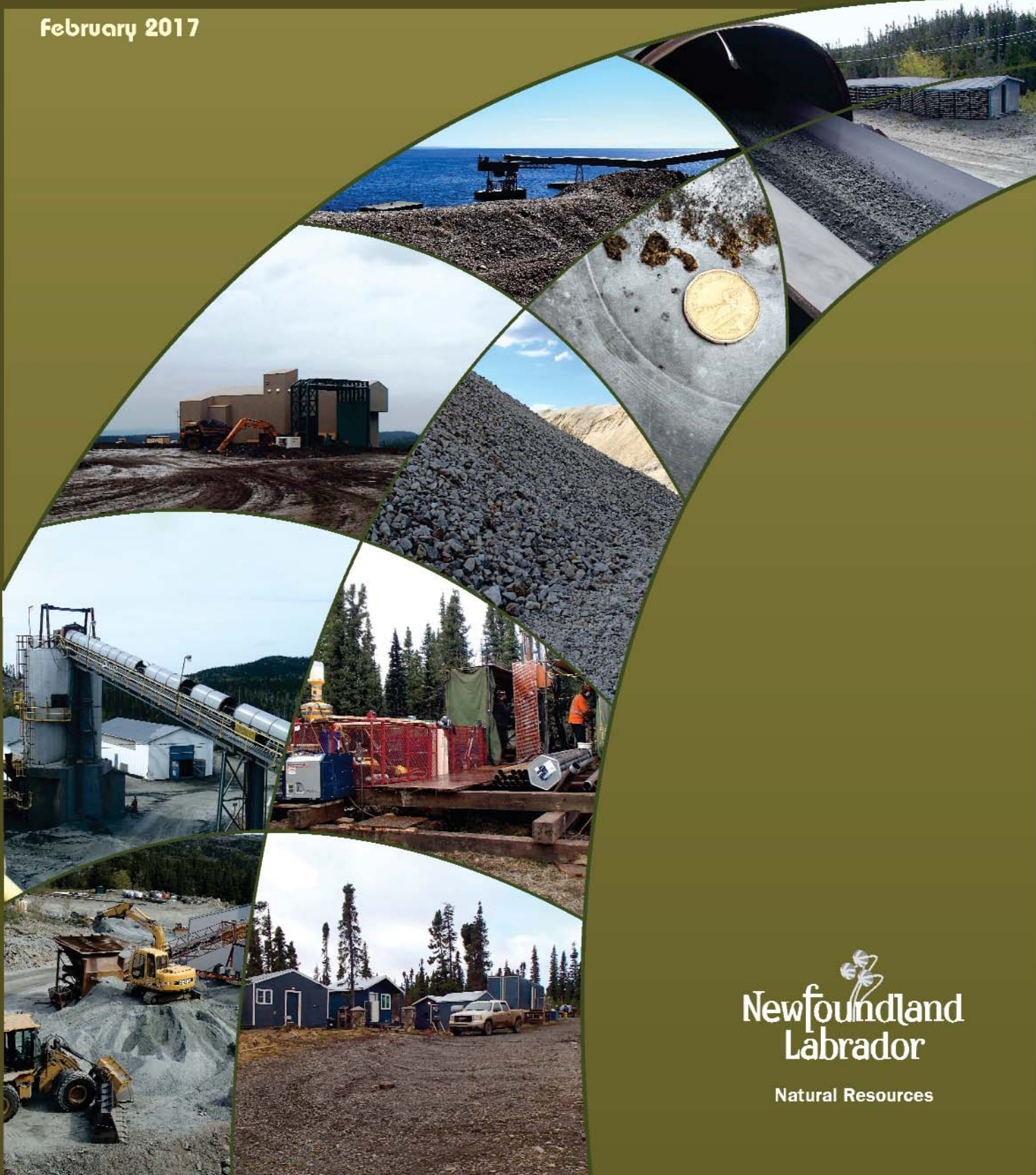


MINING IN NEWFOUNDLAND AND LABRADOR

February 2017

Department of Natural Resources, Mines Branch



Newfoundland
Labrador

Natural Resources

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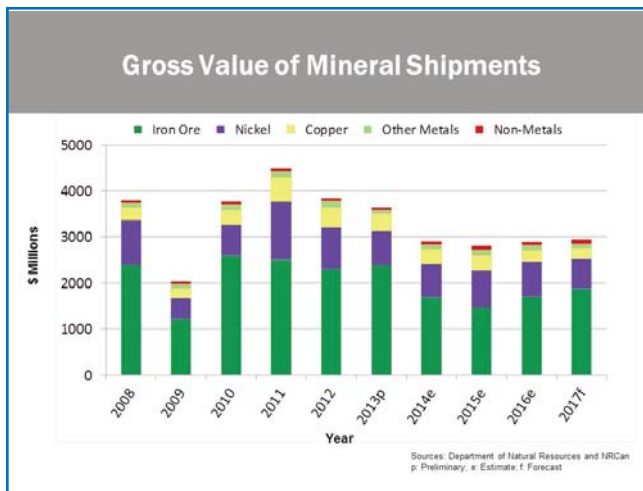
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MINERAL DEVELOPMENT REVIEW

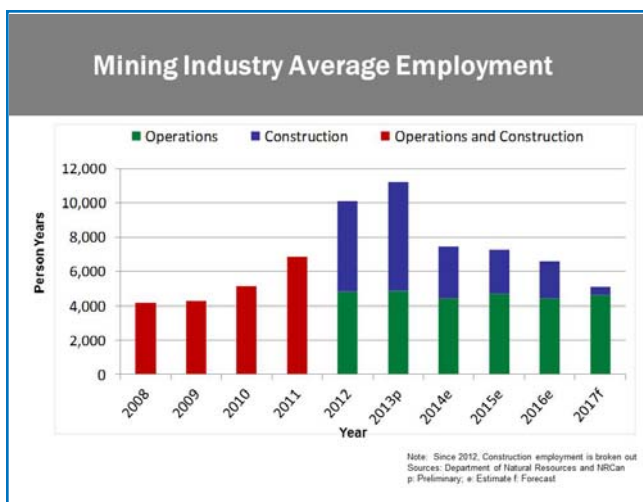
Value of Mineral Shipments

The gross value of mineral shipments for Newfoundland and Labrador is forecast to total \$2.9 billion in 2017. This reflects a 1.9 percent increase from the 2016 estimated gross value and is the result of an increase in the value of iron-ore and aggregate-stone shipments.



Employment

Mineral industry employment in 2017 is projected to equal 5085 person years. This represents a 22.8 percent decrease



from the 2016 estimated value of 6585 person years. Completed construction of the Vale Newfoundland and Labrador Ltd. Long Harbour processing plant has reduced construction employment and has resulted in an overall employment decline.

PRODUCING MINES

Vale Newfoundland and Labrador Limited

Vale Newfoundland and Labrador Limited (VNL) operates a mine and mill in Voisey's Bay, and a hydromet processing plant at Long Harbour. The mine started operations in 2005, and produces both nickel and copper concentrates

Construction at the Long Harbour processing plant was completed in late 2016, and allows the plant to process all grades of nickel concentrate from Voisey's Bay, and produces finished nickel, copper and cobalt. VNL estimates a two year ramp-up schedule to reach full capacity at the hydromet plant of 50 000 tonnes of finished nickel per year.

Through the first nine months of 2016, VNL reported production of 32 700 tonnes of nickel, 21 000 tonnes of copper and 566 tonnes of cobalt from Voisey's Bay; this is 10 percent higher than 2015 due to the hydromet plant ramp-up.

Estimated person years of employment for all aspects of the Voisey's Bay Project, including the mine and processing plant,



VNL – Bulk Carrier Umiak 1
(photo courtesy of VNL).

is anticipated to be 1711 in 2017. This is significantly lower than the 2016 employment of 3400 person years due to the completion of Long Harbour facility.

The Voisey's Bay Mine Expansion Project will include both the Reid Brook and Eastern Deeps deposits that are adjacent to the current open-pit mine, the Ovoid. The construction phase of the expansion started in 2016, will facilitate the transition from the open pit to underground mining set to commence in 2020. Once in operation, underground mining will extend the life of the Voisey's Bay operation until 2032. At peak production, the underground mines will produce about 40 000 tonnes of nickel-in-concentrate per year which will be shipped to Long Harbour for further processing into finished nickel. An additional 400 full-time positions will be created at Voisey's Bay to support the underground operations and expanded site services.

Iron Ore Company of Canada

The Iron Ore Company of Canada (IOC) has been producing iron ore at the Carol Lake project in Labrador West, since the 1960s. Production capacity at the site is 23.3 million tonnes of concentrate, of which over 13 million tonnes can be pelletized. IOC projects to generate 1800 person years of employment in Labrador during 2017.

Labrador Iron Ore Royalty Corporation (LIORC) owns 15.1 percent of IOC, and reported IOC concentrate production for 2016 as 8.3 million tonnes and pellet production at nearly 10 million tonnes. Despite continuing with improvements from last year, production for the year was slightly lower than expected.

IOC will proceed with the Wabush 3 Project following the approval of a \$79 million investment by the Board of Directors on February 22, 2017. The Wabush 3 Project is a new open pit that would allow flexibility in providing iron ore feed to its existing concentrator to achieve and maintain pro-

duction at the mill's rated capacity. Wabush 3 would provide a new source of iron ore to extend the operating life of its Carol Project.

Tata Steel Minerals Canada Limited

Tata Steel Minerals Canada Limited (TSMC) is a joint venture between Tata Steel of India, New Millennium Iron Corporation and Ressources Quebec. TSMC operates a high-grade iron ore project in the Menihék area of northwestern Labrador, and completed its first shipment of direct shipping ore (DSO) to Europe from the project in September 2013. Current mining takes place in Labrador but in future years plant feed will come from both Labrador and Quebec.

After a temporary winter scale down of operations in 2016 that included stabilization of the plant, which remains in care and maintenance, TSMC will be operating on a seasonal basis in the near term. This action was in response to challenging conditions in the steel and iron-ore markets and will be reviewed on an ongoing basis. TSMC forecasts 250 person years of employment during 2017 at the mining operation.

On July 26, 2016, TSMC announced that it had been awarded a financial contribution of \$175 million by the Government of Québec to support the development of its DSO project. The financial contribution includes an equity stake for \$125 million and a loan of \$50 million. Québec and the company also agreed to cooperate in creating favourable conditions for iron-ore transit from Arnaud Junction to the multi-user dock at the Port of Sept-Îles. The agreement, signed in October 2016, facilitated an 18 percent ownership stake in the company by the Government of Québec. This, combined with rail and port improvements in the Sept-Îles area at Pointe Noire, will benefit the TSMC operation.

TSMC is working toward developing the Howse iron ore deposit. This was originally a joint venture between TSMC and Labrador Iron Mine (LIM), but on April 2, 2015, TSMC



Mining activity at IOC's Luce Pit



Tata Steel – Kivivic 2

acquired LIM's remaining interest in the project. This DSO deposit will be a low capital mining venture and will use TSMC's adjacent infrastructure. Open-pit drill and blast mining will be used and extracted ore will be crushed and screened on site. Ore will be trucked less than 5 km to TSMC's rail loop, and railed to Sept-Isles. The company has estimated an 11 year mine life. An environmental preview report was received by the Department of Environment and Conservation on April 20th, 2016, and is currently being reviewed. The project is also subject to review under the Canadian Environmental Assessment Act 2012, and is undergoing a separate environmental assessment with the Canadian Environmental Assessment Agency.

Atlantic Minerals Limited

Atlantic Minerals Limited (AML) began commercial production in 1996 and is located at Lower Cove on the Port au Port Peninsula. AML is a leading world producer of chemical grade limestone, chemical-grade dolomite and construction aggregates. Product is exported by vessel from its 2000 tonnes-per-hour ship-loading marine terminal located adjacent to the mine. The operation has 88 year-round employees, plus seasonal jobs at the site that increase the total person years of employment to 133.



Atlantic Minerals' Lower Cove

AML's quarry expansion project, designed to access high-grade calcium limestone reserves adjacent to its current mining lease in the White Hills area on the Port au Port Peninsula, was released from environmental assessment in August 2016. The expansion would extend existing operations for approximately 25 years based on estimated annual production of two million tonnes of high-grade calcium limestone and one million tonnes of dolomite limestone. The quarry extension is planned for 2017.

Anaconda Mining Incorporated

Anaconda operates the Point Rousse Project near Ming's Bight on the Baie Verte Peninsula. The project consists of the pro-

ducing Pine Cove gold mine and mill, the Stog'er Tight mine, an exploration/development project called the Viking Project and a prospective package of mineral exploration licences in the area.

In the six months ended November 2016, Anaconda reported the sale of 7307 ounces of gold that generated \$12.3 million in revenue. The Pine Cove mill reached a new record level of throughput at a rate of 1300 tonnes per operating day. The operation is expected to create 95 person years of employment in 2017.

Anaconda registered the expansion of their West Pit at the Stog'er Tight mine for environmental assessment in September 2016. Pending approval, approximately 140 000 tonnes of ore will be mined over an eight to ten month period commencing in winter/spring of 2017/2018. Processing will occur at the Pine Cove mill facility which is already in operation.



Anaconda – Open pit at Pine Cove

In an effort to increase its mineable ore reserves beyond 2019, Anaconda is focusing on its Viking Project and Argyle Prospect. The company filed a Technical Report and Mineral Resource Estimate for the Thor Deposit, part of its Viking Project, in August 2016. Also, Anaconda has recently indicated optimism regarding the Argyle Prospect. On January 18, 2017, the company announced the assay results from the second phase of diamond drilling. Of the 22 holes drilled, 20 intersected gold mineralization at relatively shallow depths. Processing these deposits at the Pine Cove mill is Anaconda's intention, but economic feasibility has not yet been studied.

Anaconda is working with Shore Line Aggregates, a subsidiary of its contract miner, Guy J. Bailey Ltd., and Phoenix Bulk Carriers (BVI) Ltd., to supply three million tonnes of construction aggregate, using Anaconda's waste rock from its gold mining operation. The waste rock will be crushed and loaded onto ships bound for Charleston, South Carolina, to be used in the construction of a port facility there. To date, approximately one million tonnes of aggregate have been shipped, creating over 70 new direct jobs.



Rambler's concentrate storage shed at Goodyear's Cove

Rambler Metals and Mining Canada Limited

Rambler Metals and Mining Canada Limited (RMM) owns and operates the underground Ming copper–gold mine and the Nugget Pond base and precious metals milling facility on the Baie Verte Peninsula. Copper and gold-rich ore from the Ming Mine is trucked about 40 km to the Nugget Pond gold hydromet mill and copper flotation circuit for processing. Copper concentrate is shipped through the company's port facility at Goodyear's Cove.

In 2016, RMM's total mill throughput reached approximately 270 000 dry metric tonnes (dmt) of ore. The mill produced nearly 16 000 dmt of concentrate containing 4174 tonnes of saleable copper, and 6132 troy ounces of saleable gold. The company is expected to create 181 person years of employment in 2017.

The company is continuing its transition from the Phase I high-grade massive sulphides Ming Mine to Phase II integration of the Lower Footwall Zone (LFZ) ore. 2017 will be the first full year of massive sulphide ore blending with the LFZ ore. RMM's goal is to increase production to at least 1250 tonnes per day by mid 2017, which will enable the operation to lower unit costs, thereby strengthening its ability to be a long-term producer in the region. The expansion is fully funded, partly from a repayable contribution of \$2 million from the Atlantic Canada Opportunities Agency's Business Development Program in November 2016.

RMM has also been investigating the use of Dense Media Separation (DMS) onsite at Nugget Pond. DMS is a pre-concentration step aimed at improving the overall economics of the operation. Trial results, released by RMM in January 2017, indicate that DMS was successful in increasing the final grade of copper. With the Phase II expansion into the LFZ well underway, RMM is now focusing its efforts on determining the economics of installing and operating a commercially sized DMS plant at the Ming Mine site.

Barite Mud Services Incorporated

Barite Mud Services Incorporated (BMSI) has been reprocessing tailings since 2015, from ASARCO's former base-metal mine in Buchans to produce barite for use in the offshore oil industry. Approximately 40 000 to 50 000 tonnes of tailings will be reprocessed to yield 10 000 to 15 000 tonnes of barite annually. BMSI is a seasonal operation and operates from May to October and has a projected 15 year mine life. BMSI is expected to create 15 person years of employment in 2017.

Hi-Point Industries (1991) Limited

Hi-Point Industries (1991) Ltd. produces horticultural peat and Oclansorb, an oil absorbent product. The company has provided Oclansorb to the international petroleum industry for over two decades; this lightweight peat product absorbs oil up to six times its natural weight. Located in Bishop's Falls, the operation is expected to generate 21 person years of employment in 2017.



Peat harvesting equipment at Hi-Point Industries (1991) Ltd.'s operation

Trinity Resources Limited

Trinity Resources Limited (TRL) owns and operates the pyrophyllite mine and milling operation located in Conception Bay South. It also sells waste rock for use as aggregates in white cement. The company ships product from its own six-acre ship loading facility located within 6 km of the mine, and expects to generate 11 person years of employment in 2017.

DEVELOPING PROPERTIES

Canada Fluorspar (NL) Incorporated

Canada Fluorspar (NL) Inc. (CFI), a subsidiary of US-based Golden Gate Capital, initiated construction of a surface and underground fluorspar mine in St. Lawrence, on the Burin Peninsula, in 2016. Construction is expected to be carried out over two years, with operations scheduled to begin in late 2017.



Canada Fluorspar – Fluorite mineralization in core

The CFI operation will produce up to 200 000 tonnes of acid-grade fluorspar concentrate annually from the AGS Vein, and will include a mill, tailings management facilities and supporting infrastructure. The current St. Lawrence Fluorspar Project resource exceeds 22 million tonnes of fluorspar. Construction in 2017 is projected to create 100 person years of employment. CFI expects to employ approximately 200 full-time positions during the 10-year operating phase.

INACTIVE MINES

Teck Duck Pond Operations

Teck Duck Pond Operations officially closed on June 30, 2015. The mine started producing copper and zinc concentrates in 2007 and exhausted the mineral reserves over an eight year mine life as originally planned. The project was located approximately 30 km southeast of Millertown and consisted of two small open pits, an underground mine, a concentrator (mill),

tailings facilities and a 100-person operations camp. Concentrate was trucked to a storage and shipping facility in St. George's and sold to smelters in North America and overseas.

At its peak, the mine employed over 350 people. Rehabilitation of the mine site has started and will be completed by 2018 followed by a period of environmental monitoring.

Wabush Mines

Wabush Mines started mining iron ore from the Scully Mine in Labrador in 1965. Cliffs Natural Resources (CNR) bought out its partners and became sole owner of the mine in 2011. Concentrate was railed for pelletizing in Pointe-Noire, Québec, until the pellet plant closed in 2013.

In February 2014, CNR announced that mining and concentrating activities at Wabush Mines would be idled; later in 2014, CNR announced that the mine was permanently closed. Wabush Mines is going through the Companies' Creditors Arrangement Act (CCAA) process. The CCAA parties have been granted an extension to the stay period until June 30, 2017. Rehabilitation of the Wabush Mines Scully Mine was conditionally released from environmental assessment in February 2016.

Labrador Iron Mines Limited

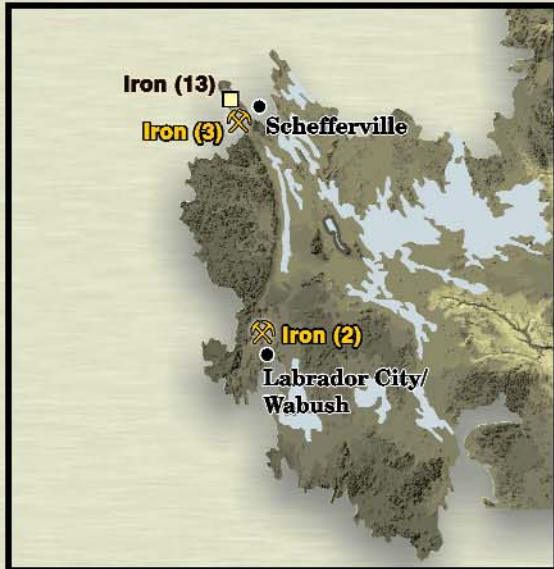
Labrador Iron Mines Limited (LIM) operated a direct shipping iron-ore mine in the Menihok area of Labrador. Declining iron ore prices prompted LIM to cease production in 2014. In April 2015, LIM initiated a court-supervised restructuring process under the Companies' Creditors Arrangement Act (CCAA). On December 20, 2016, LIM successfully exited from the CCAA process.

Beaver Brook Antimony Mine Incorporated

Beaver Brook Antimony Mine Incorporated suspended operations at its antimony mine near Glenwood in January 2013, due to a combination of high operating costs and lower than expected ore grades. The operation has been placed on care and maintenance with nine employees working at the site. The mine employed 104 people during its last full production year of 2012.

PRODUCING MINES, DEVELOPING PROPERTIES AND PROCESSING FACILITIES

February 2017



Producers

1. Vale Newfoundland and Labrador Limited, Voisey's Bay
2. Iron Ore Company of Canada, Labrador City
3. Tata Steel Minerals Canada Ltd., Menihek Area
4. Atlantic Minerals Limited, Lower Cove
5. Anaconda Mining Inc., Pine Cove
6. Rambler Metals and Mining Canada Limited, Baie Verte Peninsula
7. Barite Mud Services Inc., Buchans
8. Hi-Point Industries (1991) Ltd., Bishop's Falls
9. Trinity Resources Ltd., Manuels

Processing facilities

10. Vale Newfoundland and Labrador Limited, Long Harbour Hydromet Plant
11. Rambler Metals and Mining Canada Limited, Nugget Pond Mill

Under development

12. Canada Fluorspar (NL) Inc., St. Lawrence
13. Howse Minerals Limited., Menihek Area

* Note scale differences of Labrador and Newfoundland maps

