20,000 tonne per day mill and a 20-year mine life (in contrast to a previous estimate of 40,000 tonne per day and a 14 year mine life for the entire resource). As of April 2014, Measured and Indicated resources (using a cut-off grade of 2 g/t Au) are 237.8 Mt grading 0.46 g/t Au and 0.69 g/t Ag.

5.5. Southeast Region

5.5.1. Proposed coal mines

Centermount Coal Ltd. proposes an open pit and underground coal mine for its **Bingay Creek** property. Work in 2016 consisted of drilling and environmental baseline studies. The project is in the pre-application stage of Environmental Assessment. If the proposed mine goes into production it would produce 2 Mt of coal annually, and have a mine life of 20 years, with a total

resource of about 39 Mt.

In 2015, Teck Coal Ltd. withdrew from the pre-application phase of Environmental Assessment for their **Coal Mountain Phase II** (Marten Wheeler) project, and the project remains on hold. The project was designed to replace production at the Coal Mountain mine, which is now scheduled to shut down in 2017.

The **Crown Mountain** property of NWP Coal Canada Ltd., (a wholly owned subsidiary of Jameson Resources Ltd.) is in the pre-application stage of Environmental Assessment. In 2016, a preliminary prefeasibility study was updated with improved economics related to coal pricing, OPEX and CAPEX costs. Coal quality test work indicates that approximately 84% of the coal is hard coking coal, with the remainder as pulverized coal injection (PCI) coal.

The **Michel Creek** project of CanAus Coal Ltd., a wholly owned subsidiary of CoalMont Pty Ltd., is in the pre-application stage of Environmental Assessment. Drilling in 2016 focused on the Loop Ridge and Michel Head areas, with samples collected for coal quality testing. The project will use new techniques for treating selenium in the construction and operational phases of the project to comply with environmental targets identified in the Elk Valley Water Quality Plan. The company released an updated NI 43-101 resource estimate with 44.6 Mt Measured and 42.5 Mt Indicated (open-pit and underground), and is working towards the pre-feasibility engineering and design phases for the project.

5.5.3. Proposed industrial mineral mines

The **Driftwood Magnesite** property is owned by MGX Minerals Inc. In 2016 a NI 43-101 compliant resource estimate was released with updated results from their 2014 and 2015 drill programs. The company is working on a preliminary economic assessment. Additional drilling was carried out in the fall of 2016. They also acquired a pilot test mill, including a jaw crusher, ball mill, floatation cells, cyclone dewatering equipment, and tailings filtration system. The mill was used to process the bulk sample material to a high-purity magnesite (MgCO_3), and a silica by-product using reverse flotation techniques. The magnesite was shipped offsite for further processing to produce magnesium oxide (MgO) and magnesium metal (Mg). The company received a 20-year mine lease for quarry operations and are evaluating mine and process design options. They are also conducting environmental baseline work for their quarry application.

CertainTeed Gypsum Canada Inc. continued to advance the proposed **Kootenay West** project, which entered the pre-application stages of Environmental Assessment in 2014. The mine will have an average production rate of 400,000 t per year, over a 42-year mine life. The total mineral reserve is estimated at 18.7 Mt, and product will be blended to a product specification of 83-85% gypsum for market. In 2016, the company focused on environmental work and mine design, with two pits (North and South). The projected start-up date for the mine is in 2018.

5.6. Southwest Region

5.6.1. Proposed industrial mineral mines

BURNCO Rock Products Ltd. continues to undergo Environmental Assessment for the **BURNCO Aggregate** project. The proposed sand and gravel mine would ramp up to a 1.5 Mt per year operation, initially barging product to BURNCO Rock Products Ltd.'s ready-mix concrete plants in South Burnaby and Port Kells. BURNCO submitted revisions to the project in 2014, changing production rate, relocating some facilities, and specifying a mine life of 16 years.

Ballinteer Management Inc. now holds the property comprising the **Sechelt Carbonate** project. They filed engineering, archeological, and baseline environmental studies for assessment in 2016. After a period of quiescence, Ballinteer indicates an interest in advancing the project, which entered the pre-application phase of Environmental Assessment in 2005 under different ownership. The property contains resources of limestone, dolostone, and gabbroic rock for potential use as aggregate.

6. Exploration expenditures

In 2016, exploration expenditures, drilling estimates, and other metrics for British Columbia were captured in the British Columbia Mineral and Coal Exploration Survey, which replaces the annual Ministry of Energy and Mines mineral exploration expenditures survey. The survey is a joint initiative between the Province of British Columbia Ministry of Energy and Mines, the Association for Mineral Exploration, and Ernst & Young LLP. The new survey does not capture exploration expenditures for aggregates, which had previously been done for the Southwest region only. Previous surveys also assigned expenditures to a predominant category for a program, for example, grassroots. The new survey allowed respondents to partition expenditures as a percentage, for example grassroots 60%, advanced 40%. For details see Ernst & Young LLP, 2017, British Columbia Mineral and Coal Exploration Survey 2016 Report, which can be downloaded from (<http://www.ey.com/ca/en/industries/mining---metals/bc-minerals-and-coal-exploration-survey-2016>).

Total metal, industrial mineral and coal exploration expenditures are estimated at \$205 million for 2016, down \$67 million from the 2015 survey total of \$272 million. Of this, \$38.5 million was contributed by coal projects and \$166.5 million by metal and industrial mineral projects (Fig. 5). Exploration expenditures by region for 2016 are illustrated in Figure 6. Exploration expenditures can be further divided into five categories: grassroots, early stage, advanced stage, mine evaluation, and mine lease (Figs. 7-13). Although not directly comparable due to the new collection methods, it is worth noting that in the 2015 survey, grassroots and early-stage exploration represented 14.7% of the total exploration expenditures, whereas the 2016 survey estimates the value at 27.5%.

The total reported metres drilled for the province was 290,702 (see Fig. 14 for regional breakdown).

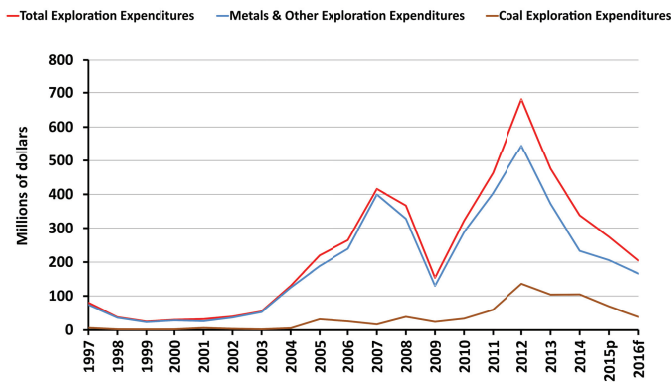


Fig. 5. Total exploration expenditures, metals plus other expenditures, and coal expenditures by year.

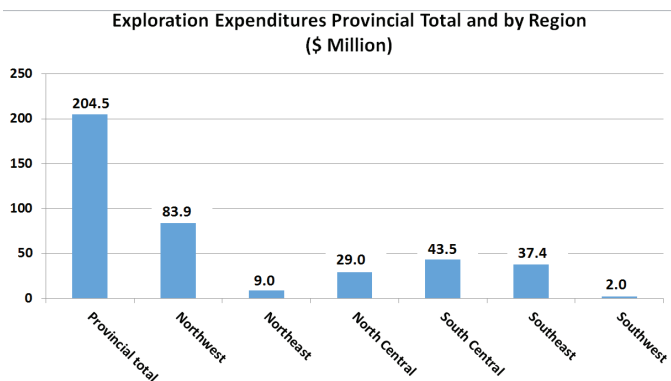


Fig. 6. Exploration expenditures by region (Ernst and Young LLP and MEM survey).

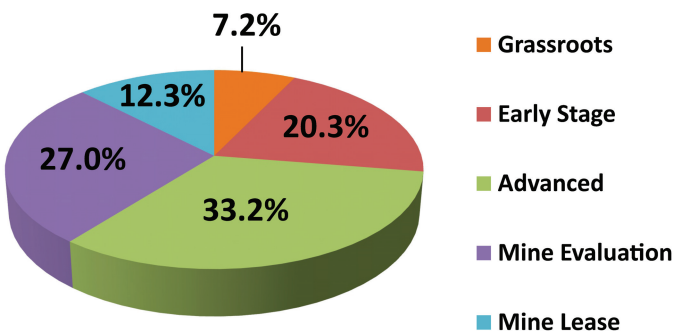


Fig. 7. Provincial exploration expenditures by exploration category.

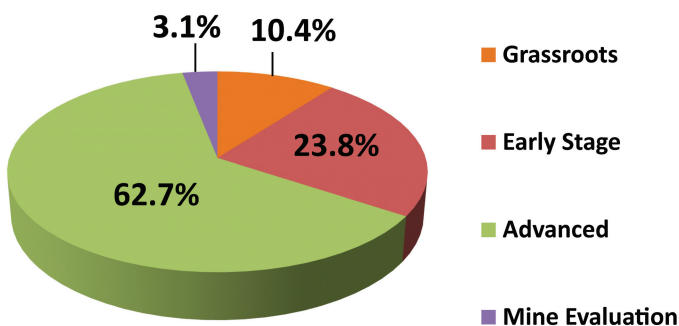


Fig. 8. Northwest Region exploration expenditures by exploration category.

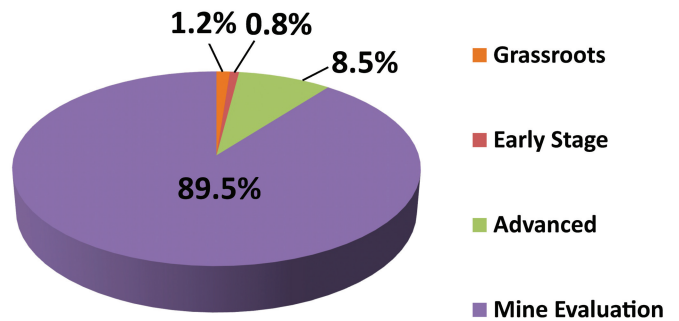


Fig. 9. Northeast Region exploration expenditures by exploration category.

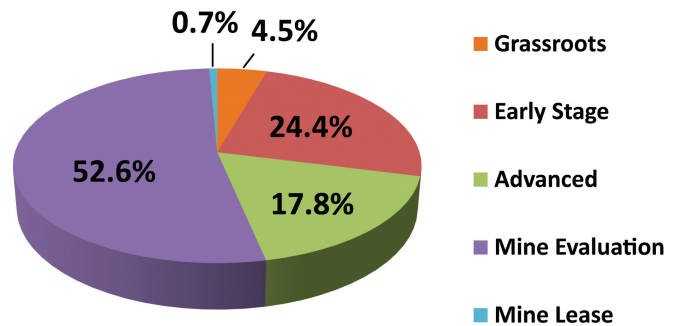


Fig. 10. North Central Region exploration expenditures by exploration category.

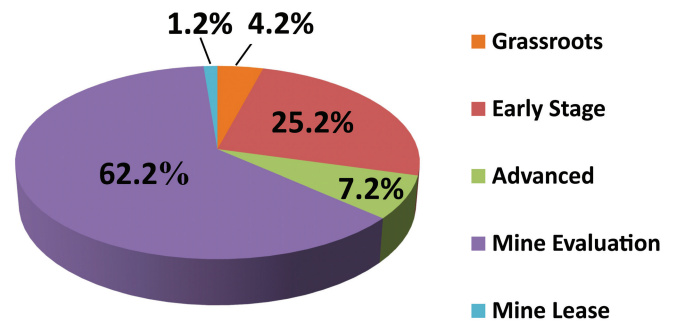


Fig. 11. South Central Region exploration expenditures by exploration category.

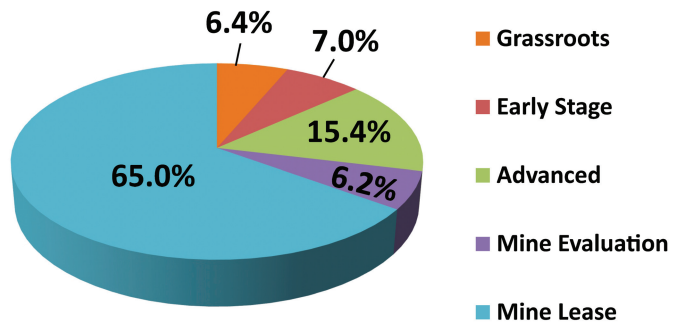


Fig. 12. Southeast Region exploration expenditures by exploration category.

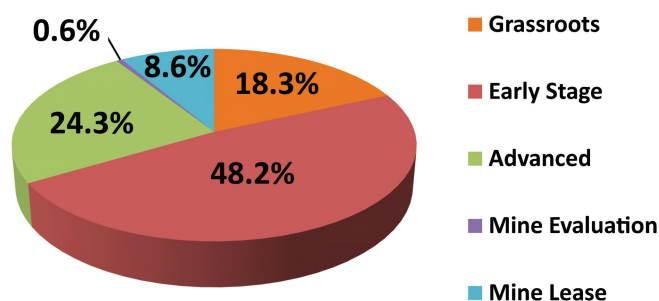


Fig. 13. Southwest Region exploration expenditures by exploration category.

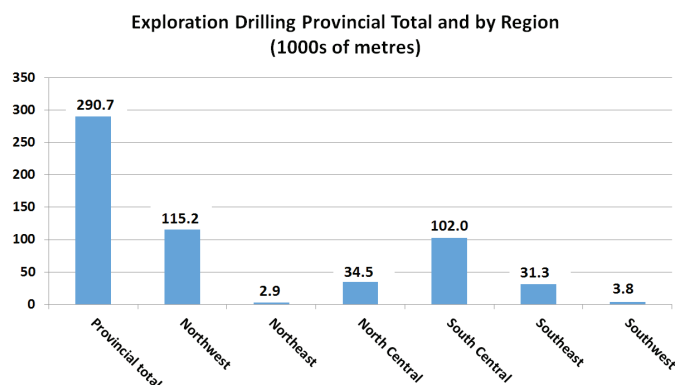


Fig. 14. Exploration drilling metres, provincial total and by region.

7. Exploration land tenure

Acquisition of new mineral claims in 2016 was up slightly compared to 2015 (Fig. 15). The total for 2016 was 1,167,303 hectares vs. 930,981 hectares for the previous year. New coal licenses issued in 2016 totalled 105,991 hectares, up from the 2015 total of 70,806 hectares (Fig. 16).

8. Selected exploration project highlights

Although exploration expenditures were lower in 2016, explorationists continued to discover, define, and expand porphyry and porphyry-related copper-gold and copper-molybdenum deposits, gold deposits of various types, and stratiform base-metal, specialty metals, industrial minerals, and coal deposits. Survey data suggest that grassroots and early stage projects may have increased. Below, selected exploration projects are grouped by project type and region (Table 7). A more comprehensive list of selected exploration projects active in 2016 are described in the individual regional sections of this volume.

8.1. Precious metal projects

8.1.1. Northwest Region

In the first half of 2016, an increase in the price of gold increased interest in gold exploration in the Northwest Region.

Outside of the Brucejack proposed mine area, evaluation of the surrounding 1,200 km² of mineral claims by Pretium Resources Inc. continued (**Brucejack Regional**). Work in

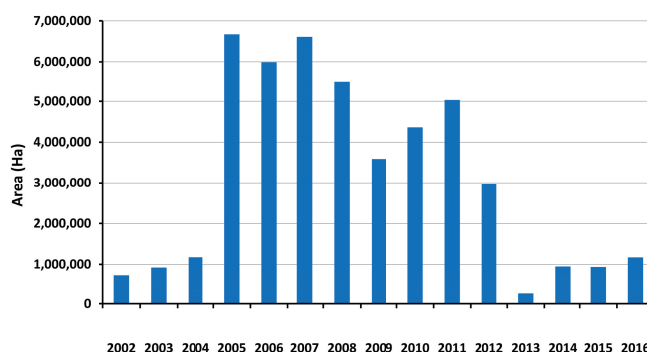


Fig. 15. Tenure, new mineral claims (area Ha) by year.

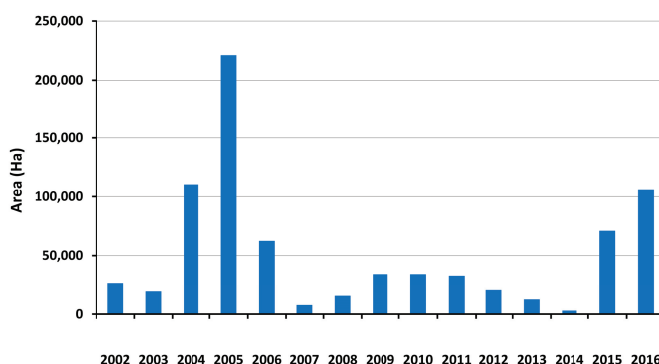


Fig. 16. Tenure, new coal license issuances (area Ha) by year.

the last two years included airborne geophysical surveys and regional sampling. In 2016, the regional program focussed on an area about 20 km southeast of the mine project. New work included additional airborne magnetic, radiometric and hyperspectral surveys. Ground work included magneto-telluric geophysical surveys, property-scale mapping, prospecting, and diamond drilling.

The **Clone** gold property is owned by Makena Resources Inc. 50%, Silver Grail Resources Ltd. 25% and Teuton Resources Corp. 25%. In 2016, seven diamond drill holes with lengths reported to range between 38 and 137 m were completed. Reported assay results for the first hole included 6.43 metres grading 17.83 g/t Au.

The **Iskut** project is owned by Seabridge Gold Inc. The project was obtained through the acquisition of SnipGold Corp. by Seabridge in June of 2016. Seabridge carried out an exploration program consisting of 3,368 m of diamond drilling in thirteen holes, a magnetotelluric (MT) survey, hyperspectral imagery acquisition, prospecting, geological mapping, and legacy data compilation, including core re-logging. Results are anticipated to be applied to a much larger 2017 exploration program.

Ascot Resources limited carried out over 69,000 m of diamond drilling on their **Premier** project with numerous holes returning high-grade gold and silver values. Highlight intersections include 125.50 g/t Au over a core length of 1.50 metres within a broader interval grading 13.71 g/t Au over

Table 7. Selected exploration projects.

Project	Region	Operator	MINFILE	Commodity; Deposit type	Resource (NI 43-101 compliant unless indicated otherwise)	Work Program	Comments
Bow	Northwest	Decade Resources Ltd.		Au, Ag, Co in quartz veins		Chip and grab sampling, diamond drilling.	Highlight drilling results included 6.09 m of 17.17 g/t Au, 47.27 g/t Ag and 0.165% Co and 5.80 m of 21.18 g/t Au, 48.81 g/t Ag and 0.227% Co.
Brucejack Regional	Northwest	Pretium Resources Inc.		Au, Ag, Zn, Cu; Precious metal veins, VMS		Diamond drilling, geological mapping, rock sampling (4,500), hyperspectral imagery, geochronology, geophysics (Magnetotelluric, magnetics, radiometrics).	
Clone	Northwest	Makena Resources Inc.	103P 251	Au, Ag, Cu, Co; Au; precious metal veins		Diamond drilling (7 holes), rock sampling.	Reported assay results for the first hole included 6.43 metres grading 17.83 g/t Au from 46.33 to 52.76 metres downhole.
Dolly Varden	Northwest	Dolly Varden Silver Corporation	103P 188	Ag, Zn; Noranda / Kuroko massive sulphide,	I: 3.073 Mt at 321.6 g/t Ag; In: 898,500 t at 373.3 g/t Ag	Diamond drilling (~2,311.6 m, 13 holes), mapping, prospecting, soil sampling.	Drilling highlights included 19.4 m grading 485 g/t Ag.
GJ	Northwest	Skeena Resources Limited	104G 034	Cu, Au; calc- alkalic - porphyry	M+I: 133.670 Mt at 0.32% Cu + 0.36 g/t Au; Inf: 53.69 Mt at 0.26% Cu + 0.330 g/t Au	Diamond drilling (2,872 m, 8 holes), prospecting, legacy data compilation, camp rebuild.	
Iskut	Northwest	Seabridge Gold Inc.	104B 107	Au, Ag, Cu; intrusion related, calc- alkalic porphyry	24 kt at 11.3 g/t Au, 22 g/t Ag, 0.23% Cu (Johnny Mtn)	diamond drilling (3,368 m in 13 holes), MT geophysics, hyperspectral imagery, geological mapping, prospecting, legacy data compilation, reclamation.	
Kirkham	Northwest	Metallis Resources Inc.	104B 079	Au, Cu; calc- alkalic porphyry and Au, Ag; intrusion related		VTEM/magnetic/ra diometric survey carried out.	

Table 7. Continued.

KSP	Northwest	Colorado Resources Ltd.	104B 111 and 104B13	Au, Cu; calc-alkalic porphyry and Au, Ag; intrusion related		Diamond drilling (6 holes (2 at Tami, 4 at Khyber)) geological mapping, prospecting, rock sampling, and ground magnetics. Diamond drilling (8,861.8 m, 59 holes) sampling (990 soils, 511 rock), geological mapping (50 km ²), Geophysics (IP, 10 line km; ground mag, 47 line km VTEM, 126 line km) at Inel occurrence.	Drilling highlight results at Inel included one meter grading 138.5 g/t Au and broader intercepts including 25.7 m averaging 9.24 g/t Au.
Ootsa	Northwest	Goldreach Resources Ltd.	093E 105	Cu, Au; calc-alkalic porphyry	M+I: 224.189 Mt at 0.22% Cu, 0.15 g/t Au, 0.021% Mo, 2.8 g/t Ag; Inf: 5.212 Mt at 0.18% Cu, 0.09 g/t Au, 0.019 % Mo, 2.6 g/t Ag (at \$8.50 / NSR cut-off)	Prospecting, soil sampling, geology, (Troitsa target area).	PEA release March 2016. Sampling at Troitsa returned up to 4.78% Cu and 96.9 g/t Ag.
Premier	Northwest	Ascot Resources Ltd.	104B 044	Au, Ag; Au in quartz veins		Diamond drilling (69,123 m in 279 holes).	Highlight intersections include 125.50 g/t Au over a core length of 1.50 meters within a broader interval grading 13.71 g/t Au over 14.80 meters.
Pyramid	Northwest	OK2 Minerals Ltd.		Cu, Au; calc-alkalic porphyry		RC drilling (2000 m, 5 holes), geological mapping, prospecting, soil sampling, ground geophysics (IP), corporate.	Grab samples graded up to 82.96 g/t Au (zone 37), 0.15% Cu and 0.18 g/t Au (Chili zone).
Scottie	Northwest	Rotation Minerals Ltd. 80%, Red Eye Resources Ltd. 20%	104B 034	Au, Ag; Au in quartz veins			Diamond drilling, prospecting. Drilling highlights included 1.13 m of 31.54 g/t Au.
Snip	Northwest	Skeena Resources Limited	104B 250	Au, Ag; Au in quartz veins		Diamond drilling (7,180 m in 28 holes), ground magnetics, corporate.	Drilling highlight results included 33.07 g/t Au over 2.4 m for the Lamp Zone, 16.24 g/t Au over 13.5 m for the 200 Footwall Zone and 16.01 g/t Au over 4.7 m at the Twin West structural corridor.
Spectrum	Northwest	Skeena Resources Limited	104G 036	Au, Cu; Au in quartz veins, high k calc-alkalic porphyry	Ind: 8.59 Mt at 1.04 g/t Au, 6.58 g/t Ag, 0.11% Cu Inf: 22.63 Mt at 1.03 g/t Au, 3.85 g/t Ag, 0.11% Cu (0.50 g/t eAu cut-off)	Diamond drilling (6,826 m, 24 holes), mapping, prospecting, soil sampling, ground magnetics, maiden resource established.	
Surprise Lake	Northwest	Decoors Mining Corp.	104N 032	Au; Au in quartz veins		Trenching, sampling.	Five 1 m trench samples of new bedrock gold discovery returned assays of 0.01, 6.89, 42.1, 3.05 and 0.15 g/t Au.

Table 7. Continued.

Thorn	Northwest	Brixton Metals Corporation	104K 031	Ag, Au; Subvolcanic	Inf: 7.4 Mt at 35.54 g/t Ag + 0.51 g/t Au + 0.13% Cu + .032% Pb + 0.59% Zn	Diamond drilling (1,645 m total; (1,190 m in 5 holes at Outlaw, ; 455 m in 4 holes at Aberlour)), mapping, prospecting, soil sampling, ground geophysics 20 line km IP, Lidar mapping, increased mineral claims to 99,560 ha.	Drilling highlights included 10 m of 3.61 g/t Au within 52 m of 0.94 g/t Au at the Outlaw zone and 1 m of 4.42 g/t Au within 3 m of 1.72 g/t Au at the Abelour zone.
Treaty Creek	Northwest	Tudor Gold Corp.	104B 078	Au, Ag; Epithermal high sulphidation		Diamond drilling (~3,765 m, 8 holes), prospecting, Magneto-telluric geophysical survey, corporate.	Drilling highlights included 54 m grading 1.12 g/t Au within a broader zone of 0.53 g/t Au over 630 m.
Whiting Creek	Northwest	Huckleberry Mines Limited	093E 112	Cu, Mo; calc-alkalic porphyry		Diamond drilling.	Highlights included 222.5 m of 0.31% Cu and 0.02% Mo
Akie	North Central	Canada Zinc Metals Corp.	094F 031	Zn, Pb, Ag; Sedimentary exhalative Zn-Pb-Ag	19.6 Mt at 8.17% Zn, 1.58% Pb, 13.6 g/t Ag; containing 1.6 Mt (3,540 Mlbs) Zn, 311 Kt (685 Mlbs) Pb, 267 t (8.6 Moz) Ag; Indicated	NI 43-101 technical report, resource estimate update, environmental baseline monitoring.	Reviewing plans for permitted underground exploration.
Cirque	North Central	Teck Resources Limited (Cirque Operating Corp.)	094F 008	Zn, Pb, Ag; Sedimentary exhalative Zn-Pb-Ag	historic non NI 43-101 compliant: 28.38 Mt at 7.85% Zn, 2.17% Pb, 46.8 g/t Ag (North Cirque); indicated and inferred (Teck Corporation, 1995)	core drilling (495 m), processing and interpretation of airborne and ground gravity datasets, mapping, prospecting.	2013 drilling highlights (released in 2015): 10.5 m at 1.26% Zn, 0.22% Pb, 3.36 g/t Ag (gap area, CRQ-13-001); 63 m at 1.61% Zn, 0.30% Pb, 3.94g/t Ag, including 12 m at 3.22% Zn, 0.65% Pb, and 8.23 g/t Ag (South Cirque, CRQ-13-003).
Kemess East	North Central	AuRico Metals Inc.	094E 315	Cu, Au, Ag; Porphyry Cu±Mo±Au;	39.27 Mt at 0.40% Cu, 0.50 g/t Au, 1.99 g/t Ag, 0.008% Mo containing 157,650 t (347.55 Mlbs) Cu, 19.6 t (630 Koz) Au, and 78.1 t (2.51 Moz) Ag, 3.20 Kt (7.05 Mlbs) Mo, Indicated	Resource estimate update, core drilling (13 holes, 13,544 m; infill, expansion), metallurgical testwork.	2016 drilling highlights: 628 m at 0.53 g/t Au, 0.41% Cu (KH-16-13); 549 m at 0.55 g/t Au, 0.41% Cu (KH-16-12); 504 m at 0.52 g/t Au, 0.36% Cu (KH-16-9); 372 m at 0.59 g/t Au, 0.40% Cu (KH-16-11); 344 m at 0.51 g/t Au, 0.43% Cu (KH-16-07).
Kwanika North Central	North Central	Serengeti Resources Inc. (95%) Daewoo Minerals Canada Corp. (5%)	093N 073	Cu, Au, Ag; Porphyry Cu±Mo±Au	Central Zone pit: 101.5 Mt at 0.31% Cu, 0.32 g/t Au, 0.96 g/t Ag, containing 316.2 Kt (697.2 Mlbs) Cu, 32.3 t (1.04 Moz) Au, 97.0 t (3.12 Moz) Ag; Central Zone UG: 29.7 Mt at 0.34% Cu, 0.36 g/t Au, 1.05 g/t Ag, containing 100.8 Kt (222.3 Mlbs) Cu, 10.9 t (350 Koz) Au, 31.4 t (1.01 Moz) Ag; Indicated	core drilling (2,446 m), ground geophysics (IP), resource estimate update, preliminary economic assessment update.	2016 Central Zone drilling highlights: 438 m at 0.71% Cu, 0.83 g/t Au, 2.0 g/t Ag including 233.6 m at 1.18% Cu, 1.30 g/t Au, 3.2 g/t Ag (K-16-177); 58 m at 0.26% Cu, 0.29 g/t Au, 1.2 g/t Ag (K-16-179).

Table 7. Continued.

Panorama North	North Central	Atrum Coal Panorama Inc.	104A 085, 104A 089	Coal; Anthracite	n/a	core drilling (1,180 m).	2016 drilling highlights: 6.85 m total coal (1.90 m thickest seam) to 326 m depth (DHPN-16-01); 9.87 m total coal (2.05 m thickest seam) to 260 m; (DHPN-16-02); 10.75 m total coal (2.30 m thickest seam) to 325 m; (DHPN-16-03); 11.80 m total coal (1.70 m thickest seam) to 269 m (DHPN-16-04).
Pie, Cirque East, Yuen (Pie Option properties)	North Central	Teck Resources Limited	094F 023; 094F 008; 094F 013	Zn, Pb, Ag; Sedimentary exhalative Zn-Pb-Ag	n/a	core drilling (Pie; 1080 m), ground geophysics (gravity), geochemical sampling (rock, soil), mapping, prospecting.	
Thor	North Central	Copper North Mining Corp.	094D 126	Cu, Au, Ag; Porphyry Cu±Mo±Au	n/a	core drilling, prospecting.	2016 drilling highlights: 107.60 m at 0.14% Cu, 0.045 g/t Au (Thor East).
Cariboo Gold (Barkerville Mountain; Cow Mountain; Island Mountain)	South Central	Barkerville Gold Mines Ltd.	093H 019	Au; Vein; replacement	Cow Mountain block (as of 2015-03-31; cut off 0.5 g/t Au): Indicated: 35.8 Mt grading 2.4 g/t Au (containing 2.8 Moz Au); Inferred: 27.5 Mt grading 2.3 g/t Au (containing 2.0 Moz Au)	Drilling to define resources at BC vein; Cow Mountain; Island Mountain; geochemical and geophysical surveys; explored regional targets.	Improved resource definition; discovery of new ore zones near mines; discovery of “Cariboo break” structural feature.
Fox (Ridley Creek; BN; BK; South Grid)	South Central	Happy Creek Minerals Ltd.	093A 259	W, Mo, Ag; Skarn	Ridley Creek zone (as of 2016-03-15; cut-off 0.1% WO ₃): Indicated: 505,000 tonnes grading 0.468% WO ₃ ; Inferred: 280,000 tonnes grading 0.456% WO ₃ .	Drilling to delineate target areas and demonstrate continuity of mineralization; trenching; sampling.	Published first resource estimate for Ridley Creek zone. Improved geological models for BN and BK zones.
Gibraltar North	South Central	Taseko Mines Ltd.	093B 011	Cu, Mo; Porphyry	n/a	Drilling.	Intersected high grade Cu-Mo porphyry outside mining area.
Ike	South Central	Amarc Resources Ltd.	092O 025	Cu, Mo, Ag; Porphyry	n/a	Drilling; Geophysical surveys.	Extended mineralized zone.
Prospect Valley	South Central	Westhaven Ventures Inc.	092ISW 107; 111; 112	Au, Ag; Vein	North and South Discovery zones (as of 2012-01-11; cut-off 0.30 g/t Au): Inferred: 10.1 Mt grading 0.5 g/t Au, containing 166,000 troy oz Au.	Drilling; prospecting.	Extended mineralized zone; improved geological model. Drilling highlights included 95.8m of 0.70g/t Au, including 15m of 2.23g/t Au.
Thule (including Titan Queen; Embayment; Eric) (South Central)	South Central	Nicola Mining Inc.	092ISE 034; 035; 036	Cu, Au, Ag; Skarn; porphyry	n/a	Drilling.	Improved geological model.

Table 7. Continued.

May Mac	Southeast	Golden Dawn Minerals Inc.	082ESE 045, 116	Au-Ag-Pb-Zn+/-Cu; Cu-Au-Ag skarns, polymetallic veins, epithermal Au-veins	37,200 t grading 3.4 g/t Au, 342.8 g/t Ag, 2% Pb, 2% Zn (1981; non-compliant)	Drilling (17 DDH: 1,770 m); mapping; rock sampling.	Drill intercepts include: 4.4 m grading 218.6 g/t Ag, 2.49 g/t Au, 1.5% Pb, 2.9 % Zn; 2.1 m grading 185.9 g/t Ag, 3.50 g/t Au, 1.5% Pb, 1.8 % Zn; discovery of a new silver zone with 2.3 m grading 152.0 g/t Ag, 0.36 g/t Au, 1.9% Pb, 1.9 % Zn.
Thor	Southeast	Taranis Resources Inc.	082KNW 030, 031, 060, 061	Ag-Pb-Zn+/-Au; polymetallic veins and breccia, stratiform volcanogenic massive sulphide	Indicated: 640,000 t grading 0.88 g/t Au, 187 g/t Ag, 0.14% Cu, 2.51% Pb, and 3.51% Zn; Inferred: 424,000 t grading 0.98% Au, 176 g/t Ag, 0.14% Cu, 2.26% Pb, and 3.2% Zn (2013: potential open pit and underground)	Drilling; data compilation and updating geological modeling; acquisition of a test mill, and moved on site; environmental baseline studies.	9.15 m grading 143.9 g/t Ag, 1.05 g/t Au, 0.09% Cu, 1.83% Pb, 3.78 % Zn; 9.05 m grading 97.7 g/t Ag, 0.74 g/t Au, 0.16 % Cu, 3.32 % Pb, 5.83% Zn; 7.22 m grading 156.1 g/t Ag, 0.88 g/t Au, 0.09% Cu, 4.1% Pb, 2.39% Zn; 2.5 m grading 400.8 g/t Ag, 0.55 g/t Au, 0.13% Cu, 2.38% Pb, 3.19% Zn.
Jersey-Emerald	Southeast	Margaux Resources Inc.	082FSW 010, 009	Pb-Zn-Ag+/-W, Au, Mo, Bi; stratiform replacement, skarn	Emerald-Dodger Tungsten: Measured and Indicated: 3.071 Mt grading 0.34% WO ₃ , 0.028 Mt grading 0.1% Mo; Inferred 5.48 Mt grading 0.27% WO ₃ , 0.481 Mt grading 0.1% Mo(2006 - 2015) Jersey: Indicated: 1.9 Mt @ 4.1% Zn, 1.96% Pb; Inferred: 4.98 Mt @ 3.37% Zn, 1.95% Pb (2010)	Dewatering underground workings at Emerald; channel sampling in the underground; drilling (800m); surface sampling; LiDAR surveys; data compilation and 3D geological modeling.	Underground channel sampling included: 3.0 m grading 14.15% Zn, 9.30 Pb, 4.18 g/t Ag; 3.0 m grading 11.6% Zn, 23.21% Pb, 2.99 g/t Ag; 3.0 m 14.85% Zn, 10.55% Pb, 2.32 g/t Ag; 3.8 m grading 11.45% Zn, 20.45% Pb, 3.22 g/t Ag; 0.9 m grading 11.35% Zn, 13.60% Pb, 4.40 g/t Ag; 2.7 m grading 14.65% Zn, 0.91% Pb, 0.49 g/t Ag; Surface prospecting included: 7.9% zinc, 22.6% lead, 646 g/t (22.8 oz/t) silver; 11.6% zinc, 12.8% lead, 228 g/t (8.0 oz/t) silver.
Whitewater	Southeast	Braveheart Resources Inc.	082FSW 222, 171	Au-Ag-Pb-Zn+/-Mo; polymetallic veins, Au-veins		Results on their bulk sample; Drilling (1500 m).	Bulk sample (354 kg) assayed 15.5 g/t Au. ; Drill core assays included 2.48 m of 3.29 g/t Au and 17.7 g/t Ag and 5.1 m of 2.13 g/t Au and 5.2 g/t Ag.

Table 7. Continued.

North Island	Southwest	Northisle Copper and Gold Inc.	092L 240, 092L 200, 092L 078	Cu, Au, Mo, Re; L04: Porphyry Cu±Mo±Au	Hushamu: Indicated 304 Mt 0.29 g/t Au 0.21% Cu 0.01% Mo Inferred 205.6 Mt 0.26 g/t Au, 0.18% Cu, 0.008% Mo Red Dog: Indicated 23.6 Mt 0.32% Cu, 0.46 g/t Au, 0.007% Mo Inferred 848,000 t 0.23% Cu, 0.33 g/t Au, 0.005% Mo	Drilling to update historical resource at Red Dog. Ongoing preliminary economic assessment.	Hushamu and Red Dog are separate deposits now included in the same project.
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14.80 metres. The project is under option from Boliden Ltd. Ascot can acquire 100% of the project by making a payment of \$4.775 million on or before June 30, 2017.

Diamond drilling was carried out on the **Scottie** gold property (80% Rotation Minerals Ltd. and 20% Red Eye Resources Ltd.) The project site is the former Scottie Gold mine, which operated from 1981 to 1985 with an average head grade of 16.20 g/t Au. Drilling carried out in 2016 focused on gold-bearing areas outside of the immediate mine workings, and reported intersections included 1.13 m of 31.54 g/t Au.

Skeena Resources Limited has met the expenditure requirement to acquire 100% ownership of the **Snip** property from Barrick Gold. It is anticipated that regulatory approvals will be received in 2017, allowing the complete transfer of the property to Skeena. In 2016 the company completed 7,180 m of diamond drilling in 28 holes. Drill results identified or confirmed three significant high-grade zones all of which are outside of historic mine working areas. Highlight results included 33.07 g/t Au over 2.4 m for the Lamp Zone, 16.24 g/t Au over 13.5 m for the 200 Footwall Zone and 16.01 g/t Au over 4.7 m at the Twin West structural corridor.

DeCoors Mining Corp. signed a binding letter of intent to transfer ownership of the Surprise Lake project to Gray Rock Resources Ltd. In 2016, coarse visible gold was discovered in quartz-rich phyllitic bedrock beneath a placer operation on the property. This is the first documented occurrence of coarse gold in bedrock in the Atlin camp. Gray Rock reported the results of sampling prompted by the bedrock gold discovery. Five one-metre long samples were collected from rock-sawn channels. The samples returned assays of 0.01, 6.89, 42.1, 3.05 and 0.15 g/t Au. As well, 20 grab samples were taken; highlights included 20.8 and 4.11 g/t Au.

Brixton Metals Corporation carried out work on their **Thorn** property. Work included the collection of 2,337 soil samples and 247 rock samples, 15.5 km of ground IP surveying, LiDAR surveying, and 1,645 m of diamond drilling in nine holes. The geochemical and geophysical programs outlined significant new target areas. In particular, the soil survey delineated a new 7 square kilometre gold-in-soil anomaly associated with a near surface IP chargeability high anomaly at the Chivas zone.

Drilling highlights included 10 m of 3.61 g/t Au within 52 m of 0.94 g/t Au at the Outlaw zone and 1 m of 4.42 g/t Au within 3 m of 1.72 g/t Au at the Abelour zone.

In 2016, Tudor Gold Corp. worked on the **Treaty Creek** project. Ownership is divided between Tudor Gold Corp. (60%), Teuton Resources Corp. (20%) and American Creek Resources Ltd. (20%). Work included a magnetotelluric survey that covered favorable areas identified by previous drilling and geophysical programs. The geophysical surveying was followed up with a 3,765 m eight-hole drill program. Highlights included 54 m grading 1.12 g/t Au within a broader zone of 0.53 g/t Au over 630 m.

8.1.2. South Central Region

Barkerville Gold Mines Ltd. advanced its **Cariboo Gold** project by: drilling the BC vein to define high-grade, mineable zones; drilling at Cow Mountain (site of former Cariboo Gold Quartz mine) to define a bulk-mineable resource; drilling at Island Mountain (site of former Mosquito Creek and Aurum mines) to define a bulk-mineable resource; planning an underground mine beneath the Bonanza Ledge open pit; and testing early-stage exploration targets across an expanded block of claims and a newly-identified, 60-kilometre structural trend called the 'Cariboo Break'. This is by far the biggest exploration project in the region. Approximately 70,750 m were drilled in 2016, using four drill rigs. Drilling highlights included 14.59 g/t Au over 10 m and 10.02 g/t Au over 22.20 m, including 13.01 g/t Au over 11.50 m at Cow Mountain. Newly discovered zones at Island Mountain returned 52.62 g/t Au over 3.25 m and 16.08 g/t Au over 7.10 m.

In February 2016, Westhaven Ventures Inc. increased its interest in the **Prospect Valley** project from 70% to 100%, taking over the property from Berkwood Resources Ltd. In 2016, Westhaven carried out a program of re-logging old core, prospecting, soil sampling, mapping, geophysical surveys, and drilling (8 holes; ~1,500 m). The focus was on the Discovery trend and offsets to it. Prospecting led to the discovery of new targets, such as the Ridge and Southeast Extension zones, which have gold-bearing quartz stockworks. Drilling targeted the Early Fault Zone, on the southern side of the South

Discovery zone, and the Southeastern Extension zone, seeking higher grade mineralization that can occur deeper in epithermal systems. Drilling highlights included 95.8 m of 0.70 g/t Au, including 15 m of 2.23 g/t Au.

8.2. Porphyry (Cu-Au, Cu-Mo, Mo) projects

8.2.1. Northwest Region

Metallis Resources Inc. carried out a VTEM/magnetic/radiometric airborne survey on their **Kirkham** project. The survey was carried out on parts of their property not covered by the same survey methods in 2013. Results will be integrated and interpreted to design a 2017 exploration program, which includes drilling.

The **KSP** property is under option to Colorado Resources Ltd. from Seabridge Gold Inc. In 2016 Colorado's exploration program included rock and soil sampling, geological mapping, induced polarization and magnetic ground surveys, an airborne VTEM survey, and 8,862 m of diamond drilling in 59 holes. Drilling (53 holes) focussed around the former Inel underground workings. Drilling highlight results include one metre grading 138.5 g/t Au and broader intersections including 25.7 m grading 9.24 g/t Au.

The **Ootsa** copper-gold-molybdenum-silver project is owned by Gold Reach Resources Ltd. Gold Reach released an updated resource estimate and Preliminary Economic Assessment (PEA) for the **Ootsa** project in March 2016. The PEA envisioned a toll-milling scenario whereby material would be milled and processed on a fee-basis at the Huckleberry mine facility. No agreements are in place to conduct toll-milling of **Ootsa** mill-feed at the Huckleberry facilities. The PEA presents initial details of a conventional pit and shovel mining operation at the East and West, Ox and Seel deposits. Ground work on the **Ootsa** project in 2016 included evaluating the Troitsa Peak prospect area, about 8 km south of the Seel deposit. An alteration system of strong argillic replacement and silicified breccia zones of approximately 250 m by 1,700 m has been identified. Forty-seven rock outcrop and float samples were collected and returned anomalous gold-silver grades up to 1.4 g/t Au and 197 g/t Ag. A sample described as high grade returned values of 4.78% Cu and 96.9 g/t Ag. Follow up work is planned for 2017.

The **Pyramid** gold-copper project is owned by OK2 Minerals Ltd. A 2016 work program included geological mapping, rock sampling, prospecting, and reconnaissance reverse circulation (RC) drilling. Two new zones of gold mineralization were discovered (Zone 3 and the Chili zone). Grab samples from zone 37 returned assays up to 82.96 g/t Au. The Chili zone is a 15 km² alteration assemblage from which rock samples graded up to 0.15% Cu and 0.18 g/t Au. The RC drilling was carried out on the known West zone and results will be used to prioritize areas for follow-up diamond drilling in 2017.

The **Spectrum-GJ** gold-copper project(s) of Skeena Resources Limited contain two separate mineral resources (Spectrum and GJ) that will be combined in a NI 43-101 Preliminary Economic Assessment, expected to be released in

April, 2017. In 2016, Skeena drilled 2,872 m in 8 holes at the GJ Donnelly deposit, and 6,279 m were drilled in 22 holes at the Spectrum Central Zone. The drilling was carried out to collect samples for metallurgical test work and to better define the resource in planned mining areas. Highlights included 180 m grading 0.55 g/t Au and 0.15% Cu, including 73 m grading 0.97 g/t Au and 0.26% Cu at Spectrum. Results for the GJ Donnelly deposit are pending.

Huckleberry Mines Ltd. carried out a small exploration program on the **Whiting Creek** prospect, about 8 kilometres from the **Huckleberry** mine processing plant. Three diamond-drill holes tested the edges of the Creek zone, one of three known zones of mineralization at **Whiting Creek**. All three holes intersected copper mineralization with WC16-01 intersecting 70.1 m of 0.39% Cu and 0.02% Mo (from surface), WC-16-02 intersecting 222.5 m of 0.31% Cu and 0.02% Mo (from near surface), and WC16-03 intersecting 152.4 m of 0.25% Cu and 0.02% Mo (starting at a depth of about 185.0 m). The drilling shows that the Creek zone is open to the west, and has potential to have higher grades, as the intercept in WC16- 01 included a 36.6 m intersection of 0.57% Cu.

8.2.2. North Central Region

The **Kemess East** copper-gold property of AuRico Metals Inc. is 1 kilometre east of AuRico's **KUG** deposit. In 2016, a 13-hole (18,544 m) drilling program was carried out. Drilling targeted the existing resource and high-grade core for infill and step-out expansion, and also refinement of the geological model through better delineation of key faults. Except for one abandoned hole, all drilling intersected mineralization, including a 628 m interval grading 0.53 g/t Au, 0.41% Cu, 2.07 g/t Ag, and 0.005% Mo. Metallurgical test work on drill core is planned.

The **Kwanika** property is owned by Serengeti Resources Inc. (95% interest) and Daewoo Minerals Canada Corp. (5%). In 2016, Serengeti Resources completed a deep-penetrating ground IP survey line that confirmed a modeled strong IP chargeability anomaly from a previous survey. A three-hole deep-drilling program followed to test the lateral continuity of the supergene enrichment in the known Central Zone high-grade core, and to test for extensions along its down-dip edge to the north and to greater depth into the chargeability anomaly. Results included a 438-m long mineralized intersection in the Central Zone grading 0.71% copper, 0.83 g/t gold, and 2.0 g/t silver, and a 58 m intersection grading 0.26% Cu and 0.29 g/t Au at the bottom of a hole that tested the down-dip northwest edge of the Central Zone. As well, anomalous copper-gold mineralization in strongly altered andesite was encountered over a 245 m intersection. This potentially represents a downthrown structural block 500 m to the north of the Central Zone above the deep chargeability anomaly. In November, an updated resource estimate was released for the Central Zone (Indicated and Inferred, pit constrained and underground components at 0.13% and 0.27% CuEq cut-offs) and South Zone (Inferred, pit constrained). It includes a high-grade domain in the Central

Zone of 57.7 Mt grading 0.48% Cu, 0.55 g/t Au, and 1.43 g/t Ag at a 0.40% CuEq cut-off. The 2016 drilling was incorporated into the resource estimate. The release of a revised Preliminary Economic Assessment is planned for 2017.

In 2016, work was carried out on the **Thor** property of Copper North Mining Corp. (under option from Electrum Resources Corp.). Work included diamond drill testing of two target areas on the western flank of the north-south trending McConnell Range and adjacent valley. The Thor East target in the uplands is defined by potassic alteration and mineralization in outcrop coincident with local aeromagnetic highs. Drilling highlight results included 107.60 m of 0.14% Cu and 0.045 g/t Au at the Thor East target.

8.2.3. South Central Region

In August 2016, Taseko Mines Limited announced acquiring more than 2,400 acres of mineral claims, adjacent to existing claims but outside current mining areas for the Gibraltar mine. The **Gibraltar North** claims are 2 kilometres northwest of the Extension zone (part of Gibraltar mine's current resources). Decades ago, exploration found geophysical anomalies characteristic of porphyry mineralization. Drilling in 1992 intersected 0.4-0.9% copper over 80-100 m. In September 2016, Taseko released results from a single hole drilled in 2015 that confirmed previous results. The hole intersected ~150 m of ~0.4% copper, within which was an interval of 73 m of 0.68% copper. In the Fall Taseko commenced a six-hole, 4,500 m drill program. Results are pending. The company's exploration target is a possible high-grade core to known porphyry mineralization.

Amarc Resources Ltd. continued drilling their **Ike** property. The program was financed through an option agreement with Centerra Gold Inc. The principal target is copper-molybdenum-silver porphyry mineralization in an extensive alteration zone on the eastern side of the Coast Plutonic Complex. The 2016 drilling program (3 holes; 1,900 m) helped define the southern part of the deposit and included a step-out hole some 800 metres to the west. All holes encountered mineralization. The two southern holes intersected long intervals with copper-molybdenum-silver values that are comparable to other BC porphyry deposits. The step-out hole intersected lower grade copper and molybdenum over its ~480 m length. As defined by drilling to date, the main zone at **Ike** covers an area of 1200 m east-west, 1000 m north-south, and extends to depths of more than 500 m. It remains open to expansion laterally and to depth. Drill intersections in the main zone range up to ~600 m grading ~0.3% Cu, ~0.03% Mo and ~2 g/t Ag. Other work in 2016 included 77 km of induced polarization on four nearby targets, talus sampling, and regional geological mapping. The company plans extensive drilling in 2017 to delineate known mineralization and to test early stage targets on nearby claims.

Nicola Mining Inc. carried out a diamond drilling program (1,084 m in five holes) on their **Thule** copper property, which surrounds the main pit of the past-producing Craigmont mine. Highlight results included 1.11% Cu over 85.92 m.

The company also plans to evaluate Craigmont's low-grade stockpiles as potential feed for Teck's mill at Highland Valley Copper because the former mine's cut-off grade was as high as 1.2% Cu.

8.2.6. South Coast Region

The **North Island** project of Northisle Copper and Gold Inc. consists of two separate deposits (Hushamu and Red Dog) that are approximately 7.5 kilometres apart. Hushamu, a copper-molybdenum-gold porphyry prospect, is the most advanced with Indicated 304 Mt of 0.21% Cu, 0.29 g/t Au, 0.010% Mo, and 0.56 ppm Re and Inferred 205,600,000 t 0.18% Cu, 0.26 g/t Au, 0.008% Mo and 0.38 ppm Re. In 2016, Northisle carried out a drilling program at Red Dog which, at a 0.20% Cu cut off, has an updated resource estimate of 23.6 Mt at 0.32% Cu, 0.46 g/t Au and 0.007% Mo in the Indicated category and 848,000 t at 0.23% Cu, 0.33 g/t Au and 0.003% Mo Inferred. An ongoing preliminary economic assessment includes both Red Dog and Hushamu deposits.

8.3. Polymetallic base and precious metal projects

8.3.1. Northwest Region

Decade Resources Ltd. has an option agreement by which they can earn an 80% interest in the **Bow** project. In 2016, Decade carried out chip sampling and diamond drilling. Highlight drilling results included 6.09 m of 17.17 g/t Au, 47.27 g/t Ag and 0.165% Co and 5.80 m of 21.18 g/t Au, 48.81 g/t Ag and 0.227% Co.

The **Dolly Varden** silver project is owned by Dolly Varden Silver Corporation. In 2016, Dolly Varden carried out surface mapping and sampling and completed 2,311 m of diamond drilling in 13 holes. Diamond drilling was carried out on the Torbit deposit and in the Ace-Galena area. Drilling at Torbit intersected multiple mineralized zones including 2.0 m of 2,488.5 g/t Ag within a broader intersection of 19.4 m grading 485 g/t Ag. Drilling at Ace-Galena extended known mineralized horizons 300 m along strike and results included 3.25 m of 405.77 g/t Ag, 0.12% Pb and 0.16% Zn within a broader intercept of 66.46 m of 59.97 g/t Ag, 0.12% Pb and 0.10% Zn.

8.3.2. North Central Region

The **Akie** property of Canada Zinc Metals Corp. and subsidiary Ecstall Mining Corp. (100% owned) includes the Cardiac Creek baritic zinc-lead-silver SEDEX deposit. In 2016, a NI 43-101 technical report was released with an updated resource estimate for the Cardiac Creek deposit that incorporates infill and step-out drilling carried out since 2012. This drilling focused on the central, high-grade part of the deposit and refinement of the deposit model. The resource, a continuous zone at a 5% zinc cut-off grade, increased by 55% in the Indicated category from the previous 2012 estimate with little change in average grade; it now stands at 19.6 Mt grading 8.17% Zn, 1.58% Pb, and 13.6 g/t Ag. The additional Inferred resource, now 29% of the total, is 8.1 Mt grading 6.81% Zn,

1.16% Pb, and 11.2 g/t Ag. Environmental baseline monitoring and review of plans for permitted underground exploration via a ramp decline to about 500 m below surface continued.

The **Cirque** property is owned by the Cirque Operating Corporation, which is a joint venture partnership between Teck Resources Limited (50% interest) and Korea Zinc Company, Ltd. (50% interest). The property includes the South Cirque and North Cirque deposits. In 2016, developing and refining drill targets continued as part of a multi-year exploration program that has integrated airborne gravity gradiometry (AGG) and Versatile Time Domain Electromagnetic (VTEM) geophysics, targeted ground gravity geophysics, soil and rock geochemical sampling, geologic mapping, and prospecting. Drilling in 2016 focused on the R-Creek target about 1 kilometre northwest of North Cirque deposit. As well, property-wide baseline environmental monitoring continued.

The **Pie Option** properties (Pie, Cirque East and Yuen) are under option from Canada Zinc Metals Corp. by the Cirque Operating Corporation. In 2016, five high-priority target areas on Pie and Yuen were selected for focused exploration, and a target about one kilometre west and down-dip of historic drilling and trenching in the Pie Main area was drilled. Baseline environmental monitoring for the Pie, Cirque East and Yuen properties continued.

8.3.2. Southeast Region

Taranis Resources Inc. continued drilling at the **Thor** property, which is composed of several targets and showings, including the True Fissure, Great Northern, Broadview, and Blue Bell past-producing mines. Their 2016 program included 2,100 m of drilling on several targets, and further sampling and mapping.

Braveheart Resources Inc. continued exploration work at their **Whitewater** property. Early in the year they released the results for a bulk sample taken in 2015. The 354 kg sample assayed 15.5 g/t Au. They also carried out a 10-hole 582.5 m diamond drilling program. Highlight results included 2.48 m of 3.29 g/t Au and 17.7 g/t Ag and 5.1 m of 2.13 g/t Au and 5.2 g/t Ag. In October it was announced that an additional 500 m follow-up drilling program was being carried out.

8.4. Skarn projects

8.4.1. South Central

At the **Fox** tungsten skarn property, Happy Creek Minerals Ltd. continued to define the extent, grade, and continuity of tungsten mineralization. In March 2016, the company released its first NI 43-101 compliant resource estimate for the Ridley Creek deposit and in June updated this report with metallurgical data from a 450 tonne sample. Resources stand at 505,000 t WO₃ (Indicated) and 280,000 t WO₃ (Inferred) with a 0.1% WO₃ cut-off.

Exploration in 2016 focused on four targets (BK; Ridley Creek; BN; South Grid) with a program of geological mapping, trenching, and drilling (28 holes; ~2,330 m). Three of seven holes drilled at BK, near hand-dug trenches, returned values

of ~0.7% WO₃ over 2 to 6 m intersections. Ten holes drilled at the Ridley Creek zone were designed to expand the existing resource. One hole on the northern edge of the deposit returned ~8.5 m grading ~1.1% WO₃. At the BN zone, one hole returned ~4 m of ~5% WO₃, which compared favourably with previous drill results. The company believes these tungsten values may represent a higher grade zone (currently 100 by 150 m) within a larger, lower grade deposit some 1,000 by 1,500 m in extent. The company plans more work to define trenching and drilling locations.

8.4.2. Southeast Region

Golden Dawn Minerals Inc. began drilling at their **May Mac** gold-silver-lead-zinc project in 2015, and continued their drill program in 2016. Drilling tested down dip and step-out extensions of the main mineralized vein, and intersected similar zones with iron, lead, and zinc sulphides. Drilling highlights included 4.4 m grading 218.6 g/t Ag, 2.49 g/t Au, 1.5% Pb, 2.9 % Zn; 2.1 m grading 185.9 g/t Ag, 3.50 g/t Au, 1.5% Pb, 1.8 % Zn and the discovery of a new silver zone returning 2.3 m grading 152.0 g/t Ag, 0.36 g/t Au, 1.9% Pb and 1.9% Zn. Bulk sampling and further underground drilling is planned for 2017. They also entered into an agreement with Huakan International Mining Inc. to acquire the idle Lexington mill (200 tpd gravity-flotation processing facility) and the former Lexington and adjacent Golden Crown underground Cu-Au mines.

Margaux Resources Ltd. continued work on their **Jersey-Emerald** project. The project area contains the historic Jersey and Emerald mines. In 2016, Margaux collected samples from a historic drift at **Emerald** that was discovered during a 2014 drilling program. Channel sampling results included 3.0 m grading 14.15% Zn, 9.30 Pb, 4.18 g/t Ag; 3.0 m grading 11.6% Zn, 23.21% Pb, 2.99 g/t Ag; 3.0 m 14.85% Zn, 10.55% Pb, 2.32 g/t Ag; 3.8 m grading 11.45% Zn, 20.45% Pb, 3.22 g/t Ag; 0.9 m grading 11.35% Zn, 13.60% Pb, 4.40 g/t Ag and 2.7 m grading 14.65% Zn, 0.91% Pb, 0.49 g/t Ag. They also conducted surface sampling, completed a LiDAR survey over the property, worked on dewatering historic underground workings, and compiling historic data. In the fall they announced a planned 800 m drilling program.

A 2015 resource estimate for the **Emerald** is 3.071 Mt grading 0.34% WO₃ (measured and Indicated) with 5.48 Mt grading 0.273% WO₃ (Inferred) using a 0.15% WO₃ cut-off grade. The 2010 **Jersey** resource estimate included 1.9 Mt grading 4.1% Zn and 1.96% Pb (Indicated), and 4.98 Mt grading 3.37% Zn and 1.95% Pb (Inferred), using cutoff grades of 3.5%.

8.5. Coal Projects

8.5.1. North Central Region

In August, Atrum Coal NL entered into a joint exploration agreement with Japan Oil, Gas and Metals National Corporation (JOGMEC) for the **Panorama North** property. JOGMEC can earn a 35% interest by investing \$5 million over three years. Review of historic exploration results was followed by a four-hole drilling program in October. Multiple coal seams, including

near-surface seams, were intersected; the thickest seam ranges from 1.70-2.30 m. Down-hole geophysical logging was also completed. Anthracite coal has metallurgical and specialty market industrial mineral applications.

9. Publically funded geoscience

9.1. The British Columbia Geological Survey

Established in 1895, the British Columbia Geological Survey (BCGS) links government, the minerals industry, and British Columbians to the province's geology and mineral resources. The key roles of the Survey are to: 1) create, maintain, and deliver geoscience knowledge to lead informed decision making; 2) attract exploration for new mineral and coal resources; 3) act as the public steward of mineral and coal resources; and 4) guide public policy by providing assessments on mineral exploration and mining activities. The activities of the Survey and its geoscience products are profiled annually at the Association for Mineral Exploration Roundup in Vancouver, and at regional, national, and international geoscience conferences.

Headquartered in Victoria, the BCGS is a branch in the Mines and Mineral Resources Division of the Ministry of Energy and Mines. The Cordilleran Geoscience Section is responsible for generating new geoscience knowledge, largely through field-based studies and surveys. The Resource Information Section maintains and develops the provincial geoscience databases and disseminates geoscience data online. The Section is also responsible for evaluating, approving, and archiving mineral and coal exploration assessment reports filed by the exploration and mining industry. From a satellite office in Vancouver, the Mineral Development Office links the province's mineral and coal resources to the investment community, distributes and promotes BCGS technical data, and coordinates the technical outputs of the Regional Geologists Program.

The Survey supports the minerals industry through many of the projects that it undertakes. Projects in 2016 focused on deposit studies, exploration methods development, and regional synthesis and map compilation. Projects in the Nicola arc (Quesnel terrane) focused on mapping and establishing a stratigraphic and geochronologic framework to better understand the prolific porphyry deposits in the region. In northwest British Columbia, mapping in Stikine terrane, also with an exceptional porphyry mineral endowment, was in collaboration with the Geological Survey of Canada (GSC) through the second iteration of Geo-mapping for Energy and Mineral program (GEM 2). In association with the GSC fifth iteration of the Targeted Geoscience Initiative (TGI-5), BCGS is assessing the genetic relationship of 'orogenic' gold deposits along the Llewellyn fault system in northwest BC and continuing specialty metal studies in southwest BC. In recent years the BCGS has expanded and developed new mineral exploration methods. An important theme in 2016 studies was using indicator minerals as an exploration tool. The results of Survey projects are published annually in *Geological Fieldwork* (Fig. 17) and in publications by partners including Current Research (GSC), and Summary of Field Activities

(Geoscience BC).

The BCGS continues to update its databases, including MINFILE, COALFILE, Property File, the Assessment Reports Indexing System (ARIS), digital bedrock geology map, and regional geochemical surveys all which can be accessed through MapPlace. Since 1995, MapPlace, has provided open geoscience data and custom map-making tools to help assess the mineral potential of British Columbia, assist exploration, and guide investment decisions. The next generation of MapPlace, (MapPlace 2), was released in November 2016 at the BCGS Open House in Victoria. Relative to the original version, MapPlace 2 can be used on either a Mac or a PC, requires no plug-ins and works in most web browsers, has a simpler, more intuitive interface that is easy to use, accesses third-party base maps and imagery from sources such as Google, Bing Maps and OpenStreetMap, and displays province-level data at exceptional speeds. In contrast to other Canadian web map services, MapPlace 2 goes beyond simply displaying information. Databases are continuously updated and talk to each other, enabling users to conduct queries and generate custom results by connecting to current data from many sources. MapPlace 2 is designed for anyone who wants to reduce the costs of accessing and analyzing geoscience data in British Columbia, including the mineral industry, resource

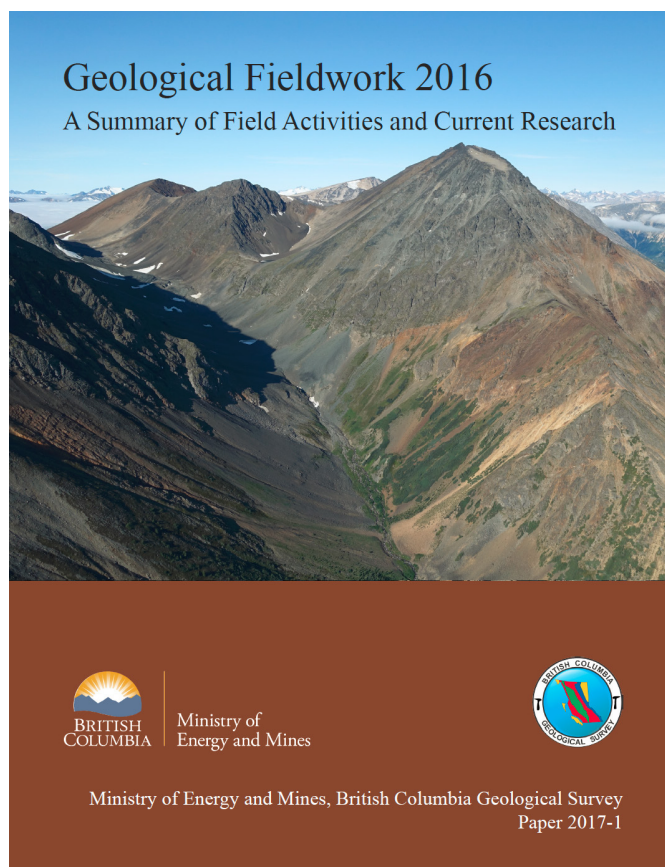


Fig. 17. *Geological Fieldwork* contains peer-reviewed papers that summarize field activities and current research by the British Columbia Geological Survey.

planners, public safety agencies, communities, First Nations groups, government, research organizations, and the general public.

9.2. The Geological Survey of Canada

The BCGS and the Geological Survey of Canada (GSC) continue to collaborate on large and small geoscience projects. The second phase of the Geo-mapping for Energy and Minerals program (GEM-2) commenced in 2014 and the program will run until 2020. The BCGS is participating in the Cordilleran Regional project that is a collaborative effort between the geological surveys of Yukon, Alaska, British Columbia and the Canadian government. Multidisciplinary field-based studies in poorly understood areas focus on bedrock geology, crustal architecture, Cordilleran tectonics, and metallogeny. The TGI-5 projects are targeted topical studies directed at understanding ore systems from metals source to deposit emplacement. Together, these efforts help drive the discovery of new mineral deposits and increase known resources. In addition, surficial geology and glacial history studies will provide vital knowledge for mineral exploration in covered regions.

9.3. Geoscience BC

Geoscience BC is a not-for profit, non-governmental, geoscience organization established in 2005 with grants from the provincial government. Geoscience BC is industry-focused, with a board of directors and technical advisors largely drawn from industry. It is mandated to promote mineral, oil and gas, and geothermal exploration in British Columbia by generating and distributing geoscience data. Open and targeted requests for proposals generate many of the large geoscience projects and work is done by contractors, consultants, and other providers of public geoscience.

10. Foreign investment initiatives

Opportunities exist for companies to attract foreign investment using government services and staff. The province participates in international investment missions showcasing mineral and coal opportunities. If you are interested in profiling your projects or investment opportunities in upcoming events, connect with the Mineral Development Office in Vancouver for more information.

11. Concluding remarks

Although exploration expenditures were down compared to 2015, explorationists continued to discover, define, and expand porphyry and porphyry-related copper-gold and copper-molybdenum deposits, gold deposits of various types, and stratiform base-metal, specialty metals, industrial minerals, and coal deposits.

Eight metal mines were in production at the start of 2016. This number dropped to seven as the Huckleberry mine went on care and maintenance in August. The Red Chris mine declared its first year of official production, and metal mine development projects continued with the Brucejack and Silvertip projects. The Quinsam underground coal mine went on care and maintenance in early 2016. In the Northeast Region mining restarted at the Brule coal mine.