

BC
MINING
LAW REFORM



Closure, Reclamation & Abandoned Mines

University of Victoria Environmental Law Centre



For their generous support, thank you to:

van[∞]uver
foundation

 **Tides Canada**

This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

Cover photo: Chris Miller

Introduction

Improperly closed mines can create serious long-term environmental and health impacts and can impose economic burdens on communities, governments, and other businesses. For example, the closed Britannia Mine on Howe Sound remained one of Canada's most contaminated sites for decades, leaching pollution that decimated the unique ecology of North America's southernmost fjord.¹ Similarly, a now-defunct copper mine on Vancouver Island wiped out food, recreational and economic fisheries on the Tsolum River, while the un-remediated Tulsequah Chief Mine in the northwest has contaminated the region's most productive salmon watershed for many decades. Poor reclamation at the Pinchi Lake mercury mine in the interior meant that generations of Tl'azt'en people faced the risks of mercury contamination in their traditional food supply.²

Water pollution from acid rock drainage and metal leaching is a major concern at these and many other closed mines—particularly where old mines lie upstream of sensitive ecosystems or important water sources. Inadequate closure and cleanup creates other risks, such as hazards left at abandoned mine sites, constraints on future land use, and costs for long-term reclamation and water treatment.³ Moreover, when proper mine closure does not occur in a timely way, these negative impacts are more likely to become permanent and more expensive to address⁴—with these larger costs often left to taxpayers. For example, the public paid \$46 million to control acid rock drainage at the Britannia mine—and will continue to pay \$3 million annually to maintain treatment in perpetuity.⁵

Historically, there was minimal regulation to ensure proper closure and decommissioning of BC mines. In recent decades, however, it has become widely understood that cost-effective prevention of environmental harm is best achieved by addressing these issues when mines are being planned and designed, not after the fact.⁶ This is why BC requires that mine proponents prepare detailed mine closure plans *before* starting work on a mine.

Unfortunately, despite requirements for detailed closure plans, the current regulatory approach does not ensure that mines are properly cleaned up by the companies that profited from them.⁷ BC's laws do not adequately protect taxpayers from the costs of existing and proposed mines that may be abandoned. Compounding the problem, the province has a large legacy liability from old mines that were developed and abandoned when regulations were even looser. There are more than 1,100 closed mines in the province,⁸ and many of these were developed in an era where closure planning was less than an afterthought. Addressing the ongoing impacts from these sites can be particularly costly.⁹

BC's laws should require world-leading practices for mine closure and reclamation, and must ensure that the responsible companies, not taxpayers, pay for these clean-up

activities. Government also needs to ensure adequate monitoring of closed mines and implement a comprehensive program for prioritizing and funding the cleanup of old polluting mines based on relative risk.

Reclamation funding

Mining is a cyclical industry where the fate of individual projects is subject to a suite of unpredictable factors—for example, changes in commodity prices, extreme weather events, accidents, and labour disputes can shutter mines abruptly. Mining companies are also often highly speculative enterprises and bankruptcy is common. When government has not secured enough financial assurance from companies ahead of time, these bankruptcies result in unpaid cleanup bills that often fall to taxpayers.¹⁰

The Tulsequah Chief Mine, for example, has been polluting continuously since 1957, when it was abandoned by Cominco. Attempts to reopen the mine have resulted in two bankruptcies in the last decade: Redfern Resources in 2009, and Chieftain Metals in 2016. After the 2016 bankruptcy, BC tried unsuccessfully to have Chieftain Metals' receiver comply with cleanup orders, but government recently had to launch its own cleanup initiative.¹¹

Given how common these premature closures are in the industry, requiring full reclamation security at the beginning of mine operations is a common-sense approach to avoid regularly having the public pay the cleanup bill.

BC's stated goal is to make sure that modern mine sites "do not leave an ongoing legacy or require public funds for clean-up activities,"¹² and section 10 of the *Mines Act* provides the authority for the Minister to act on that intention. Specifically, subsection 10(4) of the *Act* allows the Chief Inspector to make a mine permit conditional on the company providing security:

- (a) For mine reclamation, and
- (b) To provide for protection of, and mitigation of damage to, watercourses and cultural heritage resources affected by the mine.

Subsection 10(5) of the *Act* provides further powers that allow government to require security top-ups throughout the life of the mine as liabilities increase; but this, too, is optional and at the Chief Inspector's discretion.¹³ The province's 2016 "Factsheet" on mine reclamation security clearly sets out the toothlessness of the legislation when it comes to taking adequate full security:

*As a condition of the Mines Act... a financial security is required for **all or part** of the outstanding costs associated with the mine reclamation and the protection of land, watercourses and cultural resources.*

[emphasis added]

As the provincial factsheet describes, the *Mines Act* requires that companies post security for somewhere between 0% and 100% of planned cleanup costs. Whether that amount is closer to 0% or 100% is a discretionary decision to be made by the Chief Inspector.

In practice, this discretionary approach has not protected British Columbians from covering the costs of routine cleanup that should have been paid by the mining company. Government—as represented by the Chief Inspector—has regularly chosen to require that companies provide security for only part of the projected cleanup costs. In 2016, the Auditor General warned that BC's failure to require adequate security to pay for expected cleanup costs had produced a \$1.2 billion unfunded taxpayer liability.¹⁴ By the end of 2017, this liability had already climbed to \$1.4 billion, according to the BC Chief Inspector of Mines.¹⁵ In 2018, Canada's Ecofiscal Commission confirmed that this massive public liability for routine mine cleanup costs continues to rise.¹⁶ As the Commission concluded, BC's "low-stringency" approach to taking full security for projected cleanup costs means "financial assurance in British Columbia is stronger in theory than in practice."¹⁷

Criticism of BC's approach on cleanup security has mounted on the international stage. In October 2018, the Governor of Alaska wrote to BC's Premier, criticising our discretionary mine security rules.¹⁸ The Governor noted BC's failure to obtain adequate financial assurances from the owners of the Red Chris and Tulsequah Chief mines, which continue to pollute waters on both sides of the border. Alaska's concerns arise, the Governor stated,

...because statutory decision-makers in British Columbia may accept less than full security based on a company's financial strength, and the public has less access to the data and analyses used to set the amount of financial assurances.

In Canada, Quebec provides an example of a more rigorous mine reclamation security policy. In that province, the total security amount has to be deposited with the government over a two-year period after approval of a mine's reclamation plan. The international standard set by the Initiative for Responsible Mining Assurance ("IRMA") goes further still, requiring that companies provide financial assurance for independently reviewed cleanup cost estimates *before initial development permits are issued*. The IRMA standard also requires that financial security amounts be reviewed by third parties at least every five years or when there is a significant change to a mine plan.¹⁹

In addition to protecting the taxpayers' purse, requiring full security for cleanup incentivizes better environmental performance. As economist Robyn Allan has noted,

when a company knows that it will not necessarily have to bear the full costs of cleanup (because it is not required to post full security), it has less incentive to manage the mine in a way that minimizes long-term remediation or water treatment costs. In contrast, when a company has provided full security at the outset, it has additional motivation to conduct its overall operations to facilitate proper cleanup—and the return of its security deposit.²⁰

- 1. RECOMMENDATION: Require that companies provide full security for independently reviewed reclamation costs before permits are issued to begin mining operations. For existing mines, require full security for reclamation costs within two years.**

Mine reclamation standards and timelines

Most mining jurisdictions require that companies restore mined lands to some sort of natural or otherwise usable state—this is often referred to as 'reclamation' and is part of the overall process of properly closing a mine.

To ensure that reclamation goals are achieved, a clear set of measurable and enforceable reclamation criteria is needed.²¹ Currently, BC's laws generally do not set adequate standards for reclamation, and government inspection procedures "are broad and include vague statements without clear guidance for staff or contractors."²² For example, policy guidance regarding old mines includes that they "should be inspected from time to time as practical."

In other jurisdictions, like California, government sets clear reclamation standards for different types of post-closure land uses.²³ In Washington State, the government mandates an enforceable schedule to ensure that reclamation activities are undertaken as soon as possible.²⁴ This protects the public from growing reclamation liabilities that would fall to taxpayers in the event of a company default. Whereas mineral exploration sites in BC must generally be reclaimed within one year,²⁵ there are no mandated reclamation timelines for mines. BC can reduce risk to the public by mandating clear reclamation standards and timelines that meet or exceed IRMA requirements, and by ensuring independent and ongoing inspection of reclamation efforts.²⁶

- 2. RECOMMENDATION: Enact measurable and enforceable reclamation criteria that meet or exceed the international standards set in IRMA's Standard for Responsible Mining.**

3. **RECOMMENDATION: Ensure timely independent review of the adequacy of site reclamation and regular public reporting of review findings.**

4. **RECOMMENDATION: Require at least annual inspection of all closed mines for geotechnical issues, ground and surface water contamination and revegetation.**

Community and stakeholder involvement

Community input and engagement in the process is a key aspect of proper mine closure. According to the 2018 Asia-Pacific Economic Cooperation (APEC) Mining Task Force's *Mine Closure Checklist for Governments*, the "desired results of closure should be defined by key stakeholders in concert with overarching policy."²⁷ IRMA's Responsible Mining Standard echoes this approach and requires that reclamation and closure plans contain clear descriptions of the "role of the community in reviewing the reclamation and closure plan."²⁸

Public and stakeholder involvement is equally important in reviews and updates of existing closure plans—because, over time, communities and local authorities may identify unforeseen impacts that require attention. In Colorado, local authorities must be consulted before changes to an existing closure and reclamation plan are approved. To be compliant with the IRMA standards, companies must also provide interim reclamation progress reports at the request of stakeholders.²⁹

Finally, in order to effectively engage and provide valuable input to the closure planning process, the public needs access to good information and may also require independent expert support. BC has recently moved to require the posting of Annual Reclamation Reports online, but there is no requirement that closure plans be reviewed by interested parties during their initial development or their review and amendment. There is also no requirement that government or the company provide resources to enable the public or affected groups and individuals to engage. Other jurisdictions ensure support for community participation in the review of closure plans by requiring proponent companies to pay for the review costs of third parties.³⁰ The IRMA standard requires that, if necessary, the company must provide resources for "capacity building and training to enable meaningful stakeholder engagement."³¹

5. **RECOMMENDATION: Require and support local and stakeholder engagement on the content of mine closure and reclamation plans, including proposed changes to those plans and the monitoring of their effectiveness.**

Comprehensive approach to old mines

The Sunro Mine at Jordan River on Vancouver Island is the perfect example of why BC needs to ensure that old mine sites are monitored, especially when sensitive ecosystems or water sources are located downstream. The Sunro mine operated from 1950–1974 and the BC government deemed the mine 'reclaimed' in the 1990s and stopped monitoring it. The poorly remediated site continued to leach metals, poisoning the river and confounding the efforts of local volunteers and other partners working to re-establish salmon populations. BC, with no comprehensive monitoring program for former mine sites, did not identify the ongoing contamination of the river and action was taken only after a citizen complained.³² Unfortunately, Jordan River is just one example of a much larger problem. In fact, MiningWatch Canada has estimated that, collectively, old mine sites in BC contribute to over \$3 billion in unfunded cleanup liabilities for taxpayers.³³

Despite this significant public risk, BC is not keeping close tabs on these old and potentially polluting sites. In her 2016 audit of compliance and enforcement in the sector, the Auditor General found that, of the four closed mines that were audited, only one reclamation inspection was performed over the three-year audit period. The Auditor General found it particularly troubling that the closed Shasta mine in northern BC received no inspections during the audit period despite its history of serious non-compliance with reclamation requirements. She concluded that the number of inspections of closed mines in BC was inadequate, given the financial and environmental risks they pose.³⁴

With a legacy of many old mine sites that continue to pollute and the constraints of finite public resources for cleanup, BC needs an effective approach to prioritize which sites receive attention first.³⁵ For this, the province could look to jurisdictions where laws require prioritizing abandoned mine remediation projects through consultation with local agencies—and promote community involvement in restoration activities.³⁶ To effectively tackle the problem of abandoned mines with constrained public resources, APEC's *Mining Closure Checklist for Governments* recommends prioritization of cleanup of old sites based on the relative cost and estimated environmental and public health benefits of specific cleanup projects.³⁷

In developing a prioritization approach for cleaning up old polluting mines, BC could take lessons from its Crown Contaminated Sites Program (CCSP), which is intended to identify

and remediate high risk contaminated sites on Crown land where no responsible person can be identified. This program has operated on a small budget and has only remediated a total of 19 sites as of March 2018.³⁸ However, despite its limitations, there are positive aspects of the CCSP's approach that could be scaled up and adopted as part of a larger program to ensure adequate monitoring and cleanup of old polluting mines. For example, the program has developed a risk-ranking methodology to prioritize the cleanup of those sites that pose the greatest estimated risk to human health and the environment.³⁹ The CCSP has also demonstrated the value of partnerships with local communities and Indigenous Nations in cleanup planning and implementation. For example, the CCSP undertook a joint planning process with the Takla Lake First Nation through which the province and the First Nations agreed on a final remediation approach.⁴⁰

While the estimated unfunded cleanup liabilities for old mines in BC are large, there are feasible options for raising the funds needed to comprehensively address the problem. For example, a leading approach to funding cleanup of polluting legacy sites is to require current operators to pay into an orphaned and abandoned mine site cleanup fund. In Western Australia, the state government established a Mining Rehabilitation Fund in 2012 that addresses future and past abandoned mines. It is a pooled fund that current operators contribute to and is held by government. The capital funds are to be used for restoration of any mine site that becomes abandoned, while interest earned on the capital in the fund is used for restoration of past abandoned sites.⁴¹ BC also has its own experience to draw from—in 2018 the province announced a levy on oil and gas permit holders to be paid into an Orphan Site Reclamation Fund to deal with old and abandoned wells. Current operators pay a levy amount based on the estimated amount of future cleanup liability for their operations in relation to the industry-wide future liability amount.⁴² A similar levy regime for current mine operators in would help BC pay for necessary cleanup at priority legacy sites that continue to pollute important ecosystems and put public health at risk.

6. RECOMMENDATION: Establish a rehabilitation fund for old polluting mines that active mining companies contribute to proportionally, based on the relative size of their total cleanup and reclamation liabilities.

Endnotes

- 1 Coastal Ocean Research Institute, *Ocean Watch: Howe Sound Edition*, (Vancouver: 2017) at p. 28, online: <http://oceanwatch.ca/howesound/wp-content/uploads/sites/2/2017/02/OceanWatchHoweSoundReport.pdf>; See also the water quality and oceanographic data near a deep water outfall discharging acid mine drainage from Britannia Mine Into Howe Sound, British Columbia; Government of Canada, Fisheries and Oceans Canada, *Canadian Data Report of Fisheries and Aquatic Sciences*, No. 1063, 43.
- 2 Letter. "Request for Establishment of a Judicial Commission of Public Inquiry to Rectify and Improve BC Mining Regulation." Calvin Sandborn & Kristy Broadhead. Received by the Honourable Christy Clark (8 March 2017) (Victoria: BC) at pp. 7-8 and 32-39. Note that the Pinchi Lake site has been remediated, and in November 2018 the BC government issued a request for proposals to remediate the Tulsequah mine—after remediation plans proposed by the primary creditor of the failing project were rejected by the province.
- 3 G.A. Tremblay, "Managing Orphaned and Abandoned Mines - A Canadian Perspective." Presented at the International Summit on Derelict Mines Dealing with Derelict Mines Summit (NSW, Australia: December 4-6 2016), online http://www.abandoned-mines.org/wp/wp-content/uploads/2018/02/Tremblay_Hogan_DerelictMines_2017.pdf
- 4 Canada's Ecofiscal Commission, *Responsible Risk: How putting a price on environmental risk makes disasters less likely* (2018).
- 5 Letter. "Request for Establishment of a Judicial Commission of Public Inquiry to Rectify and Improve BC Mining Regulation." Calvin Sandborn & Kristy Broadhead. Received by the Honourable Christy Clark (8 March 2017) (Victoria: BC) at pp. 40 and 45-48.
- 6 G.A. Tremblay, "Managing Orphaned and Abandoned Mines - A Canadian Perspectives." Presented at the International Summit on Derelict Mines Dealing with Derelict Mines Summit (NSW, Australia: December 4-6, 2016) at p. 2, online: http://www.abandoned-mines.org/wp/wp-content/uploads/2018/02/Tremblay_Hogan_DerelictMines_2017.pdf.
- 7 For examples of this evidence, see: Letter. "Request for Establishment of a Judicial Commission of Public Inquiry to Rectify and Improve BC Mining Regulation." Calvin Sandborn & Kristy Broadhead. Received by the Honourable Christy Clark (8 March 2017) (Victoria: BC) at pp. 45-48.
- 8 Letter. "Request for Establishment of a Judicial Commission of Public Inquiry to Rectify and Improve BC Mining Regulation." Calvin Sandborn & Kristy Broadhead. Received by the Honourable Christy Clark (8 March 2017) (Victoria: BC) at p. 37.

- 9 G.A. Tremblay, "Managing Orphaned and Abandoned Mines—A Canadian Perspective." Presented at the International Summit on Derelict Mines Dealing with Derelict Mines Summit (NSW, Australia: December 4-6, 2016) at p. 2, online: http://www.abandoned-mines.org/wp/wp-content/uploads/2018/02/Tremblay_Hogan_DerelictMines_2017.pdf
- 10 Letter to Premier Christy Clark. "Request for Establishment of a Judicial Commission of Public Inquiry to Rectify and Improve BC Mining Regulation." Calvin Sandborn & Kristy Broadhead (8 March 2017) (Victoria: BC) at p. 40.
- 11 Gordon Hoekstra "BC issues request for proposal to clean up acidic Tulsequah Chief Mine", *Vancouver Sun*, December 2, 2018; Province of British Columbia, "Tulsequah Mine Information", Ministry of Environment, online: <https://www2.gov.bc.ca/gov/content/environment/air-land-water/site-permitting-compliance/tulsequah-mine>; Chris Zimmer, "Chronology of Tulsequah and Big Bull Acid Mine Drainage Clean Up Orders, Inspections and Responses", *Rivers Without Borders* (2012 June 26), online: <https://riverswithoutborders.org/reading-room/reports/2012/06/chronology-of-tulsequah-and-big-bull-acid-mine-drainage-clean-up-orders-inspections-and-responses>.
- 12 Province of British Columbia, "Reclamation and Closure," Mine Permitting, online: <https://www2.gov.bc.ca/gov/content/industry/mineral-exploration-mining/permitting/reclamation-closure>.
- 13 *Mines Act*, RSBC 1996, c. 293. S. 10(5).
- 14 Auditor General of British Columbia, *An Audit of Compliance and Enforcement of the Mining Sector* (Victoria: Office of the Auditor General, 2016) at p. 6.
- 15 BC Chief Inspector of Mines, *2017 Annual Report* (Government of British Columbia: Ministry of Energy, Mines and Petroleum Resources), Reclamation Security Table on pages 22–25, online: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration-mining/documents/health-and-safety/ci-annual-reports/2017_ci_annual_rpt.pdf
- 16 Robyn Allan, *Toward Financial Responsibility in British Columbia's Mining Industry* (Union of British Columbia Indian Chiefs, 2016) at p. 33.
- 17 Robyn Allan, *Toward Financial Responsibility in British Columbia's Mining Industry* (Union of British Columbia Indian Chiefs, 2016) at p. 42.
- 18 Letter. Governor Bill Walker. Received by Honourable John Horgan, Oct 31, 2018 (Juneau: Alaska).
- 19 Initiative for Responsible Mining Assurance, *IRMA Standard for Responsible Mining IRMA-STD-001* (2018) at 2.6.4

- 20 Robyn Allan, *Toward Financial Responsibility in British Columbia's Mining Industry* (Union of British Columbia Indian Chiefs, 2016) at p. 34.
- 21 Maya Stano & Emma Lehrer, *Fair Mining Practices: A New Mining Code for British Columbia* (Fair Mining Collaborative, 2013), at p. 357.

- 22 Auditor General of British Columbia, *An Audit of Compliance and Enforcement of the Mining Sector* (Victoria: Office of the Auditor General, 2016) at p. 47.
- 23 Maya Stano & Emma Lehrer, *Fair Mining Practices: A New Mining Code for British Columbia* (Fair Mining Collaborative, 2013) at p. 344.
- 24 Maya Stano & Emma Lehrer, *Fair Mining Practices: A New Mining Code for British Columbia* (Fair Mining Collaborative, 2013) at p. 353.
- 25 Province of British Columbia, Ministry of Energy and Mines, Health, Safety and Reclamation Code for Mines in British Columbia (Victoria: 2017) at § 9.13.1(1), online: https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/mineral-exploration-mining/documents/health-and-safety/code-review/health_safety_and_reclamation_code_2017_rev.pdf.
- 26 Maya Stano & Emma Lehrer, *Fair Mining Practices: A New Mining Code for British Columbia* (Fair Mining Collaborative, 2013) at p. 373.
- 27 Asia-Pacific Economic Cooperation Mining Task Force, *Mine Closure Checklist for Governments*, (Steering Committee on Economic and Technical Cooperation, Mining Task Force, 2018) at p. 10, online: <https://www.apec.org/Publications/2018/03/Mine-Closure---Checklist-for-Governments>.
- 28 Initiative for Responsible Mining Assurance, *IRMA Standard for Responsible Mining IRMA-STD-001* (2018) at 4.2.2.2.
- 29 Initiative for Responsible Mining Assurance, *IRMA Standard for Responsible Mining IRMA-STD-001* (2018) at 2.6.2.4.
- 30 Maya Stano & Emma Lehrer, *Fair Mining Practices: A New Mining Code for British Columbia* (Fair Mining Collaborative, 2013) at p. 324.
- 31 Initiative for Responsible Mining Assurance, *IRMA Standard for Responsible Mining IRMA-STD-001* (2018) at IRMA, 2.6.2.4.
- 32 Mark Hume, "The Rebirth of BC's Jordan River is a Victory for Environmental Activism," *Globe and Mail* (2016, October 16).
- 33 Letter to the Premier Christy Clark. "Request for Establishment of a Judicial Commission of Public Inquiry to Rectify and Improve BC Mining Regulation." Calvin Sandborn & Kristy Broadhead. (8 March 2017) (Victoria: BC) p. 32.
- 34 Auditor General of British Columbia, *An Audit of Compliance and Enforcement of the Mining Sector* (Victoria: Office of the Auditor General, 2016) at p. 89.

- 35 Megan Glatzel & Bea Gordon. "The West's Sleeping Giant: Abandoned Mines and the role of the Good Samaritan" *Stanford -Water in the West*. (2018 June 7).
- 36 Maya Stano & Emma Lehrer, *Fair Mining Practices: A New Mining Code for British Columbia* (Fair Mining Collaborative, 2013) at p. 328.
- 37 Asia-Pacific Economic Cooperation Mining Task Force, *Mine Closure Checklist for Governments* (Steering Committee on Economic and Technical Cooperation, Mining Task Force, 2018) at p. 78, online: <https://www.apec.org/Publications/2018/03/Mine-Closure---Checklist-for-Governments>
- 38 Province of British Columbia, "Crown Contaminated Sites Program: 2018 Biennial Report." (Victoria: Ministry of Forests, Lands, Natural Resource Operations and Rural Development, 2018) at p. 28.
- 39 Province of British Columbia, "Crown Contaminated Sites Program: 2018 Biennial Report." (Victoria: Ministry of Forests, Lands, Natural Resource Operations and Rural Development, 2018) at p. 6.
- 40 Province of British Columbia, "Crown Contaminated Sites Program: 2018 Biennial Report." (Victoria: Ministry of Forests, Lands, Natural Resource Operations and Rural Development, 2018) at p. 8.
- 41 Government of Australia. *Driving policy innovation in mine closure management, environmental risk mitigation and rehabilitation of abandoned mine sites as a pro-development strategy* (Canberra, Australia: Department of Foreign Affairs and Trade, 2016).
- 42 Randon Slaney and Eric Wiebe, *British Columbia Moves towards a Liability-Based Regulatory Regime for Oil and Gas to Address Orphan Sites* (Calgary: Burnet, Duckworth & Palmer LLP, 2018), online: <https://www.bdplaw.com/publications/british-columbia-moves-towards-a-liability-based-regulatory-regime-for-oil-and-gas-to-address-orphan-sites/>.