

Chief Inspector of Mines

2021/2022 Annual Report



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Report Overview

Statement of Compliance

This report is completed annually, to comply with the requirement under section 36 of the *Mines Act* (the “Act”) that the Chief Inspector of Mines publish an annual report showing results of the previous year in achieving the purposes of the Act. Beginning in 2020, the Annual Report is developed jointly by the Chief Inspector of Mines (CIM) and the Chief Permitting Officer (CPO). This report covers the fiscal year April 2021 to March 2022.

About EMLI

The Ministry of Energy, Mines and Low Carbon Innovation (EMLI) is responsible for British Columbia’s (BC) electricity, alternative energy, oil, natural gas, mining and mineral exploration sectors. Based on the recommendations of the Auditor General’s Report (2016) and the Mining Jobs Task Force (2018), the regulation of BC’s mining and mineral exploration was separated into two divisions – the Mines Competitiveness and Authorizations Division (MCAD) and the Mines Health, Safety and Enforcement Division (MHSE).

EMLI’s Operating Principles

- We pursue innovative and progressive approaches that minimize cumulative effects on the land and accelerate BC’s transition to a low-carbon economy.
- We respect Indigenous knowledge and actively pursue reconciliation and respectful relationships with First Nations and Indigenous Peoples as a priority in all aspects of the Ministry’s work.
- We support taking thoughtful risks to drive innovation and continuous improvement.
- We are fair and transparent about our decisions and actions, both within EMLI and with external partners.
- We celebrate diversity and create a safe space for all voices to speak and be heard.

Indigenous Acknowledgment

EMLI acknowledges all Indigenous Peoples on whose territories we live, learn and work. We honour their connection to the land and respect the importance of diverse teachings, practices, customs, and traditions within these territories.

EMLI is committed to establishing government-to-government relationships with Indigenous Nations that are based on respect, recognition, and accommodation of Indigenous rights, and to the reconciliation of Aboriginal and Crown titles and jurisdictions. In furtherance of this commitment, consistent with the evolution of policy and jurisprudence over recent decades, and the establishment of the UN Declaration on the Rights of Indigenous Peoples as the framework for reconciliation in BC, the Ministry is taking concrete actions to change the way we work with Indigenous Nations and support their journey towards self-determination.



Message from the Chief Inspector of Mines (CIM)



It is my pleasure to release the 2021/2022 Chief Inspector of Mines Annual Report. The 2021/2022 operating year was another challenging year, with the ongoing COVID-19 Pandemic, the floods caused by the atmospheric river, and devastating wildfires, impacting people across the Province. Our divisions continued to demonstrate their resiliency, flexibility, and capacity to adapt to challenging situations. Progressively, we have been able to return to a more normal routine, including a gradual return to the office.

I am extremely proud of the individuals who are part of the Office of the Chief Inspector (OCIM) as they collaborate and provide their expertise to ensure that we deliver on our mandate effectively. The OCIM continues to evolve and develop strategies to respond to industry requirements and to meet our directives.

With the creation of the Technical Compliance Unit, we now have expertise and resources within the OCIM to manage compliance issues involving these technical disciplines: geotechnical engineering, geoscience and reclamation. Our direct involvement and accountability to respond to complaints and dangerous occurrences at mines allows us to effectively address these issues as we provide technical support while leading incident investigations, in collaboration with the Mines Investigations Unit.

We have integrated our risk-based inspection planning to include all disciplines, and our fieldwork activities now include group inspections, as well as large regional inspection sweeps. This gives us the opportunity to integrate across the inspectorate, promote consistency, and expand our inspection coverage to sites that have not been regularly inspected.

Recently, we received an audit report from the Office of the Auditor General that included five recommendations. EMLI has accepted the recommendations and actions are underway to ensure they are addressed.

We continue to monitor new emerging technologies in the mining industry, including autonomous and semi-autonomous machine systems, battery electric vehicles, and trolly-assisted haulage systems. We are currently updating the Health, Safety and Reclamation Code to reflect emerging technologies.

Our partnerships with Indigenous Nations are important, and we continue to promote and enhance a more collaborative compliance oversight of the mining industry. Through accompanied inspections, the OCIM is building relationships with Nations across the Province by working together on oversight and compliance initiatives.

There are still many exciting projects and challenges ahead of us. We are all looking forward to continuing to develop our teams, promote a consistent approach to health and safety across the industry, and ensure that we accomplish our mandate as regulators.

Herman Henning
Chief Inspector of Mines

Message from the Chief Permitting Officer (CPO)



In the 2021/2022 fiscal year, permitting staff in the Major Mines Office (MMO) and Regional Operations Branch (ROB) worked diligently to review and make decisions on 479 applications under the *Mines Act*. This included 441 Notices of Work for regional aggregate producers, quarries, placer mines and coal and mineral exploration projects and 38 *Mines Act* permit amendments for major mines.

The [Departure from Approval Guidance](#), published by the MMO in late 2020, was successfully implemented in 2021. Risk management is improved by reducing the time spent reviewing routine low-risk mining activities, allowing permitting staff to focus their efforts on the review of more significant activities. In 2021, notable permit amendments were issued for the Bonanza Ledge, Blackwater, Red Chris, Elk Gold, Premier, and New Afton mine sites, among others.

Efforts are ongoing to make the application review process as efficient as possible. In 2021, MMO staff worked cooperatively with the Ministry of Environment and Climate Change Strategy and with industry to develop an implementation guide for the Joint Application Information Requirements for *Mines Act* and *Environmental Management Act* permits (the JAIR). The implementation guide, published in 2022, will aid mining companies in using the JAIR. A Major Mines Authorizations Guide is also being completed to replace the Proponent Guide to Coordinated Authorizations for Major Mine Projects. The guide will provide clarity with respect to the coordinated authorizations process that is used for projects that require authorizations under both the *Mines Act* and the *Environmental Management Act*.

The [Major Mines Reclamation Security Policy \(Interim\)](#), released in 2022, was informed by input from industry, environmental organizations and Indigenous groups, and by best practices from other jurisdictions. The policy addresses recommendations made in a 2016 *Audit of Compliance and Enforcement of the Mining Sector* and is intended to (among other objectives): reduce the differential between the reclamation liabilities of mining companies and the reclamation securities held by the Province; encourage progressive reclamation; and support the continued competitiveness of BC's mining industry.

The hard work of permitting staff in the ROB to process Notices of Work allowed mining companies to take advantage of a positive investment climate for mining in BC. 2021 saw near-record exploration expenditures totaling \$660M, up from \$422M in 2020. This is the second highest amount on record for the Province.

The ROB worked closely with Front Counter BC and with industry to re-examine the Notice of Work intake process, with the aim of minimizing the number of times that applications are moved between individuals and agencies. Updates to the mine data management system (CORE) by our colleagues on the Mines Digital Services team, has made it easier for the ROB team to access and analyze data to gain an understanding of where process improvements are needed, and to support those changes. The hiring and training of additional staff in the latter part of 2021, is allowing ROB to tackle a backlog of authorizations and to make other process improvements.

Widespread flooding in the fall of 2021 had a devastating impact on roads, bridges and other infrastructure in the southwest and southern interior of the Province. Aggregate producers and quarry operators worked hand-in-hand with the Ministry of Transportation and Infrastructure, municipalities, contractors and others to respond to this situation. Permitting staff in the ROB issued emergency authorizations as needed to ensure that response and recovery efforts were not slowed by bureaucracy. Cooperation and collaboration between mine operators, contractors, infrastructure owners, and regulators contributed to a highly successful recovery effort.



Several guidance documents were published by the ROB in 2021 to assist regional mine operators and mining proponents by providing clarity with respect to certain regulatory requirements. This included guidance for [Developing a Reclamation and Closure Plan for Regional Mines](#), a [Bulk Sample Application Overview Fact Sheet](#), and a policy and information bulletin with respect to [Permitting Pilot and Custom Mill Operations](#). More work is underway including a Mine Plan Update Policy to provide guidance on the process to address mine plan requirements as per part 10.4.1 of the Health, Safety and Reclamation Code for Mines in BC.

I am optimistic about the future of mining in BC and what we can accomplish in 2022/2023 working together with Indigenous Nations, mining proponents and other provincial agencies. I am proud of the dedication and professionalism of our permitting staff in the MMO and ROB and what they were able to accomplish in the 2021/2022 fiscal year. I am cognizant of the very large role that mining plays in building prosperous communities across the Province and the benefits that mining brings to everyone in BC – from the aggregate products used in our roads, bridges and buildings to the copper and other minerals used to manufacture the tools, equipment and infrastructure that we use every day. We are committed to continuously improving the way that mining permit applications are reviewed and processed so that mining can continue to benefit everyone in the Province.

George Warnock
Chief Permitting Officer

Mining in BC

Mineral exploration, mining and related sectors in BC provide jobs for more than 30,000 people in communities throughout the Province and add millions to BC’s economy every year. EMLI aims to support a sustainable, responsible and competitive mining sector that supports Indigenous reconciliation, creates jobs and contributes to responsible mining products and low-carbon technologies. The mining industry in BC is subject to robust regulatory oversight that is protective of the health and safety of workers, the public and the environment.

Mineral Production



Total Production (all commodities): \$10.8B

Estimated production value based on global commodity prices. Production numbers from Natural Resources Canada are preliminary estimates.

What is metallurgical coal used for?

Metallurgical coal is used for making steel, iron alloy, carbon, and other metals. Steel plays a critical role in building green energy infrastructure, such as wind turbines, solar panels, and tidal power systems. According to the Mining Association of BC, 100 tonnes of metallurgical coal is required to produce the 185 tonnes of steel used to build a typical wind turbine.



What is copper used for?

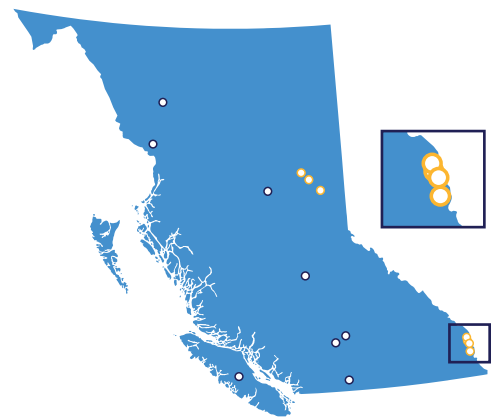
Copper is used in a variety of industries, such as manufacturing and construction, and is identified as one of 31 critical minerals in Canada. The green energy transition is anticipated to significantly increase demand for copper because of its uses in expanding electricity networks and clean energy technologies, such as electric vehicles.

Operating Mines

7* operating coal mines
8* operating major metal mines

Legend

-  Operating major metal mine
-  Operating coal mine



* Breakdown in Appendix D

Our Staff

Headquartered in Victoria, the Mines Health, Safety and Enforcement Division (MHSE) and Mines Competitiveness and Authorizations Division (MCAD) staff are located throughout the Province, with five regional offices, an office in Vancouver and individuals in remote locations. Each regional office includes regional permitting inspectors and regional health, safety, and compliance inspectors, and may also include staff or inspectors from the Major Mines Office or other branches within the divisions.

Other Offices

Headquarters:

Victoria

MHSE staff: 43

MCAD staff: 38

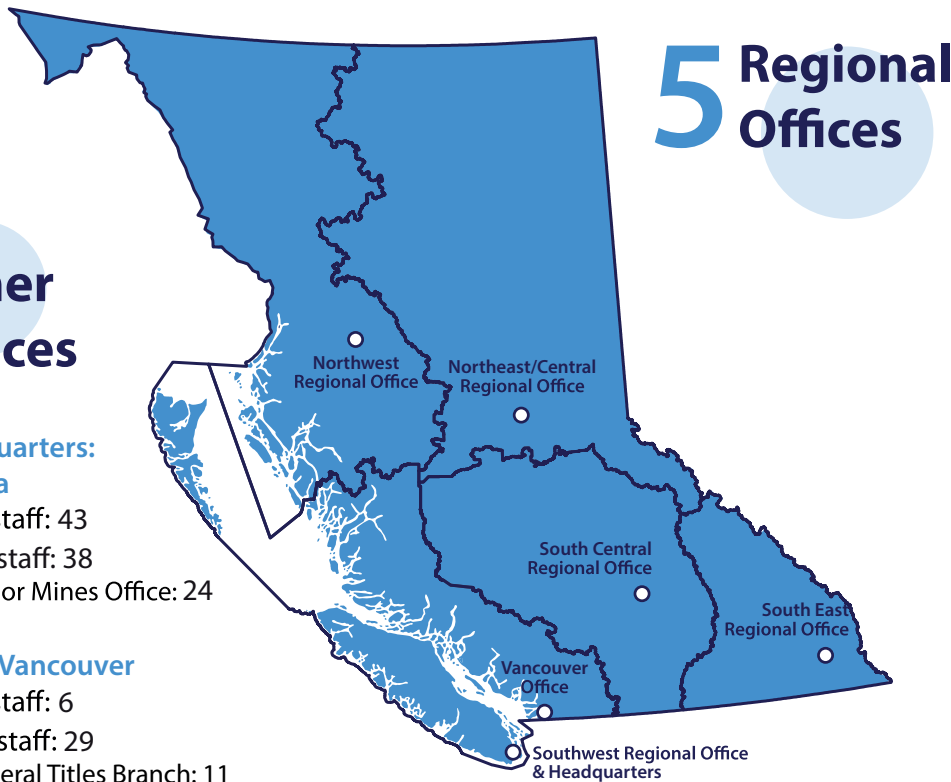
- Major Mines Office: 24

Other: Vancouver

MHSE staff: 6

MCAD staff: 29

- Mineral Titles Branch: 11



5 Regional Offices

Northwest: Smithers

MHSE staff: 10

MCAD staff: 17

Northeast/Central:

Prince George

MHSE staff: 8

MCAD staff: 12

South Central:

Kamloops

MHSE staff: 11

MCAD staff: 15

Southeast: Cranbrook

MHSE staff: 12

MCAD staff: 15

Southwest: Victoria

MHSE staff: 9

MCAD staff: 8

MHSE/MCAD data as of March 31, 2022

Inspectors by Location

- Victoria*
- Cranbrook
- Smithers
- Prince George
- Kamloops
- Vancouver



*Some inspectors assigned to Victoria live and work in other regions of the Province

How We Regulate



Issuing title/
tenure



Reviewing
applications



Setting
requirements
(permitting)



Verifying
compliance



Enforcing
compliance



Auditing for
continuous
improvement

What We Regulate



Health &
Safety



1414
Mineral Exploration



57
Coal Exploration Sites



89
Abandoned Mines



87
Metal Mines



22
Coal Mines



1223
Sand and Gravel
Operations



68
Mines with TSFs



361
Quarries



942
Placer Mines



2802
Certifications*

*issued in 2021-22,
breakdown in Appendix B

Mines Health, Safety and Enforcement Division

The Mines Health, Safety and Enforcement Division (MHSE) provides a proactive risk-based approach to regulatory oversight of BC’s mining sector through compliance management, enforcement, and auditing to protect human health and safety and the environment. Mine Inspectors oversee all aspects of the mining cycle: from exploration to operations to final reclamation. In addition, inspectors support the health and safety of workers by verifying compliance with the *Mines Act*, Health, Safety and Reclamation Code for Mines in British Columbia and associated regulations, and permit conditions. Work in this division includes a focus on continuously improving overall effectiveness of the mining regulatory framework.

Office of the Chief Inspector

The Office of the Chief Inspector (OCIM) is responsible for mining compliance oversight, mine emergency incident response and programs required to protect the health and safety of workers and members of the public from risk factors associated with mine operations across the Province. The OCIM also provides technical compliance oversight and enforcement. The OCIM consists of the following work units:

- Mining Compliance Unit
- Health and Safety Unit
- Operational Support Unit
- Technical Compliance Unit

Regulatory Management and Enforcement Branch

The Regulatory Management and Enforcement Branch (RMEB) provides cross-divisional regulatory, policy and strategic leadership and services to support the Ministry’s regulatory oversight objectives, including conducting investigations and reviewing the Health, Safety and Reclamation Code for Mines in BC (the Code). The RMEB consists of the following work units:

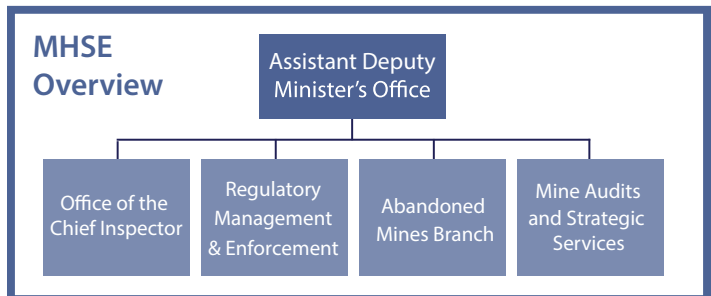
- Regulatory Management Unit
- Mines Investigations Unit
- Code Review Secretariat Unit

Abandoned Mines Branch

The role of the Abandoned Mines Branch (AMB) is to protect public safety and reduce liabilities by eliminating or minimizing the physical safety hazards and/or environmental impacts posed by abandoned and historic mines where no owner has been identified.

Mine Audits & Strategic Services

The Mine Audits and Strategic Services Branch (MASS) provides cross-divisional leadership and delivery of the key mining-related continuous improvement program areas for EMLI, including Mines Digital Services (MDS), mine audits program, and mines data management and reporting. MASS also provides leadership and support on corporate and other strategic initiatives for the Mines Health, Safety and Enforcement Division.





Mines Competitiveness and Authorizations Division

The Mines Competitiveness and Authorizations Division (MCAD) regulates the authorizations and technical operations of mines. MCAD also develops strategic policy, provides public geoscience and ensures that BC's mines are competitive in their economic and social performance. MCAD undertakes the management and responsible development of the Province's mineral, coal, and aggregate resources through:

- developing and delivering geoscience databases and surveys;
- profiling British Columbia's mineral and coal opportunities;
- providing secure mineral and coal tenure systems;
- delivering a fair, effective, and transparent regulatory process;
- developing and implementing policies and legislation to attract investment in BC;
- developing strategies and actions to continuously enhance provincial competitiveness;
- collecting fees and securities associated with permits and tenures;
- advising government agencies on mineral and coal resources and their potential; and
- engaging and collaborating with Indigenous communities, stakeholders, local and federal governments, and the public.

Policy and Competitiveness Branch

The Policy and Competitiveness Branch develops and leads strategic legislative and policy initiatives to support the growth of mineral exploration and mine developments in BC and represents the Division's interest on key government initiatives.

Major Mines Office

The Major Mines Office (MMO) brings coordination and clear accountability to both industry and government to ensure timely review of high-quality permit applications to support enduring decisions with respect to permitting major mine projects.

Regional Operations Branch

The Regional Operations Branch (ROB) is primarily responsible for authorizations and setting compliance requirements for regional mines, including sand and gravel pits, industrial mineral and rock quarries and placer and mineral exploration sites.

Mineral Titles Branch

The Mineral Titles Branch authorizes and administers the legislation governing the acquisition, exploration and development of mineral, placer, and coal rights in the Province.

British Columbia Geological Survey

The British Columbia Geological Survey is responsible for assessing BC’s geology and related mineral and coal resources. It integrates active research programs with historical data and, drawing on continuously advancing concepts and technologies, provides information to guide societal decisions centered on the Earth sciences.

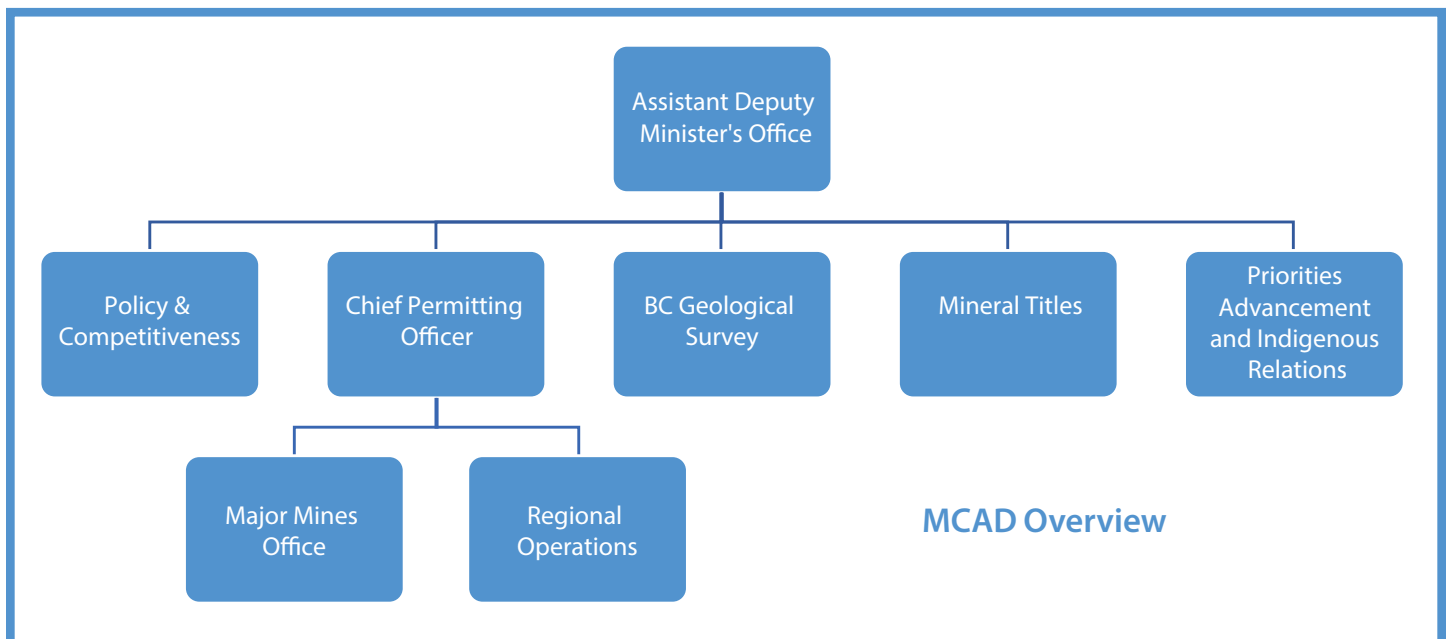
Priorities Advancement and Indigenous Relations Branch

The Priorities Advancement and Indigenous Relations (PAIR) Branch was established in June 2022 within MCAD. PAIR is responsible for providing a leadership role to MCAD in its reconciliation efforts with Indigenous Peoples to advance and resolve key strategic issues across the mining sector in order to support project

advancement through both the Major Mines Office and the Regional Operations branches.

The Indigenous Relations team within the branch has a focus on advancing the Ministry’s reconciliation commitments through working collaboratively and respectfully with Indigenous Peoples on major mining authorization processes across the Province. PAIR collaborates with the Ministry’s Strategic and Indigenous Affairs Division to guide the implementation of the United Nations Declaration on the Rights of Indigenous Peoples, the Truth and Reconciliation Commission of Canada’s Calls to Action, and the *Declaration on the Rights of Indigenous Peoples Act* within the Ministry. PAIR provides a leadership role to increase Indigenous collaboration and participation in the mining sector, coordinates consultation processes and the Ministry’s support to the Ministry of Indigenous Relations and Reconciliation (MIRR) in treaty and reconciliation initiatives, and develops appropriate policy and legislation.

The Priorities Advancement team within the branch supports the planning and leading of strategic legislative and policy initiatives to support the growth of mineral exploration and mine development both through engagement and collaboration with Indigenous Peoples and stakeholders. PAIR also collaborates with MHSE and supports key Ministry/Division strategic initiatives, policy and legislative projects, and engagements and collaboration with Indigenous Peoples across these areas.





COVID-19 & Emergency Events

As with all areas of Government, the Ministry continued to remain adaptable to the evolving pandemic situation. These challenges were compounded by the unprecedented emergency events in 2021/2022.

The Mines Inspectorate increased the number of inspections in 2021/2022 while maintaining strict COVID-19 Protocols when conducting on-site mine inspections. The Chief Inspector and Chief Permitting Officer remained responsive to the evolving situation and continued to make use of the tools and protocols used in 2020, such as video conferencing and online certifications, to protect the health of inspectors and staff on mine sites. Specific actions in 2021 included:

- January 2021: the Chief Inspector suspended all in-person invigilation of shiftbosses, blasting and mine rescue certifications, and provided direction on interim measures.
- February 2021: the Ministry organized the annual inspectors conference as a virtual event.
- September 2021: the Chief Inspector of Mines issued guidance encouraging mine sites to develop Communicable Disease Prevention Plans, aligning with orders from the Provincial Health Officer and guidance from WorkSafeBC.

Additionally, the Ministry continued to work closely with the Office of the Provincial Health Officer, industry and the Northern Health Authority to coordinate

communications and ensure industry had the most up-to-date information about COVID-related orders and maintaining a healthy workforce.

Encouraged by the success of incorporating new technologies in response to the pandemic, the Inspectorate continues to look for opportunities to support resourcing efficiencies and consistency in practices across the Province. For example, the Chief Inspector announced the move to centralize Blaster Certifications in March 2022.

Along with the ongoing pandemic, mine sites faced challenges related to emergency events, such as extreme heat, wildfires and floods. In 2021, atmospheric rivers brought heavy rain, flooding and mudslides to areas of BC, which impacted the operation of certain mines. A difficult fire season also impacted operations. The Inspectorate monitored situations and engaged with affected mine sites to assess risk and provide support where necessary. Going forward, the Inspectorate will continue to work with other Government agencies to plan for, and coordinate on, future emergency events.

Continuous Improvement

It has been 6 years since the 2016 Auditor General's report on mining compliance and enforcement was released. EMLI has made significant structural and operational changes to improve safety, oversight, and transparency of the regulation of BC's mining industry.

EMLI is committed to:

- Consistent communication to industry regarding hazards and dangerous occurrences so that lessons learned from incidents can help avoid similar issues at other sites.
- Following a risk-based inspection approach to ensure adequate coverage of all operating mines as well as those in care and maintenance.
- Ensuring sites with tailings storage facilities (TSFs) have appropriate engineering oversight and that actions required by the Code are undertaken. This includes those sites without an owner.
- Continuously improving oversight through implementation of Mine Audits Unit recommendations and ongoing Code revisions.

Recent Regulatory and Legislative Changes include:

2021

- First revision of the Code by the Standing Code Review Committee included eight revisions to improve safety at BC mines. The revisions clarify and modernize existing provisions and ensure the Code remains current in relation to changing standards and federal regulations. The majority of these revisions came into force in April 2021, with the exception of the avalanche safety requirements that came into force in July 2021.
- Chief Auditor released *Code requirements for tailings storage facilities* (June 2021). The Ministry released an action plan, including the establishment of the Part 10 Sub-committee of the Standing Code Review Committee to review audit findings and make recommendations.
- Increased transparency and improved digital systems.
- Updates to Compliance and Enforcement (C&E) policies and Staff/Inspector Training Program.

2022

- Second Audit released: *Worker protection in mobile equipment near water* (April 2022).
- Updates to risk-based inspection planning to include all related disciplines, such as geotechnical engineering, geoscience and reclamation.
- Updates to the Mines Inspector Training Program, which includes mandatory courses on legislation, policy, safety, administrative law, and a range of core duties for new inspectors, including a formal field-based mentoring component.
- Updates to the BC Mines Blaster Certifications Program.
- Office of the Auditor General released report *Oversight of Major Mines: Policies and Procedures to Address Environmental Risks*, which made five recommendations to the Ministry. The Ministry has accepted all five recommendations.



Training

The Mines Divisions training program improves the consistency of regulatory oversight and supports continuous learning by developing new training, tools and resources for staff. Continuous learning and professional development for inspectors and mining staff is a key component of ensuring the safety of workers and the public, building relationships with Indigenous communities, and protecting the environment.

In addition to offering courses to staff (see Appendix A), the training team continued to enhance the inspector training program in 2021 and 2022.

- In April 2021, a learning management system was launched to assign and track inspector training. The system formalizes the mandatory training requirements that inspectors must complete to become appointed as inspectors of mines and provides oversight on training compliance. The overall training compliance rate at the end of the 2021-2022 fiscal year was 92%.
- The training team developed eLearning modules to expand its training offerings and increase accessibility. eLearning allows inspectors to take training when needed and ensures that all staff has access to consistent training.
- A 3-day virtual all staff conference was held in February 2022, building on the success of the first virtual conference held in 2021.

Staff Training through FY 2021/2022

19
Mandatory courses

17
Optional and recommended courses

1388
Staff hours for mandatory training

865
Staff hours for optional and recommended courses

In addition to training on mining and regulatory oversight matters, EMLI launched a Reconciliation Learning Plan which provides inspectors and mining division staff the opportunity to learn about Indigenous Cultural Safety. The San'yas Indigenous Cultural Safety Training course is open to all staff in the Ministry whose work affects or could be of interest to Indigenous peoples. The training is aimed at educating Ministry staff on the history of colonialism and Indigenous rights in Canada, in order to provide context for enhancing the ability of Ministry staff to ensure work is conducted in a manner that recognizes and respects the rights of Indigenous peoples. The training is in accordance with s.35 of the Constitution, the *Declaration on the Rights of Indigenous Peoples Act* (DRIPA), and the UN Declaration on the Rights of Indigenous Peoples.

Audits



The Chief Auditor leads a dedicated team within the Ministry to evaluate the effectiveness of the regulatory system for mining in BC and makes public recommendations to Government. This team is independent of the other regulatory functions of the Ministry. Having built the audit program from concept to implementation, the Mine Audits Unit (the Audit Unit) developed and refined its policies and procedures, engaging with Indigenous peoples and interested parties, and completing and releasing its initial audits. More information on the Audit Unit can be found on the [Mine Audits Unit website](#).

Although outside of this formal reporting period, in June 2022, the Office of the Auditor General released its report [Oversight of Major Mines: Policies and Procedures to Address Environmental Risks](#). This audit was conducted in follow-up to the 2016 Audit, which ultimately informed much of the restructuring that was supported by Budget 2019 funding. Overall, the 2022 Audit findings were positive and concluded that the Ministry has developed adequate policies and procedures to address the key environmental risks of major mines identified in the 2016 Audit and developed an adequate framework to manage potential public safety and environmental concerns at abandoned mines. The 2022 Audit included five recommendations, mainly related to continuing work already in progress. The recommendations have been accepted by EMLI and actions are underway to ensure they are addressed. An update will be provided in the next Annual Report of the Chief Inspector of Mines and Chief Permitting Officer.

Standing Code Review Committee



The Standing Code Review Committee reviews BC's mining regulations in light of evolving trends and to ensure strong protection for health, safety, and environment at mine sites. The 12-person committee is appointed by the Minister and has equal representation from Indigenous communities, labour and industry.

In 2021 and 2022, the committee worked on revisions that aim to:

- address the use of autonomous and semi-autonomous machine systems on mines;
- update and clarify the requirements for reporting and investigating reportable incidents on mines; and
- remove all gendered language in the Code and introduce the requirement for mines to have a universal washroom facility.

These revisions were unanimously recommended by the committee and are anticipated to move forward in 2022. The work of the committee is ongoing with a goal to make Code revisions approximately every year.

Additionally, the Code Review Committee has struck subcommittees to commence work on a number of technical topics. The Part 10 subcommittee started work in fall 2021 to address the recommendations arising out of the Tailings Storage Facility Audit released by the Chief Auditor in 2021. A UN Declaration subcommittee was struck in 2022, in partnership with the First Nations Energy and Mining Council, to ensure that Code revisions are aligned with the United Nations Declaration on the Rights of Indigenous Peoples and the corresponding legislation that came into force in BC in 2019. The Secretariat is now working on an action plan for a subcommittee to address occupational health requirements in the Code.

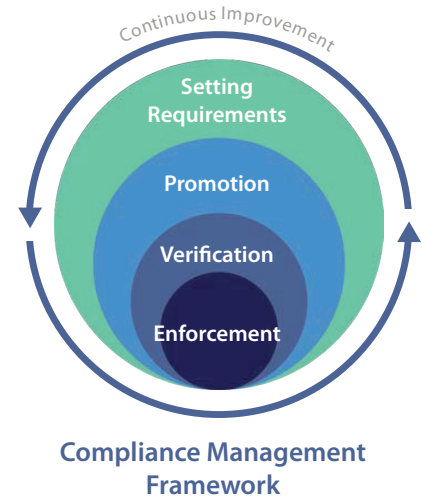
The current online version of the Code can be downloaded from the [Health, Safety and Reclamation Code website](#). More information on the Code Review Committee can be found on the [Code Review Committee website](#).

Regulatory Oversight

The Ministry has adopted the Natural Resource Compliance Management Framework as a model for its regulatory oversight activities. This Framework includes a continuous improvement element and sets out key factors for:

- setting requirements (permitting, Code requirements);
- promoting requirements (education about the rules);
- verifying compliance (inspections, compliance reviews); and
- enforcing compliance (issuing orders, enhanced enforcement tools).

As a general approach, the Ministry has prioritized inspections in consideration of site and operational risks to ensure that inspection resources are appropriately and effectively allocated. This risk-based inspection approach has allowed for effective planning based on the analysis of multiple factors and incorporates multiple technical disciplines, including geotechnical engineering, geoscience and reclamation. As a result, mine sites that pose a higher potential risk are subject to a greater inspection frequency to promote health and safety, environmental responsiveness and ensure compliance with regulatory requirements.



Geotechnical engineering focuses on the design, operation, and maintenance of engineered site infrastructure, including waste rock dumps, stockpiles, open pits, and underground mine development. Geoscience focuses on the metal leaching and acid rock drainage potential of mine waste, mine waste management, water management, water quantity and quality predictions, source control measures, and water treatment and other mitigation measures for mines in BC. Reclamation focuses on reclamation and closure plans for mines in BC. It also focuses on the management and mitigation of sediment and erosion, dust, vegetation, wildlife, and cultural heritage protection.

The new centralized incident reporting system provides timely reporting and effective responses to mining incidents in the Province. Furthermore, real-time data allows for the identification of health and safety trends and appropriate responses, such as education, compliance inspections or enforcement actions.

Factors considered in the risk-based approach include:



Operational Status



Type of Operation



Size of Mine



Phase of Operations



Discipline-specific factors established for each inspection speciality¹



Compliance History

¹Electrical, ergonomics, geoscience, geotechnical, occupational health and reclamation.

Inspections FY21/22

	General Compliance ¹	H&S Specialties ²	Technical Compliance ³
Major Mines:	231	217	62
Regional Mines:	930	493	61

¹ General Compliance includes: health and safety (H&S), permitting
² H&S Specialties include: mechanical, electrical, ergonomic, occupational health
³ Technical Compliance includes: reclamation, geotechnical, geoscience

Regional Inspections

In 2021, a regional inspection sweep was completed in northwest British Columbia. A total of 84 mines were inspected, including two major mines. Personnel from the MHSE and MCAD Divisions of EMLI, the Oil and Gas Commission and First Nations attended the inspections. 155 orders, including two suspension of regular work orders, were issued along with 31 advisories or warnings.

Northwest BC Inspection Sweep	
Mines Inspected	Last Inspection prior to Sweep
84	1 in 2018
	9 in 2019
	3 in 2020
	12 in 2021
	59 prior to 2018



Mines Investigations Unit (MIU)

The Mines Investigations Unit (MIU) investigates serious incidents to determine what happened and why it happened and to make findings for prevention. Investigation findings may lead to industry Hazard or Safety Alerts to ensure critical safety messages and learnings are shared across industry. Where the causes of an incident are due to significant non-compliances, they may recommend an administrative or monetary penalty or write a report to Crown Counsel with recommendations for charges under the *Mines Act*. The MIU may also assist inspectors regarding escalated enforcement for non-compliances encountered during inspection activities and associated follow-up actions.

In 2021/2022, the MIU completed five reports recommending administrative monetary penalties. These reports are submitted for review and approval and go through an administrative hearing process that allows the named party an opportunity to be heard before a finding is rendered. Seven decisions were issued in this reporting period. All decisions are published on the BC Mine Information website following the applicable appeal period.

More about the MIU can be found here: <https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/compliance-enforcement/mines-investigations-unit>

Quick stats

Over **\$1,000,000** in AMPs imposed since 2017

The first **three** successful *Mines Act* prosecutions in over 20 years

Indigenous Engagement

Reconciliation with Indigenous peoples is a cross-government priority shared by every Ministry. Through the *Declaration on the Rights of Indigenous Peoples Act*, BC is committed to advancing reconciliation with Indigenous peoples.

In addition to the current initiatives underway, the Ministry will be working in cooperation and collaboration with Indigenous peoples on specific future actions and priority areas of focus. The following overarching goals guide the work of the Ministry.

- Support new partnerships and constructive arrangements with Indigenous Nations towards self-determination.
- Help find innovative solutions that could facilitate resource development and other economic opportunities in partnership with Indigenous Nations.
- Pursue opportunities to share benefits related to mining, oil and gas, and clean energy development with Indigenous Nations.
- Support negotiations towards new kinds of decision-making arrangements.
- Continue to participate in collaborative decision-making for major mining projects, and explore other sectors where collaborative decision-making could be utilized to enhance Indigenous participation in the regulatory process.
- Support the development and implementation of new mandates for wide-ranging reconciliation arrangements.

BC was the first jurisdiction in Canada to pass legislation implementing the UN *Declaration on the Rights of Indigenous Peoples* with the unanimous passing of the *Declaration on the Rights of Indigenous Peoples Act (Declaration Act)* in November 2019.

Working with Indigenous Peoples

EMLI is committed to working with Indigenous peoples to ensure collaboration continues throughout the life of mines, to uphold s.35 of the Constitution and advance BC's commitments under DRIPA. In order to help fulfil these commitments, EMLI engages closely with Indigenous peoples on authorizations related to both regional and major mines in order to understand the potential impacts to s.35 rights in relation to Indigenous lands, territories and resources. EMLI is also working to increase opportunities for engagement in compliance activities for permitted mines, including through participation in training and compliance activities. EMLI has created the Priorities Advancement and Indigenous Relations branch to help lead MCAD's reconciliation work.

Indigenous Engagement in Compliance Activities

EMLI provides guidance to inspectors to increase consistency regarding engaging Indigenous Nations in compliance activities. The purpose of this guidance is to:

- Build relationships with Indigenous Nations in whose traditional territories mining activity occurs;
- Provide a clear and transparent approach for compliance-related engagement;
- Increase Indigenous Nations' knowledge and understanding of EMLI's compliance verification approach;
- Help enhance mines inspectors' understanding of Indigenous interests, values and experiences related to compliance; and
- Increase trust in the regulatory regime for mining.

Three ways Indigenous Groups can get involved in compliance activities:



Compliance related education/training.

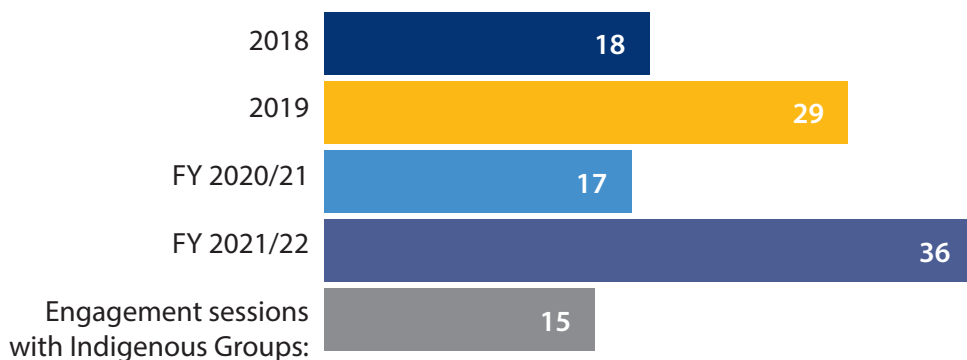


Identification of compliance interests, input into compliance planning.



Site visits (mine tours or accompanied inspections).

Accompanied inspections:



EMLI is committed to working with Indigenous Nations to ensure that collaboration continues throughout the life of mines, including upon closure and reclamation. The Province also works collaboratively with Indigenous Nations to increase opportunities for engagement in compliance activities for permitted mines, such as through participation in mine visits and inspections.

Negotiation of the first mining-related shared decision-making agreement under DRIPA

On June 15, 2021, the Province and the Tahltan Central Government began negotiations to develop the first consent-based, decision-making agreement under section 7 of the *Declaration on the Rights of Indigenous Peoples Act* (DRIPA). Section 7 of the Declaration Act sets out provisions for negotiating consent-based decision-

making agreements regarding significant Provincial decisions. The negotiation of the first section 7 agreement is intended to support ongoing work to collaboratively achieve long-term comprehensive reconciliation and land-use predictability in Tahltan Territory. The aim of the negotiations is to reach an agreement related to environmental assessment approvals for the Eskay Creek mine located in Tahltan Territory. These negotiations build on the success of the revitalized environmental assessment process to explore joint decision and consent agreements with First Nations on major projects, and the collaborative work between BC and the Tahltan Central Government on agreements to advance reconciliation. This includes the Shared Prosperity Agreement to advance economic reconciliation and work toward achieving long-term land-use predictability and shared prosperity.

Health and Safety

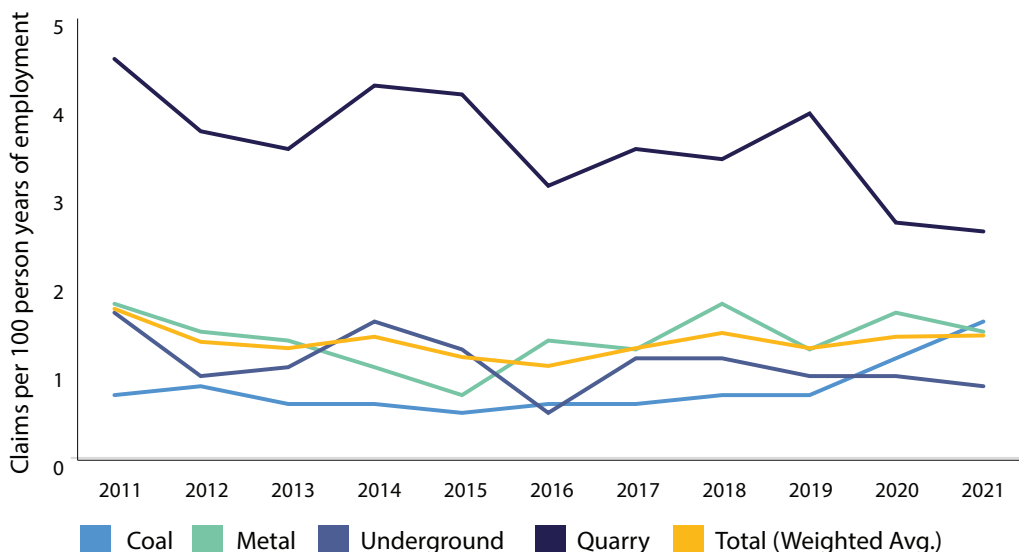
Mining is one of the safest heavy industries in the Province. While WorkSafeBC does not regulate health and safety on mine sites, they do oversee the claim system for injured workers and are therefore the holder of official and comparable statistics of worker safety in BC.

Injuries by Sub-sector, weighted average (Source: WorkSafeBC)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Classification Unit											
Mining (Metal, Coal & Quarries)	1.6	1.4	1.1	1.2	1	1.1	1.2	1.3	1.2	1.4	1.4
Sub-Sector											
Oil & Gas, Mineral Resources	1.8	1.4	1.1	1.1	1.1	1.1	1.1	1.3	1.2	1.4	1.6
Heavy Construction	3.5	3.6	3.4	3.3	2.9	3.1	3.2	3.1	2.3	1.7	1.4
Forestry	4.8	4.8	5.2	5	4.8	4.8	4.5	4.6	4.3	4	3.8
General Construction	4.6	4.4	4.1	4.2	4.2	4.2	3.9	4.1	3.7	3.4	3.5
Road Construction or Maintenance	3.1	2.9	2.7	2.6	2.7	2.6	2.7	2.7	2.6	2.5	2.8
Wood and Paper	3	3.4	3.1	3.1	3.2	3	2.9	2.7	2.7	2.8	2.8
Provincial	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.2

The injury rate for mining remains one of the lowest for heavy industries in BC. The 1.4 mining injury rate is the same as the previous year, but higher than two years ago. In analyzing the trends in mining injury rates, all mining sectors saw a reduction in injury rate from the previous years except for coal. Industry is aware of this trend and measures are being taken to reverse it.

Mining Injury Rates



The unit for injury rates is the number of claims per 100 person years of employment; One person-year is the equivalent of one worker working for a full year, whether on a full-time or part-time basis.

Data has been updated to reflect historical values to reflect ongoing changes to represent new and ongoing claims data. The weighted average has also been updated to include statistics from quarries, as the injury rate/person years data had previously not been factored in.

Injury rates for mining may vary slightly from past CIM Annual Reports, as statistics from quarries had previously not been incorporated into the weighted total. Historical values have been amended to reflect the inclusion of this data.

The most common accident type in mining injuries continues to be ‘struck by’ incidents, including being struck by vehicles, mobile equipment and objects. The Office of the Chief Inspector of Mines publishes dangerous occurrence weekly updates, hazard alerts, health and safety notices and incident information to communicate potentially hazardous issues related to mining activity.

Protecting Workers Proactively

EMLI continues to take a proactive approach to safety, which reduces the risk of harm to employees and increases overall employee wellbeing.

Dangerous Occurrences

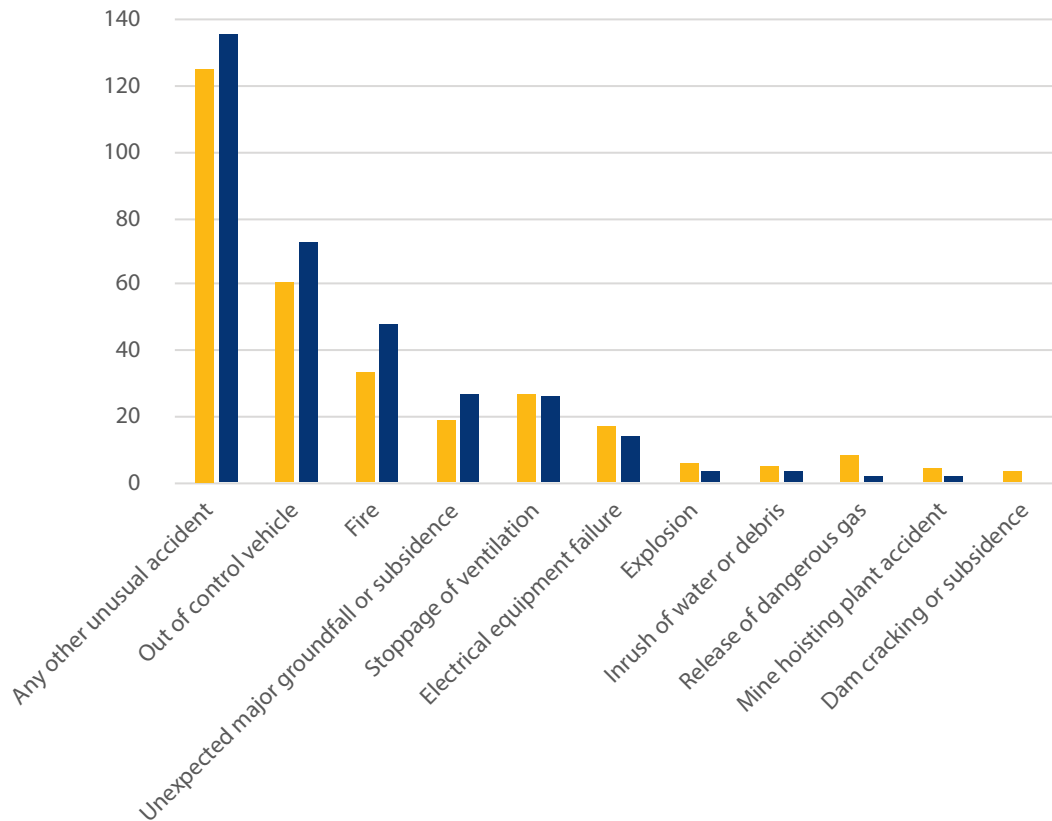
Dangerous Occurrences are reportable incidents that cause or threaten to cause injury/illness or damage to people, equipment, property, or the environment. The Chief Inspector provides a weekly dangerous occurrences summary report online to ensure that important safety lessons are shared in a timely way across the mining sector. The reports summarize reportable incidents from the prior week and provide reminders about key regulatory requirements.

See the reports here: <https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/health-safety/incident-information/dangerous-occurrence-reporting>

Dangerous Occurrences

	FY 2020/21	FY 2021/22
Major Mines:	233	282
Regional Mines:	36	49

Dangerous Occurrences: FY2020/2021 vs FY2021/2022



*Any other unusual accident includes injuries not caused by the other incident types, such as vehicle accidents where vehicle was not ‘out of control’ and departures from blasting procedures that did not result in an ‘explosion’.



The 2021/2022 fiscal year saw an increase in dangerous occurrence reporting. To ensure consistent regulatory oversight and to improve overall mine safety, EMLI implemented a centralized dangerous occurrence reporting system with a toll-free Mine Incident Reporting Line and Email, available 24/7. The increase in incidents reported is attributed to improved communication between mines and the regulator and better reporting throughout the industry due to the centralization of reporting and high integrity of data.

Hazard Alerts

Hazard alerts provide useful recommendations, regulatory reminders and mitigation strategies for reducing the risk of specific hazards that are associated with serious incidents that occurred at BC mines. [Hazard Alerts - Province of British Columbia \(gov.bc.ca\)](https://www2.gov.bc.ca/gov/content/safety/health_safety_notices)

Three hazard alerts were published in 2021/2022:

- Drill fall to quarry floor
- Safe work procedures
- ATV and UTV rollovers on mine sites

Health and safety notices are proactive warnings that share safety-related information with the BC mining industry by identifying potential hazards and providing recommendations and regulatory reminders to keep workers safe. [Health and Safety Notices - Province of British Columbia \(gov.bc.ca\)](https://www2.gov.bc.ca/gov/content/safety/health_safety_notices)

Three health and safety notices were published in 2021/2022:

- Spring run-off at BC mines
- Avalanche
- Wildfires

Guidance documents

Guidance documents increase awareness and provide relevant information on issues related to compliance. In 2021/2022, the Chief Inspector published hand arm vibration guidance. [hand_arm_vibration_guidance_final.pdf \(gov.bc.ca\)](https://www2.gov.bc.ca/gov/content/safety/health_safety_notices)

Mine Safety Awards

EMLI sponsors the Mine Safety Awards, held annually for the past 60 years. Awards are given to mining operations with the lowest injury rates in their respective operation categories for the past year. The 60th annual Mine Safety Awards occurred virtually in May 2022. See the [Mine Safety Awards](#) website for the full list of winners.

In 2021, EMLI awarded a Chief Inspector of Mines Award for commitment to health and safety to HyTech Drilling Ltd. This award recognizes the measures Hy-Tech Drilling Ltd. took to reduce musculoskeletal injuries, such as:

- Developing in-house technology to reduce the number of breaks a drill rod has, thereby reducing the number of twists and bends by the driller's helper by a ratio of 10 to 1.
- Introducing morning stretching at the start of the shift with instructions in drill shacks for workers to use throughout the day.
- Purchasing new drill shacks with robotics to help load drill rods.
- Having a physiotherapist on standby for video link sessions, to diagnose and treat workers, including in-field supervisors trained in injury taping.

New Safety Award

In 2021/2022, EMLI introduced a new Mine Safety Technology Award to recognize companies taking proactive steps to protect mine workers. The Mine Safety Technology Award rewards new and innovative technology uses to reduce the risk of harm from various hazards in the mining industry. This new award celebrates companies striving to protect the health and safety of their employees with the use of cutting-edge technology or innovatively using existing technology. This award is the first of its kind in Canada and EMLI is excited to join this movement toward leading indicators and hopes to inspire mines to find new ways to protect workers.

The inaugural recipient of this award was Fireside Barite Mine - Fireside Minerals Ltd for their automation of the bagging process, which significantly decreased worker musculoskeletal injuries and improved their overall process.

Mining-related Fatalities

When fatalities occur on a mine site, they are investigated by the Mines Investigations Unit (for more on the MIU, see page 18). Tragically, one mining-related fatality occurred in fiscal year 2021/2022 when a worker operating a utility terrain vehicle (UTV) on a mine site died as a result of his injuries when it rolled.

Modernization of the BC mines certifications program



In 2017, the Code Review Committee re-introduced the requirement for a Mines Supervisor certification into the Health, Safety and Reclamation Code for Mines in BC (Code). In April 2018, the BC Mine Supervisor Certificate was launched along with a plan to modernize and update the Code-required certification program for BC mines. This plan included a re-branding of the certifications along with the ability to track BC Mines Certifications through an innovative registry to ensure that accurate information on miners' certifications is being kept.

The self-funding BC Mines Certificate program increases accessibility and availability to the certifications and allows inspectors to spend more time with boots on the ground. It will also ensure that funding is continuously available for the program to update exams and that the most up-to-date learning technology is being utilized.

Since 2018, the BC Mines Certificate program has certified more than 11,250 Mine Supervisors and in July 2022 launched a new, updated BC Mines Blaster certification program. The BC Mines Shiftboss certification is the next certification to be updated, with a launch date planned for early 2024.

Other jurisdictions in Canada are seeing the success that BC has had with modernizing this program and are using BC's certificate programs and the registry as templates for their own modernization projects.

Permitting

The Mines Competitiveness and Authorizations Division (MCAD) is responsible for regional and major mines permitting. MCAD is working hard to ensure permitting is both timely and thorough, with a fulsome consideration of environmental values and a commitment to Indigenous consultation and reconciliation.

Regional Permitting

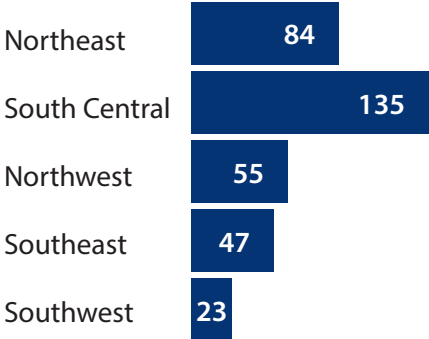
EMLI's regional offices are responsible for permitting all exploration, placer, quarry, and sand and gravel mining activities. These regional operations provide economic opportunities for people throughout the Province. In addition, mineral exploration projects that advance to development can lead to more sustained economic benefits for the Province. With the exception of 2019, exploration expenditures have continued to increase year over year since 2016, resulting in over \$2.19B spent from 2016 to 2021.



Regional permitting is conducted in five regions throughout the Province. Applicants submit a Notice of Work (NOW) application for a new permit or an amendment to an existing permit. NOW applications are reviewed by the permitting team, and other provincial agencies as needed, to ensure that a comprehensive review of the application is conducted. Consultation with Indigenous Nations is a key part of the permitting process, and helps inform an understanding of the interactions between the proposed activity and traditional values. Permitting inspectors collate all of the information gathered to impose permit conditions, which must be complied with along with the requirements found in the *Mines Act* and the Health, Safety and Reclamation Code for Mines in BC.

Permits Issued

Despite the challenges of COVID-19, regional permitting inspectors continued to issue a high volume of permits or amendments.



Major Mines Permitting

The Major Mines Office (MMO) brings coordination and clear accountability to both industry and government to ensure the timely review of high-quality permit applications that support enduring decisions with respect to permitting major mine projects. MMO leads the coordinated authorizations process for major mine permitting across the Province, through collaboration with other natural resource agencies.

Recent highlights

- Implemented Departures from Approval Guidance, which has cut timelines by 50% for processing these types of applications; and
- Implemented the Interim Major Mines Reclamation Security Policy, which brings added clarity to the requirements for major mine reclamation liability cost estimates.

Departures from Approval Guidance

The Departures from Approval Guidance was developed to provide clarification on the process for determining whether a proposed activity is considered a “non-substantial” departure from the approved mine plan and reclamation program under Part 10.1.18 of the Code. This guidance includes a tool for mine managers to assess whether or not a proposed departure is substantial and provides instruction on how to proceed with these types of requests.

More information and a self-assessment tool can be found here: [Departures from Approval - Province of British Columbia \(gov.bc.ca\)](https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/permitting/reclamation-closure)

Interim Major Mines Reclamation Security Policy

Reclamation, and the standard to which it must be completed, has evolved considerably since *Mines Act* permits were first required in 1969. Work within EMLI to improve tools, guidance, and policy related to reclamation has been ongoing over the past number of years. These efforts include a focus on accurately capturing reclamation liability costs when determining the security amount to be required under a *Mines Act* permit. The Interim Major Mines Reclamation Security Policy was developed following the 2016 auditor general’s report on mining that highlighted areas for improvement and the policy was informed by subsequent engagement with Indigenous Nations, non-governmental organizations, industry and the public. The Policy requires that reclamation liability cost estimates include both conventional reclamation (such as re-sloping and re-vegetation) and environmental liabilities (such as water treatment). The policy also requires bonding for the operation and maintenance of any necessary water-treatment plants for a post-closure period of 100 years.

More information on reclamation and securities can be found here: <https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/permitting/reclamation-closure>

Regional Mine Securities

The Regional bond calculator was introduced in 2018 to allow for a more consistent and transparent method of calculating reclamation costs on regional mine sites. Since the introduction of the calculator, reclamation bonding for regional sites has increased from approximately \$60M at the end of FY2016/2017 to approximately \$102M at the end of March 2022.

Mining	2020/2021	2021/2022
Coal Exploration	\$14,532,281	\$14,551,361
Sand & Gravel	\$21,819,857	\$23,333,632
Mineral Exploration	\$27,420,075	\$31,922,112
Placer	\$10,242,413	\$10,344,333
Quarries	\$21,455,433	\$22,111,252
Total	\$95,470,059	\$102,262,690

Major Mine Securities

In November 2020, the Minister of EMLI received a mandate to work with the Minister of Environment and Climate Change Strategy to implement bonding at large-scale industrial sites to ensure that those sites pay the costs for environmental clean-up if their projects are abandoned. EMLI is engaged in this inter-agency work, which is complementary to ongoing work at EMLI respecting reclamation securities for major mines.

Below is the estimated reclamation liability for major mines and the reclamation security held by EMLI, as of March 31, 2022. Mine permits may contain schedules for placing additional security that are not reflected in these totals. A detailed list can be found in Appendix C.

Major Mine Securities Held	2021 Liability Estimates	2021 Differential
\$2,981,359,697	\$4,032,013,749	\$1,050,654,051

Reporting Year	Total Bond Amount	Estimated Liability	Differential
2020/2021	\$2,307,179,634	\$3,446,289,151	\$1,139,109,517
2021/2022	\$2,981,359,697	\$4,032,013,749	\$1,050,654,051
CHANGE	\$674,180,063	\$585,724,598	-\$88,455,466



Abandoned Mines Branch

While the regulation of the mining industry has evolved and improved, the long history of mining in the Province has resulted in some mines that may pose a risk to public safety and/or the environment because the owners did not reclaim the mine or the condition to which the site was reclaimed falls short of today's standards.

Formed in 2019, the mandate of the Abandoned Mines Branch (AMB) is to recognize and reclaim past mining activities that today pose potential risks to public safety and/or the environment, where there is no *Mines Act* permit and/or responsible person to address these risks.

The regulatory authority for the actions of the AMB is derived from Section 17 of the *Mines Act* which allows for the Chief Inspector of Mines to take action in, on or about a closed or abandoned mine in order to prevent danger to persons or property or to abate pollution of land and watercourses.

AMB Guiding Principles

- Use a risk-based approach to identify and prioritize abandoned and historic mines presenting the highest risk to public safety and/or the environment.
- Mitigate physical safety hazards and/or environmental impacts caused by abandoned and historic mines by complying with all applicable health, safety, and reclamation standards, as defined under the Health, Safety and Reclamation Code for Mines in BC, the Environmental Management Act (EMA), and the Contaminated Sites Regulations (CSR), to the extent practicable.

- Reclaim abandoned and historic mines to a productive end land use including, but not limited to, using best practices, science-based principles, the preservation of historical/cultural resources, and traditional knowledge.
- Manage the reclamation of sites in a cost-effective manner based on available resources.
- Encourage collaboration and cooperation with Indigenous communities and the public, other agencies, and local government.
- Provide transparent public reporting of program operations and results.

The long-term goal of the AMB is to mitigate residual public safety and environmental risks associated with abandoned and historic mines as reasonably practicable, and minimize long-term monitoring and maintenance requirements.

The AMB engages First Nations to assess impacts at sites, determine work programs, and provide employment opportunities. The AMB also collaborates with the Crown Contaminated Sites Program to make efficient use of resources when addressing environmental and physical risks and contamination at abandoned mines.

Program Highlights

Inventory and Hazard Assessments: Setting up for future successes

Established tools and procedures, including:

- Developing a data management system to serve as the foundation for accurate data storage, analyses and sound decision making;
- Creating a field tool for consistent data collection and accurate georeferencing; and
- Defining a risk assessment framework to aid in the prioritization of sites for future remediation action.

Protecting Public Safety

AMB responds to public safety concerns. These generally involve small historic underground mine openings.

Recent projects included:

- Designing and installing a gate to prevent the public from entering three small open adits but allowing access by amphibians (Bowen Island).
- Repairing a fence at the Lakeview-Dividend mine constructed to prevent falls down a steep cliff.
- Designing and installing various portal closures to prevent the public from entering the open portals (Northair Mine).

TSF Dam Safety

The AMB monitors five tailings storage facilities (TSFs) at four mines that have no responsible owner/permittee: Lawyers, Red Mountain (Coxey – two TSFs), Northair and Mt Copeland.

The Ministry contracts independent qualified geotechnical engineers to inspect and advise the Ministry on dam stability and performance at these sites annually. Recommendations include site maintenance activities, such as vegetation removal, and dam and spillway maintenance.

Monitoring and maintenance activities at these five tailings storage facilities include:

- Ensuring annual dam safety inspections (DSIs) or dam safety reviews (DSRs) are completed;
- Following up on recommendations in the DSI/DSR reports;
- Ensuring operation, maintenance and surveillance (OMS) manuals and mine emergency response plans (MERPs) are completed and updated at all sites; and
- Initiating plans to table test each MERP in coordination with EMLI's Mine Emergency Program.

Tulsequah Mine Reclamation Project

The Taku River Tlingit First Nation (TRTFN) and EMLI collaborated on the development of a conceptual closure and reclamation plan for the Tulsequah Chief Mine to address longstanding concerns about the mine, primarily related to water discharge.

The plan outlines a phased approach and is designed to be flexible, so changes can be made once more information is gathered from the site.

Early reclamation work, conducted between 2020-2022, has included:

- Initiating repairs to the 10km road and repairing or replacing bridge structures to allow safe access around the minesite;
- Initiating a multi-year water quality and aquatic monitoring program in the Tulsequah River;
- Assessing the readiness of the interim water treatment plant; and
- Conducting a Lidar survey of the Tulsequah river to support engineering designs.

This work was required to address environmental, health and safety issues and to prepare the site for long-term remediation. A large portion of the work was conducted by the economic arm of the TRTFN government, the Atlin Tlingit Economic Limited Partnership.

Future work at this site includes the continuation of the water quality monitoring program and reclamation to address the acid rock drainage. AMB will continue to work with the TRTFN throughout the lifespan of the project.

More information and future updates can be found at: <https://www2.gov.bc.ca/gov/content/environment/air-land-water/site-permitting-compliance/tulsequah-mine>

Digital Systems Modernization

EMLI continues to improve data accuracy, transparency and information sharing between industry, the public and the Ministry.

Natural Resource Inspection Systems (NRIS)

The NRIS application is linked to EMLI's other digital databases. This application allows inspectors to create inspection records, such as site observations, orders, and remedial actions, using the most up-to-date and accurate mine information. It also allows for tracking and analysis of inspection and compliance data.

MineSpace

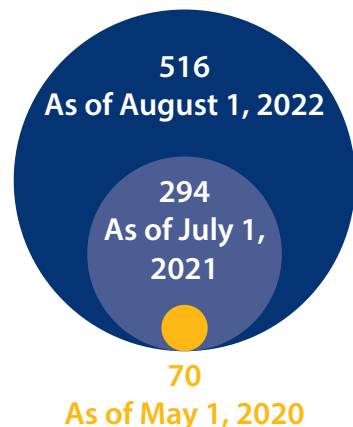
The Mines Digital Services team continues to enhance the interactive portal connecting EMLI to mining proponents in BC. The MineSpace portal has since received almost 2,000 document submissions and has streamlined interactions between mining proponents and EMLI.

Proponents in MineSpace can:

- view their mine information as held by EMLI
- submit Permit and Code Required Reports directly to EMLI
- view their permits, compliance history, and variance applications
- review their bond information

The number of mines included on MineSpace continues to grow. Proponents with either a basic or business BCeID can register at: <https://minespace.gov.bc.ca/>

Mines on MineSpace



In 2022/2023, the Mines Digital Services team plans to connect the MineSpace systems to software systems in other ministries to improve collaboration, improve the mines authorization process for mining proponents in BC, and improve transparency in decision processes for mine applications.

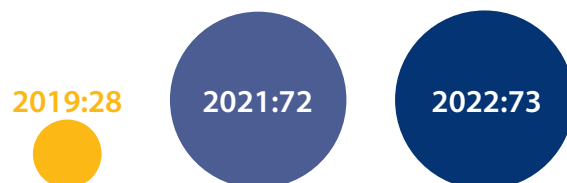
CORE

CORE is the EMLI application used to manage data to regulate mines in BC and record mine-related information and surfaces data to the BC Mine Information website. Through the CORE application, permits, compliance history, and spatial and attribute data are available quickly and from any location. CORE also ensures that permits are issued in a standardized format so that all permits contain the same information presented in the same manner, ensuring consistency and clarity. In 2022, CORE was enhanced to incorporate Major Mine project descriptions, Major Mine applications required under the *Mines Act*, Information Requirements Table, and Notice of Departures as provided by mining proponents in MineSpace. This gives EMLI staff a more comprehensive understanding of the mine being reviewed.

BC Mine Information Website

The BC Mine Information (BCMI) website continues to evolve with the number of major mines available for viewing on the website continuing to increase and the annual addition of regulatory reports. The site is connected to data used by EMLI so that information on BCMI directly reflects the same data EMLI staff use, including permits and the permitted mine area spatial data for many of the mines.

Mines on BCMI



The BCMI can be found at: <https://mines.nrs.gov.bc.ca/>



Conclusion

The mining sector is one of the oldest and most dynamic industries in BC and it continues to provide important economic opportunities for communities throughout the Province. EMLI is committed to ensuring the sector remains responsive and competitive with appropriate oversight that ensures the protection of workers, the public and the environment.

The Mines Competitiveness and Authorizations Division (MCAD) and the Mines Health, Safety and Enforcement (MHSE) Division provide robust regulatory oversight that supports the responsible development of the Province's mineral exploration mining sectors. In 2021/2022, the divisions have implemented improvements to keep regulations relevant and effective while addressing recommendations provided by the Chief Auditor.

The Divisions remain focused on advancing reconciliation commitments by working collaboratively and respectfully with Indigenous Peoples, guided by the United Nations Declaration on the Rights of Indigenous Peoples, the Truth and Reconciliation Commission of Canada's Calls to Action, and the *Declaration on the Rights of Indigenous Peoples Act*. This focus will ensure the Ministry is taking concrete actions to enhance relationships with Indigenous Nations and support their journey towards self-determination.

Appendix A: Training

Course	Participants	Hours
Mandatory Training		
Administrative Law 101	118	3.5
Enforceable Order Writing	97	2
Information Gathering/Notetaking	73	1.5
Mine Emergency Management	89	1.5
Mine Inspection Procedure	89	2
<i>Mines Act</i> : Compliance and Enforcement	86	3
Group-Specific Courses		
Avalanche Awareness for Mines Inspectors	28	6.5
Recommended Training (inspectors)		
Abandoned Mines Program	89	1
Application of <i>Mines Act</i> Sections 15(4.1) and 15(5)	81	1
Complaints Management Policy	76	1
Reclamation and the Code	154	1
Regional Permits for Compliance Inspectors	66	1
What to Expect During an Audit by the Chief Auditor	91	1
Code Revisions – Avalanche Safety	61	1
Code Revisions – Gas Detection and Loss of Control of Drill Holes	70	1
Indigenous Engagement in Compliance Activities	No data	1
Recommended Training (all staff)		
Introduction to the Learning Management System (LMS)	43	1
LMS for Supervisors	30	0.5
Privacy Training	94	1

Appendix B: Certifications Issued to Industry 2021/2022

Blasting	210
Mine rescue - gravel	6
Mine rescue - surface	279
Mine rescue - underground	142
Shiftboss - fireboss	1
Shiftboss - open pit	44
Shiftboss - underground	34
Shiftboss - sand and gravel	6
Mine supervisor certificate	2080
Total	2802

Appendix C: Reclamation Liabilities*

Name	Owner	Total Bond Amount	Estimated Liability	Differential
Elk Valley (Elkview, Fording River, Line Creek, Coal Mountain, Greenhills, Upper Elk Valley)	Teck Coal Ltd.	\$1,281,450,854	\$1,712,410,000	\$430,959,146
Sage Creek	Sage Creek Coal Ltd.	\$1,000	\$1,000	\$0
Tent Mountain	Luscar Ltd.	\$58,500	\$58,500	\$0
Sukunka Coal	Tailsman Energy Inc.	\$50,000	\$67,500	\$17,500
Mt Spieker	Canadian Natural Resources Ltd.	\$10,000	\$10,000	\$0
Willow Creek	Conuma Resources Ltd.	\$22,005,333	\$27,103,035	\$5,097,702
Quintette	Teck Coal Limited	\$60,000,000	\$44,090,000	-\$15,910,000
Bullmoose	Teck Coal Limited	\$1,000,000	\$1,000,000	\$0
Benson Mtn	Wolf Mountain Coal Ltd.	\$25,000	\$0	-\$25,000
Mt Klappan	Fortune Coal Ltd.	\$25,000	\$0	-\$25,000
Quinsam	Quinsam Coal Corp.	\$7,281,000	\$12,466,000	\$5,185,000
Basin Coal	Basin Mine Ltd. Partnership	\$276,547	\$275,500	-\$1,047
Brule	Conuma Resources Ltd.	\$23,148,811	\$29,905,672	\$6,756,861
Wolverine/Hermann	Conuma Resources Ltd.	\$43,282,622	\$40,909,012	-\$2,373,610
Trend/Roman	Peace River Coal Ltd.	\$73,900,000	\$91,211,381	\$17,311,381
Murray River	HD Mining International Ltd.	\$1,903,000	\$1,903,000	\$0
Endako	Thompson Creek Mining Co.	\$61,900,000	\$61,900,000	\$0
Pinchi	Teck Resources Ltd.	\$2,000,000	\$2,000,000	\$0
Granisle	Glencore Canada Corp.	\$161,522	\$2,070,000	\$1,908,478
Island Copper	BHP Billiton Base Metals.	\$4,229,760	\$33,700,000	\$29,470,240
Kitsault	Avanti Kitsault Mine Ltd.	\$1,770,000	\$2,146,000	\$376,000
HVC	Teck Highland Valley Copper Ltd.	\$350,862,500	\$563,438,000	\$212,575,500
Brenda	Glencore Canada Corp.	\$5,000,000	\$33,476,001	\$28,476,001
Cassiar	Cassiar-Jade Contracting Inc.	\$600,000	\$383,250	-\$216,750
Myra Falls	Nyrstar Myra Falls Ltd.	\$132,424,500	\$142,880,585	\$10,456,085
Copper Mtn	Copper Mountain Mining Corp.	\$20,983,554	\$20,300,000	-\$683,554
Bul River	Bul River Mineral Corp.	\$491,511	\$491,511	\$0
Bell	Glencore Canada Corp.	\$25,100,000	\$19,522,325	-\$5,577,675
Gibraltar	Gibraltar Mines Ltd.	\$108,500,000	\$108,500,000	\$0
Giant Nickel	Barrick Gold Inc.	\$27,000	\$2,500,000	\$2,473,000

Name	Owner	Total Bond Amount	Estimated Liability	Differential
Silvana	Klondike Silver Corp.	\$225,000	\$827,000	\$602,000
Craigmont	Huldra Properties Inc.	\$700,000	\$700,000	\$0
Beaverdell	Teck Resources Ltd.	\$10,000	\$19,691,812	\$19,681,812
Sullivan	Teck Resources Ltd.	\$22,500,000	\$123,609,387	\$101,109,387
HB	Teck Resources Ltd.	\$10,000	\$10,000	\$0
Dankoe	439813 BC Ltd.	\$10,000	\$0	-\$10,000
Boss Mtn	Glencore Canada Corp.	\$30,000	\$1,950,000	\$1,920,000
Ajax	KGHM Ajax Mining Inc.	\$350,000	\$350,000	\$0
Equity	Goldcorp Canada Ltd.	\$101,994,000	\$101,744,000	-\$250,000
Table Mtn.	Cassiar Gold(2020) Corp.	\$274,444	\$1,675,789	\$1,401,345
Mosquito Creek	Barkerville Gold Mines Ltd.	\$5,000	\$437,119	\$432,119
Carolin-Ladner	New Carolin Gold Corp.	\$256,250	\$6,696,715	\$6,440,465
Scottie Gold	Red Eye Resources Ltd.	\$15,000	\$19,397	\$4,397
Goldstream	Barkerville Gold Mines Ltd.	\$200,000	\$1,125,000	\$925,000
Venus	United Keno Hills Mines Ltd.	\$7,000	\$7,000	\$0
Taurus	Cassiar Gold Corp.	\$10,000	\$442,202	\$432,202
Mt. Brussilof	Baymag Mines Co. Ltd.	\$15,102	\$855,931	\$840,829
Ashlu	Osprey Mining and Exploration Ltd.	\$10,000	\$160,000	\$150,000
Lussier Creek 4J	Georgia Pacific Canada Ltd.	\$20,000	\$45,930	\$25,930
Blackdome	J- Pacific Gold Inc	\$100,000	\$130,000	\$30,000
Nickel Plate	Barrick Gold Inc.	\$138,555,000	\$138,555,000	\$0
Johnny Mountain	Skyline Gold Corp.	\$562,310	\$10,697,660	\$10,135,350
Premier	Ascot Resources Ltd.	\$52,690,000	\$52,690,000	\$0
Parson Barite	Sherritt International Corp.	\$10,000	\$89,428	\$79,428
Hedley Gold Tailings	Sunrise Resources Ltd	\$0	\$3,000,000	\$3,000,000
Samatosum	First Quantum Minerals Ltd.	\$7,800,000	\$7,266,667	-\$533,333
Barrier Feldspar	Kanspar Industries Inc.	\$20,000	\$0	-\$20,000
Golden Bear	Gold Corp Canada Ltd.	\$210,000	\$2,882,881	\$2,672,881
Sable Shasta/Baker	TDG BC Assets Corp.	\$1,027,000	\$1,027,000	\$0
Snip	Skeena Resources Ltd.	\$2,425,000	\$2,450,000	\$25,000
CIL	Clayburn Industries	\$1,000	\$0	-\$1,000
Stronsay (Cirque)	Cirque Operating Corp.	\$220,000	\$1,969,181	\$1,749,181
Eskay Creek	Skeena Resources Ltd.	\$13,005,256	\$8,761,153	-\$4,244,103
QR	Barkerville Gold Mines Ltd.	\$17,880,000	\$17,880,000	\$0
Elk Gold	Elk Gold Mining Corp	\$15,866,700	\$15,866,700	\$0

Name	Owner	Total Bond Amount	Estimated Liability	Differential
Mount Polley	Mount Polley Mining Corp.	\$31,350,611	\$32,770,061	\$1,419,450
Huckleberry	Huckleberry Mines Ltd.	\$59,000,000	\$49,203,203	-\$9,796,797
Kemess	AuRico Gold Inc.	\$56,500,000	\$49,846,000	-\$6,654,000
Bralorne	Bralorne Gold Mines Ltd.	\$12,300,000	\$15,100,000	\$2,800,000
May Mac	Golden Dawn Minerals Inc.	\$50,000	\$94,995	\$44,995
Ainsworth Mill	Bluebird Mining Ltd.	\$5,000	\$250,000	\$245,000
Lumby	Saddle Mtn. Minerals Ltd.	\$5,000	\$5,000	\$0
Bluebell	Teck Resources Ltd.	\$0	\$0	\$0
HB Tailings	Regional District East Kootenay	\$2,769,000	\$2,769,000	\$0
Max Moly	FortyTwo Metals Inc.	\$730,000	\$1,313,403	\$583,403
New Afton	New Gold Inc.	\$38,790,000	\$48,746,403	\$9,956,403
Galore Creek	Galore Creek Mining Corporation	\$1,167,000	\$1,167,000	\$0
Ruby Creek	Global Drilling Solutions Inc.	\$100,000	\$50,000	-\$50,000
Tulsequah	Chieftain Metals Inc.	\$151,410	\$72,910,000	\$72,758,590
Zip	1086359 BC Ltd.	\$235,000	\$325,558	\$90,558
Lexington	1086359 BC Ltd.	\$215,000	\$248,732	\$33,732
Yellowjacket	African Queen Mines Ltd.	\$150,000	\$1,181,509	\$1,031,509
Mt. Milligan	Terrane Metals Corp.	\$51,300,000	\$51,300,000	\$0
Dome Mtn	Gavin Minerals Ltd.	\$579,000	\$13,312,503	\$12,733,503
Bonanza Ledge	Barkerville Gold Mines Ltd.	\$18,872,000	\$18,872,000	\$0
Treasure Mtn	Nicola Mining Inc.	\$505,100	\$0	-\$505,100
Red Chris	Newcrest Red Chris Mining Ltd	\$13,700,000	\$113,166,109	\$99,466,109
Yellow Giant	Banks Island Gold Ltd.	\$355,000	\$2,273,123	\$1,918,123
Silvertip	Coeur Silvertip Holdings Ltd.	\$18,179,000	\$16,408,426	-\$1,770,574
Brucejack	Pretium Resources inc.	\$31,700,000	\$25,200,000	-\$6,500,000
KSM	KSM Mining ULC	\$36,189,500	\$36,189,500	\$0
Blackwater	BW Gold Ltd.	\$980,000	\$980,000	\$0
TOTAL		\$2,981,359,697	\$4,032,013,749	\$1,050,654,051

* Values as of March 31, 2022. Values are self-reported in each company's Annual Reclamation Report (ARR). Some values may reflect updates provided after submission of the ARR.

Appendix D: Major Mines

Mine Name	Company	Nearby Community	Commodity	2021 Production
Metal Mines				
Brucejack	Pretium	Iskut	Gold (oz)	351,195
			Silver (oz)	454,135
Copper Mountain	Copper Mountain Mining	Princeton	Copper (lb)	90,100,000
			Gold (oz)	28,736
			Silver (oz)	523,821
Gibraltar	Taseko	Williams Lake	Copper (lb)	112,300,000
			Molybdenum (lb)	1,954,000
Highland Valley Copper	Teck	Logan Lake	Copper (lb)	288,364,296
			Molybdenum (lb)	1,100,000
Mount Milligan	Centerra Gold	Fort St. James	Copper (lb)	73,000,000
			Gold (oz)	196,438
New Afton	New Gold	Kamloops	Copper (lb)	61,700,000
			Gold (oz)	52,452
			Silver (oz)	256,528
Red Chris	Newcrest/Imperial Metals	Iskut	Copper (lb)	65,426,160
			Gold (oz)	60,160
			Silver (oz)	171,045
Myra Falls	Nyrstar	Myra Falls, mid-Vancouver Island	Zinc (lb)	68,085,279
			Lead (lb)	5,621,781
			Copper (lb)	7,663,259
			Gold (oz)	30,403
			Silver (oz)	388,013
Coal Mines				
Brule	Conuma Coal	Chetwynd	Metallurgical Coal (tonnes)	1,600,000
Coal Mountain	Teck	Sparwood	Metallurgical Coal (tonnes)	Closed
Elkview	Teck	Sparwood	Metallurgical Coal (tonnes)	8,091,000
Fording River	Teck	Elkford	Metallurgical Coal (tonnes)	8,256,000
Greenhills	Teck	Elkford	Metallurgical Coal (tonnes)	6,015,000
Line Creek	Teck	Sparwood	Metallurgical Coal (tonnes)	3,464,000
Willow Creek	Conuma Coal	Chetwynd	Metallurgical Coal (tonnes)	900,000
Wolverine	Conuma Coal	Chetwynd	Metallurgical Coal (tonnes)	1,100,000