



Analysis - Environmental Liability of Mine Sites in British Columbia

Table 1 – Environmental Liability for Mine Site Clean-up in Canada’s Three Main Mining Jurisdictions: British Columbia, Quebec and Ontario (Updated May 2016)

	British Columbia	Quebec	Ontario
Mine sites under private responsibility	76 sites (\$2.1 billion) ¹	> 30 sites (\$0.7 billion) ⁵	169 sites (\$1.7 billion) ⁶
Abandoned sites under public responsibility with cost estimates	70 sites (\$0.3 billion) ²	> 713 sites (\$1.2 billion) ⁵	47 sites (\$1.2 billion) ⁶
Abandoned sites under public responsibility without cost estimates	27 sites ³ (cost unknown)		146 sites (cost unknown) ⁶
Smaller mine hazard sites	> 1100 sites ⁴ (cost unknown)		> 4050 sites (\$0.2-0.8 billion) ⁶
Total number of sites (using provinces’ figures)	> 1273 sites	> 743 sites	> 4412 sites
Total liability estimates (using provinces’ figures)	> \$2.4 billion	> \$1.9 billion	> \$3.1 billion
Total liability estimates (using MiningWatch’s figures)	> \$4.0 billion	> \$3.8 billion	> \$7.6 billion
Total financial securities held by provinces (using provinces’ figures)	\$0.9 billion	\$0.7 billion	\$1.0 billion (hard) \$0.7 billion (soft)
Total unsecured liability (using provinces’ figures)	> 1.5 billion	> 1.2 billion	> 1.4 billion
Total unsecured liability (using MiningWatch’s figures) ⁷	> 3.1 billion	> 3.1 billion	> 5.9 billion

1. Source: [BC Auditor General Report, May 2016](#) (pp.29-30). 2. Sources: [BC Crown Contaminated Sites Program Report 2014](#) (p.29); [BC Budget Estimates 2016-2017](#); [BC Public Accounts 2014-15](#). 3. Sources: [BC Auditor General Report, May 2016](#); [BC Crown Contaminated Sites Program Report 2014](#). 4. Source: [BC Historic Mines Atlas](#). 5. Sources: [Restauration des sites miniers, Rapport sur les activités minières au Québec 2014, Le Devoir, August 2015](#). 6. Source: [Ontario Auditor General Report, December 2015](#). 7. See Table 2 below for BC details.

Table 2 – Environmental Liability for Mine Sites Clean-up in British Columbia
(Compiled from May 2016 B.C. Auditor General report & other sources)

	Number of sites	Province Cost Estimates for Clean-Up	MiningWatch Cost Estimates for Clean-Up	Financial Security Held By Province	Total Unsecured Liability (Province Estimates)	Total Unsecured Liability (Mining-Watch Estimates)
Mine sites under private responsibility	76 sites ¹	\$2.1 billion ¹	> \$3.2 billion ⁴	\$0.9 billion ¹	\$1.2 billion	> \$2.3 billion
Abandoned mine sites under public responsibility	97 sites ¹	\$0.3 billion ³	> \$0.6 billion ⁵	\$0	\$0.3 billion	> \$0.6 billion
Smaller mine site hazards under public responsibility	> 1100 sites ²	unknown costs	> \$0.2 billion ⁶	\$0	unknown costs	> \$0.2 billion
Total liability for mine site clean-up	> 1273 sites	> \$2.4 billion	> \$4.0 billion	\$0.9 billion	> \$1.5 billion	> \$3.1 billion

1. Source: [BC Auditor General Report, May 2016](#) (pp.29-30). 2. Source: [BC Historic Mines Atlas](#); over 2000 sites according to [NOAMI Workshop on Best Practices for Orphaned and Abandoned Mine, 2006](#). 3. Sources: [BC Crown Contaminated Sites Program Report 2014](#); [BC Budget Estimates 2016-2017](#); [BC Public Accounts 2014-15](#) (costs are "an estimate of the minimum remediation costs for known sites where an assessment has been conducted, or where available information on sites is sufficient to estimate the costs") 4. Applied a 50% cost increase factor based on past experience of real, ground-based, clean-up costs once detailed engineering and work begin in other Canadian provinces and territories. 5. Applied a 100% cost increase factor for these poorly defined sites based on past experience of real costs once detailed engineering and work begin in other Canadian provinces and territories. 6. Using Ontario's lower estimated cost figure for those sites.

Table 3 - Water Treatment Liability for Mines in British Columbia (Low & High Cost Scenarios)
(Compiled from May 2016 B.C. Auditor General report)

	Number of sites	Low Cost Scenario (\$0.5 million / year)	High Cost Scenario (\$3 million / year) ²	Total Liability for Water Treatment per Decade (Low/High Scenarios, MiningWatch Estimates)
Identified mine sites with water treatment	14 sites ¹	\$7.0 million	\$42 million	\$70/\$420 million
Identified mine sites that <i>will</i> require water treatment	12 sites ¹	\$6.0 million	\$36 million	\$60/\$360 million
Identified mine sites that <i>may</i> require water treatment	33 sites ¹	\$16.5 million	\$99 million	\$165/\$990 million
Unidentified mine sites that may require water treatment	?	?	?	?
Total	59 sites	\$29.5 million	\$177 million	\$0.3 to 1.8 billion

1. Source: [BC Auditor General Report, May 2016](#) (pp.5, 37-38) 2. Using the Britannia Mine figure (B.C. Auditor General report, May 2016). Some mine sites require higher water treatment costs.

Table 4 – Total Unsecured Environmental Liability for Mine Sites in British Columbia

	Province Estimates	Mining-Watch Estimates
Total liability for mine sites clean-up costs (see Table 1 above)	> \$1.5 billion	> \$3.1 billion
Total liability for water treatment costs per decade (see Table 3 below)	unknown	> \$0.3 billion
Total liability for major mine spill (1 per decade) ¹	unknown	> \$0.5 billion
Total unsecured liability	> \$1.5 billion	> \$3.9 billion

Total BC mining royalties & rights collected in 2015 (same as expected yearly average for 2014-2018) ²	\$0.1 billion
Number of years to pay off BC's total unsecured environmental liability for mine sites using 100% of mine royalties	Over 15 to 40 years

1. Using Mount Polley spill figures: over \$400 million loss in share value (not recovered to date), nearly \$100 million losses in mine revenue, over \$70 million in cleanup costs, over 20 million in loss salaries, and more. 2. [BC Budget and Fiscal Plan 2016](#) (Table A.9). Also, the yearly average of mining revenues collected or to be collected by BC from 2009 to 2018 is 0.2 billion.