

Exploration and mining in the Southeast Region, British Columbia



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1. Introduction

Four metallurgical coal mines operate in the Elk Valley of the Southeast Region, accounting for most of Canada's coal production and exports, and mine expansion and exploration continued at these mines. Dating back to the mid-1800s, the region has a long history of metals mining, including lead, zinc, and silver from the past-producing Sullivan mine and gold and silver from the Rossland, Greenwood, Sheep Creek, and Slocan camps. Today, exploration in the region focusses on base and precious metals. The region hosts several industrial mineral mines and quarries, and placer mining continues. The Trail smelter (Teck Resources Ltd.) produces refined zinc and lead, silver, critical metals (including germanium, indium, and cadmium), and fertilizer products.

Estimates for exploration expenditures, drilling programs, and other metrics were captured in the British Columbia Mineral and Coal Exploration Survey, a joint initiative of the Province of British Columbia Ministry of Energy, Mines and Low Carbon Innovation, the Association for Mineral Exploration in British Columbia, and EY LLP. For the Southeast Region, exploration expenditures are forecasted at \$55.4 million and exploration drilling is estimated at approximately 96,700 m (Clarke et al., 2022; EY LLP, 2022). Although the number of exploration projects remained similar to that of recent years, the amount of drilling decreased. During the summer fire season, many programs had to be temporarily suspended, but exploration continued into the fall and some programs remained active in December.

2. Geological overview

The mineral endowment of British Columbia, including the Southeast Region, is intimately tied to the tectonic evolution of the Canadian Cordillera, which records a protracted history of supercontinent breakup followed by accretion of allochthonous terranes to the western flank of Ancestral North America and post-accretion deformation and magmatism (e.g., Nelson et al., 2013). From east to west, the Southeast Region provides a cross-section through several components of the Canadian Cordillera (Fig. 1). On the east are Archean to Mesoproterozoic basement rocks of Ancestral North America, Proterozoic rift and intracratonic basin successions (Belt-

Purcell and Windermere supergroups), Paleozoic to Jurassic passive margin and deep-water basin deposits, and Jurassic to Cretaceous foreland basin deposits. To the west are the Slide Mountain terrane, which records Devonian subduction beneath the western flank of Ancestral North America and back-arc extension that led to the creation of the 1000 km-wide Slide Mountain ocean, and the Quesnel volcanosedimentary arc terrane and its basement (Nelson and Colpron, 2007; Nelson et al., 2013). The Southeast Region contains two of the major physiographic belts commonly used to describe the Canadian Cordillera (Fig. 1). In the Rocky Mountain foreland belt, mainly unmetamorphosed sedimentary rocks are deformed by northeast-vergent, thin-skinned thrusts and folds. The Omineca belt contains greenschist- to amphibolite-grade siliciclastic and volcanic rocks and basement-cored gneiss domes (Monger, 1999).

3. Mines and quarries

3.1. Metal mines

There are no metals mines operating in the Southeast Region of British Columbia.

3.2. Coal mines

Coal remains British Columbia's most valuable mined commodity with sales forecasted at CDN \$6.26 billion for 2021, which accounts for approximately 49.7% of the mining revenue for the province. In the Southeast Region, Teck Coal Limited mines coal from structurally thickened seams of the Kootenay Group (upper Jurassic to lower Cretaceous; Fig. 2; Table 1) at four open-pit operations along the Elk River valley: Fording River, Greenhills, Line Creek, and Elkview. More than 95% is metallurgical, high-quality hard coking coal. Coal is shipped via rail to three main shipping terminals on the west coast (Westshore, Neptune, and Ridley). Total annual production from the mines in the Southeast Region for 2021 is forecast to be 26 Mt of metallurgical coal. Teck reported that Q3 2021 production was 17.6% higher than the same quarter in 2020. Q3 production was 6 Mt with nine-month sales (2021) of 18.3 Mt. Unusually intense rainstorms in November caused transport infrastructure collapse from floods and slope failures. Although production was unaffected, rail links from Elk Valley

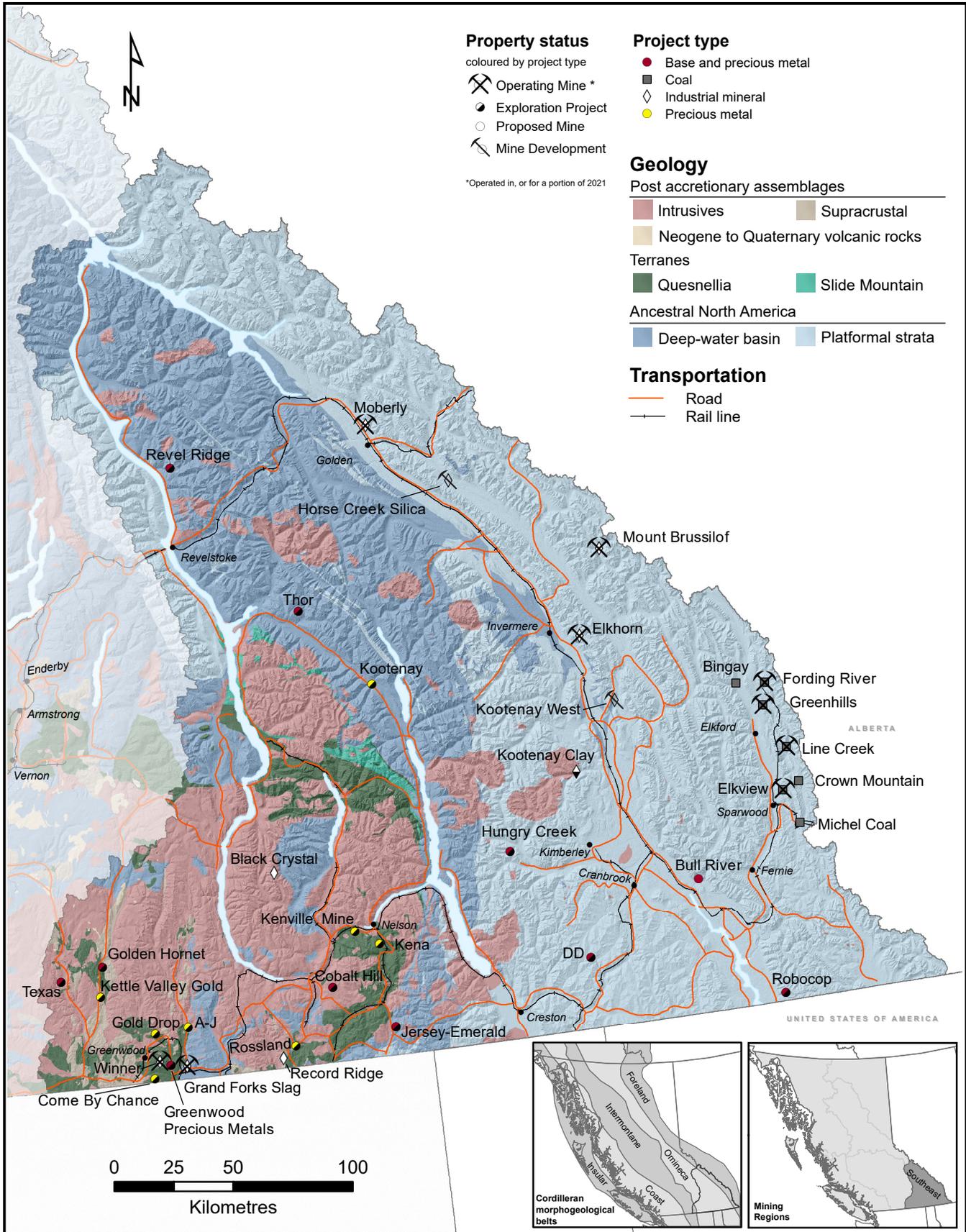


Fig. 1. Mines and selected exploration projects, Southeast Region, 2021. Terranes after Nelson et al. (2013).

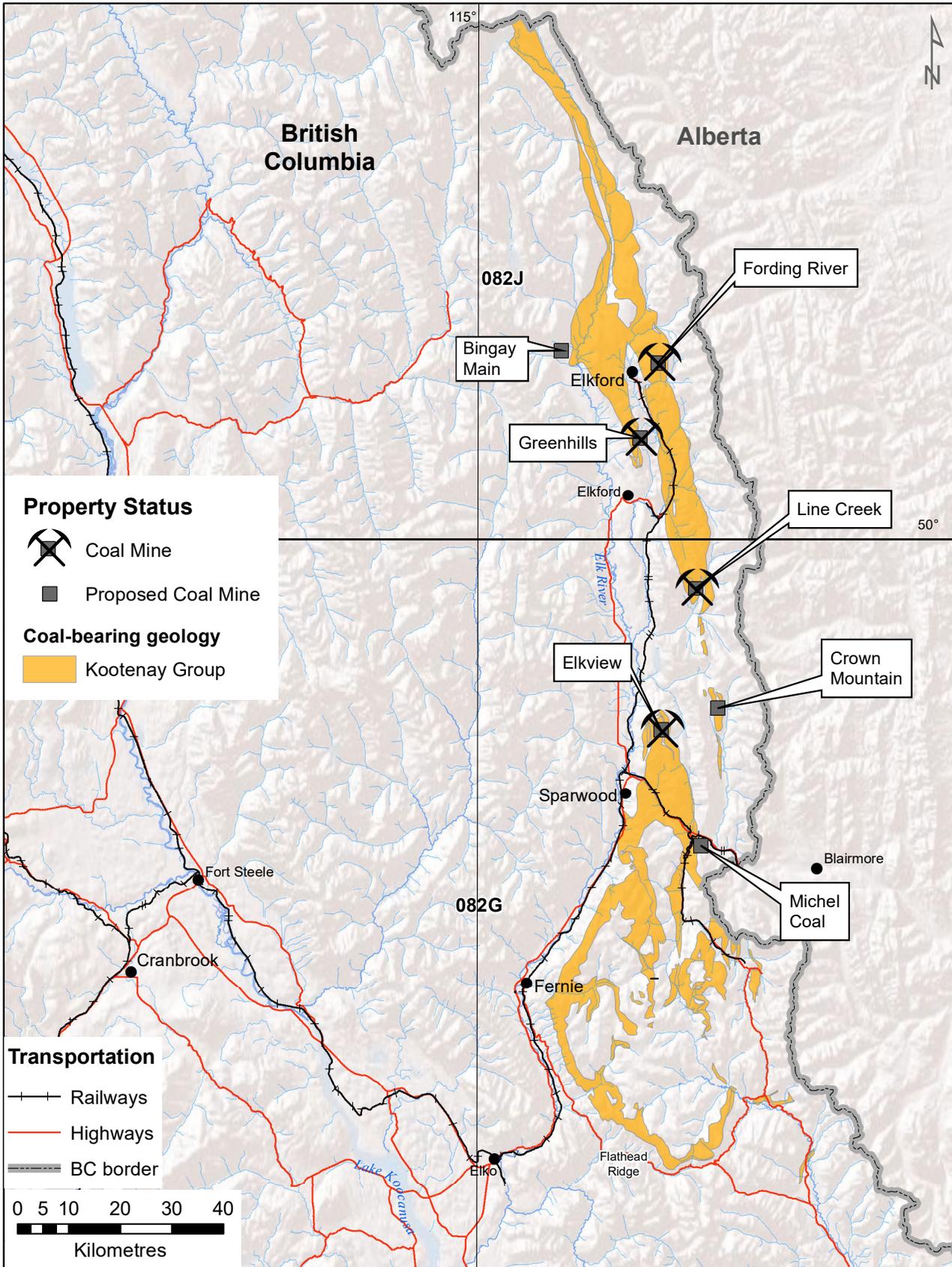


Fig. 2. Map of the Kootenay Group and East Kootenay coalfields, including the major coal mines and projects in southeastern British Columbia. From British Columbia Geological Survey (2022).

Table 1. Coal mines, Southeast Region.

Mine	Operator (partner)	Commodity; deposit type; MINFILE	Forecast 2021 Production (based on Q1-Q3)	Reserves	Resources	Comments
Elkview	Teck Coal Limited , 95%; Nippon Steel & Sumitomo Metal Corporation, 2.5%; POSCO, 2.5%	HCC; Bituminous coal; 082GNE016, 17	9.0 Mt clean	na	na	Teck estimates a remaining reserve life of approximately 30 years at the current production rate.
Fording River	Teck Coal Limited	HCC; Bituminous coal; 082JSE012	9.5 Mt clean	na	na	The focus for development drilling in 2021 was the Fording River Extension project. Proven and Probable reserves sufficient for 28 years mine life; increase to 48 years including the Fording River Extension project.
Greenhills	Teck Coal Limited , 80%; POSCO Canada Limited ('POSCAN'), 20%	HCC; Bituminous coal; 082JSE007, 10	5.4 Mt clean	na	na	Proven and Probable reserves are projected to support another 47 years of mining at planned production rates.
Line Creek	Teck Coal Limited	HCC, TC; Bituminous coal; 082GNE020	4.0 Mt clean	na	na	Proven and Probable reserves at Line Creek are projected to support planned production rates for a further 15 years.

HCC = hard coking coal; PCI = pulverized coal injection; TC = thermal coal; ULV = ultra low volatile
P = Proven; Pr = Probable; M = Measured; I = Indicated; Inf = Inferred

to Neptune and Westshore terminals in the Lower Mainland were cut. Some coal was rerouted north to Ridley Terminals in Prince Rupert, some south through the United States.

3.2.1. Elkview (Teck Coal Limited, 95%; Nippon Steel & Sumitomo Metal Corporation, 2.5%; POSCO, 2.5%)

The **Elkview** mine, which extends across 27,100 ha of coal lands, produces metallurgical coal. Upgraded in 2020, the annual production capacity of the mine and preparation plant is 9.0 Mt and Teck estimates a remaining mine life of 30 years.

3.2.2. Fording River (Teck Coal Limited)

The **Fording River** mine, which extends across 13,000 ha of coal lands, produces primarily metallurgical coal, with lesser amounts of lower grade hard coking coal. The current annual production capacity of the mine is 9 Mt; the preparation plant has a capacity of 9.5 Mt. In 2021, production was mainly from the Eagle Mountain and Swift pits. The focus for development drilling in 2021 was the Fording River Extension project. Teck also did exploration drilling and large-diameter core drilling, in their producing pits and carried out bulk sampling on seams in the Castle Mountain area for coal quality testing. Proven and Probable reserves at the mine are sufficient for a 28-year mine

life and, if the Fording River Extension project is included, a 48-year life.

3.2.3. Greenhills ((Teck Coal Limited, 80%; POSCO Canada Limited ('POSCAN'), 20%)

The **Greenhills** mine, consists of 11,800 ha of coal lands from which mainly metallurgical coal and minor thermal coal is mined. Currently, the annual production capacity is 5.9 Mt from the mine and 5.4 Mt from the preparation plant. Some coal from Greenhills is processed at Fording River. Proven and Probable reserves are projected to support 47 years of mining.

3.2.4. Line Creek (Teck Coal Limited)

The **Line Creek** mine consists of 8200 ha of coal lands and produces mainly metallurgical coal and minor thermal coal. The annual production capacity of the mine and preparation plant is 4.0 Mt. Proven and Probable reserves are projected to support mining for a further 15 years.

3.3. Industrial minerals mines and quarries

The Southeast Region has several industrial mineral mines and quarries (Fig. 1; Table 2). The operators range from local companies through to large international corporations.

Table 2. Selected industrial mineral mines, Southeast Region.

Mine	Operator	Commodity; deposit type; MINFILE	Forecast 2021 Production (based on Q1-Q3)	Reserves	Resources	Comments
Elkhorn	CertainTeed Gypsum Canada Inc.	Gypsum; Bedded gypsum; 082JSW021	na	na	na	Elkhorn site nearing end of mine life.
Grand Forks Slag	Pacific Abrasives and Supply Inc.	Slag; Tailings; 082ESE264	na	na	na	Seasonal.
Moberly Silica	Vitreo Minerals Ltd.	Silica; Industrial silica; 082N 001	About 60 kt product on contract for sales through to 2022	na	na	About 200 kt of stockpiled material on site from 2019 mining operations. No mining in 2021.
Mount Brussilof	Baymag Inc.	Magnesite; Sparry magnesite; 082JNW001	230 kt	na	na	Material is coarse crushed on site and trucked to processing facility in Exshaw, AB.
Winner	Rockwool Inc.	Gabbro/basalt; Crushed rock, for mineral wool; 082ESE265	na	na	na	Seasonal.

P = Proven; Pr = Probable; M = Measured; I = Indicated; Inf = Inferred

3.3.1. Elkhorn (CertainTeed Gypsum Canada Inc.)

The **Elkhorn** mine produces gypsum from Middle Devonian evaporites of the Burnais Formation. Because the reserve life for gypsum is ending, the mine is blending a product with the anhydrite that was once left behind as waste, which will allow the mine to continue production until 2023.

3.3.2. Grand Forks Slag (Pacific Abrasives and Supply Inc.)

The company supplies slag material from the former Granby Consolidated Mining, Smelting and Power Company smelter site for sand blasting abrasive material.

3.3.3. Moberly Silica (Vitreo Minerals Ltd.)

The last production at the **Moberly Silica** mine, owned by Vitreo Minerals Ltd., was in 2019 and 200,000 t of material is currently stockpiled. The company began contract sales of 60,000 t in the summer of 2021. The silica deposit (99% SiO₂) is in regionally extensive orthoquartzites, 300 m thick at the mine site, of the Mount Wilson Formation (Middle to Upper Ordovician).

3.3.4. Mount Brussilof (Baymag Inc.)

In production since 1981, Baymag Inc. produces magnesite at the **Mount Brussilof** mine from Cambrian limestones in which magnesium has replaced calcium. Quarried ore is crushed

then trucked to the company's processing facilities in Exshaw, Alberta. Annual magnesite production is approximately 230 kt.

3.3.5. Winner (Rockwool Inc.)

Rockwool Inc. extracts gabbro and basalt from its seasonal **Winner** quarry.

4. Placer operations

Placer mines have operated in southeastern British Columbia since the gold rush of the 1860s. Although activities were not tracked in 2021, several placer areas have operations under Mines Act permits. Active locations include, Goldstream River, Quartz Creek, Lardeau Creek, Perry Creek, Moyie River, Wild Horse River, and the Nelson-Salmo-Trail region. The placer creeks are generally linked to areas with known bedrock gold mineralization.

5. Mine or quarry development

Two industrial mineral projects in the Southeast Region are at the mine development stage, **Horse Creek Silica**, and **Kootenay West** (Table 3).

5.1. Horse Creek Silica (Sinova Global)

At the **Horse Creek Silica** mine, Sinova Global operates a seasonal quarry in Mount Wilson orthoquartzites. In 2021, the

Table 3. Selected mine development projects, Southeast Region.

Project	Operator (partner)	Commodity; deposit type; MINFILE	Reserves	Resources	Comments
Horse Creek Silica	Sinova Global	Silica; Silica sandstone; 082N 043	na	1.4 Mt est.	High purity silica >99.9% SiO ₂ , permit updates, road and rail construction, mine site preparation. Drilling; 3 DDH (2272 m), 29 RC (2275 m). Planned up to 400,000 tpy.
Kootenay West	CertainTeed Gypsum Inc.	Gypsum; Evaporitic bedded gypsum; 082JSW005, 20	na	North and South quarries: Total 17 Mt (blended quality of 83% gypsum)	Mine road construction, environmental mitigation; planned 400,000 tpy; 43-year mine life.

company continued with permit updates, road construction, rail siding development, and mine site preparation. The mine is expected to produce up to 400,000 tpy of >99% SiO₂ with an estimated resource of 1.4 Mt.

5.2. Kootenay West (CertainTeed Gypsum Canada Inc.)

The company continued development work on its **Kootenay West** mine. Most work was on developing and improving road access to the mine site and environmental mitigation. The mine reported a resource of 17 Mt gypsum at a blended quality of 83%, with annual production of 400,000 tpy. The deposit is in evaporites of the Burnais Formation (Devonian) in a section 20-25 m thick grading 75-95% gypsum. With expected transition to active mining in 2022, the projected mine life is 43 years.

6. Proposed mines and quarries

The Southeast Region has two proposed metal mines (**Bull River, Record Ridge**), three proposed coal mines, (**Bingay Main, Crown Mountain, Michel Coal**), and one proposed industrial mineral mine **Black Crystal** (Fig. 1; Table 4).

6.1. Proposed metal mines

6.1.1. Bull River (Braveheart Resources Inc.)

Braveheart Resources is continuing development of its **Bull River** mine. Work included full dewatering of all mine levels and assessment and refurbishment of all surface facilities. Underground drilling in six holes (1050 m), below known mineralization, identified extensions to the mineralization. Best results reported are from hole BRU-21-05 with 1.71% Cu, 17.6 g/t Au, and 11.6 g/t Ag along 4.9 m within which was a 0.5 m high-grade intersection of 3.09% Cu, 127 g/t Au, and 40.60 g/t Ag. In early December the company updated the mineral resource, reporting Indicated at 2,261,000 t with 2.132% Cu, and 0.442 g/t Au, and Inferred at 1,356,000 t with 1.598% Cu and 0.417 g/t Au. Relative to a resource estimate reported in 2018, the new copper resource increased by 57%.

The company also began assessing the economic potential of cobalt mineralization.

6.1.2. Record Ridge (West High Yield Resources Ltd.)

The **Record Ridge** magnesium project is in a variably serpentinized and locally carbonatized ultramafic cumulate body. The body is cut by Coryell intrusions to the west and faulted against andesite and basalt of the Elise Formation to the east. The company restarted its application for a Mines Act permit and continued metallurgical studies to develop high-purity MgO and Mg(OH)₂ products and possible nickel chloride, nickel oxide, iron oxide and pure silica byproducts. Reported mineral resources as of 2013 include 28.4 Mt at 24.82% Mg Measured, 14.6 Mt at 24.21% Mg Indicated, and 1.07 Mt at 24.37% Mg Inferred.

6.2. Proposed coal mines

Three coal mine proposals are currently in the Environmental Review process.

6.2.1. Bingay Main (Centerpoint Resources Inc.)

The **Bingay Main** project proposed by Centerpoint Resources Inc. remains in the Pre-Application process at the Environmental Review Office. The company has proposed a mine with a production capacity of 1 Mt per year and a mine life of 12 to 14 years.

6.2.2. Crown Mountain (NWP Coal Canada Ltd.)

The **Crown Mountain** mine proposed by NWP Coal Canada Ltd. is in the Pre-Application process at the Environmental Review Office. The company was granted an extension to the expiry of the Application Information Requirements (AIR) for the project from October 26, 2021 to April 26, 2022 to accommodate First Nations concerns. The company has proposed a mine with production capacity for 3.7 Mt per year and a mine life of 16 years.

Table 4. Selected proposed mines, Southeast Region.

Project	Operator (partner)	Commodity; deposit type; MINFILE	Reserves	Resources	Comments
Bingay Main	Centermount Coal Ltd.	Coal; Bituminous coal; 082JSE011	na	na	Pre-application stages of EA; letter submitted in 2020 for project to remain in EA. Proposed 1Mt per year operation with 12 to 14 year mine life.
Black Crystal	Eagle Graphite Inc.	Graphite; Crystalline flake graphite; 082FNW260, 283	na	Regolith + calc- silicate M + I: 19.23 Mt at 1.35% fixed carbon Inf: 23.92 Mt at 1.3% fixed carbon (2018)	Research and development; possible application for Li-ion battery anodes.
Bull River	Braveheart Resources Inc.	Cu, Au, Ag; Cu±Ag quartz veins; 082GNW002	na	I: 2.26 Mt at 2.13% Cu, 0.44 g/t Au Inf: 1.36 Mt at 1.60% Cu, 0.42 g/t Au	Six underground drill holes. Best intersection with 1.71% Cu, 17.6 g/t Au and 11.6 g/t Ag along 4.9 m.
Crown Mountain	NWP Coal Canada Limited (Jameson Resources Limited (80%), Bathurst Resources Limited (20%))	HCC and PCI; Bituminous coal; 082GNE018	HCC P: 42.60 Mt Pr: 4.91 Mt PCI P: 7.13 Mt Pr: 1.19 Mt (2014)	HCC + PCI M: 68.9 Mt I: 6.0 Mt (2014)	Pre-Application EA stage, 2021 extended FN consultation to 2022. Proposed 2 Mt per year operation (86% HCC and 14% PCI) with 15 year mine life.
Michel Coal	North Coal Ltd.	HCC and PCI; Bituminous coal; 082GSE050	na	HCC M: 44.6 Mt I: 42.5 Mt open-pit and underground (2015)	Entered pre-application of EA in 2015; received AIR requirements in September 2020; geotechnical studies and updates to mine design; coal quality testing indicates coal has similar characteristics to Elk Valley hard coking coal; environmental baseline and mine design.
Record Ridge	West High Yield (W.H.Y.) Resources Ltd.	Mg; Alaskan-type Pt±Os±Rh±Ir; 082FSW398	na	M: 28.4 Mt 24.82% Mg I: 14.6 Mt 24.12% Mg Inf: 1.07 Mt 24.37% Mg	Restarted Mines Act permit application, metallurgical testing.

HCC = hard coking coal; PCI = pulverized coal injection; TC = thermal coal
P = Proven; Pr = Probable; M = Measured; I = Indicated; Inf = Inferred

6.2.3. Michel Coal (North Coal Ltd.)

The **Michel Coal** project proposed by North Coal Ltd. is in the Pre-Application process at the Environmental Review Office. The company has proposed a mine with production capacity of 2.3-4 Mt per year and a mine life of 30 years.

6.3. Proposed industrial mineral mines

6.3.1. Black Crystal (Eagle Graphite Inc.)

The Black Crystal project has an active mining lease. No work was reported for the site in 2021.

7. Selected exploration activities and highlights

In 2021, numerous precious metal, polymetallic base and precious metal, and industrial mineral projects were active in the Southeast Region (Table 5).

7.1. Selected precious metal projects

7.1.1. A-J (Belmont Resources Inc.)

Belmont Resources Inc. completed 2061 m of drilling in nine holes at its **A-J** property adjacent to former workings of the Athelstan and Jackpot mines. Several holes intersected gold mineralization. Highlights results included: 14.66 m of 1.78 g/t Au in hole AJ21-009 and 0.43 m of 9.35 g/t Au in hole AJ21-008. The area is underlain by variably altered ultramafic rocks of the Mount Roberts Formation (Carboniferous to Permian). Mineralization is generally restricted to talc-carbonate listwanite and serpentinite alteration zones. Gold mineralization occurs with massive to semi-massive sulphides, mainly pyrite and arsenopyrite.

7.1.2. Gold Drop (GGX Gold Corp.)

The company drilled 25 holes for a total of 1617 m on its **Gold Drop** property. Targets included the Perky (12 holes, 445 m), Lively (12 holes, 1061 m) and C.O.D. (1 hole, 111 m) veins. The company applied for a permit to allow bulk sampling of the C.O.D. vein. The property is underlain by chert and siliceous argillite of the Knob Hill Group (Devonian to Permian). Mineralization consists of disseminated pyrite, galena, chalcopyrite, and sphalerite in north-trending steeply dipping quartz veins 10 cm to 2 m wide with gold and silver values.

7.1.3. Greenwood Precious Metals (Golden Dawn Minerals Inc.)

Golden Dawn Minerals Inc. completed helicopter-borne VTEM and magnetic geophysical surveys at its **Greenwood Precious Metals** project, which identified several targets and included both the Lexington mine and Golden Crown targets. The company mobilized equipment in late September to begin drilling at the Lexington mine where mineralization consists of low-grade copper associated with a quartz porphyry intrusion. Pyrite and chalcopyrite form fracture fills and disseminations.

7.1.4. Kena project (West Mining Corp.)

West Mining Corp. completed the first phase of an exploration

program on its **Kena** project. The project includes three adjacent properties (Kena, Daylight, and Athabasca) that extend along a 20 km trend. The properties cover known mineralized zones and historical mine sites. Mineralization comprises quartz-pyrite stockwork and veinlet zones in bleached and silicified Jurassic plagioclase porphyry and well-foliated, pyritic intermediate volcanic rocks (Silver King intrusive and the Elise Formation). Field work included geological mapping, prospecting, and rock sampling focussed on veins at old workings and following gold and copper soil geochemistry anomalies and airborne magnetic low features. Additionally, a 300 line-km, 100-m line spacing helicopter magnetic survey was flown over 27 km².

At the Kena property, 4000 m of diamond drilling (26 holes) was completed and on the Daylight property, eight holes were completed at the Great West Zone. Highlights included: hole DL21-01 averaged 0.25 g/t Au for its entire 100.37 m depth; hole DL21-05 averaged 0.23 g/t Au for its entire 318.72 m depth; and hole DL21-08 averaged 0.32 g/t Au for its entire 146.5 m depth. The company released an updated, 43-101 compliant combined resource estimate for the Kena project in March of 2021, with an Indicated resource of 32 Mt of 0.54 g/t Au at a 0.25 g/t Au cut-off and an Inferred resource of 177 Mt of 0.49 g/t at a 0.25 g/t Au cut-off.

7.1.5. Kenville Gold Mine, Amelia, and Providence (Ximen Mining Corp.)

Ximen Mining Corp. continued its mine rehabilitation planning with hydrogeological and engineering studies at its **Kenville Gold Mine** project. The company received permits in the fall for drilling on both its **Amelia** Gold Mine and **Providence** properties in the Greenwood area.

7.1.6. Kettle Valley Gold (Goldcliff Resources Corporation)

Goldcliff Resource Corporation excavated nine trenches for a total of 600 m at their **Kettle Valley Gold** project. Other work included soil sampling, rock sampling, prospecting and mapping. Sampling discovered a new mineralized zone ("Cliff") in quartz-carbonate altered Eocene rhyolitic volcanic rocks of the Marron Formation. Samples of mineralized float and sub-crop similar to adjacent bedrock yielded results ranging from 162 to 736 ppb Au and 14.0 to 41.7 ppm Ag.

7.1.7. Kootenay (Wealth Minerals Ltd.)

The company planned a helicopter-borne VTEM and magnetic geophysical survey covering 5456 hectares (12,014 line-km) over its **Kootenay** project that comprises the Goldsmith, Lardeau and Legend claim blocks. The targets are known gold mineralization in listwanite-altered ultramafic rocks at Goldsmith and possible nickel-cobalt mineralization associated with ultramafic bodies.

7.1.8. Rossland (Currie Rose Resources Inc.)

The company drilled the Mascot (3 holes, 687 m) and Gertrude (1 hole, 61 m) targets of its **Rossland** project and completed a surface VLF-EM survey at Gertrude. Drilling

Table 5. Selected exploration projects, Southeast Region.

Project	Operator (partner)	Commodity; Deposit type; MINFILE	Resources (NI 43-101 compliant unless indicated otherwise)	Comments
A-J	Belmont Resources Inc.	Au; Polymetallic veins Ag-Pb-Zn+/-Au; 082ESE047		9 DDH, 2061 m.
Cobalt Hill	Megawatt Lithium and Battery Metals Corp.	Co; Polymetallic veins Ag-Pb-Zn±Au; 082FSW325		Ground IP, 28 line-km.
Come-By-Chance (CBC)	Belmont Resources Inc.	Cu, Au; Cu skarns; 082ESE261		IP and lidar surveys. 42 DDH begun.
DD-Hungry Creek	DLP Resources Inc.	Zn, Pb, Ag; Sedimentary exhalative Zn-Pb-Ag; 082FSE110		4 DDH, DD (2 holes, 3630 m), Hungry Creek (2 holes), 306 line-km airborne MT survey.
Gold Drop	GGX Gold Corp.	Au; Epithermal Au-Ag-Cu, low sulphidation; 082ESE153		25 DDH, 1617 m (Perky 11 DDH, 445 m; Lively 12 DDH, 1061 m; C.O.D. 1 DDH, 111 m).
Golden Hornet	Talisker Resources Ltd.	Au, Zn, Cu, Pb; Au-quartz veins; 082ESE168		DDH 14 holes, 4583 m.
Greenwood Precious Metals	Golden Dawn Minerals Inc.	Au, Cu; Au-quartz veins; Porphyry Cu±Mo±Au; 082ESE032, 41		Helicopter-borne VTEM and magnetic surveys over Golden Crown and Lexington mine.
Jersey-Emerald	Apex Resources Inc.	W; Irish-type carbonate-hosted Zn-Pb; 082FSW009	I: 1.4 Mt 0.173% WO ₃ , 0.021% Mo, 0.05 g/t Au Inf: 5.1 Mt 0.227% WO ₃ , 0.026% Mo, 0.08 g/t Au	New resource estimate released in September. Combined best case open pit & underground.
Kena	West Mining Corp.	Au; Alkalic porphyry Cu-Au; 082FSW237		Kena: 9 DDH, 3253 m; Athabasca/Daylight: 14 DDH, 2011 m.
Kenville Gold Mine, Amelia, Providence	Ximen Mining Corp.	Au; Au-quartz veins; 082FSW086		Ongoing mine rehabilitation.
Kettle Valley Gold	Goldcliff Resources Corporation	Au; Au-quartz veins		Nine trenches, 600 m, new “Cliff” zone.

Table 5. Continued.

Kootenay	Wealth Minerals Ltd.	Au; Polymetallic veins Ag-Pb-Zn±Au; 082KSW088	Helicopter-borne VTEM and magnetic geophysical survey, 12,014 line-km.
Kootenay Clay	Hi Ho Silver Resources Inc.	Clay; Sedimentary kaolin	A 7000 kg bulk sample was shipped to China for evaluation.
Revel Ridge	Rokmaster Resources Corp.	Pb, Zn, Ag; Irish-type carbonate-hosted Zn-Pb; 082M 003	Drilling, (28,000 m); 44 holes underground, 39 surface. Rock and soil sampling; new resource calculation in progress.
Robocop	Grizzly Discoveries Inc.	Co; Polymetallic veins Ag-Pb-Zn±Au; 082GSW019	400 line-km VTEM and magnetic surveys; rock and soil sampling.
Rossland	Currie Rose Resources Inc.	Au; Intrusion-related Au pyrrhotite veins; 082FSW093	4 DDH, 748 m, 11 line-km VLF-EM.
Texas	Troubadour Resources Inc.	Au, Ag; Polymetallic veins Ag-Pb-Zn±Au; 082ESW235	2093 m DD in 25 holes; new vein found, best assay: 0.8 m with 8.79 g/t Au.
Thor	Taranis Resources Inc.	Base metals; Polymetallic manto Ag-Pb-Zn; 082KNW030	10 DDH, 1500 m, line cutting, VLF and resistivity; permit for 10,000 t bulk sample in 2022.

M = Measured; I = Indicated; Inf = Inferred

at Mascot provided a best result of 0.2 m of 7.41 g/t Au and 2.19 g/t Ag with no other notable results. A single hole at Gertrude yielded three high-grade intersections with the best being 1.87 m of 17.68 g/t Au. An 11 line-km ground VLF-EM survey was done over the Gertrude target. The company has dropped its option on the targets.

7.2. Selected polymetallic base and precious metal projects

7.2.1. Cobalt Hill (Megawatt Lithium and Battery Metals Corp.)

Megawatt Lithium and Battery Metals Corp. completed a 22.8 line-km ground induced polarization survey at its **Cobalt Hill** cobalt property. The survey examined three target areas: the Meister zone, the Cobalt zone, and the Gold Soil anomaly zone. Results released define geophysical features that support known geological and geochemical responses in the three areas. The property is underlain by the Bonnington granodioritic pluton (mid-Jurassic). Copper-cobalt mineralization is in pendants interpreted to have been derived from either metasedimentary rocks of the Hall Formation (Lower Jurassic) or the Castlegar gneiss (Paleozoic).

7.2.2. Come-By-Chance (Belmont Resources Inc.)

Belmont resumed a IP and lidar surveys at its **Come-By-Chance** property this fall, after being suspended due fires in the summer. In mid-November the company began a planned 42-hole drill program. The property is largely underlain by tuffaceous sedimentary rocks, limestone, conglomerate, and greenstone of the Brooklyn Formation (Triassic). Mineralization includes mesothermal veins, possible epithermal veins, and replacement mineralization with copper and gold values.

7.2.3. DD and Hungry Creek (DLP Resources Inc.)

The company used the results of a ground MT survey on the **DD** and **Hungry Creek** properties completed in December 2020 to target drilling in 2021. The company drilled several holes, mapped, and prospected. On the DD property, two holes DD21-01 (1728 m) and DD21-02 (1902 m) were drilled. In DD21-01, strongly hydrothermally altered and sheared Sullivan horizon siltstone and argillite was intersected from 1452.46 to 1550 m. Weak pyrrhotite, chalcopyrite, and trace pyrite occur through this alteration zone along with a late gabbro sill from 1498 m to 1503.57 m. In DD21-02, a 7.6 m interval of the Sullivan siltstones and argillites with fine

grained disseminated sphalerite (Zn, Fe)S and wispy bands of pyrrhotite was intersected. This section included a 2.92 m interval with 0.16% Zn and 0.06% Pb.

The company drilled two holes on the Hungry Creek property, neither of which intersected copper-cobalt mineralization identified previously in boulders along Hungry Creek. However, the drill hole information helped better understand of the middle part of the Creston Formation (Belt-Purcell basin) and further prospecting west and south of the area drilled identified a section of middle Creston quartzites with visible copper.

7.2.4. Golden Hornet (Talisker Resources Ltd.)

The company completed an airborne VTEM and magnetic survey at the end of 2020 for a total of 1093 line-km. Sampling from late 2020 extended known historic mineralization, including the new polymetallic Montana Zone which returned up to 14.05 g/t Au, 7.84% Zn, 1.8% Cu and 4.4% Pb. In 2021, the company drilled 4850 m in 14 holes, of which 10 were placed to test mineralized structures of the Hornet zone and 4 holes were placed 700 m to the northeast to test the extension of a geochemical anomaly identified in 2020. Mineralization occurs in both quartz veins and breccias within feldspathic tuff and diorite dikes of the Anarchist Group (Carboniferous to Permian).

7.2.5. Jersey-Emerald (Apex Resources Inc.)

The **Jersey-Emerald** mine is a sedimentary exhalative carbonate hosted lead-zinc deposit. The former mine is in lower Cambrian limestones of the Laib Formation. Skarn-hosted tungsten mineralization is also present. In September, the company released a resource estimate for its Jersey Emerald tungsten project that includes open pit and underground operations, with an Indicated resource of 1.4 Mt with 0.173% WO₃, 0.021% Mo, and 0.05 g/t Au and an Inferred resource of 5.1 Mt with 0.227% WO₃, 0.026% Mo, and 0.08 g/t Au.

7.2.6. Revel Ridge (Rokmaster Resources Corp.)

The company completed underground drilling at its **Revel Ridge** project. Results from the Main zone indicated continuity of zinc-silver mineralization along a 1200 m length and a vertical extent of the same amount. Drilling highlights included RR21-28 with 26.2 m grading 1.73 g/t Au, 14.38 g/t Ag, 0.75% Pb, and 4.95% Zn, and RR21-23 with 1.0 m grading 7.22 g/t Au, 4.00 g/t Ag, 0.32% Pb, and 0.41% Zn. Surface drilling of 10,747 m was completed in the fall and results extended the limits of known mineralization. Highlights included 3.60 m grading 0.19 g/t Au, 244.28 g/t Ag, 6.25% Pb, and 18.09% Zn at the Main zone, and 2.70 m grading 0.03 g/t Au, 83.69 g/t Ag, 4.20% Pb, and 8.64% Zn at the Yellowjacket zone. Underground drilling resumed in November. A resource update is in progress using information from 39 NQ surface holes completed this summer. Rock and soil sampling identified mineralized float and outcrops well beyond the known mineralized zones.

The Revel Ridge property is underlain by north- to northwest-striking, moderate to steeply east dipping metasedimentary and metavolcanic rocks of the Hamill and Lardeau groups; mineralization is in the Hamill Group (Badshot and Mohican formations). The Main zone is a structurally controlled stratiform massive sulphide zinc-lead-silver-gold-iron-arsenic deposit overprinting a pre-existing silver-lead-zinc deposit (the Yellowjacket zone).

7.2.7. Robocop (Grizzly Discoveries Inc.)

Grizzly Discoveries Inc. completed a 400 line-km with 100 m line spacing of VTEM and magnetic geophysical surveys over its **Robocop** property. Surface work included soil and rock sampling. The highest-grade rock sample taken on the property yielded 3.35% Cu and 196 ppm Co and is from a newly discovered outcrop 340 m west of the 'Discovery' showing area. A permit application has been submitted for follow-up drilling.

7.2.8. Texas (Troubadour Resources Inc.)

The company completed 2093 m of drilling in a total of 25 holes at its **Texas** project. Drilling intersected several polymetallic veins near the Cabin target. Results included 5.9 m grading 1.78 g/t Au. A newly discovered vein yielded a highlight of 0.8 m with 8.79 g/t Au. The property is underlain by a Nelson suite granodiorite pluton (Middle Jurassic) that is cut by quartz and lesser carbonate veins with strong chlorite-carbonate-clay-silica alteration envelopes.

7.2.9. Thor (Taranis Resources Inc.)

The company planned a 1200 m drill program on its **Thor** property. A total of ten holes were drilled on the Ridge target, now named the Thunder zone. Drilling intersected Jowett Formation volcanic rocks containing abundant quartz veins with tetrahedrite, sphalerite, galena, and pyrite mineralization. The best assays reported from the first three holes drilled include 10.30 m with 0.07% Cu, 1.07% Pb, 2.13% Zn, 103.42 g/t Ag, and 0.35 g/t Au. Within the interval was a 3.96 m with 0.15% Cu, 2.63% Pb, 3.63% Zn, 253.8 g/t Ag and 0.61 g/t Au. The company received permits for a 10,000 t bulk sample. The property is underlain mostly by Cambrian to Devonian carbonate and fine-grained sedimentary rock of the Lardeau Group.

7.3. Selected industrial mineral projects

7.3.1. Kootenay Clay (Hi Ho Silver Resources Inc.)

An outcrop of illite-rich lacustrine clay is exposed on a road cut of the Skookumchuk Creek forest service road, near Buhl Creek. The clay extends for at least 110 m along the road cut and about 28 m back from it. Grab samples yielded about 78 wt.% illite. The company shipped a 7000 kg bulk sample to China to be evaluated for use in cosmetics.

8. Geological research

Höy et al. (2021) reported on mapping and U-Pb zircon

and $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology of the Pentiction Group in the Boundary area, and Kuppusamy and Holuszko (2021) developed a rare earth element database based on samples from the East Kootenay coal fields. Perelló et al. (2021) investigated the timing of sediment-hosted stratiform copper-silver mineralization in the Creston Formation (Belt-Purcell Supergroup) using U-Pb zircon detrital zircon geochronology to establish a maximum depositional age (ca. 1470 Ma) and Re-Os molybdenite geochronology to determine the age of mineralization (ca. 1043 Ma).

9. Summary

Companies have been able to establish financing for fieldwork and company development. Exploration has been varied across a spectrum of commodities, including precious and base metals, specialty metals, industrial minerals and coal. Industrial minerals production has remained steady. Coal prices and sales increased during the year and demand for metallurgical coal remains strong.

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